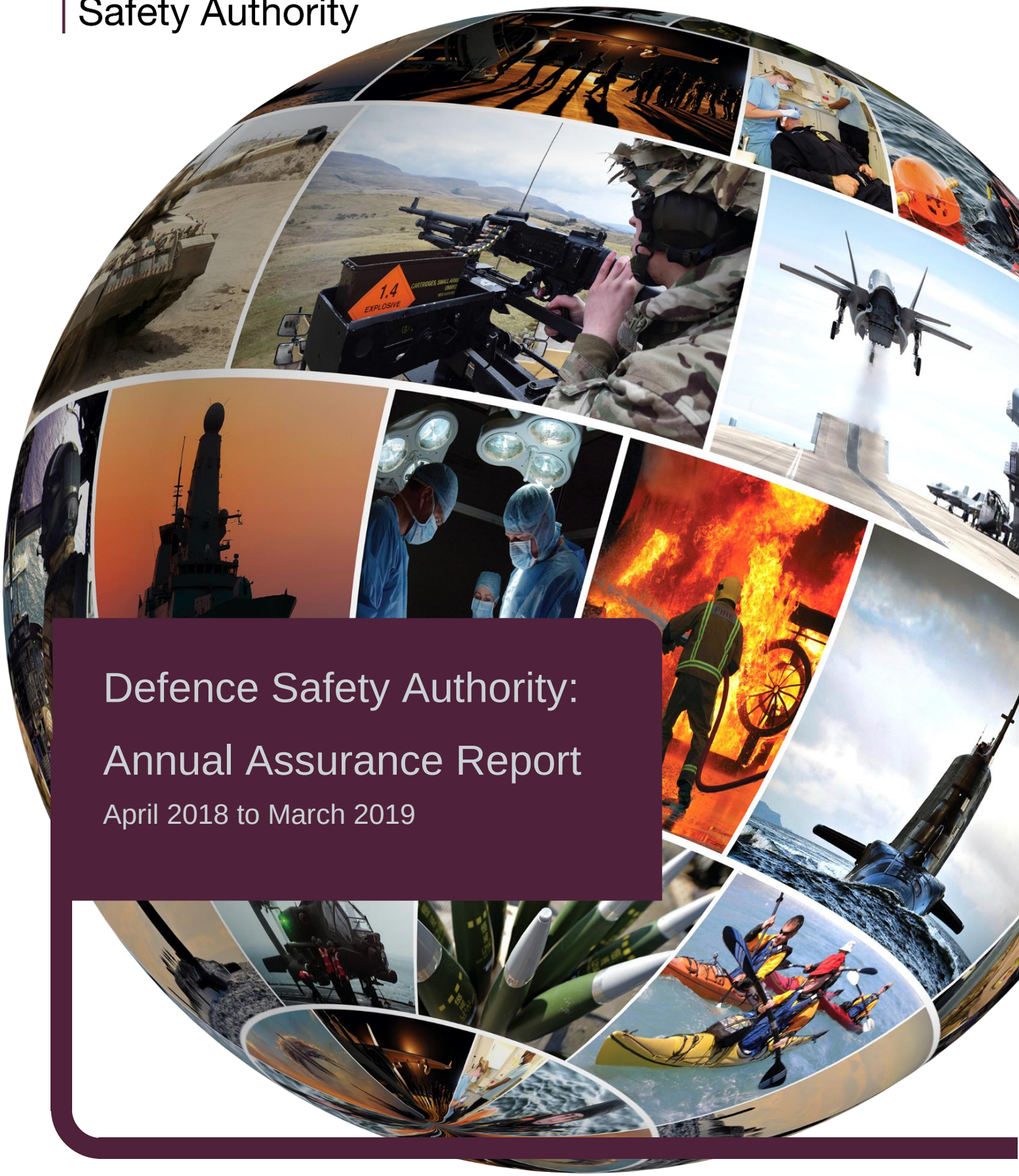
Defence
Safety Authority



Defence Safety Authority: Annual Assurance Report

April 2018 to March 2019

Contents

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1. Introduction

The Defence Safety Authority is an independent authority that provides Defence with Health, Safety & Environmental Protection (HS&EP) regulation, assurance, enforcement and investigation capabilities.[1] It comprises seven Defence Regulators for aviation, maritime, land, nuclear, fire, ordnance and medical services alongside HS&EP policy and business services teams and the Defence Accident Investigation Branch. Since its formation in 2015 the DSA has substantially transformed attitudes and driven improvements to HS&EP in Defence.

This Annual Assurance Report (AAR) provides the Secretary of State (SofS) for Defence with independent assurance that his policy for HS&EP in Defence is being adequately promoted and implemented. This is the DSA's fifth AAR, covering the period 1 April 2018 to 31 March 2019. This was a period of significant change, both in the context in which Defence activities are conducted and the way that HS&EP is managed in Defence. The implications of these changes, together with a review of what we have learned from accidents, incidents, investigations and enforcement action taken this year, are considered in Section 2.

Previous AARs have highlighted a number of long-standing and seemingly intractable issues, so I am pleased to report signs of progress. Increasingly mature Safety & Environmental Management Systems (SEMS) are established in many areas and are providing risk owners with better visibility to manage those risks. Section 3 contains assurance assessments each of the regulated domains. These improvements need to be sustained and consolidated, with better internal assurance mechanisms and management information to support the work of sufficient Suitably Qualified and Experienced People (SQEP).

This report also considers the maturity of the DSA and its Regulators, which underpins confidence in their assurance assessments. The DSA will continue to develop its capabilities to provide increasingly effective, proportional and consistent HS&EP frameworks that are transparent, accessible and practical.

The DSA's maturity and development are considered in Section 4 which also describes the recently published DSA Strategic Plan for 2019 to 2025 and the work being undertaken to implement the recommendations of an independent external audit of the DSA's effectiveness which took place last year.[2]

This AAR builds on the observations and recommendations made by my predecessor in last year's AAR.[3] That report was a critical review of how well Defence was managing and governing safety. It raised uncomfortable questions and challenged the Department in areas where we considered governance to be lacking or where focus had been lost. In Section 5 this report reflects on how Defence, at all levels and across its diverse range of high and low risk activities, responded positively to that challenge. It highlights some other emerging issues as our collective understanding of HS&EP develops and considers how the attitude and attention of the Department have altered towards the goal of a progressive and Just HS&EP culture.[4] This is of critical importance as a culture that is fit for purpose will better enable delivery of the ***Defence Purpose***.[5]

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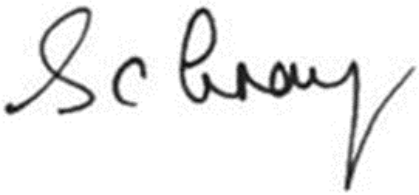
[1] Charter for the Defence Safety Authority dated 24 March 2015.
[2] Parry, *Report and Findings from the 2018 External Audit of the DSA*, November 2018.
[3] MOD, *Defence Safety Authority Annual Assurance Report April 2017 – March 2018,* dated 26 October 2018.
[4] DSA01.2, *Implementation of Defence Policy for Health, Safety and Environmental Protection, Chapter 5, Safety Culture*, May 2018.
[5] '*The Defence Purpose is to protect the people of the UK, prevent conflict, be ready to fight our enemies. We are prepared for the present, fit for the future'*.

Some of the most important changes during the period of this report were the steps taken by Head Office to address gaps in the governance of HS&EP, supporting our military commands and enabling organisations to deliver their missions and services safely. The DSA is working with the Chief Operating Officer and the newly-established Directorate of HS&EP to reinvigorate governance in this area and develop HS&EP roles, responsibilities and policy delineation between the Head Office and DSA. The establishment of the Defence Safety & Environmental Committee (DSEC), chaired by the Permanent Secretary, is a particularly welcome development which will provide vital oversight and direction for HS&EP. This AAR recommends areas where the Defence Board, utilising the DSEC, may wish to further focus its efforts and prioritise its investment in HS&EP.

The DSA will help set the standard for HS&EP in Defence; knowing, sharing and demonstrating what good HS&EP culture, leadership and performance looks like. We do this specifically through our regulatory set but also through our embodiment and advocacy of a Just HS&EP Culture and through our assurance, enforcement and investigative activities. We act not only as a regulator, but as a critical friend; working together to keep Defence healthy, safe and environmentally sound.



Air Marshal Sue Gray CB OBE FREng
Director General
Defence Safety Authority

Context

2.1 Operating Environment

The environment within which Defence operates is complex. As the UK continues its preparations to withdraw from the EU, the MOD has begun to implement the outcomes of the Modernising Defence Programme[6] (MDP) and play its part in the 2019 Spending Review. The key themes of the MDP were to **Mobilise** making the most of what we already have; **Modernise** our forces and capabilities to be more innovative and effective in maintaining our strategic advantage; and **Transform** the way we do business to create the financial headroom for modernisation. This has been a decisive step towards creating a whole-force structure with capabilities to meet the ***Defence Purpose*** which fits within our fiscal envelope and enables Defence to sustain its required activity levels. Whilst mobilisation and modernisation will allow some ageing capabilities to be retired, it will also necessitate change to the existing portfolio of extensive business transformation[7] and major capability programmes.[8] Therefore, the importance of understanding, defining and managing the safety and environmental implications of each of these changes will become more critical and an essential focus of the Department's senior risk owners, particularly as they ensure their people, equipment, and processes are both ***Safe to Operate*** and ***Operate Safely***. How these pressures may impact Defence safety is discussed in Section 5 (Analysis).

Integral to this have been the recommendations from a Review of Head Office Governance of Health Safety and Environmental protection (HS&EP).[9] This Review, commissioned by the Chief Operating Officer (COO) in summer 2018 and endorsed by the MOD Executive Committee in January 2019, led to the establishment of a new Defence Safety & Environment Committee (DSEC), chaired by the Permanent Secretary (Perm Sec) and with the Service Chiefs and Chief Executive Officers (CEOs) of key Enabling Organisations as members. A new Director HS&EP role was also established to create new governance structures to reinforce oversight of Departmental safety management and performance (See Section 5.4).

2.2 Safety Performance

2.2.1 Safety Risks to Defence Personnel.

The specialist roles, activities and demands at the very heart of Defence differentiates our personnel from others. Whilst Defence personnel are exposed to the same threats to injury, ill health and death as the general public, there is a unique mix of risk and rigour which elevates that risk in some cases[10], and reduces it in others.[11] Accountability for the management of these risks in the MOD ultimately lies with the Secretary of State for Defence (SofS), with the Permanent Secretary (Perm Sec) as the Principle Accounting Officer and Departmental lead for Safety[12], supported by the single Service Chiefs[13] and other Top Level Budget Holders (TLBHs)[14] as the Senior Duty Holders (SDH) and risk owners for Defence.

2.2.2 Safety-Related Fatalities & Injuries.

- **Fatalities.** There have been two Defence safety-related fatalities[15] during the period of this report[16] which are both subject to Service Inquiries (SI) and two members of the public died as a result of Defence activity.[17]

[6] The MOD initiated a programme of modernisation following the Government's National Security and Capability Review in 2017/18.
[7] Including the Army Command Review, the Defence Fire and Rescue Project (DFRP) and DE&S Transformation.
[8] Including the Queen Elizabeth Class carrier, Type 26 Global Combat Ship, Astute and Dreadnought submarines, AJAX mechanised infantry vehicle, Sea and Land Ceptor missiles, Lightning II, P8A Poseidon, Crowsnest and E-7 Wedgetail.
[9] MOD, *Review into the MOD Head Office Governance of Health, Safety and Environmental Protection*, dated 18 December 2018.
[10] Realistic training, operational flying, handling and use of firearms and explosives and exposure to enemy action.
[11] The UK Regular Armed Forces are at a statistically significant lower risk of dying compared to the UK general population due in part to the 'healthy worker effect', MOD, *Deaths in the UK Regular Armed Forces: Annual Summary and Trends over Time 1 January 2009 to 31 December 2018*, published 28 March 2019.
[12] The Perm Sec is nominated as the Departmental lead for safety in the Charter for the Defence Safety Authority, dated 24 March 2015, para 6.
[13] The heads of the Royal Navy, Army and Royal Air Force.
[14] Comprising the Commander of Joint Forces Command (JFC) and the Chief Executives of the various MOD Executive Agencies.
[15] As determined by a Defence Accident Investigation Branch triage or where a Service Inquiry and/or a coroner/procurator fiscal (Scotland) has subsequently confirmed as safety related.
[16] 1 April 2018 to 31 March 2019.
[17] Two Land Transport Accidents: MAN SV versus civilian pickup truck (Belize, 7 May 2018) and MAN SV versus motorcyclist (East Yorkshire, 24 August 2018). Both remain under police investigation.

Defence Safety-Related Fatalities
14 November 2018 **Diving fatality, Portland Harbour**
29 January 2019[18] **Jackal vehicle accident[19], Catterick Driving Training Area**

Figure 2-1

- **Injuries.** Defence Statistics provides an annual report on injuries, ill health and deaths involving Defence Personnel and conduct periodic analysis of trends.[20] In addition to investigating specific incidents, the DSA works with Defence Statistics to understand the underlying issues and trends which drive the safety-related[21] aspects of their statistical analysis. The number of injuries reported in 2017/18[22] are at Figure 2-2.

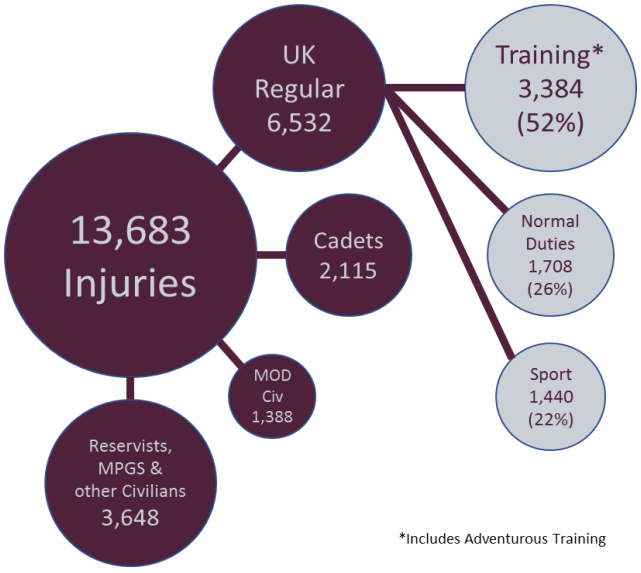


Figure 2-2[23]

2.2.3 Analysis. Supported by analysis conducted by Defence Statistics - Health[24], the DSA continually reviews the data sources available[25] to identify any relationships or significant trends in safety performance across Defence, focussing on those areas that affect personnel the most, in order to support senior risk owners and help inform their risk management activity.

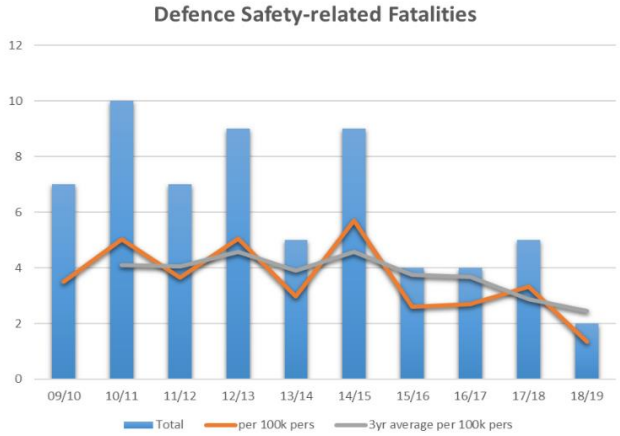


Figure 2-3

- **Safety-related Deaths.** The level of safety-related deaths[26] has shown a reducing trend (Figure 2-3), although it was recognised that single accidents resulting in multiple deaths (eg aircraft accidents) add volatility to this rate. To place this into context, 61 Regular Armed Forces personnel died in 2018 of which two of the deaths (3%) were safety-related.[27] From a societal viewpoint, in comparison with other UK industrial sectors over the period 2014 to 2018 the Defence sector carried a greater risk of safety-related[28] death than those working in Construction, but was significantly better placed than Waste/Recycling and Agriculture (Figure 2-4). In this reporting period the three leading causes of death of Regular Armed Forces personnel were Other Accidents (22), Cancers

[18] The accident occurred on 29 January 2019; however, the soldier succumbed to his injuries on 4 February 2019.
[19] Jackal is a 4x4 High Mobility Tactical Vehicle.
[20] MOD, *Deaths in the UK Regular Armed Forces: Annual Summary and Trends over Time 1 January 2009 to 31 December 2018*, published 28 March 2019.
[21] DSA focuses on safety-related deaths, injuries and near-misses of on-duty Armed Forces personnel (including Reservists), Civil Servants and Cadets.
[22] The MOD Health and Safety statistics report for 2018/19 by Defence Statistics has a provisional publication date of 31 October 2019, after this report has been finalised.
[23] MOD, *MOD Health and Safety Statistics: Annual Summary & Trends Over Time 2013/14 – 2017/18*, 20 September 2018.
[24] ibid.
[25] In conducting this analysis, the DSA has consulted the following data sources: Service Inquiry Reports and Recommendations, MoD and Statutory Regulator Enforcement Action, Air Safety and Navy Safety Information Management Systems, Defence Statistics, RIDDOR, TLB Risk Registers, DSA Annual Assurance Reports and the Armed Forces Compensation Scheme.
[26] Per 100,000 personnel.
[27] One categorised as 'Other Accident' and 1 as 'Land Transport Accident.
[28] For the purposes of this report, safety-related death equates to work-related death as defined by the HSE.

(10) and Land Transport Accidents (10).[29] It should be noted that there were 16 deaths where the mechanism of injury suggests possible suicide but a coroner's inquest has not yet been held. These deaths are categorised by Defence Statistics as Other Accidents until the coroner returns a verdict and therefore may be determined as a suicide following inquest.

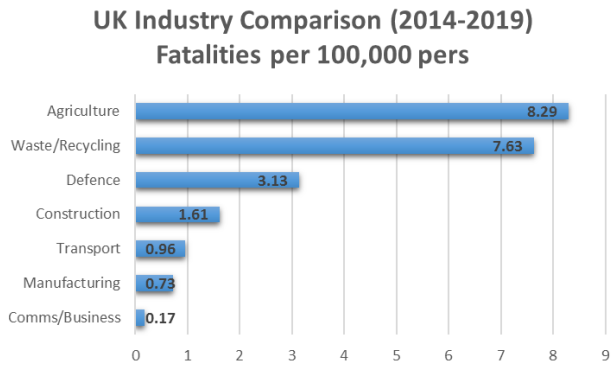


Figure 2-4[30]

- **Suicide.** The review of Service Personnel suicides published last year[31] made a number of recommendations on what measures could be taken to manage those at potential risk of suicide. The recommendations have now been transferred to the Chief of Defence Personnel and are being actioned by the Suicide Prevention Working Group (SPWG).

- **Land Transport Accidents.**[32] Over the last five-year period UK Regular Armed Forces have been at a significantly increased risk of dying as a result of Land Transport Accidents compared to the UK general population.[33] For motor vehicle accidents the rate shows '*no statistically significant different risk to the UK population';* however, our motorcyclists and pedestrians are at a significantly greater risk (123% and 252% respectively). During this period a joint Road Safety Partnership Team

comprising the DSA's Defence Land Safety Regular, Devon and Somerset Fire & Rescue Service and Dorset and Wiltshire Fire & Rescue Service designed, produced and delivered a compelling and innovative road safety film and presentation aimed at reducing road traffic collisions in Defence called 'Survive the Drive'. This initiative continues to be delivered at Defence units and facilities to positive feedback at all levels. While this campaign focuses on the individual, these sobering statistics emphasise the need for the continued attention of commanders, line managers and the Department as a whole to ensure the risk of such accidents is reduced to a level that is as low as reasonably practicable.

- **Injuries.** The number of reported injury and ill-health incidents across Defence remains on a positive trend (Figure 2-5). Defence Statistics reported that the rate of injury and ill-health for UK Armed Forces personnel had '*significantly increased*'[34] over the last five years even when considering the perennial issue of late reporting.[35] Previously this increase had in part been attributed to factors unique to Defence, such as the conclusion of Op HERRICK[36] and transition of Defence activity to more smaller scale operations across a broader range of skills and increased training activity.

[29] MOD, *Deaths in the UK Regular Armed Forces: Annual Summary and Trends over Time 1 January 2009 to 31 December 2018*, published 28 March 2019.
[30] Source: HSE, *Fatal injuries arising from accidents at work in Great Britain 2019,* published 3 July 2019.
[31] DSA, *Defence Safety Authority Focused Review of Suicides among Armed Forces Personnel – Final Report*, DSA/DMSR_04/Suicide Review dated 14 August 2018.
[32] A land transport accident is defined as any accident involving a device that has been designed for, or is being used at the time for, the conveyance of either goods or people from one place to another on land. The scope of this definition covers incidents that occur on and off the public highways and incidents that involve non-motorised forms of transport and does NOT include any deaths occurring in a vehicle as a result of Hostile Action.
[33] UK Regular Armed Forces personnel have a 66% increased risk of dying as the result of an LTA compared to the UK general population. Source: MOD, *Deaths in the UK Regular Armed Forces: Annual Summary and Trends over Time 1 January 2009 to 31 December 2018*, published 28 March 2019.
[34] MOD, *MOD Health and Safety Statistics: Annual Summary & Trends Over Time 2013/14 – 2017/18*, 20 September 2018.
[35] Late reporting and data corrections accounted for an additional 18% increase in reporting in 2016/17. Error bars have been added to illustrate the range with which historical variations could affect 2017/18 figures.
[36] UK combat operations in Afghanistan which concluded on 31 December 2014.

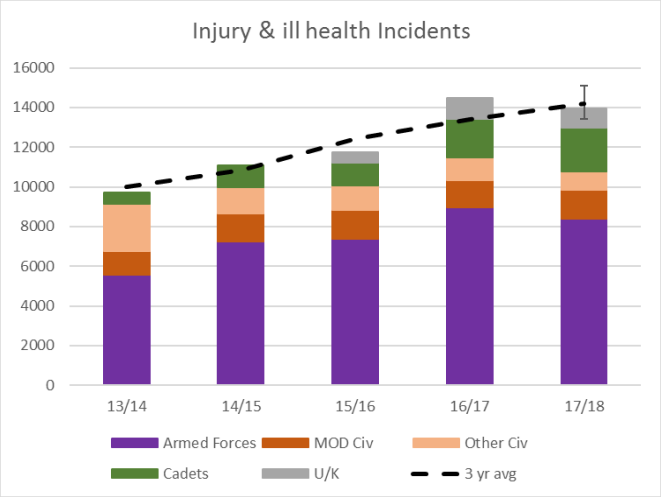


Figure 2-5[37]

However, whilst this was a plausible assumption, the sustained increase in reported injuries for the three years following Op HERRICK would suggest otherwise. Instead, this could either reflect an increased rate of incident reporting or suggest that the current measures TLBs have in place to reduce injuries may not be effective or be appropriately focused in the right areas. In reality it is likely to be a combination of both. This is considered later at Section 5.7.1.

- **Asbestos.** A pan-domain issue for MOD is the presence of asbestos, principally in the built estate because of its age but also in some older equipment. The DSA exercises oversight of the way the Department discharges its legal responsibilities to protect against exposure to hazardous materials such as asbestos and other harmful substances.

2.3 Defence Service Inquiries and Non-Statutory Inquiries.

There are 12 Service Inquiries (SI)[38] and 6 Non-Statutory Inquiries (NSI) that have reported or are on-going from this reporting period (see Annex A). The Defence Accident Investigation Branch (DAIB) was deployed on 37 occasions to conduct the initial triage of these incidents and has provided specialist support to SIs, NSIs and MOD organisations conducting their own investigations. The deployments included 13 vehicle incidents, 9 air systems, 3 maritime platforms, 6 incidents involving weapons and explosives, 4 involving heat injury, 1 suicide on a weapons range and 1 fall. Whilst this has been a similar number of deployments to last year, it is a reduction compared to 2016/17[39]; however, it is recognised that there will always be fluctuations due to the nature of incidents.

Further analysis of the incident data[40] shows that in 2018/19, of the 37 incidents attended by the DAIB, the triage reports[41] highlighted that failure to follow procedures, lack of appropriate supervision, the taking of inappropriate levels of risk and a lack of or inadequate leadership[42] remain prevalent. However, two new themes emerged:

- **Poor maintenance and equipment husbandry.** The loss of the WARRIOR in BATUS and the fire on the FOXHOUND on the M11 both had elements of poor maintenance. The WARRIOR fire also had an element of poor equipment husbandry, which had been seen in similar WARRIOR fires in previous years.

[37] 'Unknown' is where the incident report did not specify the status of the injured party.
[38] 11 DSA-convened SIs and 1 RN-convened SI.
[39] 35 DAIB deployments in 2017/18 and 48 in 2016/17.
[40] Incident causes can only be confirmed following an investigation and triage reports can only determine likely causes. Of 36 DAIB deployments, 14 resulted in subsequent inquiries either by DSA or Front-Line Commands.
[41] An initial information gathering report, designed to furnish DG DSA with sufficient information to determine follow-on investigation requirements.
[42] This includes the contribution of the Command level on an incident as they allocate resource, set the organisation's working atmosphere (including Safety Culture) and generate the policy that subordinate units work to.

- **Training progression.** The Glock pistol NSI identified training progression as a factor, with a subsequent incident resulting in injury occurring in February 2019 in which training progression was also likely to have been a factor. This theme was also reflected in one of the heat casualty incidents, where an individual conducted an Annual Fitness Test with no prior progressive build-up.

This is significant as both areas are pertinent across most Defence activity and become critical when managing high Risk to Life (RtL) activities and exercising Duty of Care. The evidence emphasises the importance of leadership and the crucial role commanders and supervisors play in personally influencing how safely activity is conducted and engendering a positive safety culture.

2.4 Enforcement Action

The majority of findings during DSA audits or inspections are minor in nature and are dealt with locally through Corrective Action Requirements (CARs) or observations documented in post-audit debriefs and reports. Enforcement Action (EA) is utilised by statutory[43] and Defence Regulators only where they find a significant non-compliance or hazard which, if left unaddressed, could impact safety, cause environmental damage or place personnel and operational capability at risk.

