



House of Commons
Defence Committee

**Remote Control:
Remotely Piloted Air
Systems – current and
future UK use:
Government Response
to the Committee's
Tenth Report of
Session 2013–14**

Sixth Special Report of Session 2014–15

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The Defence Committee

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Committee staff

The current staff of the Committee are James Rhys (Clerk), Karen Jackson (Audit Adviser), Eleanor Scarnell (Committee Specialist), Ian Thomson (Committee Specialist), Christine Randall (Senior Committee Assistant), and Rowena Macdonald and Carolyn Bowes (Committee Assistants).

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Sixth Special Report

The Defence Committee published its Tenth Report of Session 2013-14 on *Remote Control: Remotely Piloted Air Systems—current and future UK use* on 25 March 2014. On 27 May 2014 the Committee received a memorandum from the Government, which contained a response to the Report. On 25 June 2014 the Committee wrote to the Government requesting a revised and expanded response. The Government's revised response was received on 17 July 2014. This is appended.

Government Response

The Government welcomes the House of Commons Defence Committee's inquiry 'Remote Control: Remotely Piloted Air Systems—current and future UK use' and the findings set out in the Committee's report (HC 772), published on 25 March 2014.

Our formal response to its recommendations and conclusions is set out below. The Committee's headings and findings are highlighted in bold, with the Government's response set out in plain text. For ease of reference, paragraph numbering in brackets refers to the order in which they are presented in the Committee's Report.

Nomenclature, Automation and Autonomy

1. It is acknowledged by several contributors to the inquiry that the terms remotely piloted aircraft (RPA) and remotely piloted air(craft) system (RPAS) are not yet widely adopted. Nonetheless, we believe these are the most accurate terms to use when referring to the armed MQ-9 Reaper operated by the RAF in Afghanistan. These aircraft are flown remotely by a human pilot who, along with a wider crew operating from a ground control station, has general oversight and control. In relation to existing unarmed systems used by the Army for intelligence, surveillance and reconnaissance (ISR), it may be more appropriate to refer to unmanned air systems (UAS). (Paragraph 20)

2. There is considerable potential for development of future remotely piloted air systems which have a greater degree of autonomy, however, the MoD has stated explicitly that remotely piloted combat missions will always involve human operators and pilots. We support this policy for all current and future UK armed remotely piloted air system operations. (Paragraph 28)

The Government welcomes the Committee's recommendation. Our preferred terminology is set out in the Ministry of Defence's memorandum.

- a. A Remotely Piloted Aircraft (RPA) is defined as an aircraft that, whilst it does not carry a human operator, is flown remotely by a pilot, is normally recoverable, and can carry a lethal or nonlethal payload.

- b. A Remotely Piloted Air(craft) System (RPAS) is the sum of the components required to deliver the overall capability and includes the Pilot, Sensor Operators (if applicable), RPA, Ground Control Station, associated manpower and support systems, Satellite Communication links and Data Links.
- c. An Unmanned Aircraft (sometimes abbreviated to UA) is defined as an aircraft that does not carry a human operator.
- d. An Unmanned Aircraft System (UAS) is defined as a system, whose components include the unmanned aircraft and all equipment, network and personnel necessary to control the unmanned aircraft

While there is potential for development of future RPAS which have a greater degree of autonomy, the UK views that increasing automation, not autonomy, is required to improve capability.

Current British doctrine

3. The conclusion to Joint Doctrine Note 2/11 conceded that its relevance was “of the order of 18 months and during that period much of its detail and many of the issues raised will be overtaken by events”. Now, some three years later it is clear that further consideration of many of the issues the Joint Doctrine Note raises is overdue. We recommend that the MoD revisit these issues and publish an updated Joint Doctrine Note setting out its current approach to remotely piloted aircraft systems no later than September 2014. (Paragraph 38)

The Government acknowledges the Committee’s observation. The issues raised in the Joint Doctrine Note have already been taken forward on a more formal doctrinal and conceptual basis. They have been incorporated in the doctrine publication JDP 0-30, UK Air and Space Doctrine and the recently published Global Strategic Trends 5 (GST5). Work is also ongoing on the Future Operating Environment 2035 programme (FOE35). We believe that these documents capture the issues raised in the JDN.

The UK Air and Space Doctrine discusses the moral and ethical issues associated with RPAS but places them more appropriately within the wider context of the delivery of air power. This was published in July 2013 and is in the public domain (copies are being provided separately for the Committee).

GST5, published in June 2014, covers defence and security implications of automated and unmanned systems touching on economics, public perception, the role in combat and legal and ethical agreements (copies are being provided separately for the Committee). GST5 also provides the foundation for the Future Operating Environment 2035 programme (FOE35). It will consider the defence context of the future (encompassing allies and government partners) and seek to provide conceptual capability insights. Part of this work is examining issues with remote and automatic systems across defence, which will encompass unmanned and remotely operated functions; this work will conclude in the latter half of 2014.

The requirement to produce an updated JDN2/11 is removed by the completion of this work. JDN 2/11 is therefore expected to be withdrawn once the Strategic Defence and Security Review 2015 (SDSR 15) is complete.

Personnel

4. It was very clear from the visit to XIII Squadron and discussions with Reaper aircrew that all were experienced professional personnel with a clear purpose and keen understanding of the Rules of Engagement which govern their operations. Despite being remote from the battle space they exhibited a strong sense of connection to the life and death decisions they are sometimes required to take. This was in stark contrast to the image portrayed by some commentators of “drone” pilots as video gaming “warrior geeks”. We record here our appreciation for the important role they continue to perform in Afghanistan. (Paragraph 57)

The Government is particularly pleased to note the committee’s recognition of the highly skilled personnel who operate this equipment. We can be rightly proud of the important and professional role our Armed Forces personnel have performed and continue to perform in Afghanistan.

A combined Reaper fleet?

5. In light of these apparently inconsistent answers by Ministers, we call upon the MoD to provide absolute clarity about whether UK Reaper aircraft have ever been operated by US personnel outside the launch and recovery phase. If public confidence is to be built around the use of remotely piloted air systems it is important that it is clear that UK aircraft have only been utilised within Afghanistan and always in accordance with UK rules of engagement. (Paragraph 62)

We can confirm that outside of the launch and recovery phase only UK personnel have operated UK Reaper.

UK Reaper are only operated in support of International Security Assistance Force (ISAF) ground forces in Afghanistan. UK and US Reaper assigned to ISAF are tasked by the ISAF Joint Command. ISAF Reaper missions are issued to a combined pool of available aircraft from both the UK and US Reaper RPAS Squadrons. The UK has, on occasions, used a USAF Reaper for UK-tasks missions when UK Reaper RPAS were not available to them due to serviceability issues. UK aircrew are subject to UK Rules of Engagement for all weapons releases. The USAF has never requested use of a UK Reaper.

Civilian casualties

6. We consider it important that the MoD is as transparent as it can be about remotely piloted air system operations in order to build public confidence about their use and to debunk myths and counter misinformation. We note that a review is conducted and a report produced after every remotely piloted aircraft weapons release. While the public do not need to know every time weapons are released they do need to feel confident that rules of engagement are applied and followed consistently. (Paragraph 66)

7. UK operations in Afghanistan have drawn heavily on new and emerging remotely piloted air system technologies in order to offer better protection to UK, ISAF and

Afghan forces on the ground. The intelligence, surveillance and reconnaissance capabilities of our forces have been enhanced immeasurably. More controversial has been the use of the Reaper remotely piloted air system platform to conduct strike operations using precision-guided weapons. Following this inquiry, we are satisfied that RAF Reaper pilots and flight crew have a high level of experience and appropriate training to conduct such strikes. We are also satisfied that the RAF rules of engagement for Reaper operations, as outlined to us directly by senior RAF officers during this inquiry, are common with those in force for manned aircraft, and provide a high level of assurance that, as far as possible, civilian casualties will be avoided and collateral damage minimised. (Paragraph 67)