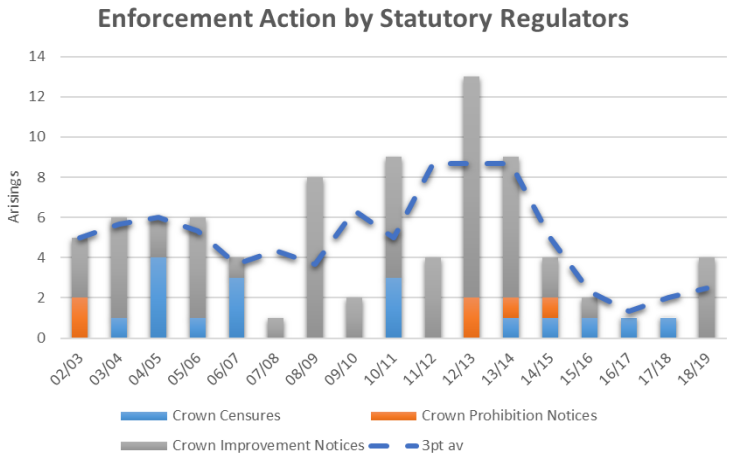


Figure 2-6

2.4.1 Enforcement by Statutory Regulators.

In the reporting period four Crown Improvement Notices were served on the Department. Two were served on the Defence Diving School[44] in October 2018 following the diving fatality on 26 March 2018. One enforcement notice was lifted within the prescribed timescale and the other required a short extension to ensure compliance. Two were served on Joint Forces Command in November 2018 following the diving fatality in Portland Harbour which are being complied with. Service Inquiries into both incidents are ongoing. This upturn in Crown enforcement notices (Figure 2-6) demonstrates the reactive nature of Crown enforcement activity normally as a consequence of an incident, rather than the finding of a routine audit. The necessary duration of statutory investigations generates a natural lag between when incidents occur and when enforcement action is taken. On this basis, no statistical parallel can be drawn between Crown enforcement activity and rates of injury, except for the direct relationship between Crown Censures served on the MOD and the volume of fatalities.

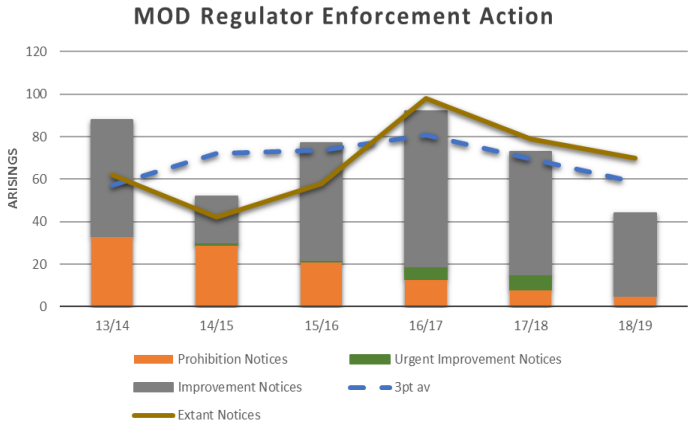


Figure 2-7

2.4.2 Enforcement by Defence Regulators

By having proportionally more resource compared to the majority of statutory regulators such as the HSE and being able to conduct more comprehensive audit and inspection activity, Defence Regulator EA is therefore able to be more progressive. Trends in EA provide valuable feedback and intelligence to both

[43] External regulatory bodies that have the authority to enforce compliance with applicable law and regulation. The MOD as a Crown body cannot be prosecuted (except for charges of corporate manslaughter), it can, however, be served improvement notices or be censured.

[44] Located at the privately-run National Diving Activity Centre in Chepstow.

Regulators and the Regulated Communities of where weaknesses and non-compliances have been detected. For Regulators this provides a crucial input to their Analysis and Plans Cells, in order to drive intelligence-led Risk-Based Assurance (RBA).

2.5 DSA Activity

2.5.1 Context. There were three principle inputs to DSA activity during 2018/19: the 14 recommendations from the preceding DSA Annual Assurance Report (AAR), the External Audit of the DSA and the Review of Head Office Governance of Health, Safety and Environmental Protection in Defence. In 2015 DG DSA committed to commissioning an external audit of the DSA.[45] The purpose of the audit was to assess the quality of the DSA's work in order to demonstrate its effectiveness as an organisation. The external audit took place between September and November 2018 and was led by Rear Admiral (Retd) Dr Chris Parry, a former Director of DOC[46] and an audit team comprising a Principal Inspector from the HSE and the Deputy Chief Inspector of the Office of Nuclear Regulation (ONR). The audit made 5 findings and 65 recommendations to the SofS (see Section 4.2). In addition, the Perm Sec commissioned a review of Head Office governance of HS&EP. The Review last year, made 27 recommendations to the Perm Sec. The outcomes and subsequent activities arising from these 2 reports are discussed in detail at Section 4.11 and Section 5.4 respectively. These key recommendations ran in parallel with the DSA's standing commitments to its Regulated Communities and its duties under the DSA Charter.

2.5.2 Outputs. DSA outputs in 2018/19 included:

- Conducted 1,462 audits and inspections[47] of Defence activity across all TLBs;
- Commenced a programme of assurance assessments of TLB Safety and Environmental Management Systems (SEMS) and compliance with SofS HS&EP policy statements;[48]
- Supported Senior Responsible Owners (SROs) in generating effective Organisational Safety Assessments (OSAs);[49]
- Conducted work to determine the potential effect of Brexit on Defence HS&EP regulation;
- Supported a successful International Defence Safety Conference with SMI Group Ltd in October 2018;[50]
- Developed the framework policy on the Duty of Care of deployed forces and Heads of Establishment;
- Commenced consultation with other MOD Environmental Protection (EP) policy owners to inform strategic oversight of EP issues and help develop a strategy for EP regulation and assurance within Defence.

[45] House of Commons Defence Committee, *Beyond endurance? Military exercises and the duty of care: Government Response to the Committee's Third Report of Session 2015–16*, published on 24 April 2016, https://publications.parliament.uk/pa/cm201617/cmselect/cmdfence/525/52504.htm

[46] Defence Operational Capability.

[47] Comprising 362 Aviation, 254 Land, 90 Maritime, 533 OME, 170 Fire, 53 Medical Services audits and inspections.

[48] Policy was promulgated at DSA01.2 Chapter 2, *Organisation and Arrangements; the Defence Safety and Environmental Management System*, December 2017.

[49] The Defence Safety Policy and Assurance Team (DSPA) have been providing a consultation service to a number of MOD organisations who are either considering or are undertaking an Organisational Safety Assessment.

[50] Attended by over 200 personnel, with speakers from 10 allied nations.

Safety Assurance

3.1 Scope

Defence is bound by UK Health, Safety & Environmental Protection (HS&EP) laws which are appropriate and proportionate for managing risks in the workplace and addressing the effects of Defence activities on the natural environment. This principle is at the core of the Secretary of State's (SofS) Policy Statement for HS&EP.[51] However, the span of Defence activities includes inherently hazardous tasks for which the well-ordered UK statutory health and safety regime can in some cases be inadequate or inappropriate. In these dynamic and challenging environments, it is vital for military commanders to be able to develop skills and expertise in managing significant safety risks during high fidelity and exacting military training, where personnel *'train as they fight*', to prevent risk being transferred to the operational commander.

To cater for these specific circumstances, Defence has a number of disapplications, exemptions and derogations (DEDs) from UK Law.[52] In the case of these DEDs it is the role of the DSA, on behalf of the SofS, to maintain arrangements in the form of regulations where there is no statutory requirement or where assurance of specific hazardous activities is required.[53] The DSA is also required to provide independent assurance to the SofS that Defence is complying with his HS&EP Policy Statement,[54] and to investigate accidents.

In this context regulation of Defence Safety is divided into seven domains and functional areas, each overseen by a Defence Safety Regulator:

- Aviation
- Maritime
- Land
- Fire
- Ordnance, Munitions and Explosives
- Medical Services
- Nuclear

Each Regulator assures, regulates and enforces where the MOD has DEDs from statute, where the MOD itself is considered to be the appointed statutory regulator[55] or for certain high hazard activities in their domain for which civil statute does not exist[56], while the role of assuring compliance with the SofS's HS&EP policy is currently being led by the Defence Safety Policy & Assurance Team within DSA HQ.[57]

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[51] MOD, *Health, Safety and Environmental Protection in Defence: Policy Statement by the Secretary of State for Defence*, dated 20 June 2018.
[52] A **disapplication** means that a law or article does not apply to the MOD. An **exemption** from an aspect of law can be granted by the SofS for Defence in exceptional circumstances. **Derogations** from particular provisions of legislation may be sought by the MOD, normally during the drafting process.
[53] '*To produce outcomes that are, so far as reasonably practicable, at least as good as those required by UK legislation*', MOD, *Health, Safety and Environmental Protection in Defence: Policy Statement by the Secretary of State for Defence*, dated 20 June 2018, para 2d.
[54] Defence Safety Authority Charter, para 2.
[55] The Defence Fire Safety Regulator has statutory powers under the Regulatory Reform (Fire Safety) Order 2005 and the Fire Scotland (Regulations) 2006.
[56] eg complex conventional or nuclear weapons systems.
[57] Pending establishment of the Head Office Health, Safety & Environmental Protection Directorate and delineation of policy areas.

3.1.1 Assurance Model. Defence Safety uses a 3 Level Assurance Model:[58]

- **1st Party Assurance (1PA):** Self-assurance (formation/unit/section level)
- **2nd Party Assurance (2PA):** Management oversight (higher command (TLB)/formation)
- **3rd Party Assurance (3PA):** Independent assurance (DSA, statutory regulator or peer)

Each DSA regulator conducts 3PA in its domain or functional area across all relevant TLBs to make an evidence-led assessment of HS&EP compliance. This is done by assuring the 2PA and, where necessary, 1PA conducted by TLBs in addition to conducting independent audits and, in certain conditions, by inspection. The DSA does not act on specific HS&EP risks owned and managed by TLBs[59], but assures SofS of compliance with his policy. The DSA also assists TLBs by drawing parallels or trends where issues or causes are cross-cutting or systemic.

3.1.2 Safety Assurance Assessment. The DSA's assessment of the Safety Assurance Level of each of the regulated domains and functional areas[60] is based on the Regulators' assurance assessments of each respective Regulated Community (RC)[61], based on evidence collected throughout the reporting year and inputs from TLBs.[62] Levels of assurance are categorised as: Full, Substantial, Limited or No Assurance (see Figure 3-2).[63]

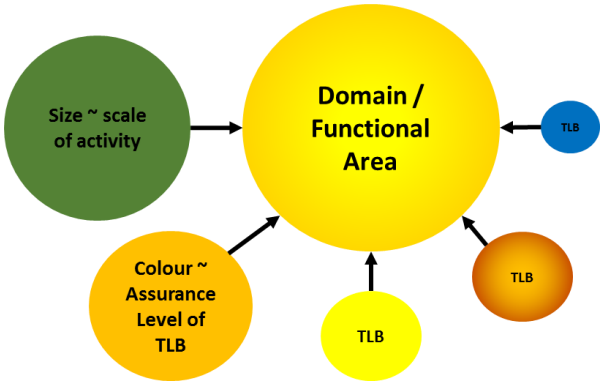


Figure 3-1

Figure 3-2

For each domain this report provides in the following sections a clear statement of regulatory assurance for the domain as a whole and the regulatory assurance of each TLB operating in the domain,[64] with the report for the Nuclear domain at Annex B.[65] Each section contains a graphical representation in the format of Figure 3-1, showing relative levels of activity by TLBs active in the domain, and an assessment of assurance is given for each.

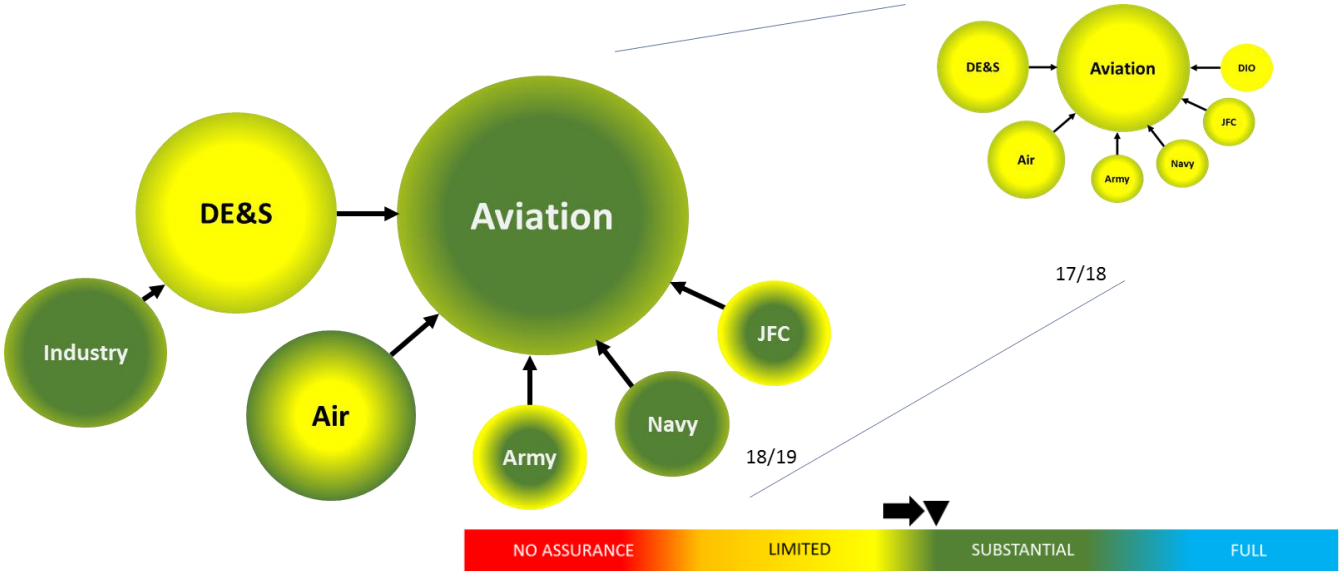
To provide TLBs and risk owners with guidance, the report specifies any areas of significant weakness within each domain or functional area supported by evidence including, where appropriate, examples of Acceptable Means of Compliance (AMC) or Defence Codes of Practice (DCo-P) in order to improve Safety Assurance.[66] Where the Safety Assurance Level has changed from the preceding year, the level of evidence provides sufficient detail to support the change and provide the respective TLB with guidance upon which they can act.

[58] DSA01.1, *Defence Policy for HS&EP, Chapter 5 – Checking and Performance Reporting*, para 3.
[59] That is the role of the respective TLB senior risk owner and Senior Duty Holder reporting through to the Defence Board risk owner in accordance with existing Departmental policy.
[60] For ease throughout this report the term 'domain' equates to 'domain and functional area'.
[61] defined as the organisations or units within a TLB or Executive Agency whose activities fall under Defence safety regulations for a specific domain.
[62] Each TLB was invited to provide DSA with any additional evidence (in the form of annual assurance report, risk registers, etc) to inform the safety assurance assessment.
[63] Defence Internal Audit definitions of assurance which originate from the Chartered Institute of Internal Auditors.
[64] Each TLB operates across many regulated domains and functional areas.
[65] Protectively marked SECRET.
[66] It is the role of the DSA to advise Head Office of the 'ends', allowing TLBs the freedoms to exploit the 'ways' and 'means'.

Aviation

3.2 Assurance Level

SUBSTANTIAL Assurance - Improved position, particularly across Army, JFC and Navy aviation.



3.2.1 Scope. Defence has an almost total exemption from the United Kingdom's Air Navigation Order[67] requiring it to regulate all Defence aviation activity. This is done by the Military Aviation Authority (MAA).[68] All three Services and JFC operate in the Aviation Domain with significant support from DIO[69], DE&S[70] and, through them, Industry which is also subject to MAA regulation and assurance.

3.2.2 Regulator Activity. During the reporting period the MAA conducted 362 audit, oversight or surveillance events; reviewed/issued 106 organisation approvals[71]; issued 53 Type Certificates and Certificates of Safety (Aviation) and delivered 160 training courses to ~3650 delegates. This activity covered Industry approved organisations, the four Front Line Commands and DE&S. Industry approved schemes had by far the most audits (58%)[72] with DE&S Delivery Teams (DT) subject to 61% of surveillance activity. Applying a risk-based approach, Industry was subject to high levels of audit as they have comparatively less Duty Holder (DH) assurance compared to military-led aviation. DE&S DTs had the next level of focus as they are fundamental in ensuring air platforms and airborne systems are appropriately certified and 'Safe to Operate'.[73]

3.2.3 Findings. In a year with no fatal air accidents and with the annual accident and fatality rate continuing to decline[74] (Figure 3-3) there have been ***numerous improvements in safety assurance across the Defence Air Environment (DAE)***. Areas of previous regulatory concern such as the management of Ageing Aircraft, the conduct and oversight of Display Flying, the governance of parachuting and the inconsistencies and variability observed

[67] Civil Aviation Authority Publication 393 (CAP 393), '*The Air Navigation Order 2016 (ANO) and Regulations*', Article 22, 25 August 2016.
[68] The safety regulator for all military aviation within Defence.
[69] Defence Infrastructure Organisation.
[70] Defence Equipment & Support, a bespoke trading entity (BTE) and arm's length body of the MOD.
[71] Under its Regulatory Articles, the MAA operates approvals schemes for companies who wish to undertake the design, maintenance, test or operation of UK military air vehicles.
[72] 76 of 130 audits.
[73] Whereas the Front-Line Commands through their Duty Holders (DHs) ensure they 'Operate Safely'.
[74] Average fatal military aviation accidents (and fatalities) ***per annum*** have continued to reduce from 5(13) in the 1990s to 3(7) in the 2000s and to 1(2) for the current decade.

of Air System Safety Cases have all lessened, with evidence of DHs managing their risks effectively, thus demonstrating the supporting regulations as fit for purpose. These improvements alongside the existence of only minor Air Safety control weaknesses are enough to warrant raising the safety assessment to ***SUBSTANTIAL safety assurance***. However, despite this level of assurance aviation safety is still affected by Defence-wide issues such as insufficient Suitably Qualified and Experienced People (SQEP), significant organisational change, shortfalls in 2PA, gaps in Continuing Airworthiness activity and understanding, weak air system configuration management by DE&S DTs and declining/deteriorating infrastructure. Mid-Air Collision (MAC) remains the dominant threat in this domain in terms of severity or reputational damage warranting continued tracking, but it is not the only threat as there are several emerging safety issues which will be subject to directed activity in the coming year.

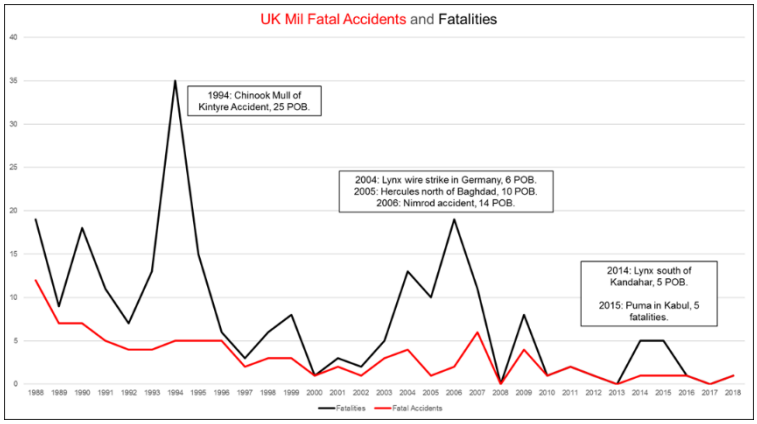


Figure 3-3

- **2PA.** With formal 2PA frameworks now established and functioning across TLBs, MAA assurance activity continues to indicate that ***2PA (and assurance in general) is not occurring at a sufficient pace or consistency[75] for TLBs to assure safety effectively***. This is more prevalent where an organisation has insufficient SQEP to deliver its full breadth and scale of safety functions, requiring prioritisation of safety functions. Whilst this is both unpalatable and sub-optimal, it is being actively managed by TLBs.[76] Last year we highlighted the linkage between ineffective assurance and instance where personnel Fail to Follow Procedures (F2FP).[77] This has been subject to increased focus during assurance visits[78] including a number of studies to consider the causal factors of F2FP. MAA analysis will continue into 2019/20 as a number of mitigating measures are developed with the Defence aviation community.

- **Infrastructure.** TLB reporting of infrastructure related air safety issues has increased significantly over the last 5 years.[79] Analysis of the ***issues identified do not suggest an immediate unmanaged safety hazard*** as DHs appear well-informed and are actively managing the resultant risks. However, critical infrastructure failures are often difficult to predict, particularly where there has been previous underinvestment in preventative maintenance, leaving DHs little option but to reduce outputs.[80] It is evident that risk owners are unable to effect much change due to resource limitations. As part of the MAA's risk-based assurance, infrastructure will remain an element of the overall rich picture assessment, particularly to monitor the 2nd and 3rd order effects of deteriorating or unfit for purpose facilities which could threaten the preservation of air safety.[81]

- **SQEP.** The provision of SQEP across TLBs remains challenging. In many cases the proportion of Air Safety posts filled is greater than that of other disciplines; however the ***resourcing of Air Safety SQEP remains patchy across the DAE***.[82] While shortfalls have been formally acknowledged by DHs, they have had limited success resolving them on an enduring basis.[83] MAA audits have continued to

[75] Wide variances have been observed in the assurance assessment by 2PA and 3PA organisations auditing the same unit (eg unit assessed as at FULL assurance by 2PA but assessed as LIMITED assurance by 3PA).
[76] eg a decision by the 22 Gp Air Safety Team to cancel an Air Safety Assurance Visit to 1 Flying Training Squadron was formally staffed to the Operating Duty Holder to endorse the change.
[77] Instances where users fail to follow or comply with published procedures or SOPs either through ignorance, intent (for personal or organisational gain) or procedures being unachievable.
[78] MAA teams have used Regulated Community bow-ties on Failure to Follow Procedure or Release of a non-Airworthy Aircraft to examine the barriers that have been identified and where there are issues with the efficacy of those barriers.
[79] Infrastructure related reports were averaging ~15 per quarter in 2013, increasing to ~60 per quarter in 2018.
[80] eg heating failures in technical facilities at RAF Benson were delaying the output of Puma aircraft from Depth maintenance.
[81] Poor working conditions and unreliable building services putting stress on our people and in some cases requiring them to operate differently or deviate from the norm.
[82] Navy Comd has a suitably resourced and SQEP Air Safety team, Joint Helicopter Comd (JHC) Air Safety teams are well staffed against their established liability; whereas, there are variances in staffing across Air Comd Air Safety teams.
[83] eg the use of Holding Officers from the flying training system has provided some Air Safety personnel who subsequently attain some qualification and limited experience, but it is not a sustainable solution.

identify ***gaps in DH awareness of the importance of Continuing Airworthiness*** (CAw) activity and the role of CAMOs.[84] Action has therefore been taken to increase the emphasis on CAw in DH training courses and a review of CAMO training is underway. There has been continuing evidence that SQEP shortfalls of Aerospace Battle Managers and Air Control Managers are requiring active management to prevent it impacting safety in the DAE. Gapping at Air Traffic Management has resulted in reductions to the extent of services provided to airspace users[85] and reduced aerodrome opening hours and the provision of ATS for transiting aircraft. In DE&S SQEP shortfalls across all functions mean that while safety critical activity is completed other programme activity which could have safety impact is not being progressed, with ODHs often unaware of this. Long-standing SQEP shortfalls in airworthiness management in DE&S constrain assurance levels,[86] although there are indications that the freedoms and levers available by being a BTE may enable improvements. Whilst discrete plans to manage the effects are being dynamically managed locally, the cumulative impact on Air Safety of SQEP shortages will necessitate the continued focus of DHs, DE&S and the Regulator.

- **Change.** MAA assurance activity has again highlighted the difficulties faced by DHs in managing high levels of complex change, be that the introduction of a new air platform or a major organisational transformation. ***Awareness of tools such as Organisational Safety Assessments (OSAs)[87] to help preserve safety during change is growing across the DAE***; however, there continues to be a general lack of understanding of their purpose and the effort required to complete them. All too often the OSAs have been conducted retrospectively, post the major change decision[88] which is entirely contrary to the intent of the OSA. The DSA recognises the need to educate and support TLBs in conducting OSAs across all domains and has committed to improving education and practical guidance on this matter.

- **Mid Air Collision (MAC).** Military Airprox[89] figures for the past year indicate little change with approximately the same number of events. Conversely, civilian Airprox has increased markedly in recent years principally through increasing numbers of Airprox reports with drones (Figure 3-4). Airprox between drones and military aircraft has not seen similar increase, continuing at around 10-15 per year[90] compared to 126 for civil aircraft in 2018.[91] Analysis has shown that this issue is more prevalent in built-up areas and around major civilian aerodromes, areas that affect only a few military operators. However, in addition to increasing the size of the Flight Restriction Zone (FRZ) introduced by the UK Civil Aviation Authority in July 2018 to protect specified aerodromes[92], the Department for Transport has agreed to work with MOD[93] to address the risk of drone MAC in the low flying environment. In addition, the DSA continues to support the fitment of Collision Warning and Traffic Alert Systems to all military air platforms as an important (but not fool proof) additional barrier to potential MAC events, while continuing to work with the Regulated Community (RC) to identify other mitigation options. Contrary to general practice in civil aviation, there is an operational advantage and military need for Defence to bring aircraft into close proximity.[94] In these instances the technical and airspace control measures mitigating MAC have limited or no value, with MAC avoidance relying heavily upon airmanship, Standard Operating Procedures

[84] Continuing Airworthiness Management Organisations.
[85] eg unavailability of staff had caused an instance where the RAF unit embedded in London Area Control Centre (Swanwick) was unable to provide an ATS to allow military aircraft to cross airways. An alternative sortie content was devised and a curtailed sortie remaining clear of Controlled Air Space was flown.
[86] eg the issue of an Improvement Notice to the UK MFTS DT due to long-standing SQEP shortfalls impacting on airworthiness management of the Future Rotary Wing and Future Fixed Wing programmes.
[87] DSA01.2, Chapter 7, *Assessment of Organisational Change on Health, Safety and Environmental Protection*, issued 8 July 2018.
[88] such as the OSA supporting the transfer of aircraft trials and evaluation (T&E) between Groups within Air Comd.
[89] a situation in which, in the opinion of a pilot or air traffic services personnel, the distance between aircraft as well as their relative positions and speed have been such that the safety of the aircraft involved may have been compromised. Source: UK Airprox Board 2019. Statistics presented are limited to Airprox reporting in the UK Flight Information Region (FIR) as published by the UK Airprox Board. Military Airprox occurrences outside the UK FIR are reported to the controlling nation where the instance occurred and to the MAA. Specific analysis of overseas Airprox did not determine any trends in relation to either area of operations or causes of event.
[90] 12 reported in 2018 compared to 10 in 2017.
[91] Source: UK Airprox Board.
[92] https://www.caa.co.uk/Consumers/Unmanned-aircraft/Our-role/Airspace-restrictions-for-unmanned-aircraft-and-drones/
[93] through the Assistant Chief of the Air Staff as the Departmental lead.
[94] Aircraft interception, tactical formation flying, air combat, air-to-air refuelling and display flying.