The Government notes these recommendations. The House Commons Defence Committee acknowledges in recommendation 4 the high calibre of staff who operate the UK's Reaper fleet. This is a result of the well-established command, control, supervisory, training and qualification frameworks the RAF has in place for conducting air operations. The RAF makes full use of these structures to ensure RPAS are used in a legal and ethical manner. UK Reaper crews receive regular training on domestic and international law regarding the use of force by UK forces in Afghanistan and the legal basis of UK involvement in supporting operations in Afghanistan. Training includes the understanding of, and compliance with, UK Rules of Engagement and International Humanitarian Law (sometimes referred to as the Law of Armed Conflict. It is also of note that UK Reaper crews have access to legal advice and support during operations 24 hours a day, every day of the year should they require it. The same strict Rules of Engagement which govern the use of conventional military aircraft also apply to RPAS.

The UK complies fully with its obligations under international law, including as set out in Article 36 of Additional Protocol 1 to the Geneva Conventions, to review all new weapons, means and methods of warfare. This process applies equally to manned and unmanned systems. UK forces operate in accordance with International Humanitarian Law, following the principles of humanity, proportionality, military necessity and ensuring that only appropriate military targets are selected. The UK's clearly defined Rules of Engagement are formulated on this basis. The same strict Rules of Engagement that govern the use of conventional military aircraft also apply to RPAS and targets are always positively identified as legitimate military objectives.

UK Reaper aircrew carry out a high level of consistent training and have continuous access to legal representation. As a result, the public can be confident that they always strictly adhere to these Rules of Engagement.

Constraints on the use of remotely piloted air systems

8. There are many constraints on the use of remotely piloted air systems in shared airspace whether in the UK or elsewhere. In its response to this report we invite the MoD to set out in detail what action the Government as a whole is taking domestically and internationally to facilitate the development of the technologies, systems and regulatory changes which will be required prior to the full and safe integration of remotely piloted air systems into shared airspace. (Paragraph 82)

The Department for Transport, which is responsible for the policy in respect of civil/commercial RPAS, chairs a cross-Government Working Group on RPAS. The objectives of the Working Group are:

- Inform RPAS-related Departmental policies and publish a UK Cross Government vision / strategy for RPAS.
- To identify Cross Government synergies and opportunities for efficiencies.
- To identify and address barriers to a successful UK industry base, to support the Government's growth agenda.

The Working Group meets throughout the year and has identified the following key issues as priorities to be addressed:

- Identifying the extent to which the UK can support safe and secure RPAS operations in the UK, including options for the certification of RPAS, pilot licensing, and associated systems.
- Identifying the key characteristics of RPAS infrastructure, including the potential radio spectrum for RPAS operations in the UK.
- Seek to identify common cross-Government user requirements to understand future concepts for shared assets / system procurement and maintenance.
- Determining how the UK might best position itself to take advantage of RPAS industry and technology.
- Public perception, privacy, data protection

In addition, the Department for Transport is working closely with both the Civil Aviation Authority (CAA) and the ASTRAEA consortium on addressing the regulatory issues that will allow the safe integration of RPAS within the UK and European airspace system. This involves working collaboratively with other Member States within both a European (EC and European Aviation Safety Agency (EASA)) and global International Civil Aviation Organization (ICAO) framework to ensure that UK objectives are secured and that sufficient progress is made on developing a proportionate regulatory framework to allow the civil RPAS market to grow. The UK industry will hope to capitalise on the successes it has achieved through the ASTRAEA project once the current regulatory barriers have been overcome.

While the potential for growth in RPAS activity is well recognised, the need to cater for the 'absence/removal' of the pilot from within the aircraft presents a number of very significant challenges, particularly in the areas of airworthiness and collision avoidance. These challenges limit the immediate expansion of the market, but once they have been addressed, a marked increase in the activity of larger sized unmanned aircraft is anticipated. In accommodating this likely increase, the Department for Transport is working with the CAA to ensure that RPAS operations are fully and safely integrated with all other users of the aviation system.

RPAS should not be considered or treated as being completely different however; they are still aircraft and, for the foreseeable future, they will still be piloted, hence RPAS should be viewed as an evolution of existing aviation. Clearly though, there are many unique and potentially complex aspects to be addressed, and these aspects will touch on virtually every area of the CAA's activities at some point. The CAA is already well engaged within European and International RPAS regulatory working groups. In the future closer coordination between Government departments will be key to ensuring that all aspects are focussed on appropriately and addressed as efficiently as possible.

The Department for Transport is sponsoring three strands of work with the CAA. These are:

- Support for CAA Regulatory Development: Through the funding of the CAA's international regulatory development activities, which will enable the CAA to guide and influence at the right levels.
- Support to Small/Medium Sized UAS Development Organisations: Through the provision of an increased level of initial advice and support.
- Support to Strategic Projects: Through the provision of a suitable level of support and regulatory oversight of larger RPAS projects that stretch regulatory boundaries in the UK and help resolve the issues with integrating UAS in UK airspace.

The European Commission (EC) has produced an RPAS roadmap setting out the route to regulation for civil RPAS in Europe. To that end, the EC has asked the National Aviation Authorities group 'Joint Authorities for Rulemaking on Unmanned Systems' (JARUS) to undertake rulemaking and guidance material development in addition to that intended by the European Aviation Safety Agency (EASA). The CAA is an active participant within the JARUS group, and is also closely involved with UAS related working groups within EUROCAE (the European Organisation for Civil Aviation Equipment), which is a European industry body aimed at developing technical standards.

On a wider scale, the UK are signatories to the Chicago Convention and participate in the Unmanned Aircraft Systems Study Group (UASSG) established by the International Civil Aviation Organization (ICAO) to act as the international focal point for the development of the appropriate regulatory framework which would allow the integration of RPAS into the aviation system.

In addition the Government and the UK CAA are in discussion with several US Government Agencies, including the Federal Aviation Administration (FAA) and the National Aeronautics and Space Administration (NASA) on developing harmonised rules for the safe integration of RPAS into international airspace.

Integration post-Afghanistan

9. We call upon the MoD to set out which of the existing remotely piloted and unmanned air systems it intends to retain beyond the end of operations in Afghanistan and to confirm that continuing operating costs can be funded from within its core programme budget from financial year 2014-15 onwards. (Paragraph 92)

The Ministry of Defence plans to retain the Reaper for contingent purposes, principally for its ISR capabilities, following the end of operations in Afghanistan. The Defence Board recently gave approval for funding to allow the Reaper capability to be maintained until SCAVENGER enters service towards the end of the decade; plans for this bridging capability are currently under development.

Of the existing UAS currently used on operations in Afghanistan by the Army (Hermes 450, Desert Hawk 3, T-Hawk and Black Hornet) it is our intention that the Desert Hawk 3 and Black Hornet platforms are retained. This is yet to be confirmed and is pending a final decision being taken by the Army Investment Board which is expected in summer 2014.

The Government's memorandum set out our longer term plans for UAS and RPAS.

ISTAR force composition

10. In its response to this report the MoD should set out how remotely piloted air systems, including Reaper, fit within its overall ISTAR strategy. (Paragraph 97)

The Ministry of Defence is currently undertaking an Air ISTAR Optimisation Study (AIOS) which is considering a range of Air ISTAR force mixes set against future Defence requirements, including the use of RPAS and options using RPAS along with manned platforms. Due to the ability of RPAS to remain airborne for long periods they contribute to delivering persistent surveillance therefore their place in any future Air ISR force mix is likely to endure long into the future. The details will be determined by the output of the AIOS in the run up to the next SDSR.