(SOPs), training and currency. Understandably, this poses a significant risk of MAC to military operators worldwide with the UK having had three military-military MAC events in the last nine years.[95] Analysis of international military MAC events since 2010 highlighted statistically the likelihood of MAC is greater in the conduct of pre-planned, authorized, high-risk activity in which several military air platforms operate with reduced separation. DHs have therefore been asked to consider and review their mitigations in light of this analysis.

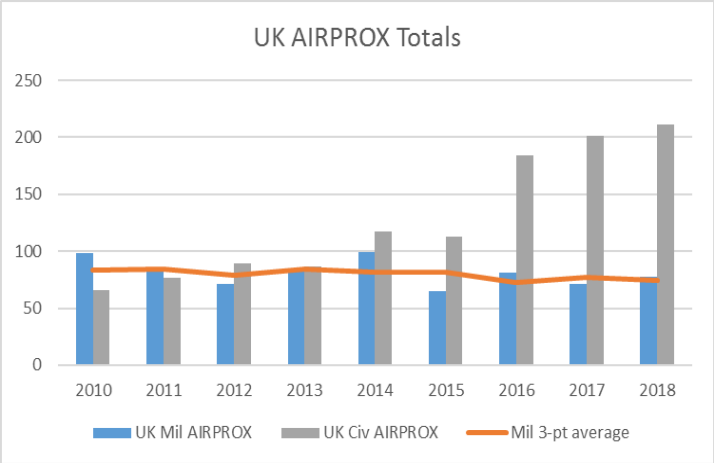


Figure 3-4

3.2.4 Emerging Issues. Whilst none of the following issues present an immediate threat to safety, the Regulator has identified them as requiring further review and analysis in the coming year:

- **Defence Aeronautical Information.**[96] Integral to the safe conduct of aviation, work is being initiated to assure the origination, management and publication of Defence Aeronautical Information;

- **Safety Modification Recommendations.** A review of recommendations following Service Inquiries has highlighted a number of modifications that have yet to be embodied. Whilst there are many reasons for non-embodiment[97], the MAA will monitor progress of all safety modifications through assurance activity;

- **Technical Data Exploitation (TDE).** Failings in adequate data analysis have been identified in several Service Inquiries.[98] The Regulator has now initiated a Multi-Disciplinary Team project to review TDE regulation;[99]

- **Carriage of Passengers.** The MAA has commenced a complete review of the categorisation by which individuals are carried on UK military registered aircraft and the safety management of non-Aircrew passengers and supernumerary crew;[100]

- **Synthetic Training Devices.** A review is being conducted into qualification and certification of synthetic training devices, to ensure that synthetic training devices are appropriately designed, qualified and maintained in order to deliver the necessary training credit, both in terms of quality and quantity as stipulated in the Air System Safety Case.

Summary - SUBSTANTIAL

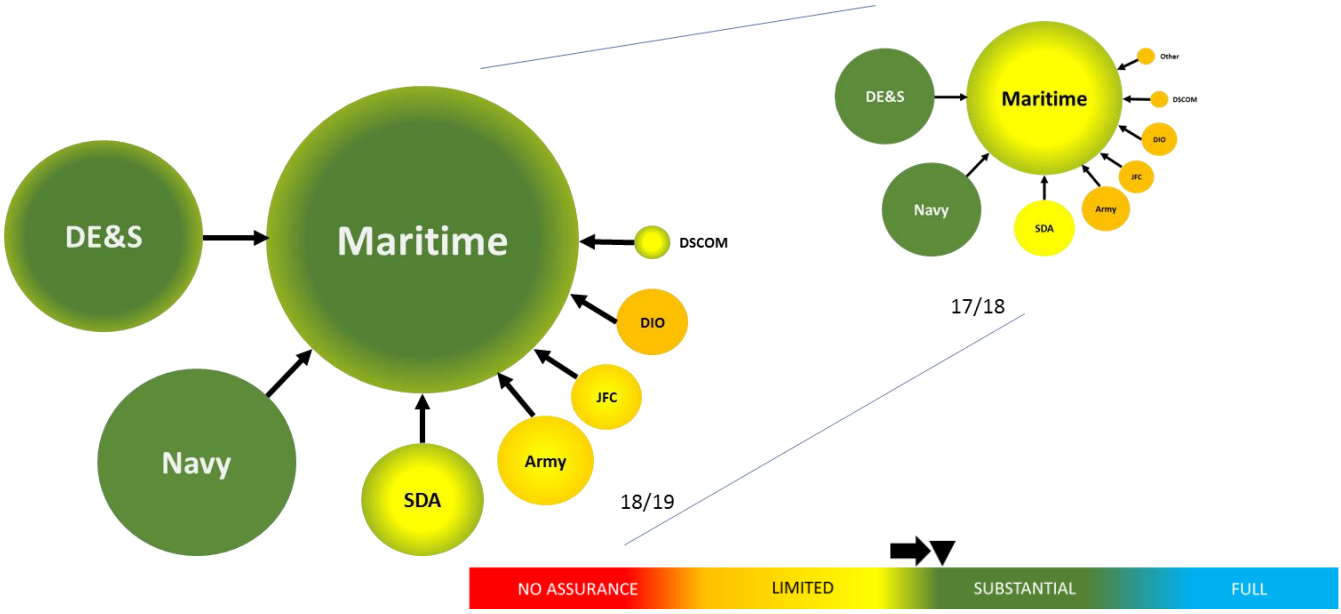
This improved assessment recognises the progress that has been made in a number of areas. However, minor weaknesses remain and the picture is not consistent across TLBs. Ineffective OSAs and lack of robust 2PA remain control weaknesses, and SQEP and infrastructure are considered as managed issues. Change, SQEP and MAC are complex and intertwined with initiatives to address taking time to deliver, but the steps being taken to improve matters are recognised. Overall there have been sufficient improvements across the DAE as a whole to make the small but important step up to a SUBSTANTIAL assessment, noting the absence of any major control weaknesses. However, there remains much to do to embed the resource and behaviours to achieve an enduring SUBSTANTIAL assurance level across all TLBs and continue driving Air Safety forwards.

[95] 3 July 2018: Phenom v Phenom, 3 July 2012: Tornado v Tornado, 23 March 2010: Red Arrow v Red Arrow.
[96] eg Aeronautical Information Publications (AIPs), low level charts, meteorological information, etc.
[97] ranging from lack of resource, prioritisation of design activity or commercial constraints.
[98] Including the Nimrod Review and the recent SI into the Griffin ZJ241 (https://www.gov.uk/government/publications/service-inquiry-into-the-accident-involving-a-griffin-mk1-zj241-at-yr-aran-snowdonia-wales).
[99] MAA Regulatory Article 1140.
[100] supernumerary crew are individuals who are temporarily attached to an Air System's crew for the purpose of carrying out a specific duty.

Maritime

3.3 Assurance Level

SUBSTANTIAL Assurance – significant improvements across the domain.



3.3.1 Scope. The Maritime domain has over 250 DEDs from the numerous Acts, Charters and international treaties which govern Defence maritime activities (including ports and diving), making it one of the more complex legislative environments in which Defence operates. This is simplified into the DSA's regulation and assurance of all Defence activity in MOD Shipping[101], MOD Ports at home and overseas[102] and MOD Diving[103]. The Defence Maritime Regulator (DMR) fulfils these regulatory roles for Defence, operating closely with the Maritime and Coastguard Agency (MCA) and the Health and Safety Executive (HSE).

3.3.2 Regulator Activity. The DMR model focuses on 3PA activity at the Operating Duty Holder (ODH) or equivalent level and as such 4 formal audits were conducted during the period. The Regulator uses 4 authorised organisations[104] to conduct audit and certification interventions with 86 diving certification audits during the period. DMR surveillance and oversight activity is conducted through attending safety meetings, regular interactions with the Regulated Community (RC) and a risk-based assurance programme coupled to an audit programme of the key areas. Notably in this period there was increased activity with the Army in supporting the transformation of Army Duty Holding particularly in respect of Diving and Boat operations, as well as engagement with DE&S Ships to review and assure Project SALUS.[105]

3.3.3 Findings. Evidence this year has demonstrated significant improvement and development at the core of the Maritime domain, particularly with both DE&S Ships and Navy Comd progressing onwards from Project SALUS and Navy Comd's Maritime Safety Strategy

[101] Royal Navy, Royal Fleet Auxiliary, MOD Chartered, Army and Adventurous Training.
[102] Ports and harbours protected under the Dockyard Ports Regulation Act 1865.
[103] Military, MOD Commercial and AT Diving of which military diving has some disapplications within the Diving at Work Regulations 1997.
[104] Naval Authority Group (NAG), Defence Diving Standards Team (DDST), Capt Port Operations and FOST Operational Sea Training Team.
[105] Project SALUS – A DE&S Programme post the Independent Maritime Safety Review to improve manning and documentation.

2018 (MSS18). The majority of the Regulator's activity has been focused on assuring this work, with clear evidence also obtained in the Document of Compliance (DOC) Audits of ACNS[106] (Ships) and ACNS (Submarines) and a review of Project SALUS. Following the fatality of an Army diver during the previous reporting period there was tragically a further fatality from a separate and fundamentally different diver training serial.[107] Both fatalities are subject to Service Inquiries and HSE Investigations that are ongoing.[108] Areas of previous regulatory concern such as the effectiveness of Navy Comd and DE&S Safety & Environmental Management Systems (SEMS) [109] and the provision of sufficient SQEP have all seen some improvement. Based on the evidence from extensive audit and assurance activity and the consolidated improvements in both safety practice and culture ***the Maritime domain has warranted an overall grading of SUBSTANTIAL safety assurance***, noting that some specific areas still remain at LIMITED.[110] Despite this level of assurance, the Maritime domain is still affected by Defence-wide issues such as insufficient SQEP, significant organisational change and shortfalls in collectively assessed 2PA. Legislative non-compliance, driven by a complex and turbulent legislative environment[111], remains the dominant threat in this domain in terms of liability or reputational damage to the Department and warrants particular oversight by all parties in the coming year.

- **SQEP.** The number of qualified personnel across the Maritime domain has been improving with evidence to suggest that ***initiatives to generate and sustain SQEP in the longer term are beginning to deliver***.[112] Despite this, a national shortage of engineers is still presenting recruitment challenges with recruitment into safety tagged assignments being slow.[113] The Naval Authority Group (NAG) in particular is having difficulty in recruiting and retaining marine engineers and naval architects which may impact the timely certification of new maritime platforms. The SQEP challenge within the Maritime domain is therefore now shifting from 'qualification' to 'experience'; a transient, though significant, outcome of recovering SQEP shortfalls. This lack of experience has begun to manifest itself through the increased use of SQEP concessions[114] and increased numbers of incidents[115] with lack of experience or F2FP as the cited cause. Whilst there may thus appear to be an improving SQEP position, this transient reduction in experience when coupled with a taut operational programme could provide commanders with a false sense of security. Continued oversight should therefore be maintained at all levels of assurance as experience builds; however, the overall vector is positive and the right actions are being taken.

- **Collectively Assessed 2PA.** Improving quality of 2PA has been apparent across the Maritime domain underpinned by the update to Navy Comd's Maritime Safety Strategy (MSS) and the conclusion of DE&S's Project SALUS; however, much of the 2PA remains stove piped.[116] This improvement is expected to continue but is wholly reliant upon TLBs maintaining the momentum they have built over the last few years. This will not be a simple task, but with more effective use of incident reporting and Learning from Experience (LFE), improved information exchange within and across TLBs and the adoption of Operating Safety Boards and the Operating Safety Statement Reviews to further improve understanding of the health of maritime platforms, this positive trajectory can be

[106] Assistant Chief of the Naval Staff.
[107] There was a fatality during diver training on 26 March 2018 (included in last year's report) and a fatality during a combat diver training serial on 14 November 2018 (see Annex A)
[108] at publication of this report.
[109] Audit and assurance activity during the year has identified that the SEMS system employed by Navy Comd and within COM Ships (DE&S) areas are broadly effective.
[110] DH models and assurance programmes are still being developed in the SDA, JFC and Army (2PA framework for Army Comd boat operations), while the DIO are addressing shortfalls for review in the next reporting period.
[111] Evolving Environmental legislation, transfer of EU regulation to UK statute as a result of UK withdrawal from the EU and the resultant management of applicable disapplications, exemptions and derogations.
[112] Projects Faraday (Navy Command Engineer Manpower Recovery Programme) and Keyham (Navy Command Junior Engineer Officer Manning Recovery Programme) plus DE&S intent to convert engineers from other disciplines into naval architects and marine engineers.
[113] particularly for environmental protection SQEP.
[114] Concessions are issued by an organisation where it accepts that an individual may not be considered fully SQEP but can still perform their duties with limitations or conditions (eg supervision). Of the **813** SQEP concessions in place across the Devonport and Portsmouth flotillas, **45% (n = 369)** were for Weapons Engineering and **17% (n=137) for** Mechanical Engineering. Type 23 vessels held the majority of SQEP concessions (**57%, n = 465**).
[115] as recorded on the Navy Lessons and Incident Management System (NLIMS).
[116] Audits of the two key Operating Duty Holders (ODHs) identified inconsistencies in 2PA and a continued lack of collective assessment of 2PA findings.

maintained. The formation of the Internal Technical Support (ITS) audit team within DE&S with the aim to improve 2PA is welcomed and has shown the potential to improve the quality and consistency of assurance well beyond its current range of acquisition projects. Overall, this ***improving picture of 2PA activity*** is encouraging but the lack of evidence of collective analysis of the results means it will remain a focus of the Regulator in the coming year.

- **Legislative Compliance.** The legislative complexity of the Maritime domain, from international treaties to domestic and devolved legislation and evolving environmental protection mandates[117], presents a significant challenge to Defence's maritime operators and platform delivery teams to establish and maintain currency in the legal and regulatory landscape in which they operate. ***The duty on the Department to provide evidence of statutory compliance (ie ensuring the MOD complies with the law) is therefore a specific risk***. Last year we highlighted the difficulty DE&S delivery teams had in demonstrating regulatory compliance for new Maritime projects.[118] and in understanding what regulations are applicable at each stage of the Concept, Assessment, Demonstration, Manufacture, In Service and Disposal/Termination (CADMID/T) acquisition lifecycle.[119] The Regulator is of the opinion that legislative compliance should be drawn out as a main component of governance. By ensuring compliance is a key and explicit component of the safety & environmental cases developed by delivery teams it would ensure legislative compliance is then proactively managed by the Accountable Person or DH as applicable.

- **Safety & Environmental Management Systems (SEMS).** Audit and assurance activity have identified that the SEMS employed by Navy Comd and by Chief of Materiel (COM) Ships within DE&S are broadly effective. The revised Navy Comd SEMS[120] is currently undergoing a 12-month ratification period[121] under the governance of the Maritime Safety Board. In-year audits have demonstrated the broad effectiveness of this update and supports their SUBSTANTIAL assurance assessment. Similarly, DE&S COM Ships has utilised the conclusions of Project SALUS as the foundation to improve and update its own SEMS programme. Self-assessment utilising ASSERT[122] has helped drive continuous improvements whilst also assessing their safety assurance as SUBSTANTIAL; an assessment shared and supported by the Regulator's 3rd party review of Project SALUS. As a new organisation, the Submarine Delivery Agency's (SDA) SEMS is developing in a positive way as it settles into normal routine and their understanding of roles and responsibilities consolidates. Their supporting documentation has also improved, providing a good foundation with updated Organisational Arrangements published and a new higher-level SDA safety committee having been stood up. The maritime aspects of Army Comd's SEMS[123] is recognised as being at an early stage of development and support is being provide by the Regulator with developing their DH construct and assurance activity for Army Small Boats. Overall, ***SEMS activity across the Maritime Domain has been extremely positive*** and is in a considerably improved position on last year.

Summary - SUBSTANTIAL

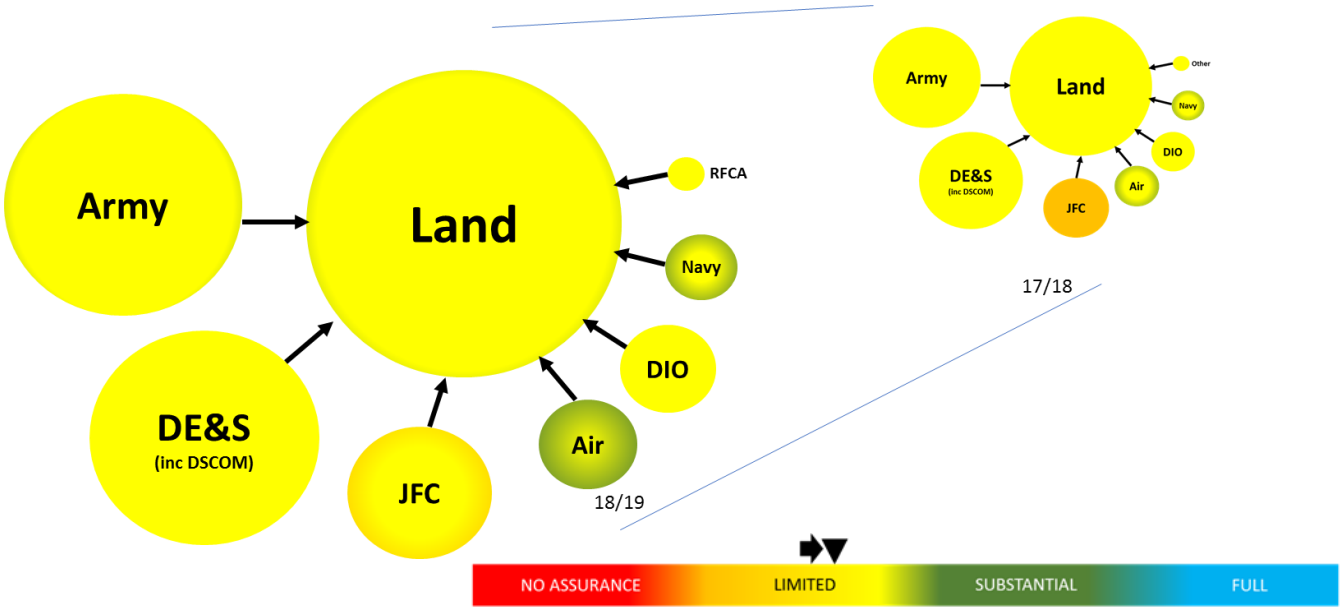
Safety assurance has continued to improve throughout the Maritime domain. All the processes and methodologies required exist and are functioning, but there is still work to be done. Previous progress in improving TLB maritime Duty Holding frameworks has been sustained, but with a need for further progress in certain niche areas. SQEP shortages and experience deficits, collective analysis and exploitation of 2PA and the consistent demonstration of legislative compliance remain the principal challenges facing those managing maritime activities. However, improvements in safety practice and culture warrant an overall grading of SUBSTANTIAL safety assurance.

[117] eg legislation to be introduced in 2020 is aimed at decreasing SO_2 emissions by setting limits for sulphur in fuel oil.
[118] Recent ship acquisitions (Queen Elizabeth-class aircraft carriers, River-class offshore patrol vessels, Tide-class tankers) all have incorporated engineering monitoring systems with limited supporting documentation and have had difficulty in demonstrating legislative compliance.
[119] eg during development of a vessel there may be a stage where it is operated under civilian maritime regulations (Red Ensign), in public service (Blue Ensign) or as a Royal Navy vessel (White Ensign).
[120] BRd 10 replacing BR9147d - Navy Command Safety and Environmental Management System.
[121] prior to formal application in November 2019.
[122] ASSERT – Air Support Safety & Environmental Reporting Tool (developed in DE&S for COM AIR, but now used across DE&S).
[123] Army Command Standing Order (ACSO) No 3216 (Organization and Arrangements for the Management of S&EP), 1st revision, April 2019.

Land

3.4 Assurance Level

LIMITED Assurance - Some improvements; however, major weaknesses remain in some specific areas.



3.4.1 Scope. The Land domain has the broadest span of statutory regulation of all the domains or functional areas.[124] The majority of activity is regulated by the UK's statutory regulators and not Defence.[125] Consequently, a high proportion of safety-related incidents and injuries occur outside of Defence regulated areas (see Section 2.2.2). The Defence Land Safety Regulator (DLSR) regulates against DEDs and high-risk activities in four areas:

- Fixed Fuel and Liquid Petroleum Gas (LPG) Infrastructure.
- Land Systems Acquisition, Maintenance/Inspection and Disposal.
- Movement and Transport activity across all modes, including the carriage of dangerous goods.
- Defence Adventurous Training (AT) Centres.

Almost all TLBs and the RFCA[126] operate in some aspect of the Land Domain with significant acquisition and support activity from DE&S and infrastructure maintenance and management by the DIO.

3.4.2 Regulator Activity. During the reporting period the DLSR conducted 254 audits and inspections consisting of 118 Fuel & Gas Infrastructure (FGI) installations, 93 Movement & Transport activities, 16 Land Systems and 27 Adventurous Training Centres. This included the inspection of all active Defence fuel installations and 88 Liquid Petroleum Gas (LPG) sites and the licensing of all Defence AT Centres. DLSR also approved 9 requests for exemption from statutory regulations.[127]

3.4.3 Findings. Based on extensive audit and inspection activity it is evident that the deficiencies and risk held in Defence's FGI have

[124] Examples such as the Health & Safety at Work Act 1974, Road Traffic Act 1988, the Carriage of Dangerous Goods by Road Regulations 1996, et al.
[125] For example, the Health & Safety Executive (HSE), the Driver & Vehicle Standards Agency (DVSA), the Driver & Vehicle Licensing Agency (DVLA), the Office of Rail & Road (ORR).
[126] Reserve Forces' and Cadets' Associations.
[127] Through the Land Exemptions Committee the DLSR Team Leader approves routine exemption requests on behalf of the SofS under Carltona principles.

started to diminish, partly as a result of long-term fuel infrastructure investment. However, considering the continuing level of Enforcement Action (EA) and the scale of recovery required, the risk of a major safety or environmental event or accident will take many years to reduce. Movement & Transport activities continue to demonstrate weaknesses, particularly in having sufficient and appropriate SQEP across a wide range of activities and in the effective management of safety-critical data. This year unfortunately saw three fatalities[128] across the transport activities that the DLSR regulate (see Section 2.2.2). Events this year also drew focus onto Defence's management and assurance of Land Systems Safety Management and whether risk owners and capability providers can consistently demonstrate that their systems are 'safe to operate' and 'operate safely' to a similar level to that being achieved in other regulated domains[129], particularly for Urgent Operational Requirements.[130] However, this year has seen further improvement in the safety standards at Defence AT Centres which, in the main, have consolidated their previous assurance assessment. Therefore, overall the evidence has shown some minor improvements but the regulated aspects of the Land domain firmly remain at **LIMITED safety assurance**.[131]

- **SQEP.** Insufficient SQEP remains a general concern of the RC across a broad range of land activities. This can be attributed to how TLBs identify and set competency requirements within their organisation, as much as to having the means to establish and sustain sufficient SQEP for their assigned duties. Assurance of FGI has again identified active facilities which lack competent staff to manage, operate and maintain Defence fuel installations, albeit that these occurrences have been at a reduced rate[132] to 2017/18. Within Movement & Transport activities 26% of inspector interventions were attributed to inadequate supervision and/or control. These instances indicate ***a culture where lack of competence can, at times, be considered tolerable by organisations***. However, as is the case in the Maritime domain, these instances predominantly reflected a lack of experience rather than qualification. This has been exacerbated further by common delays between qualification and the application of learning, a matter highlighted by the Army Inspector's review of Dangerous Goods non-compliances last year, which found that whilst staff had been trained many did not subsequently carry out that function for some time, thus losing the knowledge in addition to not building up experience.

- **2PA.** Given that the DLSR regulates a small but broad and diverse range of functions within the vast array of land-based activity, its view of 2PA is informed by observation of those regulated activities. Generally, ***valuable and effective 2PA is being delivered for those activities which are core TLB outputs and have been properly resourced***.[133] However, areas where 2PA is less robust tend to be where an activity is considered to be non-core.[134] In addition, we have seen limited collective analysis or exploitation of the results of 2PA within the TLBs, limiting the benefits good 2PA can deliver. For JFC this has been an enduring challenge as they are reliant on 2PA being provided by the single Service TLBs[135] for certain specific activities on a Service Level Agreement basis. Whilst much work this year has gone into capturing, quantifying and agreeing these dependencies at an inter-TLB and Head Office level, JFC are still vicariously affected by the resource challenges faced by the supporting TLBs. Supported by a new governance structure within Head Office, there are now further opportunities on a quarterly basis for Head Office and supported TLBs to hold those they depend upon to account.[136]

- **Land Systems Safety Management.** Following direction within Army Comd action has been taken to address known weaknesses in the management of Land Systems Safety Cases

[128] 2 civilian and 1 military (see Annex A).
[129] Aviation, Maritime and Ordnance, Munitions & Explosives domains have more structured and prescriptive certification process than general Land systems.
[130] Urgent Operational Requirements (UORs) are only subject to limited safety assessments prior to fielding to reduce acquisition times and maintain operational advantage.
[131] Land Systems (LIMITED), Movement & Transport (LIMITED), Fuel & Gas (LIMITED), Adventurous Training (SUBSTANTIAL).
[132] Four Enforcement Notices were issued for installations being operated by staff with inadequate training, a reduction on 13 in 2017/18.
[133] eg The Army Petroleum Inspectorate and RAF Fuels Assurance team, Adventurous Training Group (Army) assurance of AT Centres and Army Land Equipment Assurance audits (for equipment maintenance).
[134] eg land systems in Air Comd and Navy Comd.
[135] Navy, Army and Air Comds.
[136] In addition to formal Quarterly Performance Reporting, Head Office have established a quarterly Performance & Risk Review processes where the Perm Sec and VCDS personally hold 4* Commanders and Chief Executives to account.