Emerging technologies

11. Due to significant delays to the programme, it is now unlikely that Watchkeeper will be utilised on operations in Afghanistan, the theatre for which it was originally procured. The MoD should set out in detail in its response to this report the reasons for the delays experienced in bringing Watchkeeper to full operating capability and the lessons identified for future remotely piloted air system programmes. (Paragraph 102)

Watchkeeper was procured as an enduring capability and not specifically for operations in Afghanistan. It will provide UK Armed Forces with a 24 hour day/night all weather ISTAR capability into the future.

Since the achievement of Watchkeeper's Release to Service in February 2014 the Army has begun the final element of its training for the system from Boscombe Down airfield in Wiltshire. As of 11 July no decision had been taken on whether to deploy Watchkeeper to Afghanistan in support of drawdown.

A number of factors have had an impact on achievement of programme milestones. These can be broken into the following categories:

- Limited Prime Contractor experience in the delivery of UAS programmes
- Underestimation of scope of activity required to comply with the new Airworthiness regulations and in particular certification.

- Technical Factors, including software certification and electronic technical publications.
- Shortfalls in Suitably Qualified and Experienced Personnel (SQEP).
- Changes to training requirements for Army personnel.
- Coherence and communication across the wider stakeholder community

A number of lessons have been identified. These lessons have been applied within the Watchkeeper programme and also new Core UAS Programmes (SCAVENGER, Future Combat Air System (FCAS)) and successful UOR programmes such as Maritime UAS (Scan Eagle). The programme has also been subject to a Major Projects Authority (MPA) review in early 2013 and again in early 2014. The MPA identified a number of key areas where the Watchkeeper programme would benefit from improvement and change. Both the MPA and the Programme's own lessons can be summarised into a few key thematic areas:

- Governance—The programme now has a well established Senior Responsible Owner (SRO) with greater coherence and communication established between disparate Defence Lines of Development (DLODs). Benefits have been realised immediately on the Watchkeeper programme with other UAS programmes also taking action to ensure a cross-DLOD integrated schedule is agreed between DLOD owners early in the programme.
- Airworthiness Certification Requirements—An underestimation of the challenges of delivering sufficient quality evidence to underpin the Watchkeeper System Safety Case led to the delay to the achievement of the system Release to Service. This lesson has informed the Scavenger and Future Combat Air programmes where Airworthiness Certification has been highlighted as one of the key risks to success driving appropriate levels of contingency.
- The number of SQEP was inadequate across the stakeholder community for the Watchkeeper programme, most notably in areas including—Airworthiness Certification, training certification, software certification, Safety Management and Capability integration. As future UAS programmes reach the procurement phase, key resource requirements such as SQEP are to be identified as part of the planning and assurance process with the project commencing only when manning levels are sufficient such that risk to the successful delivery is minimised as far as is practicable.

12. It is of vital importance that the lessons identified from the much delayed Watchkeeper system inform the development and trials of all future remotely piloted aircraft and any associated weapons systems by the MoD. In its response to this report we call on the MoD to provide us with a more detailed update on the Scavenger and Taranis programmes and explain how they will contribute to future UK air combat and ISTAR capabilities. (Paragraph 108)

SCAVENGER will replace UK Reaper RPAS towards the end of this decade. The programme will develop a Medium Altitude Long Endurance (MALE) RPAS, providing

the UK Armed Forces with a theatre-wide, persistent ISR capability, with the ability to identify, monitor and if necessary attack land and maritime targets.

SCAVENGER is currently in the Assessment Phase during which lessons from the Department's other related programmes, including Watchkeeper, will be taken into account. A particular issue that will be focused on during the Assessment Phase will be certification for the air vehicles to fly in UK / European airspace, not least so that it will be possible to train on the system in the UK. The Main Gate Business case for SCAVENGER will present the necessary evidence that SCAVENGER fulfils a number of key user requirements in order to deliver a sovereign armed RPAS capability for the UK.

The Taranis Technology Demonstration Programme (TDP) aims to develop key technologies and systems to inform a future operational Unmanned Combat Air Vehicle (UCAV) acquisition programme. Two phases of Taranis flight trials were carried out in 2013-14, a third phase is planned for 2015 in order to gain further understanding of the radar cross section of the air vehicle during operation. It is unlikely that Taranis itself will be developed directly into an operational UCAV capability. It is primarily a technology demonstrator.