(LSSCs), with the recruitment of additional staff, responsibility now assigned to a single 2* authority within Army HQ[137] and promulgation of the revised policy.[138] With ***over 90% of LSSCs having been formally endorsed***, Army Comd now has an opportunity for a programme of assessment and validation in order to assure the quality and depth of evidence supporting each case. The importance of this next phase of activity and the need for its timely prioritisation is based on the preliminary findings of a number of recent accidents and incidents[139] which have found ***examples which could question the depth or completeness of existing safety cases*** which consider an equipment to be 'Safe to Operate'.[140] This is of particular relevance to those land systems which were quickly brought into service as Urgent Operational Requirements (UORs) and have been retained subsequently[141], where the scale and depth of qualification and safety assessments were balanced against urgency of protecting the lives of personnel in operational theatres. Beyond these instances the Regulator has noted examples of some land systems being modified or locally procured without full consideration of the safety implications[142] or where land systems are being maintained in facilities that lacked the required testing infrastructure and equipment and by staff without the required training or experience.

- **Fuel and Gas Infrastructure (FGI).** In order to mitigate the safety and environmental risks posed by the extensive FGI that Defence relies upon within the UK and overseas, last year the Department allotted an additional £24M towards a DIO-led plan to address previously identified fuel infrastructure deficiencies.[143] Despite this being the first year of reinvestment, the impact has been evident with a reduction in high-risk non-compliances observed during audits. However, only 40% of non-compliances this year were infrastructure-related and the

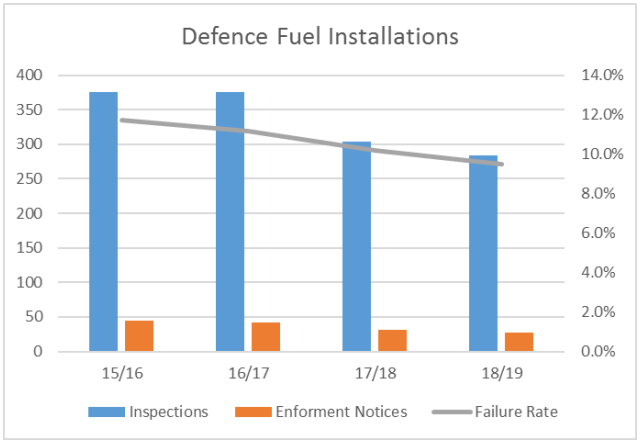


Figure 3-5

investment only covers programmed lifecycle replacement and excludes preventative maintenance or repair. Considering that deficiencies in maintenance and repair were key factors in the events which led to the explosion at the Buncefield oil storage depot in 2005[144], this improvement should only be seen as one aspect of improving safety. The continued funding of a programme of mandatory inspection, maintenance and repair[145] should be a priority for the Department in order to ensure these improvements are sustained. Following inspection of all active fuel sites/installations across Defence[146], all sites had examples of non-compliance with regulations. Most of the

[137] Director Capability within Army HQ.
[138] Army Command Standing Order No 3216, *The Army's Safety and Environmental Management System*, issued April 2019.
[139] eg the DAIB Non-Statutory Investigation (NSI) into the crashworthiness of MAN SV logistics support vehicle and roll-overs of Jackal High Mobility Tactical Vehicles.
[140] the provision of equipment which is safe by design, fit for purpose, and safe when operated/maintained in accordance with its published documentation by appropriately trained and competent personnel.
[141] The Mastiff Protected Patrol Vehicle and Jackal High Mobility Tactical Vehicle.
[142] eg fitting of Bowman radio systems to vehicles, modifications to the Challenger 2 tank invalidating tie-down schemes for its transportation, modification of locally procured vehicles at overseas locations.
[143] includes equipment deficiencies, infrastructure repairs, replacement of obsolete facilities and mandatory inspection and maintenance activity.
[144] COMAH, *Buncefield: Why did it happen?*, February 2011.
[145] Noting there are legal requirements for inspection, maintenance and serviceability of FGI for which the Department is not exempt.
[146] Four fuel installations are currently 'dormant' and not in use awaiting decommissioning decisions/action.

non-compliances were minor in nature; however, the inspections resulted in 27 Enforcement Notices (ENs) being issued, compared with 31 last year. This represents a 9.5% failure rate[147] for 2018/19, a slight improvement on 2017/18 (10.2%) and the 4th annual reduction in a row (Figure 3-5). Notably the number of Prohibition Notices has reduced to zero reflecting the increase in Heads of Establishment acting to close facilities that they find non-compliant from their own 1PA. This year there have been improvements in some parts of the overseas fuels estate with the failure rate now close to that of UK facilities, with improvements delivered at RAF Akrotiri and plans to improve secondary containment at the Oil Fuel Depot in Singapore now on contract. The extensive work done by Head Office and the DIO to begin moving our FGI from a position of managed decline ***towards*** one which is more proactive, sustainable and legally compliant has been highly commendable. However, an HSE intervention this year for statutory non-compliances in a bulk LPG facility[148] reminded us of the scale of this task and the need for the sustained focus of Head Office.

- **Land Transport Accidents (LTAs).**

LTAs, whether on or off duty, remain among the highest causes of accidents across Defence. Over the last 5 years ***military personnel were 66% more likely to die as a result of an LTA than the general population***[149]. These figures, standardised for age, gender and calendar year[150], highlighted that Army personnel aged below 30 were at the greatest risk of dying in an LTA. In addition, there were three fatal accidents involving on-duty military vehicles, resulting in the death of one soldier and two members of the public. These incidents remain under investigation. This year has seen two initiatives progressed in this safety-critical area. Firstly, in partnership with the Fire and Rescue Services[151] and building on good practice in the civilian sector, the DSA jointly produced an innovative road safety presentation called 'Survive the Drive'[152] aimed at instilling behavioural change in Defence personnel. Feedback from TLBs has been extremely positive[153], with several individuals commenting on how effectively it has engaged such a broad audience. Secondly, the DSA has initiated a replacement of the current manual Road Traffic Collision reporting system (IMPACT) with a new, web-based application (eIMPACT) which should significantly improve the level, detail and quality of vehicle incident reporting and enable quicker and more effective analysis and exploitation allowing Defence to better target road safety education, training and future initiatives. LTAs continue to impact our personnel, their families and the delivery of Defence's capabilities. How Defence should address this is discussed later at Section 5.7.3.

Summary – LIMITED

Good progress has been evident across a number of the regulated activities in the Land domain. There was further improvement in the safety standards at Defence AT Centres; significant reinvestment in our Fuel & Gas Infrastructure has started to have an impact on levels of non-compliance placing us on the path to a legally compliant and fit-for-purpose fuel & gas estate; Movement & Transport activities continued to demonstrate some major weaknesses, particularly in having sufficient and appropriate SQEP across a wide range of activities. However, events this year have drawn focus on the management and assurance of Land Systems and how Defence demonstrates that systems are 'safe to operate' and 'operate safely'. Bar Defence AT Centres, all regulated activities in the Land domain require continued focus and investment by TLBs and Head Office to build momentum on the improvements made thus far and raise them beyond their current position of LIMITED safety assurance.

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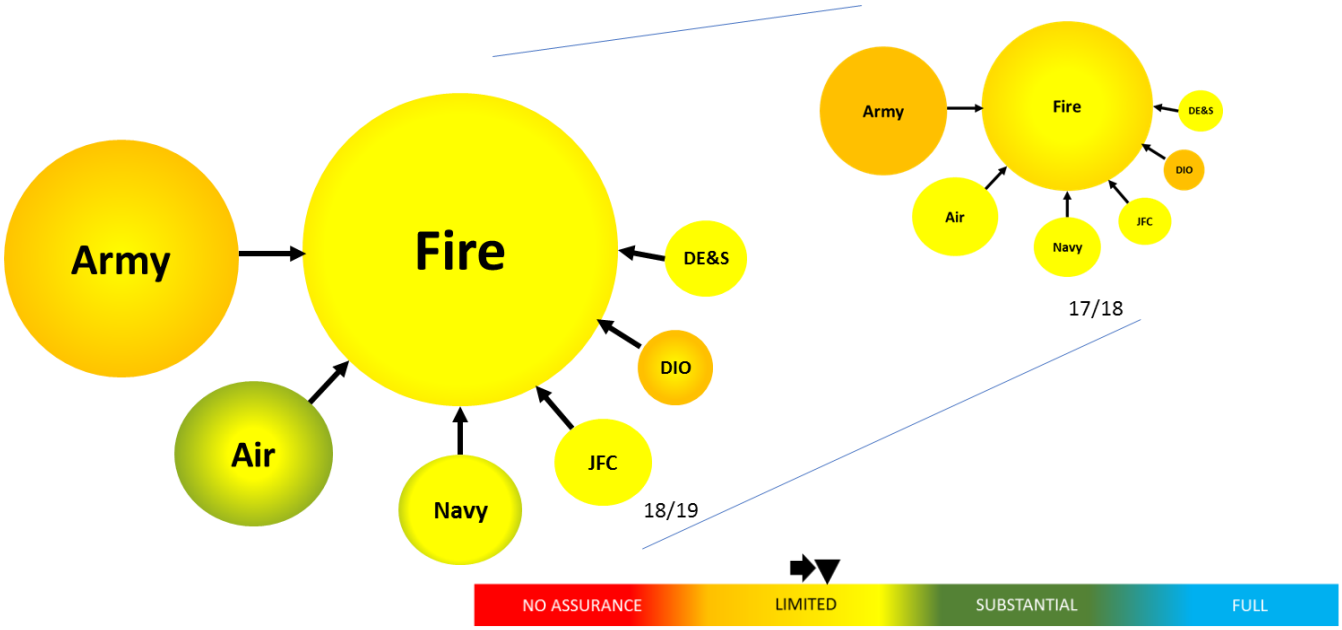
[147] 'Failure Rate' is the % of inspections that result in a formal Enforcement Notice (Prohibit/Urgent Improvement/Improvement).
[148] Lydd Camp, Kent.
[149] By Service, the Army is +123%, for the RAF +11% and Royal Naval -41% compared against the general UK population. Source: MOD, *Deaths in the UK Regular Armed Forces: Annual Summary and Trends over Time 1 January 2009 to 31 December 2018*, published 28 March 2019.
[150] This allows the calculation of a Standardised Mortality Ratio (SMR). An SMR below, equal to, or above 100 indicates that the rate for the Armed Forces or the Service is respectively below, equal to, or higher than the rate in the general UK population.
[151] Devon and Somerset Fire & Rescue Service and Dorset and Wiltshire Fire & Rescue Service.
[152] http://roadsafetygb.org.uk/news/initiative-helps-military-personnel-survive-the-drive/
[153] The partnership was subsequently recognised by a VCDS Commendation.

Fire

3.5 Assurance Level

LIMITED Assurance – Previous decline in safety assurance has been arrested and initial evidence supports a marginal improvement.



3.5.1 Scope. As a statutory regulator[154] the Defence Fire Safety Regulator's (DFSR) role is to provide assurance that Defence is compliant with the law[155] and Defence Fire Safety regulations and to issue enforcement notices where regulatory breaches have been found. This encompasses the legal requirement for Responsible (Accountable) Persons[156] to take adequate fire precautions to ensure the safety of all relevant persons in their AOR or establishment. It is discharged through risk-based audits and an agreed formal consultation process.[157] Post-fire audits may also be undertaken[158] to determine possible failings in compliance and suitable corrective/enforcement action where appropriate. In delivering its role, the DFSR works closely with its statutory peers and is represented on the National Fire Chiefs' Council (NFCC).

3.5.2 Regulator Activity. During the reporting period there were 413 reported fires (up 11% since last year[159]) and 3178 recorded false alarms (down 7% since last year[160]). The DFSR conducted 170 risk-based audits across all of the TLBs which resulted in the issue of 4 Enforcement Notices and 1 Prohibition Notice.[161] Under the Duty to Consult (D2C) process it provided a further 823 consultations on building works for TLBs and appointed Fire Safety Inspectors on 539 occasions to advise on the more technical and complex projects. Following a DSA-led review of Fire Safety in Single Living Accommodation (SLA) [162] the DFSR has put in

[154] This differs from the other Defence safety regulators who regulate where Defence has a disapplication, exemption or derogation from law.
[155] The Regulatory Reform (Fire Safety) Order 2005 and the Fire Scotland (Regulations) 2006.
[156] A legal duty of appointed Heads of Establishment (HoE) or project leads for proposed building works.
[157] 2017DIN06-23, *Duty to consult with the Defence Fire Safety Regulator*.
[158] In concert with the Defence Accident Investigation Branch for major incidents.
[159] A 15% reduction over the last 3 years.
[160] This represents a 31% reduction over the last 3 years; however, it is recognised that there is a lack of consistent false alarm reporting, particularly on Defence sites where there is DFR presence.
[161] A Prohibition Notice was served on Wellington Barracks for significant deficiencies in the fire detection and alarm system as installed.
[162] DSA, *Fire Safety Review: Defence Single Living Accommodation*, DFSR/18/001/Report dated 14 August 2018 and published on gov.uk on 4 January 2019.

place a system to track the progress TLBs are making in implementing the review's recommendations. In addition, the DFSR has remained closely engaged with Dame Judith Hackitt's Review[163] which followed the Grenfell Tower tragedy and her recommendations for improving oversight of building regulations and fire safety management.

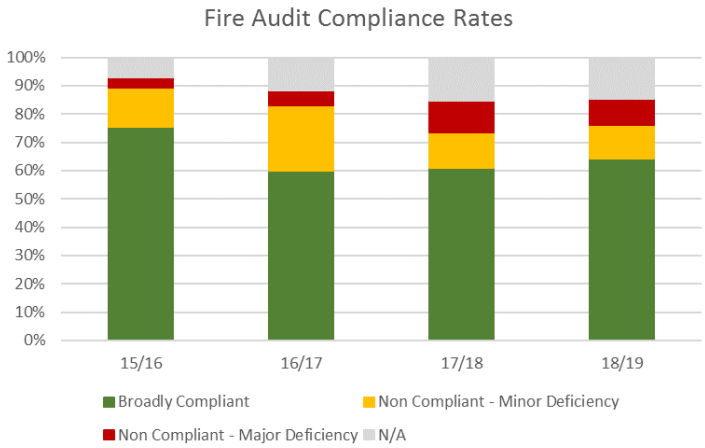


Figure 3-6

3.5.3 Findings. This year DFSR's audit activities found that the majority of premises[164] were '*broadly compliant*.'[165] The management of Fire Safety throughout Defence had been in decline for the previous two years; however, there was now evidence that this decline had been arrested, with a resultant small but measurable improvement in overall fire safety assurance.[166] Notably, there is insufficient evidence to determine whether this change is temporary or will be sustained. Whilst the number of reported fires has increased this year it remains on a reducing trend. False alarms have reduced and the number of overall regulatory non-compliances saw a marginal improvement (see Figure 3-6). More reassuringly, improvements in compliance have been reflected across over half of the audit categories compared to last year (Figure 3-7). Senior engagement by Head Office and TLBs, clarification of the roles and responsibilities of the Defence Fire Risk Management Organisation (DFRMO), additional training of fire risk assessors, the establishment of a new Defence Fire Safety Management Committee and more collaborative working between building control and regulatory authorities have all contributed to a positive shift in fire safety management across Defence. However, there are still areas requiring further attention where levels of regulatory compliance are still below the standard expected; where unwanted fire alarm signals remain at an undesirably high rate; where the consequences of delay to the implementation of the Defence Fire & Rescue Project (DFRP) have stretched resource; and where it has been more difficult to retain SQEP. Overall, Fire Safety Management remains at **LIMITED safety assurance**, but the efforts to arrest the previous decline have been worthwhile and the path has been set towards reaching Substantial assurance in a number of years.[167]

- **Fire Safety Governance.** Senior engagement by Head Office and TLBs in response to the findings of last year's AAR and the SLA Fire Safety Review has been swift and effective, with senior staff providing unambiguous direction to their staff and organisations and providing much needed clarity to the Department's numerous Heads of Establishment (HoE).[168] The roles and responsibilities of the DFRMO which were previously not broadly understood by Defence have reportedly been clarified, including the rebranding of DFRMO to Defence Fire and Rescue (DFR). In consolidating its role as the Department's service delivery organisation for fire and rescue services and the source of professional fire safety advice to TLB risk owners, the Chief Fire Officer (CFO) has also established a new Defence Fire Safety Management Committee.[169] During the reporting period Air Comd had led activity to re-assess their existing fire safety management systems down to unit level to understand the current arrangements and create a new and more effective operating model. This significant

[163] Dame Judith Hackitt, *Building a Safer Future: Independent Review of Building Regulations and Fire Safety: Final Report*, dated May 2018.
[164] 64% (+3% compared to 2017/18).
[165] NFCC term used for premises where very few deficiencies are found during audit and any found are minor in nature. Compliance is categorised as: broadly compliant, non-compliant minor deficiency and non-compliant major deficiency.
[166] Areas such as fire risk assessment, system maintenance and process compliance.
[167] which at the current pace of change could take several years.
[168] MOD, *Defence Safety Authority Annual Assurance Report April 2017 – March 2018,* dated 26 October 2018, Recommendation 8.
[169] supported by the DFR-led Defence Fire Safety Working Group and DIO-led Strategic Compliance Committee.

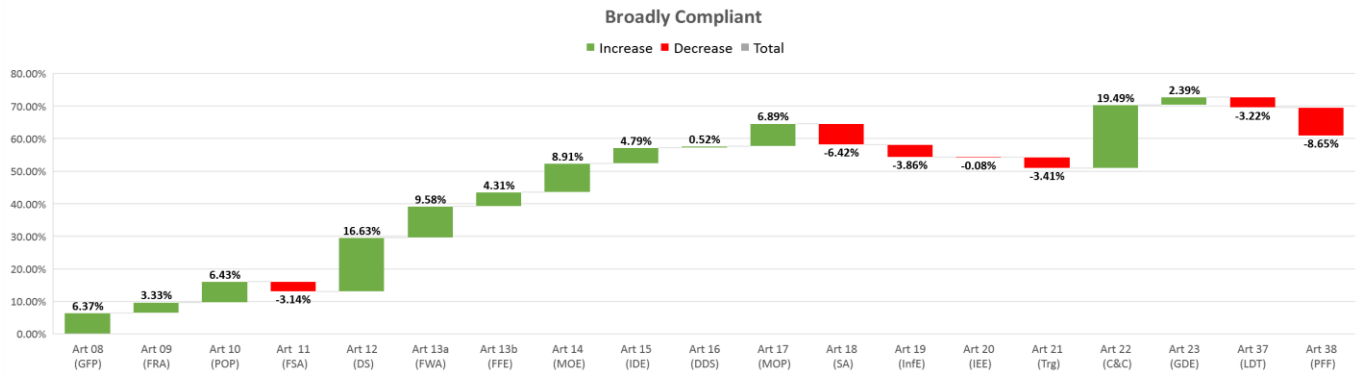


Figure 3-7

piece of Air Comd work has been shared with the other TLBs which, with the establishment of new fire safety specialist positions in Air Comd, JFC HQ and DE&S to add to the existing position in Navy Comd, will unequivocally improve their governance and assurance. The challenge now lies with the other TLBs to match these levels of assurance and good practice.

- **SQEP.** Improved training[170] and greater recognition by TLBs of the importance of SQEP has contributed to an improved picture to what was reported last year.[171] Instances of Project Managers failing to follow safety compliance processes have reduced[172] due to an improved understanding of their role in managing regulatory compliance, and there has been evidence of increasing instances of proactive and informed behaviour from HoE and supporting staff. However, these improvements have not been universal, with pockets of inadequate management or awareness still evident across Defence and requiring the momentum that has been established this year to cast wider. Beyond the building of local SQEP, the recruitment and retention of Defence's high-end fire safety specialists remains a challenge across all TLBs, including DFR and the Regulator. An increase in private sector demand has out-stripped national capacity, and the ability of the private sector to recompense at market rates has placed increased pressure on the retention of Defence expertise.

- **Change.** The major change that is soon to affect fire safety management in the Department (from Head Office to unit level) is the DFRP. Capita Business Services Ltd was announced as the successful bidder on 18 June 2018[173] for this 12-year contract valued at around £550M.[174] However, following a legal challenge implementation of the contract was delayed until May 2019. Unfortunately, this delay generated an unplanned commitment on DFR which was already being affected by planned staff transfers and retirements. Whilst this resulted in an unavoidable drop in service delivery and some Key Performance Indicators fell below agreed levels[175], DFR should be commended for minimising the impact this had on Defence organisations. However, should DFRP delay further, the CFO DFR has the means should he wish, to continue minimising the impact by drawing upon resource from within its governance area.

- **SLA Fire Safety Review.** The findings of the SLA Fire Safety Review[176] were not unexpected and were consistent with the content of previous DSA AARs. The principal finding was that TLBs had a limited ability to fulfil their statutory fire safety duties. In addition, the Review identified risks that had been magnified by cultural and management factors, all with the potential to produce pan-Defence Safety and Environmental Management System (SEMS) failures particularly across the Army estate. The Review attracted a high degree of public scrutiny following media reports that attempted

[170] such as the DFR course delivered to TLB staff which is improving the quality and utility of Fire Risk Assessments (FRAs) across the Defence Estate.
[171] MOD, *Defence Safety Authority Annual Assurance Report April 2017 – March 2018,* dated 26 October 2018, Section 3.6
[172] Infrastructure project managers within DIO Programme Project Delivery.
[173] Hansard, House of Commons Written Statement, Volume 643, *Contingent Liability,* 18 June 2018.
[174] Hansard, House of Lords Debate, Volume 643, *Defence Fire and Rescue Project: Capita,* 21 June 2018, c467, [corrected Volume 643, 25 June 2018].
[175] eg delivery of Fire Risk Assessments fell to 86% against a target of 95%.
[176] DSA, *Fire Safety Review: Defence Single Living Accommodation*, DFSR/18/001/Report dated 14 August 2018.

to incorrectly align fire risks across the Defence estate with that of the Grenfell fire. On behalf of the newly formed Defence Safety and Environment Committee (DSEC)[177] the DSA has begun tracking the implementation of the 8 recommendations which included the review of TLB SEMS, the update of Joint Business Agreements between TLBs and DFR and the introduction of revised governance and audit arrangement. Progress towards completion of these recommendations has been made as fast as resources have allowed. It was noted that the original target dates were ambitious without the benefit of any detailed planning estimates, and as such six of the eight recommendations had not been completed in the time allowed. Revised target dates have been subsequently agreed and all of the recommendations are scheduled to be completed before April 2020.

- **Governance post-Grenfell.** During this reporting period the Hackitt Review recommended the creation of a National Joint Competent Authority (JCA) to bring together under a lead authority '*Local Authority Building Standards, fire and rescue authorities and the Health and Safety Executive*' to '*maximise the focus on building safety'* to '*ensure effective joint working'*.[178] Recognising the potential benefits this could have for Defence the DIO and DSA formed a Defence Joint Competent Authority Working Group (Defence JCAWG) in October 2018 to develop the building control and fire safety regulatory framework model[179] which would mirror National JCA outcomes for the Defence Estate. It is intended that the Defence JCA model[180], when approved, will enable early cross-regulatory consultation and simplify the existing D2C process during planning, design and construction in order to provide verifiably safe buildings for Defence.

Summary – LIMITED

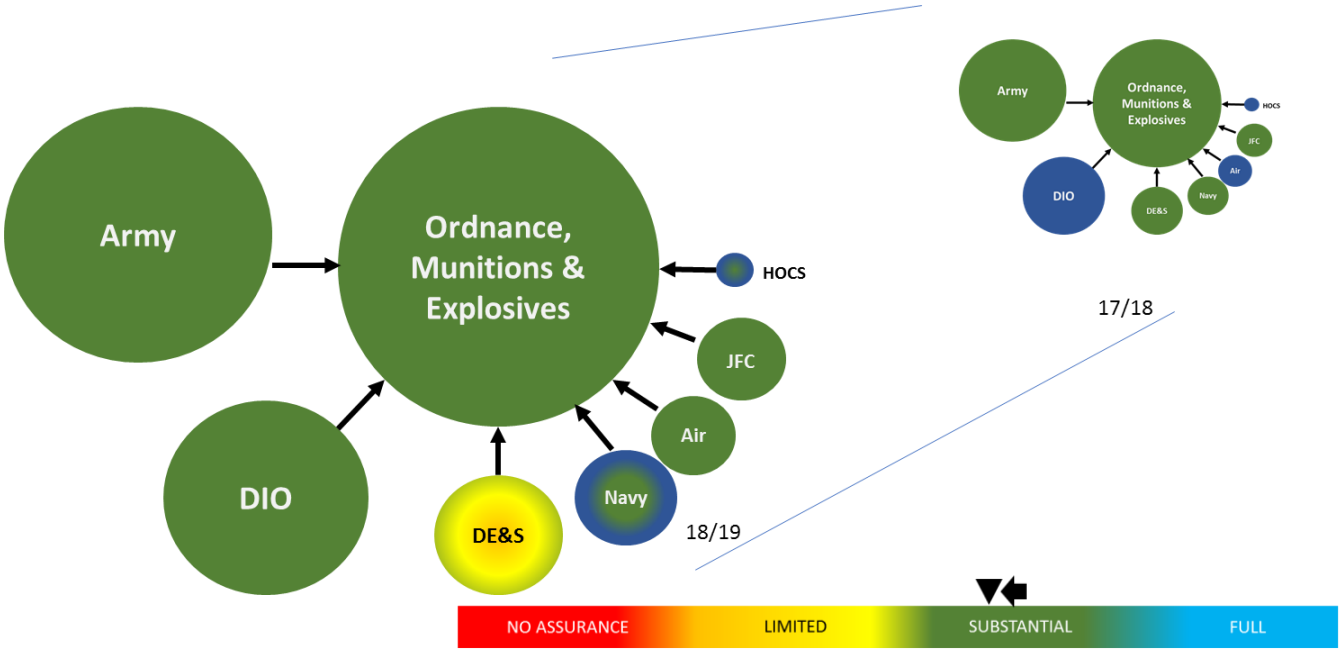
The decisive leadership demonstrated by Head Office in response to last year's AAR and the SLA Fire Safety Review kickstarted a shift in awareness, engagement and attitude across Defence. TLBs and their HoE have begun to rise to that challenge, with the previous decline in safety assurance having been arrested and the initial indications of a recovery evident in some areas. Issues with establishing and retaining SQEP, as promoting the fire safety message out across the Defence Estate will require the continued effort and resource of TLBs to maintain the momentum achieved thus far. This has impacted all areas of fire safety assurance, management and service delivery across Defence. Based on the commitments shown by Head Office and the TLBs, there is optimism for the future. New governance arrangements will allow TLBs, with Head Office, to oversee this work and determine the pace of recovery, accepting that after so many years of decline it may take several years to return to Substantial assurance. Until then fire safety will continue to have LIMITED safety assurance.