The Future Combat Air System (FCAS) programme will subsequently be responsible for the development of a UCAV capability. A two year national FCAS programme has been launched which aims to inform the forthcoming SDSR on the most appropriate force mix of platforms and systems in order to meet the future combat air requirement from 2030. A UCAV along the lines of Taranis is one potential element of this force mix, along with an additional buy of Lightning II, a Typhoon life extension or an alternative new-build manned aircraft. This will allow a decision to be made at the next SDSR about whether to commit to a UCAV development programme.

Lessons from the Watchkeeper programme have been applied to both the Taranis TDP and the national FCAS programme. The need to develop an early understanding of airworthiness certification requirements was a key lesson from the Watchkeeper programme. A specific package of work has been included within the national FCAS programme to address this challenge.

Any follow-on operational UCAV, which forms part of the future combat air force mix, would contribute to the UK's combat air and ISTAR capabilities. Key attributes of a UCAV would include the ability to undertake long range missions and to provide high levels of persistence and survivability in a contested environment featuring advanced air and ground threat systems. These attributes of range, persistence and survivability coupled with an advanced suite of sensors and weapons should permit a UCAV to make a major contribution to the provision of precise attack and ISTAR capabilities for the UK.

13. We recognise the importance of sensor technology for ISTAR capability whether deployed on manned or unmanned platforms. We consider it vital that UK ISTAR assets are equipped with up to date sensor suites which maximise their effectiveness. We call upon the MoD to provide us with details of its planned investment in future sensor technology and exploitation for remotely piloted air systems and other ISTAR assets. (Paragraph 112)

The Ministry of Defence's work regarding future sensor technology is centred on the Integrated Sensors Programme being managed by the Defence Science Technology Laboratory (DSTL). This funded programme forms the hub into which all the Front Line Commands feed, with the Department's Joint Forces Command acting as the lead sponsor. There are a number of important capability requirements that the programme is seeking to address, in particular:

- The collection of information through dense areas of natural foliage.
- To deliver more detailed urban mapping.
- The collection of more detailed data related to sub-terrain construction.

Progress against these requirements is monitored by the Commands and Capability areas with a view to ensuring benefit can be gained as soon as a technical opportunity presents itself. The programme works with wider Defence and industry in understanding and developing future technologies and potential solutions, including the need to address size, weight and power parameters that are so important when considering sensor payloads for RPAS.

The Department also works directly with industry in understanding the sensor packs that are integrated into potential Military off the shelf solutions to our deep and persistent ISTAR requirements. With SCAVENGER it is the current assumption that existing technology will be fitted to the RPAS but options for the employment of more advanced sensor technologies remain an option on other future programmes.

14. We note the potential for deployment of new and increasingly accurate weapons systems, including the Brimstone missile, on UK armed remotely piloted aircraft. We call on the MoD to provide us, in its response to our report, with a progress report on current trials and future plans. (Paragraph 114)

To date there has been no decision to integrate new weapons systems on UK armed RPAS. Such consideration will remain part of the Ministry of Defence's normal capability and financial planning processes. However, in order to investigate and demonstrate the potential capability to employ UK weapons from UK armed RPAS, the Department conducted a trial with support from MBDA and Big Safari between December 2013 and January 2014.

The trial successfully met all objectives, including RPAS carriage and release of Dual Mode Seeker Brimstone, and encompassed a range of shots against both static and high-speed, manoeuvring targets. Detailed analysis of the trial data remains ongoing and will take some time to evaluate fully. Initial indications are very positive and the possibility of a follow-on trial is under consideration.

This could be used to inform future discussion on weapons integration for current and future UK armed RPAS and would aim to build on broader Ministry of Defence sponsored trials experience, including recent air-to-ground successes in engaging small, fast targets.