[177] see Section 5.4.
[178] Dame Judith Hackitt, *Building a Safer Future: Independent Review of Building Regulations and Fire Safety: Final Report*, dated May 2018, Recommendation 1.2.
[179] replacing the current DFSR D2C model, 2017DIN06-23, *Duty to consult with the Defence Fire Safety Regulator*.
[180] covering: design, construction and refurbishment; occupation and maintenance; product safety; competence; regulation and guidance.

Ordnance, Munitions & Explosives

3.6 Assurance Level

SUBSTANTIAL Assurance - partially reduced due to weaknesses in 2PA of DE&S OME acquisition.



3.6.1 Scope. Defence has a range of DEDs from statute[181] requiring regulation of all Defence Ordnance, Munitions & Explosives (OME) activity from acquisition to disposal. This also includes regulating all MOD explosives storage sites, ranges used for live firing, laser safety and Major Accident Control (MACR) establishments.[182] This is conducted by the Defence OME Safety Regulator (DOSR). Most of the TLBs in Defence have some activity or involvement in the OME area.

3.6.2 Regulator Activity. During the reporting period the DOSR conducted 533 audits and inspections across Defence: 25% (498) of its ranges, 4% (23) of its explosives establishments and 44% (12) of its MACR sites, spanning the 6 major TLBs.[183] In addition, the DOSR provided advice and assistance to TLBs on the following operations: Op SHADER,[184] the Joint Counter Terrorist Training Advisory Team (JCTTAT)[185], Op AZOTIZE[186] and Op NEWCOMBE.[187] To advance coalition interoperability, both the Regulator and Regulated Community have been working towards a common NATO standard and methodology to Explosives Safety Cases (ESCs) and integrating this into UK regulation. In addition, this year DOSR conducted assurance activity on the Acquisition Management of the 1254 known OME systems in Defence in order to determine a baseline level of assurance. As a result of their audit and

[181] Principally the Explosives Regulations 2014, the Health and Safety at Work Act 1974 and the Dangerous Goods in Harbour Areas Regulations 2016.
[182] Major Accident Control Regulations (MACR, JSP 498) are the equivalent of the Control of Major Accident Hazard Regulations 2015 (COMAH) for Defence sites, of which the Defence Ordnance Safety Regulator also acts as the MOD's Competent Authority.
[183] Army (326 audits), Navy Comd (11 audits), Air Comd (30 audits), JFC (13 audits), HOCS (12 audits), DE&S (27 audits) and DIO (114 audits).
[184] Advice on explosives licensing at RAF Akrotiri.
[185] Overseas range safety inspections including Operations.
[186] Estonia.
[187] Mali.

assurance activity this year the Regulator issued three Prohibit Notices (PNs)[188] and seven Improvement Notices (INs).

3.6.3 Findings. There was considerable evidence that the safety systems and processes delivering in-service and operational safety of Defence's ranges, explosives storage sites and MACR establishments are robust and working effectively across the entire functional area with only minor weaknesses observed. In these areas all TLBs had Substantial safety assurance. However, the baseline assessment of OME acquisition revealed significant shortfalls in 2PA and process compliance across five of the six DE&S Operating Centres[189], ranging from Limited to No Assurance. Whilst this impacts the Regulator's assessment of DE&S safety assurance, it specifically relates to only one of the four regulated OME functions; therefore, OME across Defence is assessed as having overall **SUBSTANTIAL safety assurance** with a specific weakness in the 2PA of DE&S in OME acquisition.

- **2PA.** Regulatory awareness and assurance practices are well established for Defence's Ranges, Explosives storage sites and MACR establishments and the quality and consistency of 2PA is collectively good, mainly as a result of OME being a mature regulatory domain comprising a small cadre of specialists. However, the key finding of the Regulator's assurance of OME acquisition was that several of our Defence's in-service OME systems may not have been subject to the prescribed levels of robust 2PA and independent 3PA assurance during their introduction to service.[190] ***There is no evidence to make the Regulator believe that those OME systems are unsafe.*** However, without this necessary level of assurance a key element of the multi-layered assurance model which demonstrates our

munitions are safe is lacking. While the reasons for this level of omission/non-compliance are investigated, each of the Operating Centres have produced 'return-to-green' plans to bring them back into full compliance and continue to be supported by the Regulator as they implement them.

- **Infrastructure.** Despite the general declining condition of the Defence Estate,[191] Defence's licensed explosives facilities continue to be, in the main, fit-for-purpose and compliant.[192] Where necessary, enforcement action has been taken and any emergent trends have been reported.[193] This has demonstrated how TLBs have successfully prioritised activity where resource and capacity is limited. With infrastructure funding delegated back to TLBs[194] there are now greater opportunities for them to prioritise and manage their estate.

- **SQEP.** Despite being a small and niche cadre, TLB measures to maintain OME SQEP continue to appear effective albeit the position is fragile with an ageing SQEP demographic. All TLBs have initiatives in place to manage their levels of SQEP and the position continues to be monitored at the DOSR-chaired functional safety committee.

[188] Prohibit Notices were served on 3 indoor weapons ranges due to non-compliant infrastructure and equipment.
[189] Weapons, Ships, Land Equipment, Air Support, Combat Air Operating Centres. The Helicopter Operating Centre was assessed as having Substantial assurance with regard to OME acquisition. The Submarine Delivery Agency which is not part of DE&S does acquire OME and was assessed as having Full assurance.
[190] Operating Centres are required to conduct 2nd Party OME Safety Review Panels of each OME system to ensure the assumptions and evidence underpinning the System's safety case remain valid and that risks associated with the OME have not been unknowingly transferred to end-users or operating platforms.
[191] House of Commons Library, Briefing Paper Number 07862, *Defence Estate strategy*, 12 January 2017.
[192] Explosives facilities are subject to a range of mandatory building and electrical tests.
[193] Evidence was found of some sub-contractors not conducting inspections to the required standard. This was reported to DIO who have reacted and progress is being made towards resolution.
[194] Infrastructure funding in Defence was delegated back to TLBs from DIO on 1 April 2018 following the Defence Infrastructure Model Review (DIMR), providing TLBs with a greater ability to manage and prioritise infrastructure maintenance and procurement.

Summary - SUBSTANTIAL

Defence's Ranges, Explosives storage sites and MACR establishments all have robust safety systems and processes which provide SUBSTANTIAL safety assurance. However, a deeper look into the acquisition processes for our OME has revealed a weakness in one of the multiple layers of assurance that underpins safety. This does not suggest that matters are unsafe, but that there are additional assurance checks that should be done better. Therefore, for an area that displays a positive, well-established safety culture, with solid assurance across the majority of its activities, the OME domain continues to demonstrate overall SUBSTANTIAL safety assurance.

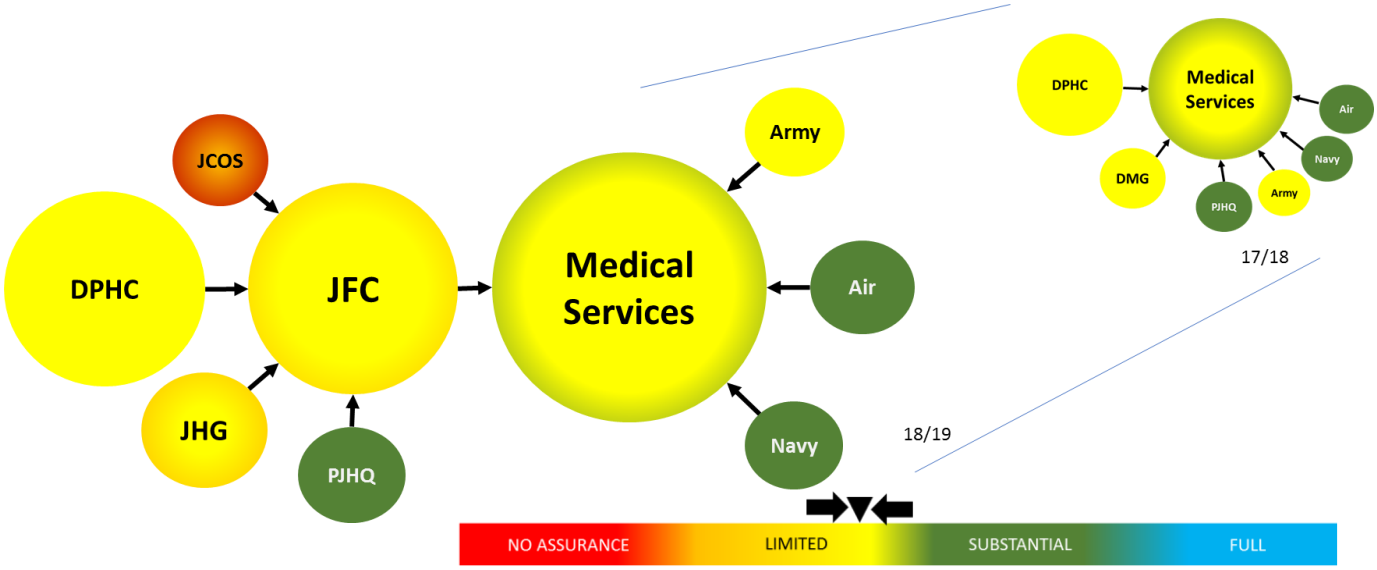
- **Change.** With several recent changes occurring across the MOD's Ports and Harbours this has been an area requiring a higher level of regulatory scrutiny and oversight. Since an HSE intervention at SMC Marchwood[195] and the issuing of a Crown Prevention Notice 3 years ago[196], Defence has been improving its safety arrangements in-line with statutory requirements. In addition, the Regulator has worked with NATO's AC/326 CNAD[197] Ammunition Safety Group to review and rewrite the applicable NATO policy and standards. Based on these regulations and policy the Regulator has observed several examples where changes in operation or infrastructure have been implemented which have necessitated additional mitigating activity in order to maintain compliance with OME regulation and minimise the Risk to Life of UK and Host Nation personnel, assets and infrastructure.[198] It is also recognised that for a number of our overseas locations Defence must remain responsive to external influences, many of which are outside its control, which require the application of temporary operating limitations and enhanced oversight by DHs where and when necessary.

[195] Sea Mounting Centre Marchwood is a dedicated military port facility on the south coast.
[196] The HSE issued a Crown Prohibition Notice for the handling and storage of explosives as there were insufficient measures in place to reduce the risk to members of the public from an explosive event.
[197] Conference of National Armaments Directors.
[198] eg required additional resources such as additional guarding of temporary perimeters or movement constraints such as the temporary closing of public roads to allow weapon movement or loading activities to take place.

Medical Services

3.7 Assurance Level

LIMITED Assurance – unchanged from last year due to significant weaknesses in JCOS[199] assurance of medical provision overseas (including PJOBs[200]).



3.7.1 Scope. Defence Medical Services (DMS)[201] have a disapplication from the Health and Social Care Act 2008 (Regulated Activities) Regulations 2014. Defence is therefore required to regulate and assure the delivery of healthcare to Service Personnel and entitled civilians[202], a role conducted by the Defence Medical Services Regulator (DMSR).[203] The DMSR is empowered to undertake proportional and risk-based safety assurance, regulation and enforcement of Defence Medical Services (DMS) in order to enhance Defence capabilities. It works closely with the Care Quality Commission (CQC) and the other UK statutory regulators[204] when required. The DMSR does not assure delivery of the care or treatment of Service Personnel in NHS funded facilities[205] nor has it the authority to assure Host Nation healthcare facilities overseas.

3.7.2 Regulator Activity. Individual Medical Treatment Facilities (MTF) undertake 1PA; the Commands,[206] HQ Surgeon General (SG)[207] and PJHQ undertake 2PA and the DMSR undertakes 3PA. During the period of this report the CQC conducted a further[208] 34 initial[209] inspections and 19 re-inspections[210] of medical

[199] Joint Command Overseas Support within JFC, this organisation was subsumed by the Director Overseas Bases (Dir OB) in March 2019.
[200] Permanent Joint Operating Bases (Cyprus, Gibraltar, South Atlantic Islands, British Indian Overseas Territories) and British Defence Singapore Support Unit.
[201] Defence Medical Services (DMS) is the collective term for the personnel of the three single Services and the integrated civilian workforce who provide medical operational capability, firm base healthcare and medical advice to Defence. The head of the DMS is Director General DMS (formerly the Surgeon General) who is the Defence Authority for Healthcare and Medical.
[202] Service personnel in the UK, abroad, those at sea, and in some circumstances family dependents of service personnel and entitled civilians.
[203] formerly the Surgeon General's Inspector General team which transferred to the DSA on 1 December 2017.
[204] including non-healthcare regulatory bodies.
[205] This is assured by the CQC as the statutory regulator in England.
[206] Navy Command, Army HQ and Air Command.
[207] Defence Primary Healthcare (DPHC) and the Joint Hospital Group (JHG).
[208] The CQC published 63 inspection reports during the first year of the programme, CQC, *Defence Medical Services CQC Inspection Programme Annual Report Year 1 (2017/2018),* dated 30 July 2018.
[209] 25 Medical Centres, 3 Dental Centres, 2 DCMH, 4 RRUs.
[210] 11 Medical Centres, 5 Dental Centres, 2 DCMH, 1 RRUs.

facilities[211], completing its second year of 3PA inspections of Defence MTFs.[212] Outcomes were marginally improved upon last year with less than 40% of Medical Centres (down ~10%) graded as 'Requires Improvement' or 'Inadequate' and 2 MTFs assessed as 'Outstanding'.[213] The Regional Rehabilitation Units (RRUs) inspected were all 'Good' but there was considerable variation with the three Defence Community Mental Health centres inspected ranging from 'Requires Improvement' to 'Outstanding'. Good leadership, management and governance are prerequisites for high quality care. These factors were evident in those NHS[214] and DMS practices rated as Good or Outstanding by the CQC.[215] Based on these inspections and additional evidence available to the DMSR[216] seven Enforcement Notices were served comprising two Prohibit Notices (PNs) and five Urgent Improvement Notices (UINs). Of the two PNs, one medical facility[217] has subsequently closed permanently, and the other is undergoing infrastructure work.

3.7.3 Findings. Based on the evidence available to the DMSR it has concluded that DMS has established systems and processes in place; however, the effectiveness of the systems is being compromised by shortfalls in SQEP which has impacted the delivery of useful 2PA within several areas delivering healthcare. This view concurs with the self-assessment[218] of the majority of TLBs[219] which each highlight shortfalls in 2PA due to reduced levels of staffing and insufficient SQEP. The impact of the reduced 2PA is borne out by continued gaps in assurance of healthcare activity[220] in the PJOBS, operations and high-risk activities. This reduced assurance activity and increased reliance on 1PA reduces confidence that all risks are being identified and well-managed. Of immediate concern has been the submission of ***No Assurance*** by the JCOS for their ***inability to assure Host Nation healthcare provision for personnel at our overseas bases*** or assure specialist activities such as diving. This reflects the inability of JCOS to conduct assurance and does not imply that Host Nation healthcare provision is inadequate or unsafe. In particular it should be noted that primary healthcare at these locations is delivered by Defence Primary Healthcare (DPHC) and has been generally assessed to be of good quality.[221] The Regulator is closely engaged with JCOS and JFC to ensure the impact to patient safety is minimised and assist them in devising an appropriate recovery plan. However, ***DMS has warranted an overall grading of LIMITED safety assurance.***

[211] 53% of Medical Centres, 22% of Dental Centres, 33% of Departments of Community Mental Health (DCMH) and 46% of Regional Rehabilitation Units (RRUs) have been inspected.
[212] CQC, *CQC's inspection programme of Defence Medical Services Annual report for Year 2 (2018/19),* dated July 2019.
[213] The gradings are: Outstanding, Good, Requires Improvement or Inadequate except for Dental Centres which either meet the required standard or not.
[214] CQC, *The State of Care in General Practice 2014 to 2017*, published September 2017.
[215] CQC, *CQC's inspection programme of Defence Medical Services Annual report for Year 2 (2018/19),* dated July 2019.
[216] such as Common Assurance Framework reports, Healthcare Governance & Assurance Visit Reports, Automated Significant Event Reporting (ASER), Bi-Annual TLB Reporting and DPHC Performance Reporting.
[217] Deepcut MTF was served a Prohibit Notice in May 2018 due to significant patient safety issues resulting from poor staffing levels and lack of SQEP and has subsequently been closed.
[218] reported through Stakeholder Biannual Assurance Reports (BARs) to the Surgeon General.
[219], Army Comd, Air Comd and JFC (covering JCOS, DPHC and PJHQ).
[220] Diving and National Air Traffic Services in Gibraltar, Secondary Healthcare in Cyprus, Gibraltar and the Falkland Islands, and Aeromed from the Falkland Islands.
[221] Healthcare Governance and Assurance Visit (HGAV) reported assurance levels of 'Substantial' across PJOB DPHC locations (Cyprus – February 2018, Gibraltar October 2018 and the Falkland Islands May 2017).

- **SQEP.** Shortfalls in both the civilian and military workforce have exposed the limited availability of SQEP in specific healthcare delivery areas as well as Governance and Assurance. Gapped posts and insufficient SQEP erode the systems in place to identify safety concerns and hampers improvement. DPHC operates a whole force approach with 57% of all posts being civilian liability. ***Although there have been improvements in overall military staffing within DPHC, shortfalls remain***. The latest data from DPHC reveals that military staffing has increased with post gapping reduced from 10% last year to 9%[222]. However, specific professional cadres continued to experience shortfalls across all three single Services.[223] Despite the partial success of short-term mitigating strategies and the use of a civilian workforce forum in providing a focussed approach to improving the recruitment process in several areas, challenges remain within recruiting and retaining the civilian workforce with staffing unchanged at 80% across the full breadth of disciplines.[224]

- **Organisational Change.** The DMS has experienced significant organisational change over the past 12-18 months.[225] The far-reaching implications of this led to friction and turbulence at multiple levels in structures, manning and leadership. This created challenges in addressing recognised safety concerns and maintaining momentum at a time when the DMS is managing multiple change programmes such as CORTISONE, Defence Healthcare Delivery Optimisation and Future Healthcare in Europe.

- **2PA.** Pressure to maintain delivery of clinical services across DPHC has been at the expense of effective 2PA. Insufficient SQEP and the lack of a formal training pathway to develop the necessary governance and assurance competences are a recognised issue that is implicitly tolerated by the TLBs.[226] How long this can or should be tolerated lies with those TLBs holding the risk, but robust 2PA is a key contributor to patient and staff safety. In addition to the lack of assurance evident in JFC of the provision of Host Nation healthcare provision for personnel at our overseas bases, there have been examples of weaknesses in medical assurance during Force Generation activities. During Ex SAIF SAREEA 3 it was identified that there is no formal handover or verification of the medical standards required for the exercise prior to deployment from the Force Generating HQ[227] to PJHQ, and therefore only limited assurance could be given that all personnel had been appropriately prepared prior to arrival at the exercise. Reassuringly, this shortfall was discovered during internal assurance activity, but it highlights that some basic but major weaknesses remain in maintenance of adequate standards of preparation in the joint environment.

- **Infrastructure.** Infrastructure firmly remains as one of the top three issues which threaten healthcare delivery and patient safety within Defence.[228] Highlighted by the CQC repeatedly[229] since 2009 and by the newly formed DMSR last year[230], the ***safety and suitability of MTF infrastructure was one of the poorer performing areas in compliance with the relevant essential standard***. These concerns were not isolated incidents but

[222] Navy Comd 9.1%; Army Comd 11.5%; Air Comd 6.9%.
[223] Navy Comd reported a 44% shortfall of Dental Hygienists. The Army reported shortfalls in Consultants in Occupational Medicine (25%). Shortfalls of Primary Healthcare Nurses were reported by Navy Comd and the Army (both 24%). Shortfalls of Mental Health Nurses were reported by both the Army and Air Comd (20% and 19% respectively).
[224] Medical Officers within Minor Injury Assessment Centres (75% gapped), Radiographers (59% gapped), Dental Hygienists (42% gapped), Social Workers (35% gapped), Psychiatrists (34% gapped).
[225] Including the move of the Inspector General's team to form the DMSR in the DSA in December 2017.
[226] non-compliance with the mandated 2-yearly cycle of 2PA visits.
[227] Army, Navy or Air Comds.
[228] The Healthcare Commission, *Defence Medical Services: A review of the clinical governance of the Defence Medical Services in the UK and Overseas*, dated March 2009.
[229] CQC, *Defence Medical Services: A review of compliance with the essential standards of quality and safety*, dated June 2012 and CQC, *CQC's inspection programme of Defence Medical Services Annual report for Year 2 (2018/19),* dated July 2019.
[230] MOD, *Defence Safety Authority Annual Assurance Report April 2017 – March 2018,* dated 26 October 2018, Section 3.7.

reflected examples across the Defence Estate, citing common issues such as damp, insufficient space, poor ergonomics, lack of sound-proofing and inadequate arrangements for handwashing and protecting privacy and dignity. The CQC also noted that many MTFs were not purpose-built to deliver primary care.[231] This situation reflects ***chronic underinvestment in healthcare facilities*** by the MOD, perpetuating a culture of acceptance by DMS staff where risk has been tolerated and access to clinical services becomes seen as a priority over safety. It is recognised, however, that the ownership of, and responsibility for, the infrastructure in which many MTFs operate is complex and often multi-agency in nature. Consequently, the amount of direct leverage that the DMS has varies. A recent agreement with JFC to prioritise infrastructure work where CQC identify non-compliance[232] represents a positive step forward, and one that the other TLBs would be encouraged to follow. In addition, the Regulator will continue to work with TLBs and the CQC to help inform the prioritisation of work.

- **Medical Systems (Med IS).** Automated Significant Event Reports (ASERs) are the primary method used across the DMS for patient safety event reporting. Alongside clinical administration, issues with Med IS are a major reason for event reporting, specifically within DPHC and PJHQ. The initial findings of a Tiger Team[233] formed to investigate the causes of this reporting found that whilst the functionality of the existing Med IS[234] was generally fit for purpose with no reported evidence of a direct patient safety issue or harm identified, routine issues of ***poor network speed, instability and poor system reliability did pose a potential[235] risk to patient safety***. Replacement of the existing Med IS remains a priority. The Cabinet Office approval of the Business Case for the previously delayed replacement (Programme CORTISONE) in November 2018 is therefore welcomed. Until Programme CORTISONE enters service it is expected that Med IS will remain a major reason for ASER reporting and will require the active intervention of DMS to maintain adequate mitigation of the recognised risks to safety.

- **Review of Service Personnel Suicides.** The DMSR-led review of Service Personnel (SP) suicides published last year[236] made a number of recommendations on what measures could be taken to reduce suicide in Service Personnel. Responsibility for delivering the recommendations through the Suicide Prevention Working Group (SPWG) has been passed to Chief of Defence Personnel. During this reporting period the SPWG asked the DMSR to complete a thematic review of unexpected deaths from October 2016 to December 2018 using ASER as a source, additional information from TLBs and cross-referenced with lessons identified by Defence Statistics in 2016. The DMSR found that the same trends identified in the previous reviews continued to be reported, raising concerns that lessons had not been learned or have had insufficient time to generate an effect. The SPWG accepted these findings and, with the continuing support of the DMSR, is reviewing their action plans accordingly.

Summary - LIMITED

There are well-defined safety structures and processes in operations across the Medical Services' community to allow risks to be identified; however, a lack of capacity is compromising their ability manage those risks effectively. Basic lessons are not being shared across Defence's healthcare delivery, which is hindering organisational learning. Shortfalls in staff and the challenge of building and retaining SQEP continue to have a detrimental impact on the TLBs' delivery of effective 2PA, a key safeguard in maintaining patient safety. This when combined with areas of inadequate healthcare infrastructure and unreliable and outdated Med IS means DMS remain at LIMITED safety assurance.

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[231] eg in 2011 the CQC visited a primary care rehabilitation facility in an old building which was once a gym. Many observations made regarding infection control had not been resolved when re-inspected in January 2019 (only one sink in the whole facility had hot water, the sink in the staff area was blocked, no patient toilets or showering facilities, and insufficient Med IS for the 7 clinicians).
[232] CQC issues are treated and prioritised as non-compliance with statute.
[233] In response to the BMA Armed Forces Committee's concerns raised in May 2018 regarding the Defence Medical Information Capability Programme (DMICP), the SG directed that a Tiger Team (TT) be created.
[234] The Defence Medical Information Capability Programme (DMICP).
[235] There have been no examples reported of this having had a direct impact on patient safety or having caused actual harm.
[236] DSA, *Defence Safety Authority Focused Review of Suicides among Armed Forces Personnel – Final Report*, dated 14 August 2018.

DSA Maturity

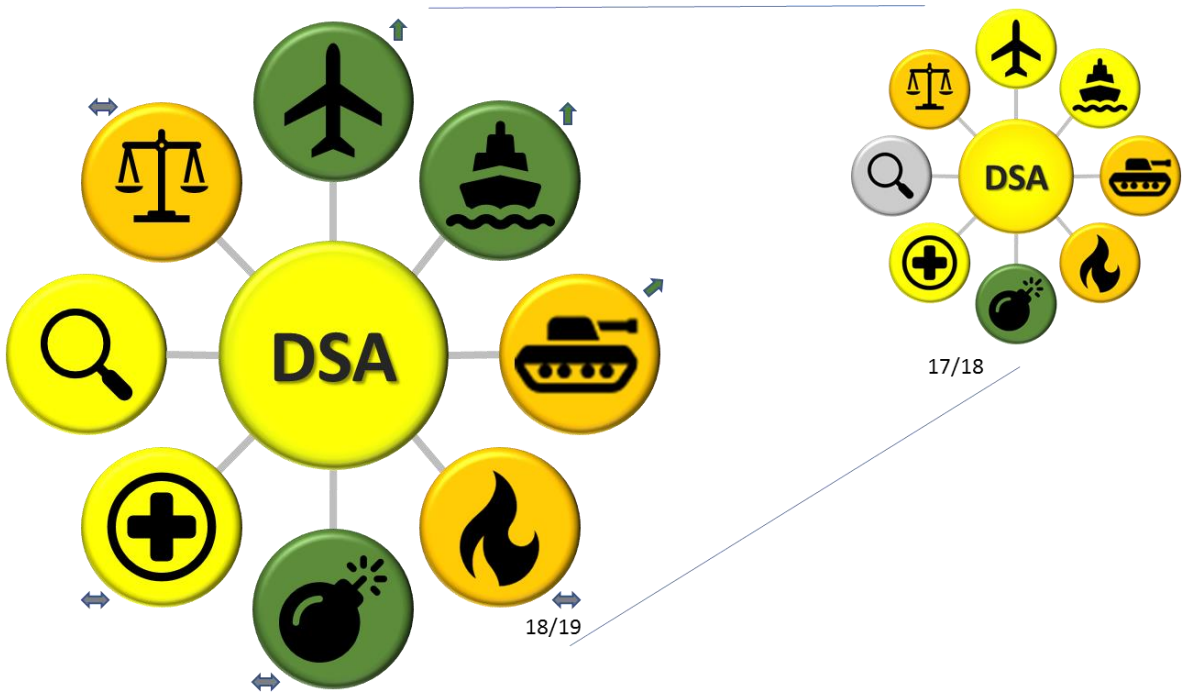

Figure 4-1

4.1 Context

A core function of the DSA is to provide a single independent focus for the regulation, assurance and investigation of Health, Safety & Environmental Protection (HS&EP) in Defence by bringing together the Defence Safety Regulators for the seven distinct regulated domains and functions, along with the Defence Accident Investigation Branch (DAIB), the Defence Safety Policy & Assurance (DSPA) Team and other stakeholders. These Defence regulated domains and functional areas have evolved independently alongside their statutory peers[237] for many years and have developed different approaches and cultures. The DSA, as a body independent of the command chain, is uniquely placed to identify cross-cutting issues and best practice, improve and simplify regulation, strive for parity across domains and highlight their relative importance to the Department. To assess the maturity of the DSA and its regulators since its formation in 2015, this report uses the same Defence Internal Audit-derived assessment grades as it does for the regulated domains. The definition of regulator maturity associated with each grade is shown at Figure 4-2.

Regulator Maturity Levels

Full:
Regulator has robust, effective regulations & processes.
Sufficient SQEP to deliver the full range of regulatory & risk-based assurance functions and have capacity to innovate. 3PA delivered is robust across all areas.

Substantial:
Regulator has effective regulations & processes but may have minor weaknesses.
Sufficient SQEP to deliver all essential regulatory & assurance functions. 3PA delivered is effective across all areas that are subject to audit.

Limited:
Regulator has effective regulations & processes but may have some major weaknesses/deficiencies.
May have SQEP deficiencies which necessitate prioritisation of outputs. 3PA delivered is supportive where audited.

No Capability:
Regulator has ineffective regulations & processes or several major weaknesses.
Insufficient SQEP to deliver essential functions. 3PA ineffective and unreliable.

Figure 4-2

[237] eg the Health & Safety Executive (HSE), Civil Aviation Authority (CAA), Maritime & Coastguard Agency (MCA), Care Quality Commission (CQC), Vehicle & Operator Standards Agency (VOSA), Air Accidents Investigation Branch (AAIB), etc.

In order to qualify the DSA's assessment of assurance in each domain it is necessary to understand the capability and maturity of the regulating body. This considers the contribution Regulators make towards their Regulated Communities through the quality and effectiveness of the 3PA they provide. It also includes the maturity of their regulations, their application of Risk-based Assurance (RBA), their alignment with the principles of the Regulators' Code[238], their relationship with their statutory peers, whether they have sufficient SQEP to deliver their full range of roles, their ability to discharge those roles effectively and their capacity to innovate.[239] Overall, the DSA is assessed as having **LIMITED** maturity. The assessed maturity level of each of the Regulators and the DSA's overall investigative and policy capability is summarised in Figure 4-1 and described in the rest of this section.

4.2 Military Aviation Authority (MAA)

Following the 2017 MAA External Audit Panel[240] findings the focus this year has been reinvigorating the MAA's internal quality assurance activity to ensure compliance with relevant standards and policies. Additionally, there has been considerable international engagement during the year in support of the mutual recognition programme with Germany, US forces and Australia. As well as helping to eliminate unnecessary certification activity, the feedback from the mutual recognition programme has provided a further element of independent assurance of how the MAA is performing in relation to its international military peer group. This year the application of RBA continued to bed-in across the MAA and has started to produce dividends.[241] Whilst improvements in overall MAA workforce numbers and Suitably Qualified & Experience People (SQEP) in certain areas have been seen, there remain some key shortfalls in certain niche and emergent areas.[242] Therefore, based on improvements in SQEP in some areas of the MAA, the robust nature of its regulatory publications and the continuing maturity of its RBA model means that the assessment of regulator maturity for the MAA can be raised to **SUBSTANTIAL** maturity.

4.3 Defence Maritime Regulator (DMR)

This year the DMR has restructured to a leaner organisational model comprising Policy & Legislation, Analysis & Plans and Inspectorate sections, supported by four Duly Authorised Organisations (DAOs)[243] in order to deliver the full complement of regulator functions. In parallel it has fully reviewed and up-issued its Regulation Set and Defence Codes of Practice (D-CoP)[244] following consultation with stakeholders. The Naval Authority Group Certification Rules and the Warships in Harbour Rules publications were also reviewed and issued earlier this year, with work ongoing to review guidance for use of Red White and Blue Ensigns, Sea Trials and Automation in the Maritime Sector. Whilst investigations into the diving fatalities which occurred in March and November 2018 continue, these tragic accidents have rightly caused the DMR and diving operators in the TLBs to question the validity of their current assurance practices. Subsequently the Defence Diving Standards Team (DDST)[245] has conducted a full certification programme of military diving units and audits of Client Responsible Organisations[246]. In addition, the DMR remains engaged with its DAOs on the outcome of these investigations, supporting reviews of training the

[238] Department for Business Innovation and Skills, *Regulators' Code*, April 2014.
[239] In assessing DAIB and DSPA maturity 'regulations' is substituted with 'policy'.
[240] MAA External Audit Panel 2017 (MEAP17) comprising independent auditors external to MOD reported that the MAA '*continues to exercise a very positive impact on Air Safety*', https://www.gov.uk/government/publications/military-aviation-authority-maa-external-audit-panel-meap-report-2017.
[241] The establishment of the MAA's Assurance Co-ordination Cell (ACC) has delivered a more holistic view across the MAA branches enabling a far richer risk picture across all elements of the Defence Air Environment (DAE).
[242] eg safety-critical software, Artificial Intelligence and battery power expertise; fast-jet and Remotely Piloted Aircraft experience.
[243] The Naval Authority Group (NAG), Defence Diving Standards Team (DDST), Capt Port Operations and FOST Operational Sea Training Team.
[244] DSA, *DSA02-DMR – Defence Maritime Regulations for Health, Safety and Environmental Protection*, published 1 January 2019.
[245] as a DMR DAO.
[246] organisations that commission commercial diving for Defence.

portfolio of diving guidance publications. Interactions with statutory regulators continue to be constructive and effective with the full support from the MCA, HSE and Environment Agency for the new regulatory set. Despite significant staff churn in this period[247], DMR has still been able to deliver its responsibilities to Defence. Based on the robust and effective review of its regulatory set, its restructuring and maintenance of sufficient competent staff to meet the full requirements of the audit programme, these developments in DMR's regulatory maturity warrant an improved assessment of **SUBSTANTIAL** maturity.

4.4 Defence Land Safety Regulator (DLSR)

This year has seen the DLSR continue to mature within all its regulated areas. The ATSR[248] has now completed its initial development and is able to fulfil its role in the inspection and licensing of all Defence AT Centres. The restructuring within the MTSR[249] has enabled better use of the resource available and the FGSR[250] continues to work with the TLBs and DIO to develop robust solutions to the legacy of significant infrastructure safety risks. Finally, while the LSSR[251] has developed a greater understanding of its safety risks, it has also confirmed that LSSR lacks the resource to fully carry out its regulatory responsibilities, particularly in the conduct of adequate 3PA and the certification of land vehicles.

Whilst the rebalancing of existing DSA resource in the last year has provided some respite, the capacity and capability to address this assurance and certification gap in a timely manner is still lacking. This may require a more innovative approach; something that will be tackled as part of the DSA's strategic objectives over the coming year.[252] Although DLSR has shown some improvement across all of its AOR as resource uplifts enacted over the last two years have taken effect, the continued shortfalls in its LSSR capability dictate that DLSR remains at **LIMITED** maturity.

4.5 Defence Fire Safety Regulator (DFSR)

Risk Based Fire Safety Audits are the key nationally recognised approach for fire safety regulators to sample compliance on selected premises. Audits are primarily focused on premises used for sleeping but also where the opportunity presents itself wider audits of other types of premises in use across the TLBs are conducted. The DFSR was able to conduct a higher level of RBA this year due to a commensurate drop in regulatory consultation on building works in some of the regions.[253] However, this welcome increase in audit tempo is not expected to endure. Therefore, in order to develop further audit capacity, generate a larger data set by which to inform better analysis and to drive improvements in quality and consistency, the DFSR has initiated an internal review of Standard Operating Procedures (SOPs), supporting processes and Enforcement Action tracking to ensure it has robust management system.

Recruitment, an ageing demographic and retention of SQEP have all been issues testing the sustained delivery of fire safety assurance across all areas of Defence. DFSR, DFR, Navy Comd and Air Comd[254] are all competing with an increase in private sector demand for fire professionals which has out-stripped national capacity, partly as a consequence of the Grenfell tragedy and organisations reviewing their fire safety arrangements. Notably the ability of the private sector to recompense at market rates has made it difficult for Defence to compete. So, despite the temporary improvement in RBA, the outflow in SQEP and the sustainment of an adequate competent regulatory capability, DFSR remains at **LIMITED** maturity.

4.6 Defence Ordnance, Munitions and Explosives Safety Regulator (DOSR)

The DOSR continues to deliver well established support to its Regulated Community and is assessed as having **SUBSTANTIAL** maturity. The regulatory framework it maintains has been recently reviewed and re-issued in a more accessible format for its stakeholders' daily

[247] ~70% of staff changed over in 2018/19 which necessitated an intensive period of training and upskilling.
[248] Adventurous Training Safety Regulator.
[249] Movement and Transport Safety Regulator.
[250] Fuel and Gas Safety Regulator.
[251] Land Systems Safety Regulator.
[252] DSA, '*Setting the Standard, The Defence Safety Authority Strategic Plan 2019-2025*', published 26 May 2019.
[253] The Duty to Consult process as directed by 2017DIN06-23, *Duty to consult with the Defence Fire Safety Regular*. Reduction in notifiable works seen in the North, Central and overseas regions.
[254] Each of these organisations employ professional fire fighters.

operations.[255] By adopting a proactive approach to recruitment and actively maintaining the competence of its staff, DOSR has maintained sufficient SQEP to deliver all of its regulatory and assurance functions whilst continuing to exploit the strong bonds it has made with its statutory peers and military allies towards improvements in commonality and interoperability.[256]

Following the discovery of issues around the 2PA of OME[257] acquisition (see Section 3.6.3) there is a clear need to expedite work to conclude the DOSR's organisational separation from those conducting internal OME assurance within DE&S.[258] This should include options for establishing robust 3rd Party certification[259] and ranges and explosives licensing activities with TLBs.[260] These changes have the potential to enhance the existing OME assurance model for a small uplift in resource and are therefore currently under investigation.

4.7 Defence Medical Services Regulator (DMSR)

Having stood up the DMSR on 1 December 2017, progress on delivering the organisational separation necessary from the Joint Medical Group (JMG) to allow the DMSR to achieve its FOC[261] has been slower than planned due to staff churn and reduced capacity in both the DMSR and JMG. This work has since been re-energised, with a set of transitional principles and deliverables agreed to provide the foundation for development beyond its current IOC.[262] This will include confirming the DMSR's scope of responsibility[263] and 'right sizing' the team. DMSR Regulations to cover the MOD's disapplication from the Health and Social Care Act 2008 (Regulated Activity) 2015 (H&SCA) Regulations[264] have been produced and published. In addition, an exemption and appeals process has also been developed.

The DMSR team is currently fully staffed for its IOC which has been the delivery of 3PA primarily in DPHC[265] which remains reliant on the CQC continuing to undertake inspections on the Regulator's behalf. A further uplift in staff will be required for the DMSR to achieve FOC and deliver its full span of regulatory functions to the scale necessary for its Regulated Community, such as a full review of applicable DEDs and expanding 3PA activity into the single Services and in our overseas and operational environments. Therefore, on the basis that the DMSR remains at IOC it is assessed as having **LIMITED** maturity.

4.8 Defence Nuclear Safety Regulator (DNSR)

The DNSR's maturity is assessed at Annex B.

4.9 Defence Accident Investigation Branch (DAIB)

The DAIB delivers a core, independent investigative function for Defence and is a key enabler to informing TLBs and Regulators of the root causes of significant safety incidents involving Defence personnel and equipment. The DAIB is fully staffed with trained investigators, some with considerable experience in accident investigation. However, it is recognised that the experience gained is a function of the number of accidents and incidents to which investigators deploy. When compounded by the high churn rates of military personnel, retention of these investigative skills is a key challenge. The DAIB is therefore working with the single Services workforce planners to consider extending the existing appointment lengths for military staff.

In terms of investigative capability, the DAIB is most mature in the aviation domain, with investigators from all three Services (both operators and engineers) and all are based at the

[255] DSA, *DSA 02 Defence Ordnance, Munitions and Explosives (OME) Regulations*, version 1.0, dated 4 June 2019 and DSA, *DSA 03.OME Defence Code of Practice (DCOP) and Guidance Notes for OME Acquisition*, dated April 2019

[256] The DOSR Policy, Regulations & Guidance Team (PRG) continues to work closely with the NATO Munitions Safety & Information Analysis Centre to align better NATO standards and methodology with UK practices.

[257] Ordnance, Munitions and Explosives.

[258] Currently the Defence Ordnance Safety Group (DOSG), a team within DE&S, provides safety advice, assurance and certification of Defence's OME systems.

[259] Currently DOSR does not provide 3rd Party certification of weapon systems (including lasers) and relies heavily on the evidence from the current 2nd Party processes in place within DE&S for assurance.

[260] TLBs currently self-authorise their own ranges and license their own explosive facilities.

[261] Full Operating Capability.

[262] Initial Operating Capability.

[263] DMSR Stakeholder Committee Mar 19 confirmed Vets and Military Working Animals should not be in scope for DMSR but covered by the Army Inspector and participation in the Royal College of Veterinary Surgeons Practice Standards Scheme.

[264] DSA, *DSA02 Healthcare Regulatory Policy and Healthcare Regulations*, dated 21 December 2018. https://www.gov.uk/government/publications/healthcare-regulatory-policy-and-healthcare-regulations-dsa02

[265] Defence Primary Healthcare.

same site. Whilst historical reasons have resulted in the Land domain investigators being currently split across two sites (Andover and Bristol)[266] this arrangement has been sub-optimal. Consequently, the DAIB is exploring options to co-locate and improve its operating efficiency. However, the DAIB's major capability gap is the lack of a specialist maritime investigative capability. Although required to investigate accidents and serious incidents across the three principal operating domains, the DAIB continue to have no dedicated maritime SQEP and rely heavily on secondment or support from external Subject Matter Experts. Work is ongoing on how to resolve this shortfall; therefore, the DAIB is assessed as having **LIMITED** maturity.

4.10 Defence Safety Policy & Assurance Team (DSPA)

As a result of the shortfall in the DSA's assurance capabilities identified in DSA's 2016/17 AAR[267], the DSA HQ has been restructured to establish a (limited) capability to assure the Department's compliance against the full scope of the SofS's HS&EP policies, particularly compliance with legislation governed by statutory regulators.[268] The initial phase of this activity has been a programme of baselining assessments of TLB Safety and Environmental Management Systems (SEMS) and compliance with SofS HS&EP policy statements. The majority of TLBs were benchmarked by the assurance team during the reporting period and an overview of the findings is at Section 5.4. The core of the DSPA team's work has continued to transition the disparate range of safety-related Joint Service Publications (JSPs) into the DSA01 set of high-level safety policies. Significant levels of obsolescent information are being reworked and whilst staff churn and recruitment challenges have reduced the pace of this change, progress has been made. DSPA also supports internal governance, RBA coordination and promotion of good-practices between regulators. In addition, a number of policy think-pieces have been produced to assist Head Office in establishing an HS&EP policy unit within the Department and split strategic policy matters from those supporting Regulation.[269] As a result, DSA's assurance of general policy compliance and occupational H&S remains limited; therefore, DSPA has been assessed as having **LIMITED** maturity.

4.11 DSA Maturity – Other factors

4.11.1 External Audit of the DSA. At a House of Commons Defence Committee (HCDC) hearing in 2015 the Department committed to conduct an external audit of the quality of the DSA's work to demonstrate its effectiveness as an organisation.[270] The external audit took place between September and November 2018. Led by Rear Admiral (Retd) Dr Chris Parry, a former Director of DOC[271], the audit team included a Principal Inspector from the HSE and the Deputy Chief Inspector of the Office of 'Nuclear Regulation (ONR) and submitted their report to the SofS on 19 November 2018.[272] The audit concluded that the DSA:

- has, since its formation, substantially transformed attitudes and galvanised action within Defence with regard to risk and safety;[273]
- should remain independent and accountable directly to the SofS;
- still has a way to go before it can provide SofS with the strategic level assurance across all HS&EP;
- should become more strategic in its approach, more output focussed and more forward looking.

For the MOD as a whole, the audit suggested that improvements needed to be made in top-level governance and agreements, with a pressing need for realistic metrics and an analytical capability by which safety assurance could be measured and vulnerabilities identified. In addition, the audit report made 65 recommendations towards further improving the

[266] DAIB's Land domain investigators were formed from the Army's Land Accident Investigation Team (LAIT) in Andover and DE&S's Serious Equipment Failure Investigation Team (SEFIT) in Bristol.
[267] MOD, *Defence Safety Authority Annual Assurance Report April 2016 – March 2017,* 31 October 2017, para 13.
[268] eg Health and Safety Executive, Maritime and Coastguard Agency, Food Standards Agency.
[269] This was an outcome of the Head Office review of safety governance in Defence (see Section 5.4).
[270] House of Commons Defence Committee, *Beyond endurance? Military exercises and the duty of care: Government Response to the Committee's Third Report of Session 2015–16***,** published on 24 April 2016, https://publications.parliament.uk/pa/cm201617/cmselect/cmdfence/525/52504.htm
[271] Defence Operational Capability.
[272] Parry, *Report and Findings from the 2018 External Audit of the Defence Safety Authority*, dated 19 November 2018.
[273] Environmental Protection was out-with the Audit's scope.

effectiveness of the DSA and governance of safety in Defence. These recommendations have been reviewed by the DSA and have been taken forward into the DSA's Strategic Plan for 2019-2025[274] in parallel with the Defence Safety and Environment Committee's work on recommendations from Head Office's subsequent review of safety governance (see Section 5-4).

4.11.2 Analysis & Plans Capability. As the Analysis and Plans capability of each Regulator has continued to mature[275], it has provided each with the ability to better direct RBA, improve the effectiveness of their engagement with their Regulated Communities and allow resource to be focused proportionately to the level of concern or likely impact to Defence.[276] As a consequence this has generated headroom for some Regulators to reinvigorate their periodic reviews of regulations so that they remain relevant and effective and strengthen their understanding and engagement on emerging legislation.

4.11.3 Environmental Protection (EP). Previous DSA AARs[277] highlighted the limited capabilities the DSA had to assure Defence's compliance with EP regulation and policy. The requirement and scope of EP assurance varies across the regulated domains. Where EP regulation and policy is mature in the Defence regulated space[278], DSA assurance is generally good in those pockets of EP regulated activity. However, beyond the assurance provided by individual Regulators the DSA does not provide consistent or coordinated oversight nor does it currently assure compliance with statutory EP. EP policy spans a number of areas in Defence, from that set by the DSA as regulation[279], land and estates policy set by FMC(Infra)[280] and wider government policy on climate change and sustainability. Central coordination therefore has the potential to add value to EP management and compliance in Defence.

This year DSA has provided support to DEFRA's development of UK legislation on the Environment (Principles and Governance) Bill and has continued to develop an understanding of the complex legislative landscape that EP has become. The DSA has also routinely reviewed Cabinet Office correspondence requests of which >50% were on EP matters, as well as participated in the 'European Conference for Defence and the Environment' and in EUDEFNET[281] to ensure awareness of upcoming European legislation that could impact Defence activities. In order to provide central coordination and coherence to the assurance of EP across the Department, the DSA has set an explicit objective in its strategy[282] to develop a Defence-wide oversight of EP issues and to grow this awareness across DSA and Head Office in the coming years.

Summary – LIMITED

The DSA has continued to mature as a constructive and effective safety Regulator for Defence activities. Decisions taken previously to restructure the DSA, improve the analysis capability of Regulators and enhance the quality of regulation, assurance, enforcement and investigation have all begun to deliver effect. The gains in terms of consistent sustainable RBA are going in the right direction, and the majority of recommendations made by the External Audit are within the DSA's gift to address. However, some step-change improvements such as the certification of Land and OME systems will need the co-operation and consent of both Head Office and some of the TLBs to move forward. The effectiveness and value added by the DSA is reliant upon the delivery of robust self-assurance by TLBs and, in the future, by the approach to HS&EP-risk management taken by the newly formed Defence Safety & Environment Committee.

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[274] DSA, '*Setting the Standard, The Defence Safety Authority Strategic Plan 2019-2025'*, published 26 May 2019.
[275] Bar DMSR who, as our newest regulator, has yet to establish an analysis and plans capability.
[276] The 3rd principle of the Regulators' Code, Department for Business Innovation and Skills, ***Regulators' Code***, April 2014.
[277] MOD, *Defence Safety Authority Annual Assurance Report April 2016 – March 2017,* dated 31 October 2017 and MOD, *Defence Safety Authority Annual Assurance Report April 2017 – March 2018,* dated 26 October 2018, Section 2.5.3.
[278] eg maritime activities and MACR.
[279] Joint Service Publication 418, *Management of Environmental Protection in Defence,* version 1 dated December 2014.
[280] Finance & Military Capability (Infrastructure) is a section within MOD Head Office that oversees Defence's Infrastructure programme, policy, funding and strategic balance of investment activity for the Defence Estate. Joint Service Publication 850: *Infrastructure and Estate Policy*, version 1 dated October 2018.
[281] The European Defence Network, an informal, expert-led group comprising of environmental focal points and specialists from Ministries of Defence (MODs) of EU Member States.
[282] DSA, '*Setting the Standard, The Defence Safety Authority Strategic Plan 2019-2025'*, published 26 May 2019.

Analysis and Recommendations

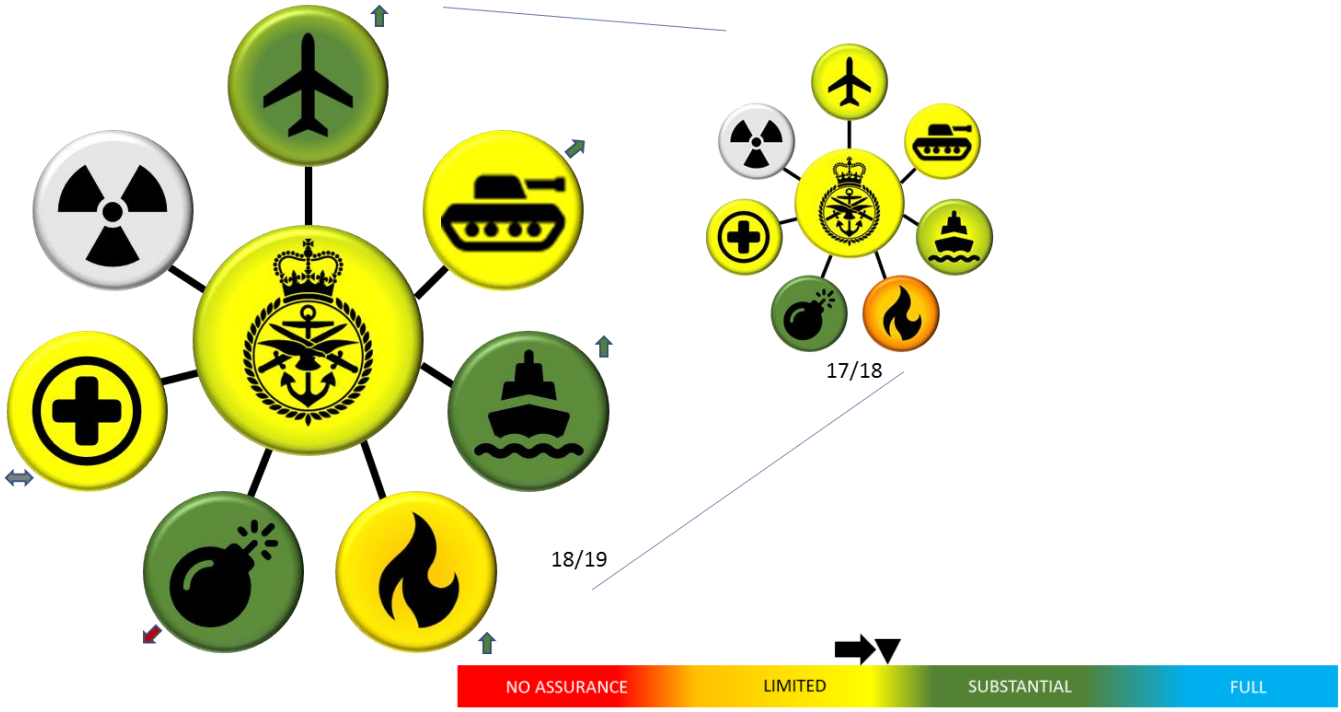

Figure 5-1

5.1 What's Changed?

The safety assurance assessments of the Regulators for each domain set out in Section 3, supported by submissions from the TLBs, are summarised in Figure 5-1. The overall assessment for Defence of **LIMITED Safety Assurance** is unchanged from last year. However, it comes with a greater level of confidence as the overall maturity and capability of the Defence Safety Regulators has increased, as described in Section 4, improving the value and confidence of the 3PA they provide.

Since the definition of Limited Safety Assurance implies significant weaknesses in control systems, it is important that Defence understands what these are and considers carefully whether they are acceptable. This understanding should inform Balance of Investment (BOI) decisions by Senior Duty Holders (SDHs) and senior risk owners[283] and, in turn, should be informed by the appetite of the SofS and the Defence Board for better safety assurance. Last year's DSA Annual Assurance Report (AAR) made a number of recommendations to the SofS on pragmatic ways to improve the Department's governance of safety, inform HS&EP-conscious decision making within Head Office and set the necessary conditions to allow senior risk owners to more effectively manage the broad and complex activities in Defence to minimise harm to our people, our capabilities and the environment.[284] Whilst the recommendations were challenging, they were also universally welcomed as a catalyst to corral and refocus the excellent 'safety-minded' work which continues across the Department on a daily basis. The following sections review progress made towards these key recommendations.

5.2 Brexit

5.2.1 Assessing the Safety Risk. The DSA has continued to refresh its assessment of the potential Safety and Environmental challenges to Defence as a result of the UK's withdrawal from the EU. The aim of this has been to assure Head Office and the Regulated Communities of the DSA's understanding of the implications of Brexit for Defence Safety and determine whether there is more that the Department should be doing.

[283] through the governance of the Perm Sec-led DSEC.

[284] MOD, *Defence Safety Authority Annual Assurance Report April 2017 – March 2018, 26* October 2018, Annex C.

Working with each DSA Regulator, the MOD EU Exit Team and statutory regulators in Other Government Departments (OGDs) this assessment gauged levels of engagement across regulated domains, sought to identify any specific risks and considered if there was any need for change to Defence Safety policy or regulations. Following cross-government direction, the DSA was also asked to consider the implications of a 'No Deal' Brexit as part of wider contingency planning.

5.2.2 Conclusion. The DSA's updated assessment concluded that for the areas that Defence regulates there was ***no current need to materially change[285] defence safety regulation***.[286] However, for safety-related matters regulated by statutory regulators[287], Defence would need to amend its processes in the same way as the general public or UK Industry in order to accommodate changes to safety-related UK law which arise from the EU (Withdrawal) Act 2018[288] These include:

- Driving in non-NATO EU countries[289];
- Changes in reporting from EU-regulated statutory bodies (eg MHRA[290], ECHA[291], EU Commission) to UK regulatory bodies;
- Contracting civilian air, maritime and road haulage services particularly where it involves EU registered crew, vessels or trailers;
- Delivery of medical services to EU-based personnel.

Prudent planning within the Department and continued close integration on safety matters across government and with civilian regulators and public bodies has considerably mitigated the impact these changes could have on Defence outputs. The DSA remains engaged with its statutory peers and the MOD's EU Exit Team as Brexit planning develops.

5.3 The Modernising Defence Programme (MDP)

5.3.1 MDP Outcome. The National Security and Capability Review (NSCR)[292] concluded that the world has become more uncertain and volatile since 2015. The resulting MDP[293] which comprised four work-streams[294] has led to a revised Defence Operating Model (DOM) and a Defence Purpose[295] which is built upon the foundations of:

- ***Mobilise*** defence to make the most of what it already has, making the current force more lethal and better able to protect UK security. The Department plans to invest to improve the readiness and availability of a range of key defence platforms, including: major warships, our attack submarines and helicopters and reprioritise within the current defence programme to increase weapon stockpiles and spares and to improve the combat effectiveness of capabilities already in service.
- ***Modernise*** defence and the Armed Forces to deliver national and international security more smartly and effectively, adapting how it operates, becoming more innovative and better at exploiting the opportunities offered by modern technology to ensure our forces retain strategic military advantage. The Department intends to invest in a range of new 'Spearhead'

[285] There may be administrative changes necessary to refer to the EU (Withdrawal) Act 2018 in lieu of EU Regulation.
[286] MOD, *Defence Safety Authority Annual Assurance Report April 2017 – March 2018, 26* October 2018, Recommendation 1.
[287] Where Defence does not have a DED, it is required to comply with the applicable UK law and is regulated by the respective statutory regulator (eg Health & Safety Executive, Vehicle & Operator Services Agency, Environment Agency, etc).
[288] and any subsequent secondary legislation.
[289] Five EU member states are not NATO members: Austria, Finland, Ireland, Malta, and Sweden; therefore driver licensing does not come under the NATO Status of Forces Agreement 1955.
[290] Medicines and Healthcare products Regulatory Agency.
[291] European Chemicals Agency.
[292] https://www.gov.uk/government/publications/national-security-capability-review-nscr .
[293] MOD, *Mobilising, Modernising & Transforming Defence A report on the Modernising Defence Programme*, published 18 December 2018 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/765879/ModernisingDefenceProgramme_report_2018_FINAL.pdf
[294] MDP workstreams: Workstream 1 – MOD Operating Model, Workstream 2 – Efficiency and business modernisation, Workstream 3 – Commercial and industrial approach, Workstream 4 – Defence policy, outputs and military capability.
[295] The Defence Purpose describes in a simple way what Defence does for the country and the direction for the whole organisation to help those working in Defence understand their objectives and how their work contributes. The Defence Purpose is to 'protect the people of the UK, prevent conflict, be ready to fight our enemies. We are prepared for the present, fit for the future'.

innovation programmes to apply cutting-edge technologies to contemporary challenges whilst integrating more fully the newer domains of cyberspace and space.

- ***Transform*** the way the Department does business to maintain momentum on strengthening and modernising defence. This will include implementing a number of changes to how the MOD is organised and is operating, such as strengthening our Head Office and accelerating transformation of the Defence Equipment and Support organisation.

5.3.2 Consideration of Safety. By ensuring safety is an integral consideration of Change, whether it is driven by activity in the Mobilise, Modernise or Transform space, the MOD can protect its operational capability from unnecessary losses, ensure the safety of its personnel and maintain its professional reputation through compliance with applicable legislation. The MDP has the potential to rationalise the large portfolio[296] of Organisational and Equipment change programmes and deliver consequential safety benefits, such as retiring those ageing capabilities which require a disproportionate level of effort and investment to remain ALARP and tolerable. However, as poorly managed Change across the Department has previously been highlighted as a pan-domain threat to safety[297], the impetus lies with SROs on ensuring the key tenets of MDP are managed effectively and consider safety throughout. This further emphasises the value of properly considered Organisational Safety Assessments (OSAs)[298] in providing SROs with a structured method of determining the impact of Change on safety outcomes. The formation of the Head Office HS&EP Directorate now provides the opportunity for senior management oversight and assurance that programme outcomes are both Safe to Operate and can Operate Safely both in isolation and when integrated with wider MOD, cross-government and coalition systems. This also presents Head Office with an opportunity to test its revised Defence Operating Model (DOM) against 'live' programmes in order to further assure itself that the DOM is fit-for-purpose.

Recommendation 1: *Head Office should assure itself that the revised Defence Operating Model and governance arrangements provide sufficient consideration of safety during its oversight of change initiatives.*

5.4 Head Office Governance of Safety

5.4.1 Requirement. The Department's Chief Operating Officer (COO), as 'safety risk owner' for the Defence Board, commissioned a review to determine the optimal role for Head Office in relation to HS&EP, and how that role should be discharged. This was against a backdrop of growing concern reflected in the DSA's Annual Assurance Report 2017-18[299] and by the Improvement Notice served on the Perm Sec in April 2018 which suggested that there was a critical shortfall in Head Office governance and resourcing, highlighted by an almost complete absence of staff in Head Office to deal with HS&EP matters as they arise. The Review was conducted between September and November 2018 and reported to the COO on 18 December 2018.[300]

[296] The Defence Equipment Plan alone equated to £180Bn out to 2026/27. MOD, *Defence Equipment Plan 2017*, 31 January 2018.
[297] MOD, *Defence Safety Authority Annual Assurance Report April 2017 – March 2018, 26 October* 2018, Sect 5.4.2.
[298] DSA01.2, Chapter 7, *Assessment of Organisational Change on Health, Safety and Environmental Protection*, issued 8 July 2018.
[299] ibid, Recommendations 3 & 4.
[300] MOD, *Review into the MOD Head Office Governance of Health, Safety and Environmental Protection*, dated 18 December 2018.

5.4.2 Findings. The Review found that MOD Head Office was unsighted on overall HS&EP performance across Defence, unclear about its responsibilities and had neither the processes nor personnel to discharge its governance and other responsibilities. However, it stressed that

'many people in the MOD – at all levels and in all the Defence Organisations – take safety extremely seriously, drawing on a great deal of expertise and experience. And it seems clear that some areas are centres of excellence. Guidance and instructions abound. However, it was remarked to us several times that HS&EP within Defence is often delivered despite and not because of our organisation and processes. The role of Head Office was notable by its absence.'

The Review made 27 recommendations, some of which aligned or overlapped with the recommendations of the External Audit of the DSA[301] (see Section 4.11). Key findings were that:

- ownership of HS&EP policy should ultimately rest with the Head Office and arrangements should be made to effect this as quickly as possible;
- a Director-level led policy unit be created, with an interim appointment as soon as possible, to support senior Head Office staff in handling the immediate issues and transition;
- the Perm Sec should chair a 4* Defence Safety and Environment Committee (DSEC)[302], with membership to include: the Service Chiefs, Commander JFC, the COO, the Director General Nuclear and the Chief Executives of DIO and DE&S and Director General DSA;
- the DSA should retain responsibility for safety-related Service Inquiries and continue its role as Defence regulator, enforcer and assurer;
- the DSA would also support the new Head Office policy unit in work to clarify the DSA's wider policy and assurance remit;
- sustained, and highly visible top-level leadership will be required if we are to embed the right HS&EP culture.

The ExCo[303] agreed with the general thrust of the recommendations and stressed that work to take the findings forward should not compromise existing safety arrangements and should contribute towards satisfying the extant Improvement Notice.[304]

5.4.3 Progress. Following endorsement by the ExCo an interim Director of Head Office HS&EP (D HS&EP) was appointed in 28 February 2019 and the inaugural DSEC was held on 24 April 2019. The DSEC subsequently approved the formation of nine workstreams[305] and a supporting DSEC Working Group to carry forward the recommendations of the Safety Governance Review, the DSA External Audit and the findings of the DSA's AAR. Work has commenced in a number of the workstreams[306] with specialist expertise being drawn in from across the Department including the DSA. In addition, new holding to account mechanisms[307] between Head Office and the TLBs have safety-governance embedded within its structure and safety is now a standing agenda item in the quarterly senior review meetings. Considerable progress has now been made on a number of fronts and reflects the positive steps Head Office has taken to address the recommendations of the Governance Review and establish the required frameworks to improve the visibility of safety-related risks.

5.5 Safety and Environmental Protection Management Systems (SEMS) Baselining

5.5.1 SEMS Baselining Activity. Following agreement by the former Defence Safety Committee, the DSA commenced a programme of baselining assessments of TLB SEMS[308] and their means of complying with the SofS HS&EP

[301] Parry, *Report and Findings from the 2018 External Audit of the Defence Safety Authority*, dated 19 November 2018.
[302] replacing the previous 3* Defence Safety Committee.
[303] The MOD's Executive Committee, chaired by the Perm Sec.
[304] In April 2018 DG DSA served an Improvement Notice on the Department for a lack of safety governance for Defence.
[305] DSEC Workstreams: 1 – Top Level Leadership; 2 – Risk; 3 – Management Information; 4 - Engagement; 5 - Delineation of Policy and Assurance Responsibilities; 6 – EP Policy and Assurance; 7 – Functional Leadership Strategy; 8 - Implementation of Recommendations made by Head Office and Parry Reviews and DSA AAR; 9 – Organisational Design.
[306] Top Level Leadership, Management Information and Risk were agreed as high priority enabling tasks.
[307] The MOD's quarterly Performance and Risk Review governance process.
[308] DSA01.2, Chapter 2, *Requirement for Safety and Environmental Management Systems in Defence*, version 1.1, dated 26 June 2018.

policy statement.[309] During this reporting period the Defence Safety and Policy Assurance (DSPA) team conducted seven baseline reviews with TLB staff[310] and took feedback on the DSA publications programme and ways of improving Defence safety policy. A further three reviews are planned for 2019[311] prior to the commencement of a formal audit programme.

5.5.2 Findings. Whilst there were no common themes identified from the baselining activity, each TLB displayed an intent to capture the means by which it exercised its safety responsibilities as an organisation. The level to which this was achieved was found to vary, with some TLBs focusing on Defence regulation and others focusing more on statutory occupational HS&EP compliance. The benchmarking also was an opportunity to explore how far each SEMS extended into an organisation, and whether there were gaps or areas of Defence activity that had been left out. Various views were given on how each TLB interacted with Head Office in the reporting and, where necessary, escalation of HS&EP risks. The introduction of new Head Office governance frameworks such as the quarterly Performance and Risk Reviews (PRRs) were seen as a positive step forward; however, uncertainty still lay in how this process would be formalized and documented. Subsequently this opportunity for Head Office to clarify safety risk mechanisms and capture them in Defence policy was seized by the newly formed DSEC and is to be addressed through an explicit workstream (see Section 5.4).

5.6 'Significant' Safety Threats

The previous DSA AAR[312] highlighted 7 significant threats to maintaining safety in Defence, many of which have endured from previous assurance reports. These were categorised as pan-domain[313], assurance and domain-specific threats.[314] Each of the domain-specific threats have already been covered: Mid Air Collision (MAC) at Section 3.2.3; Fuel & Gas Infrastructure (FGI) at Section 3.4.3; and Fire Safety Management at Section 3.5.3. In addition, the lead finding last year regarding Head Office's governance of Safety has already been discussed at Section 5.4. The remaining pan-domain threats are covered below. In addition, numerous reports and observations of deficiencies in the fabric of the Defence Estate which could pose a threat to the safety of personnel and the environment has been considered worthy of particular note for the SofS/Defence Board and senior risk owners.

5.6.1 Effects of Change. Change, whether business change or that driven by capability development or transformation, has the potential to adversely impact safety if not managed correctly. There has been growing evidence that the requirement for SROs[315] to generate and consider OSAs has been gaining traction,[316] with OSAs now mandated within the SofS's HS&EP policy statement.[317] The positive engagement initially witnessed from SROs, spanning many TLBs, has placed Defence in a considerably better informed and prepared position than previous years. However, the quality of OSAs has remained unwelcomingly variable and some have been noted as having been produced in retrospect, more as a demonstration of policy compliance, and missing the added value an OSA brings to good change management. In order to support TLBs in the preparation of OSAs and to demonstrate examples of OSAs adding real value to change programmes, the DSA will continue to promote its 'train the trainer' initiatives[318] in 2019/20 and plans to review and

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[309] MOD, *Health, Safety and Environmental Protection in Defence: Policy Statement by the Secretary of State for Defence*, dated 20 June 2018.
[310] Baseline reviews of Air Comd, Navy Comd, Army HQ, Defence Equipment & Support (DE&S), Defence Nuclear Organisation (DNO), Head Office & Commissioning Services (HOCS) and Defence Electronics & Components Agency (DECA) SEMS were conducted.
[311] Joint Force Command (JFC), Defence Science & Technology Laboratory (Dstl) and the Defence Infrastructure Organisation (DIO).
[312] MOD, *Defence Safety Authority Annual Assurance Report April 2017 – March 2018, 26* October 2018, Section 5.4.
[313] Head Office governance of safety, effects of Change and lack of SQEP.
[314] either due to the societal/reputational impact (mass casualty accident (mid-air collision with civil airliner, seismic protection of MOD buildings)), national or political relevance (fire safety (Grenfell), drones (Gatwick)) or threats which are considered cumulatively significant beyond existing TLB risk reporting (fuel/gas infrastructure accident (Buncefield, Singapore harbour).
[315] Each major equipment or business change programme has a Senior Responsible Owner appointed by the Perm Sec.
[316] DSA01.1, *Defence Policy for Health, Safety and Environmental Protection*, v1.0, August 2016 sets the requirement to conduct an OSA; whereas, DSA01.2, Chapter 7, *Assessment of Organisational Change on Health, Safety and Environmental Protection*, issued 8 July 2018 details the necessary content and approach.
[317] MOD, *Health, Safety and Environmental Protection in Defence: Policy Statement by the Secretary of State for Defence*, dated 20 June 2018.
[318] MOD, *Defence Safety Authority Annual Assurance Report April 2017 – March 2018,* dated 26 October 2018, Recommendation 5: '*The DSA to propose a training package on OSAs for inclusion in Head Office-run SRO training*'.

share the lessons from previous OSA reviews and feedback from OSA workshops.[319]

5.6.2 Insufficient SQEP. A lack of sufficient SQEP has been an enduring Defence-wide concern for the last 14 years.[320] Numerous Service and TLB-led initiatives over the years have attempted to treat this perennial issue with varied success. In the Maritime domain Royal Navy initiatives to generate and sustain SQEP in the longer term are beginning to deliver tangible results[321]; whereas, across Aviation the resourcing of Air Safety SQEP remains patchy. Improving numbers of SQEP within our Medical Services are encouraging; however, significant shortfalls remain in some key specialisations. SQEP in Defence's Ordnance, Munitions & Explosives cadre is currently adequate but lacks resilience, and our Fire Safety experts are competing with a strong external market driven by the outcomes of the Grenfell Tower Inquiry.

On a positive note, evidence this year has shown that TLBs have, in general, a clearer focus on understanding and managing risks from insufficient SQEP. Visibility has also improved centrally with critical workforce shortfalls being routinely reported to Head Office and reviewed within the new Departmental governance arrangements.[322] Regulators have further reported that SQEP shortfalls are increasingly being driven by personnel lacking experience rather than qualifications which, as a necessary transitory phase in the road to recovering competence in an organisation, further underpins a slow but improving situation. The Chief of Defence Personnel (CDP) continues to develop measures[323] which Single Services can and have chosen to enact.[324] However, faced with a dynamic external employment market, which is presently buoyant for many of the niche skills held by some of the Department's key personnel, these individual measures may not be sufficiently scalable or enduring to attract and, more importantly, retain the expertise we need. Several of the Department's external agencies have exercised the greater flexibility they were

granted to set their own remuneration and grading frameworks to address such concerns.[325] Head Office may wish to consider where these increased freedoms were successful and whether they could address the more difficult SQEP shortfalls that have challenged Defence.

Recommendation 2: *The Defence Board, through the DSEC, should consider whether some of the renumeration and grading freedoms exercised by MOD's external agencies could be utilised to address the Department's more difficult SQEP recruitment and retention challenges.*

5.6.3 Inadequate 2PA. The conduct and analysis of 2PA has previously been inconsistent across Defence through weaknesses in organisational structure, processes and workforce allocation. Previous concerns in the

[319] This will contribute towards ongoing work to include the scrutiny of OSAs as part of the assurance process in JSP 655 and SRO mandates. See MOD, *Defence Safety Authority Annual Assurance Report April 2017 – March 2018,* dated 26 October 2018, Recommendation 6.
[320] Insufficient SQEP has featured as a concern in each MOD annual safety report since 2005.
[321] The Navy Command Engineer Manpower Recovery Programme and the Navy Command Junior Engineer Officer Manning Recovery Programme.
[322] MOD internal Quarterly Performance and Risk Reviews.
[323] Options such as recruitment initiatives (golden handshakes, recruitment bounties), financial retention incentives and financial rewards aligned to attaining professional qualifications.
[324] In August 2018 the RAF introduced a financial award for engineers achieving external validation from a Professional Engineering Institute.
[325] eg DE&S (through their Transformation Programme), the UK Hydrographic Office and Dstl.

Land and Maritime domains had been subject to focussed action by both Army and Navy Commands (Comds), with demonstrable improvements in both the governance and conduct of 2PA. In Navy Comd the quality and visibility of assurance evidence has improved, and in Army Comd the frameworks to assure safety have been reinforced within the Army's overall governance and assurance policies.[326] This demonstrates the benefits of investing time, personnel and resource into 2PA and giving commanders (and risk owners) confidence in the safety underpinning the routine and high-risk activities they undertake. Where that senior investment or prioritisation is lacking, so is the confidence. Poor or insufficient 2PA does not mean that the activities or equipment in question are unsafe. It just means that it is difficult to prove that it is safe[327] and, particularly where it is assurance that a piece of equipment is *Safe to Operate*, it begins to undermine any subsequent safety argument stating that it is *Operated Safely*.[328] 2PA is a critical safeguard in the layered assurance model Defence relies upon to minimise unnecessary harm to our people and should warrant the necessary attention and priority that affords. Those areas of Defence lacking in effective 2PA should be encouraged to examine why that is the case and, through the broader Defence community, be supported in advice and guidance on ways to successfully turn it around.

Recommendation 3: *The DSEC should share amongst their members exemplars of initiatives or strategies which have been successful in improving the governance, resourcing and delivery of effective 2PA within TLBs.*

5.6.4 Defence Infrastructure. As reported last year, the Department had recognised that there was a *significant risk*[329] that the poor condition of the estate would affect defence capability. The chronic effects of a declining estate have the potential to impact safety in a number of ways. It

impacts the morale of our people who have to work in those buildings which have lacked care or investment[330]; it diverts the attention and resource of Heads of Establishment (HoE) to actively manage facilities that are not fit for purpose; it threatens the safety of our people who live and sleep in accommodation that has lacked adequate maintenance or repair of fire protection systems[331]; and it threatens the safety and environment of those working in and around our FGI. In particular, the projected £8.5Bn shortfall in overall infrastructure funding estimated by the National Audit Office (NAO) illustrates the '***huge challenge***'[332] and complexity of maintaining the Defence Estate. Recovery requires not only long-term financial planning and the capacity of the construction and facilities management sector, but the prioritisation and will of Defence to treat these issues in a taut fiscal climate, where it must compete against the operational necessity to ***mobilise*** and ***modernise*** our military capabilities. Investment last year into a 10-year programme of mandatory inspection, maintenance and repair[333] of the Department's UK fuels infrastructure demonstrated the immediate and positive impact this has on infrastructure compliance, noting that funding for the overseas fuels estate is less mature. At the beginning of this reporting period infrastructure funding and prioritisation was transferred back to user TLBs from the Defence Infrastructure Organisation (DIO) under the Defence Infrastructure Model Review (DIMR). TLBs have widely welcomed this transfer, as has the DIO, with many reporting that having the ability to direct and prioritise maintenance and repair activity has allowed them to expend their

[326] Army Command Standing Order 9001 – The Army Policy for Audit & Inspection and Army Command Standing Order 3216 – The Army's Safety and Environmental Management System.
[327] eg an inability to assure Host Nation healthcare provision for personnel at our overseas bases (see Section 3.7.3).
[328] eg a lack of assurance of weapon safety cases (see Section 3.6.3.)
[329] NAO, *Delivering the Defence Estate*, HC782 2016-17, 15 November 2016.
[330] eg chronic building deficiencies engendering a culture of acceptance of sub-standard facilities by medical staff.
[331] eg unwanted fire alarm activations eroding building occupants' responses to and confidence in fire protection systems. See DSA, *Fire Safety Review: Defence Single Living Accommodation*, DFSR/18/001/Report dated 14 August 2018.
[332] NAO, *Delivering the Defence Estate*.
[333] Noting there are legal requirements for inspection, maintenance and serviceability of FGI for which the Department is not exempt.

allocated funding more effectively. However, this new model has still to be tested against pan-TLB infrastructure issues.

5.7 Safety Think-pieces

The purpose of these think-pieces is to highlight topics or themes that the DSA has observed which the Department may wish to consider or investigate further at a strategic or collective level. They do not reflect specific safety or environmental risks or threats, but instead they aim to challenge thinking.

5.7.1 Risk to Life (RtL) versus harm. Since the recommendations of the Nimrod Review by Lord Justice Haddon-Cave[334] were accepted and implemented, the focus of Defence and the regulatory and policy frameworks it commissioned have been appropriately aimed at reducing the Risk to Life (RtL) from Defence's particularly complex, challenging and high consequence activities to As Low As is Reasonably Practicable (ALARP) and with a tolerable level of residual risk. Having started in aviation, the policy of Duty Holding was rolled out across Defence in order to provide enhanced oversight and management of those high-risk activities.[335] Considering that there has been a reducing trend in safety-related fatalities over the last ten years (see Section 2.2.3, Figure 2-3) it is posited that this policy has contributed in some part towards this outcome. However, contrary to that trend, Defence Statistics reported that the rate of injury and ill-health for UK Armed Forces personnel had '*significantly increased*'[336] uniformly over the last five years even when considering the perennial issue of late reporting (see Section 2.2.3, Figure 2-5).[337] Whilst part of this increase could be attributed to improved reporting (through improvements in safety culture or a reduction in deployed operations[338]) it could also reasonably be put that the current policies and measures to reduce injuries within our workforce are, at best, merely supressing injury rates rather than reducing them. It is accepted that the quality of the underpinning data

supporting these statistics varies considerably whether in the operational, trained or training environment, and that the Department has set the improved capture and analysis of Management Information (MI) as a priority workstream for the DSEC.[339] However, despite a lack of meaningful MI it is still recognised that safety-related injuries and ill-health have a tangible impact on the delivery of Defence outputs, on the well-being and morale of our personnel and on bearing avoidable costs on the Department.[340] There is, therefore, an opportunity now for Defence to consider how it can restore equal focus[341] on preventing harm to our people as it currently does so well towards preventing fatalities, and how this could be supported by the outputs of the various DSEC workstreams.

Recommendation 4: *The Defence Board, through the DSEC, should consider whether the current measures to minimise injury and harm to Defence personnel are adequate.*

5.7.2 Complacency versus SQEP. Even with sufficient, appropriate and even the best available SQEP, errors are made and incidents occur. However, the findings of recent DAIB deployments and the outcomes of several Service Inquiries now suggest that the risk of avoidable accidents being caused by complacency (errors made by those we would deem the most competent) may be comparable

[334] Haddon-Cave, *The Nimrod Review: An independent review into the broader issues surrounding the loss of the RAF Nimrod MR2 Aircraft XV230 in Afghanistan in 2006*, HC1025, published 28 October 2009, https://www.gov.uk/government/publications/the-nimrod-review
[335] DSA01.2 Chapter 3, *Duty Holding*, version 1.1 dated May 2018.
[336] MOD, *Deaths in the UK Regular Armed Forces: Annual Summary and Trends over Time 1 January 2009 to 31 December 2018*, published 28 March 2019.
[337] Late reporting and data corrections accounted for an additional 11% increase in reporting in 2016/17. Error bars have been added to illustrate this historical variation.
[338] It is recognised that there is a lesser propensity to report minor injuries on operations or in deployed environments where the means to report are more limited or onerous.
[339] see Section 5.4.3.
[340] through compensation, the recruitment and training of replacement staff or replacement of equipment.
[341] eg in its prominence, leadership, resource allocation and departmental policy.

to those who lack the required levels of qualification and experience. Too often we have been surprised that such an experienced crew, team, unit, tradesman or operator could make such poor judgements as to risk or cause harm when they really should not. Routinely these events can be attributed to a Failure-to-Follow process, a concern shared by many TLBs and risk owners. The standard mechanisms for treating these events such as reviewing procedures, re-education and increased supervision are generally less effective when dealing with 'high calibre/highly specialised' personnel. Credibility, peer review and senior leadership have a greater role to play. Based on recent events this may be an opportunity for Head Office to provide a Defence-wide focus to this avoidable threat and consider how the Department can apply these levers in order to maintain the very standards and behaviours that are needed to operate safely, whilst concurrently striving to improve Defence's overall Safety Culture.[342]

Recommendation 5: *The Defence Board, through the DSEC, should consider whether complacency poses an increasing threat to safety and what measures could, if required, mitigate that threat.*

5.7.3 Land Transport Accidents (LTAs) - beyond duty. LTAs[343] involving Armed Forces personnel who are on duty and which result in a fatality, serious injury or significant loss in capability are subject to the same statutory investigative requirements as any other accident category.[344] Whilst LTA fatalities have progressively dropped over the last 35 years (Figure 5-1), LTAs on and off duty remain one of the top three causes of fatality for Armed Forces personnel.[345] Numerous road safety initiatives have been successfully implemented over the last 13 years, including the latest joint MTSR[346], police, ambulance, fire and rescue services 'Survive the Drive' campaign whose innovative approach and initial feedback saw it recognised by a commendation from the Vice-Chief of the Defence Staff (VCDS). Under statutory legislation the Department's Duty of Care (DoC) as an employer covers 'work-related' safety.[347] However, the recognised[348] boundary of this DoC is narrow and equates to ~6% of the overall LTA fatalities in the last four years. The deaths and serious injuries which result from ***all LTAs*** impact not only the injured themselves, but their families, colleagues and the operational effectiveness of our Forces. Previously Head Office has monitored and centrally acted upon LTA trends beyond statutory requirements at a Departmental level; however, this was some ten years ago.[349] Since then road safety activities have continued to be discussed and coordinated between TLBs at a working level[350] but without the mandate or centralised resource to drive Defence-wide policy or training requirements beyond on-duty activities.[351] At present, alongside Defence-wide campaigns such as 'Survive the Drive' and 'Grim Reaper', there are a number of local and TLB-led

[342] An overview of safety culture is provided at DSA01.2 Chapter 5, *Safety Culture*, version 1.0 dated May 2018.
[343] This category is broader than Road Traffic Accidents in that it includes accidents involving any mode of land transportation whether on or off a public highway.
[344] Section 343 of the Armed Forces Act 2006 and Joint Service Publication 832, *Guide to Service Inquiries*, Issue 1, October 2008.
[345] The top 3 causes of Armed Forces fatalities are suicide, cancer and land transport accidents. Source: MOD, *Deaths in the UK Regular Armed Forces: Annual Summary and Trends over Time 1 January 2009 to 31 December 2018*, published 28 March 2019.
[346] Movement and Transport Safety Regulator, a section of the Defence Land Safety Regulator.
[347] Health and Safety at Work etc. Act 1974, Part 1, Section 2 General duties of employers to their employees & Section 3 General duties of employers and self-employed to persons other than their employees.
[348] Generally recognised as occurring either: on Defence premises, on duty or involving Defence equipment. Off duty LTAs are normally considered outside this statutory DoC except where work arrangements may be a major contributory cause (eg work induced fatigue).
[349] Overall LTA fatalities and trends were last formally reported by Head Office in the Defence Environment and Safety Board's annual report for 2009. Source: MOD, *Safety, Environmental and Sustainable Development Report 2009*, dated 25 October 2010.
[350] Through the Defence Road Safety Working Group under the oversight of the DSA's Movement and Transport Safety Regulator.
[351] The Defence Road Safety Working Group is non-executive, has no assigned funding and is attended by non-budget or risk owners. Any actions or initiatives are taken and funded by individual TLBs, and any required regulatory or policy changes are made by the Regulator.

initiatives and training opportunities for personnel.[352] With the formation of the DSEC and the establishment of a Head Office HS&EP directorate, Defence may wish to consider elevating the central governance and tracking of all LTAs to a higher level.[353] Moreover, it may wish to study, in a similar manner as Transport for London (TfL) has in its *'Safe Behaviours'* element of its Vision Zero action plan[354], whether the central coordination and funding of such initiatives could ensure that the same opportunities for education, awareness and training are available and accessible to all Defence personnel, regardless of location, trade or organisation with the aim to reduce overall LTA rates even further.

Recommendation 6: *The DSEC should elevate the governance and tracking of Land Transport Accidents for all Defence personnel and directly affected third parties to a higher level and consider whether Head Office-led coordination and funding could further reduce fatality rates.*

UK Regular Armed Forces LTA Fatality Rates[355]

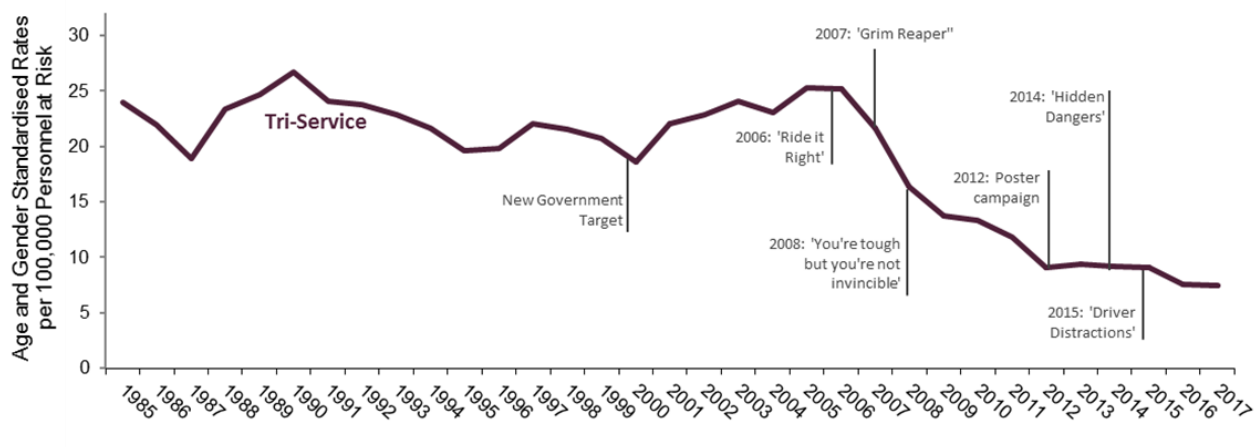


Figure 5-1

[352] Ranging from local funding of personnel attending external road safety initiatives such as Bikesafe to role-specific defensive driver training for certain personnel deploying to overseas locations.

[353] to a senior executive level in Defence which could provide both a mandate and resource to the supporting working groups. It should also consider expanding its data capture and analysis to include civil servants and third parties (eg members of the public) involved in Defence LTAs.

[354] TfL, *Vision Zero action plan*, published July 2018. Source: http://content.tfl.gov.uk/vision-zero-action-plan.pdf

[355] Source: MOD, *Deaths in the UK Regular Armed Forces: Annual Summary and Trends over Time 1 January 2009 to 31 December 2018*, published 28 March 2019.

Summary

6.1 Key Findings and Assessments

- There were two safety-related fatalities[356] of Defence personnel and two members of the public died as a result of Defence activity[357] between 1 April 2018 and 31 March 2019 (Section 2.2.2).
- There were 13,683 reported injuries[358], an 11% increase on the preceding year[359] (Section 2.2.3).
- Improvements in safety assurance have been made across all domains, bar Medical Services (Section 3.7.3) which has shown no change and Ordnance, Munitions & Explosives (OME) which has shown a partial reduction in assurance (Section 3.6.3) but remains at **SUBSTANTIAL**.
- Evidence suggests that the previous decline in Fire Safety assurance across Defence has been arrested, with indications of small but measurable improvement (Section 3.5.3).
- There is evidence of some general improvements in the delivery of 2nd Party Assurance (2PA). However, there are still specific areas of weakness resulting from a lack of investment or prioritisation which undermine confidence in the overall assurance of some equipment or services (Section 5.6.3).
- Overall safety assurance for Defence has marginally but measurably improved since last year but remains at **LIMITED**[360] due to some remaining major weaknesses in safety systems[361] (Section 5.1).
- The Aviation, Maritime and OME domains have been assessed by their Regulators as having overall **SUBSTANTIAL** safety assurance; however, a minority of TLBs operating within these domains remain at **LIMITED** (Section 5.1).
- Concerns over the material state of Defence Infrastructure (Section 5.6.4) and a lack of sufficient competent personnel (Section 5.6.2) are consistent safety themes reported by TLBs over the period of this report.
- Good progress has been made by Head Office as it begins to address the findings of the Review of Head Office Governance of Health Safety and Environmental Protection in Defence and the Improvement Notice.

6.2 TLB Safety Assurance

Figure 6-1

[356] Diving accident in Portland Harbour and Jackal accident in Catterick. For context, there were 61 Armed Forces fatalities in FY18/19.
[357] Two Land Transport Accidents: MAN SV versus civilian pickup truck (Belize, 7 May 2018) and MAN SV versus motorcyclist (East Yorkshire, 24 Aug 18). Both remain under police investigation.
[358] Defence injury and ill-health statistics are published annually in September meaning, for the purposes of the AAR, they lag all other reporting by ~6 months.
[359] Against reported injuries at this stage in FY16/17. Data quality issues and late reporting may alter the final figure.
[360] Using DIA criteria safety assurance is assessed as Full, Substantial (minor weaknesses), Limited (major weaknesses) or No Assurance.
[361] eg TLB Safety & Environmental Management Systems, Head Office strategic balance of investment processes, Acquisition Safety, etc.

Although this AAR is based on assessments by each regulated domain rather than by TLB, Figure 6-1 reflects a synthesis of the overall levels of assurance in each domain as assessed for each major TLB, showing the changes from last year's corresponding assessments. This relates only to those activities regulated by the DSA, but the baselining of TLB Safety and Environmental Management Systems (SEMS) which commenced this year is the first step towards being able to provide an overall assessment of each TLBs demonstrated level of safety assurance.[362]

6.3 Recommendations

Although my overall assessment of HS&EP in Defence remains at **LIMITED ASSURANCE** this AAR also acknowledges the progress made in many areas. While many of the more serious shortcomings highlighted in last year's AAR are being addressed, with much progress made, there are still areas for further improvement. Based on the analysis and expert opinion of my Defence Safety Regulators I have made 7 recommendations in this report (reproduced in Annex C) for topics and themes that the Department, through its newly formed Defence Safety and Environment Committee (DSEC), may wish to focus upon. These are broader in nature than the specific recommendations made in last year's AAR, but they still challenge how we as a department currently view safety. Three relate to the enduring threats to HS&EP posed by change, shortage of SQEP and inadequate self-assurance by TLBs. These areas should remain under close scrutiny by the DSEC. Three further recommendations focus on new areas of potential concern. The first recognises the extensive effort that has gone into specifically managing Risks to Life (RtL) through enhanced risk management using the duty holding principles and governing frameworks, but questions whether this has been at the expense of reducing the overall levels of harm to our people and the environment, and whether there is more we could do in this area. The second, based on a range of incidents in recent years where some of our most qualified and experienced personnel have made unnecessary mistakes, asks whether we have a problem with complacency in key areas and, if so, how we should deal with it. The third asks whether the Department currently pays enough attention to the prevention of Land Transport Accidents, both on and off duty, which are one of the biggest killers of our people, or whether there is more we could do centrally to focus attention and action.

My final recommendation is the need for Defence to further improve its Safety Culture. It is extremely important that the momentum generated in the last year to improve safety assurance in each of the regulated domains is maintained and that the attention being given to further improving the Safety Culture of each TLB is sustained at all levels.[363] It is imperative that the workstreams established by Head Office to re-establish its governance of HS&EP in Defence are fully supported, particularly as we define the Functional Leadership Strategy for HS&EP.[364] This Functional Leadership Strategy will be fundamental to improving our Safety Culture and its development should be prioritised by the Department.

Recommendation 7: *Head Office should prioritise the formation of a Functional Leadership Strategy for HS&EP which aims to improve the Department's Safety Culture.*

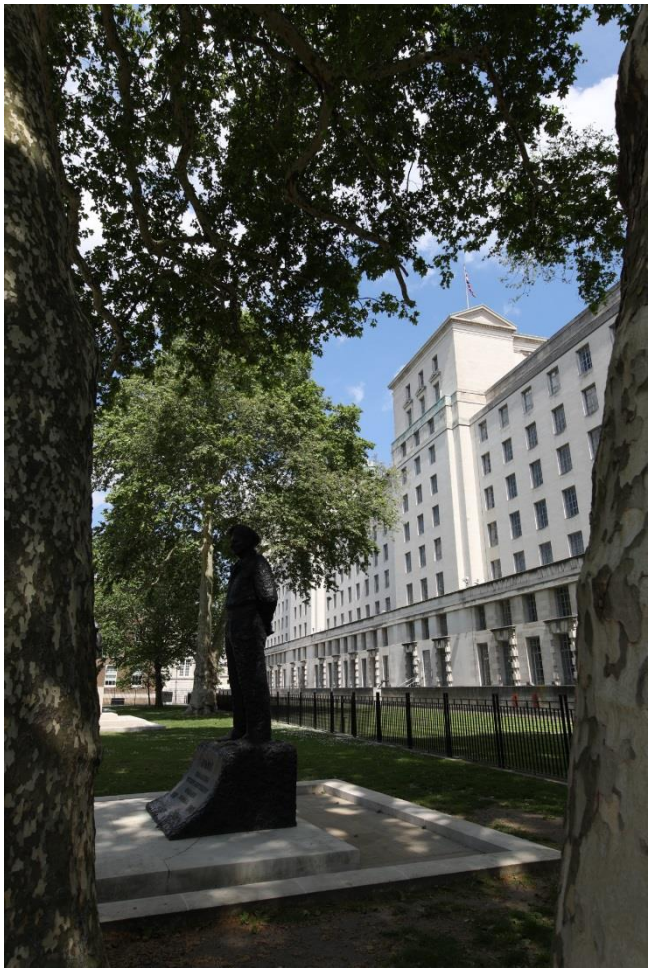
As the DSA continues to mature and enact the recommendations of its own External Audit through its Strategic Plan, it will fully support Head Office and the TLBs, through the DSEC, in taking forward the recommendations of the Head Office review of safety governance. In particular, as an independent and specialist organisation it will stand ready to advise, assist and assure the Department's work to minimise the impact it has on the environment, minimise the harm it causes to our people and grow a positive and enduring Safety Culture.

6.4 Conclusion

With the positive steps taken in restoring Head Office governance and the growing focus on HS&EP within each of the TLBs, there are a wide range of initiatives, actions and frameworks being established, rejuvenated or, in some areas, developed to higher levels of maturity and

[362] Whether the overall assessment of TLB safety assurance is conducted by the Head Office HS&EP Directorate or is an independent assessment by the DSA is yet to be decided.
[363] Several TLBs have set explicit objectives to improve Safety Culture within their annual Command (business) Plans.
[364] DSEC Workstream 7: Functional Leadership Strategy. The purpose of this workstream is to clarify who is the HS&EP functional 'owner', identify any issues arising from the shift from the Department's 'Defence Authority' framework to Functional Leadership and develop a HS&EP functional strategy and plan.

effectiveness. While many of the complex and significant HS&EP risks facing Defence today will endure for many years to come, confidence that those risks have been correctly identified, are well understood and are being appropriately managed is improving. However, to maintain this positive momentum, there is a need to have a central focus in order to channel those efforts efficiently and effectively. Therefore, with the DSEC as the governing body[365], greater emphasis needs to be placed on developing and fostering a good Safety Culture across Defence. ***Every action, change or improvement taken needs to answer the questions 'Does it promote a positive Safety Culture?'*** Only by consistently demonstrating those just, reporting, learning, questioning and flexible behaviours will HS&EP awareness become fully rooted in our thinking.



Air Marshal Sue Gray CB OBE FREng
Director General
Defence Safety Authority

[365] The DSEC Terms of Reference include the requirement to '*…improve safety culture and performance within Defence*'.

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Annex A

Safety-Related Inquiries and Investigations April 2018 – March 2019

New and ongoing Defence Safety Service Inquiries: April 2018 – March 2019	
31 January 2019	**Jackal Vehicle Accident, Catterick Driver Training Area.** An SI was convened on 13 February 2019 into the circumstances surrounding the death of a soldier following the roll-over of a Jackal High Mobility Tactical Vehicle. The SI is ongoing.
14 November 2018	**Diving Fatality, Portland Harbour.** An SI was convened on 28 November 2018 into the circumstances surrounding a death during combat swimmer diving training in Portland Harbour.
26 March 2018	**Diving Fatality National Diving and Activity Centre (NDAC).** A Navy Comd led SI was convened on 26 April 2018 into the circumstances surrounding the underwater death of a soldier during Army Diver training at the NDAC, Chepstow. The SI report was published on 31 July 2019.[366]
20 March 2018	**Hawk T1.** An SI was convened in March 2018 to investigate the crash of a Hawk T1 (Tail No XX204) from the Royal Air Force Aerobatic Team at RAF Valley that resulted in the death of the rear seat occupant and injury to the flying pilot. The aircraft was damaged beyond economic repair. The SI is due to report in October 2019.
31 January 2018	**Al Asad Airbase, Iraq.** An SI was convened in February 2018 to investigate the circumstances surrounding the death of an Army Officer who died after being struck by a vehicle in Al Asad Airbase, Al Anbar Province, Iraq. The SI is due to report in October 2019.
25 August 2017	**Hercules C130.** Hercules C-130J CMk4 (Tail No ZH873) was conducting a night cargo delivery mission to a natural surface landing strip. The aircraft landed hard and was damaged. The SI report was published on 21 May 2019.[367]
14 June 2017	**Royal Tank Regiment, Challenger 2 (CR2) live firing accident.** A CR2 suffered an internal explosion whilst conducting a live firing exercise at Castlemartin ranges, Pembrokeshire. All 4 crew members were injured to varying degrees. Unfortunately, 2 of the crew members later died from their injuries. The report was published on 26 July 2018.[368]
24 March 2017	**Watchkeeper 043.** Watchkeeper (Tail No WK043) crashed into the sea in Cardigan Bay to the north of West Wales Airport. The Unmanned Air Vehicle (UAV) was being flown by a mixed Army, UTacS, Thales crew under a Military Flight Test Permit for the purpose of conducting an Army student conversion sortie. The SI report was published on 11 April 2019.[369]
3 February 2017	**Watchkeeper 042.** Watchkeeper (Tail No WK042) crashed into the sea in Cardigan Bay to the north of West Wales Airport. The UAV was being flown by a mixed UTacS,[370] Thales crew under a Military Flight Test Permit for the purpose of conducting a de-icing equipment trial. The SI report was published on 11 April 2019.[371]

[366] https://www.gov.uk/government/publications/service-inquiry-into-the-fatal-diving-incident-at-the-national-diving-and-activity-centre
[367] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/803287/20190517-HERC_ZH873_SI_Redacted_RT_Final-O.pdf
[368] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/727954/20180823-Challenger_SI_Castlemartin_Redacted_RT.pdf
[369] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/792953/20190402-WK043_SI_Final_Report-_Redacted__RT-OS.pdf
[370] UAV Tactical Air Systems Ltd.
[371] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/792947/20190402-WK042_SI_Final_Report-_Redacted__RT-OS.pdf

New and ongoing Defence Safety Service Inquiries: April 2018 – March 2019	
2 January 2017	**Camp Taji.** A soldier from 2 LANCS suffered a fatal gunshot wound whilst inside his room in the accommodation block at Camp Taji, Iraq. An SI was convened in January 2017 but was paused to allow an associated Court Martial to be conducted. The Court Martial has since concluded and the SI is expected to be published in late 2019.
1 November 2016	**RAF Tain.** Whilst part of the waiting detail prior to a night live firing sniper shoot, a soldier from 3 RIFLES received a fatal gunshot wound. An SI was convened on 12 January 2017 after further information was received from the Police regarding the nature of the death. This report was published on 9 August 2018.[372]
9 August 2016	**Griffin.** A Griffin helicopter (ZJ241) operated by the Defence Helicopter Flying School, RAF Valley, experienced severe vibration after landing near Yr Aran, Snowdonia. During the subsequent shutdown the aircraft caught fire. The crew evacuated safely but the aircraft was rapidly consumed by the fire and sustained Category 5 damage. The SI report was published on 16 August 2018.[373]

New and ongoing Non-Statutory Inquiries: April 2018 – March 2019
Luge Accident. A RAF Senior Aircraftsman (SAC) was injured on 29 January 2018 during the RAF Bobsleigh, Skeleton and Luge Association (BSLA) Novice Ice Championships at Innsbruck Olympia Eiskanal, Austria. The SAC was a Novice Luge athlete and suffered a serious head injury. The inquiry report was published on 13 September 2018.[374]
Glock 17 General Service Pistol. Following a recent spate of accidents, all of which were the result of an unintended discharge involving the Glock pistol, DG DSA directed that a Non-Statutory Inquiry (NSI) be conducted into the Glock pistol and the safety issues surrounding its use. The NSI concluded that there was no evidence to indicate that any technical failure of the weapon contributed to any of the accidents and made a number of recommendations to enhance weapons safety across Defence.
Foxhound Fire. On 13 June 2018 a Foxhound Light Protected Patrol Vehicle (LPPV) caught fire whilst transiting to Salisbury Plain Training Area; there were no injuries. A DAIB-led NSI was instigated to determine the cause of the fire and to review other related fire incidents and wider Foxhound LPPV safety governance arrangements. The NSI concluded that repairs carried out in the 2 weeks before the fire had not been done satisfactorily, partly due to the use of inexperienced tradesmen and partly due to the lack of effective supervision. The investigation was unable to determine the source of the fire; however, it was considered very likely that it was caused by an electrical short circuit as a result of the poor routing of an electrical harness and was fuelled by the leak of transfer gearbox oil into the hull. Additionally, the lack of an Automatic Fire Suppression System in the V-Hull of the Foxhound, which had been recommended following earlier fires, meant that the fire could not be easily fought. The NSI made several recommendations aimed at reducing the likelihood of reoccurrence of a vehicle fire and to the broader organisational and safety governance arrangements.

[372] http/www.gov.uk/government/publications/service-inquiry-report-into-the-death-of-a-soldier-participating-in-a-night-live-firing-sniper-cadre-at-raf-tain-range-field-firing-area-on-1-november.
[373] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/733515/Griffin_Final_Report_-_RT.pdf.
[374] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/739452/20180910-Luge_NSI_Report_FINAL_REDACTED_RT.pdf

Watchkeeper 050 Crash. On 13 June 2018 Watchkeeper 050 (WK050) crashed following an unsuccessful attempt to land during an Army Captaincy Development Flight. A DAIB-led NSI was instigated and concluded that Ground Control Station crew had lost Situational Awareness (SA) whilst the Air Vehicle (AV) was attempting to land, choosing to manually abort the landing and remotely cut the engines which subsequently resulted in the AV crashing. The investigation was able to confirm that the AV system was fully serviceable at the time of the accident and that it had automatically initiated a go-around following its failed approach 4 seconds prior to the crew manually intervening. Unfortunately, had no action been taken by the crew the AV would have completed its automatic go-around from which it could have been commanded to conduct a further approach. The NSI subsequently made 13 Safety Recommendations with the aim of reducing the likelihood of reoccurrence of this type of accident.

Warrior Fire. On 13 July 2018 a Warrior Armoured Fighting Vehicle (AFV) operated by the Range Safety and Control Group (RSCG) at British Army Training Unit Suffield (BATUS) caught fire and was subsequently deemed a total loss; no personnel were injured. A DAIB-led NSI was instigated to determine the cause of the incident, review previous fires on Warrior AFVs and determine the extent to which recommendations from previous investigations had been implemented. The investigation was unable to determine conclusively the source of the fire; however, based on witness statements and analysis, it was considered very likely that the fire started in the area of the battery compartment. The NSI made a number of recommendations aimed at reducing the likelihood of reoccurrence and the severity of the fires on the Warrior AFV.

Dauphin AS365N3 Wire-strike. On 20 September 2018 a Dauphin AS365N3 helicopter struck electrical distribution wires near Rollestone Camp on Salisbury Plain Training Area. There were no injuries; however, it was agreed that the incident warranted an NSI by the Defence Accident Investigation Branch (DAIB). The NSI panel concluded that there were no technical issues with the aircraft and that the incident was due to Human Factors.

Civilian Fatalities involving Defence Activity: April 2018 – March 2019

MAN SUPPORT VEHICLE (MAN SV) Collision - Belize. On 7 May 2018 there was a collision between a MAN SV and 2 civilian vehicles in Belize while the MAN SV was conducting a routine non-tactical resupply in support of Ex MAYAN STORM. The driver of one of the civilian vehicles died from his injuries and the Defence personnel received superficial injuries. The collision is subject to an ongoing Belizean Civil Police and the Royal Military Police investigations.

MAN SV Collision – North Dalton, Yorkshire. On 24 August 2018 there was a collision between a MAN SV and a civilian motorcyclist while the MAN SV was conducting Packet/Convoy Commander training as part of a 3-vehicle packet. When faced with an oncoming civilian HGV on a narrow track the packet positioned itself to allow the civilian HGV to pass. In doing so the rear vehicle of the packet reversed onto a verge and collided with a civilian motorcyclist who, unbeknownst to the MAN SV driver, had pulled into a blind spot behind his vehicle. The motorcyclist regrettably died of his injuries. The collision is subject to an ongoing civil Police investigation.

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Annex B

Defence Nuclear Domain Assurance (Limited Distribution)

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Annex C

Report Recommendations

Recommendation 1:	Head Office should assure itself that the revised Defence Operating Model and governance arrangements provide sufficient consideration of safety during its oversight of change initiatives.
Recommendation 2:	The Defence Board, through the DSEC, should consider whether some of the remuneration and grading freedoms exercised by MOD's external agencies could be utilised to address the Department's more difficult SQEP recruitment and retention challenges.
Recommendation 3:	The DSEC should share amongst their members exemplars of initiatives or strategies which have been successful in improving the governance, resourcing and delivery of effective 2PA within TLBs.
Recommendation 4:	The Defence Board, through the DSEC, should consider whether the current measures to minimise injury and harm to Defence personnel are adequate.
Recommendation 5:	The Defence Board, through the DSEC, should consider whether complacency poses an increasing threat to safety and what measures could, if required, mitigate that threat.
Recommendation 6:	The DSEC should elevate the governance and tracking of Land Transport Accidents for all Defence personnel and directly affected third parties to a higher level and consider whether Head Office-led coordination and funding could further reduce fatality rates.
Recommendation 7:	Head Office should prioritise the formation of a Functional Leadership Strategy for HS&EP which aims to improve the Department's Safety Culture.

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Notes:


1.4
EXPLOSIVE