Partnering—strategic choices

15. As part of SDSR 2015, the MoD has a strategic choice to make about the future direction for UK remotely piloted air systems. Post-Afghanistan, a commitment to the existing partnership arrangements with the USAF, including a continuing presence at Creech Air Force Base, would provide the RAF with access to future upgrades to the Reaper platform and training opportunities for UK Reaper aircrew which would be likely to prove problematic in the UK given the airspace restrictions which exist presently. However, with other European NATO nations, including France, Italy and the Netherlands now operating Reaper it may be advantageous to form more collaborative arrangements at a European level in order to share experience and seek economies of scale for the delivery of training and maintenance. In the medium to long term, projects such as Scavenger and the Future Combat Aircraft System demonstration programme being developed with France may require a shift in focus. We recommend that the MoD clarifies its intentions and explains how European level co-operation can be co-ordinated with existing bilateral partnership projects. (Paragraph 124)

The Government agrees that there can be significant benefits to collaborative arrangements. The Ministry of Defence will seek to work with other nations, where it is mutually advantageous to do so, noting that the level of collaboration can be limited by commercial and legal considerations and the national policies and intentions of our partners (such as the US International Traffic in Arms Regulations (ITAR)).

We are committed to collaborating with the US in operating Reaper, and we gain significant benefit from this close relationship. We are also committed to a two year bilateral UK/France feasibility phase for FCAS, to help inform a decision in the Strategic Defence and Security Review in 2015. This decision will set the strategic focus for FCAS, drawing on outputs from both the UK/France feasibility work and UK national programmes such as TARANIS, as well as analysis of wider European collaborative opportunities.

When considering the procurement of new RPAS capability, such as SCAVENGER, the Department will consider where working with allies can help in delivering a cost-effective capability. This collaboration may be taken forward through existing bilateral relationships or through wider multinational cooperation. Where equipment is already in service, arrangements are likely to develop on an opportunity basis, taking into account the opportunities and constraints pertinent at that point. In the case of Reaper, as allies acquire the capability the Ministry of Defence will work with them to share information and, if appropriate, facilities, for our mutual benefit.

Non-military uses

16. Remotely piloted air systems have extensive potential for non-military uses in the UK and overseas. Projects such as those developed by the ASTRAEA consortium have begun to test the technologies and operating procedures required to make the use of RPAS more commonplace and research into the potential for other uses is continuing. We welcome Government support to strengthen UK research and development programmes which have the potential to expand the nascent civilian market for

remotely piloted air systems in the future. We call upon the Government to set out in detail what joint working is currently ongoing across government departments to consider the implications for the utilisation of remotely piloted air systems in the civilian environment. In relation to the issue of privacy, we recognise that existing laws which protect personal privacy, including data protection and surveillance, whether by the police, state intelligence agencies or private companies, will need to be carefully reviewed and updated. (Paragraph 131)

The Government addresses this recommendation in the detailed response to Recommendation 8. We acknowledge the need to carefully review and update laws, particularly around personal privacy, as Unmanned or Remotely Piloted Aircraft Systems are more commonly used.

Ethical and Legal issues

17. It is important in maintaining the public acceptability of remotely piloted air systems that the perception cannot be allowed to develop that their increased use has in some way reduced the threshold for military intervention. We call on the MoD to set out how it intends to address this potential problem in its response to this report. (Paragraph 137)

The Government is aware of the perception that the operation of RPAS may lead to a reduced threshold for military intervention. The Government does not believe this is the case. Military intervention remains an option of last resort and is only considered when other means have failed. The laws governing the recourse to the use of force are the same for RPAS as for other military systems. The Ministry of Defence would only ever contemplate military intervention where there was a proper legal basis to do so, for example where a UN Security Council Resolution permits or when justified under Article 51 of the UN Charter, which confirms the inherent right of states to collective or individual self-defence. The same strict Rules of Engagement that govern the use of conventional military aircraft also apply to RPAS.

The Ministry of Defence plans to continue to emphasise these points in its on-going campaign of public engagement (see the response to recommendation 23).

18. We welcome the report of the UN Special Rapporteur on the promotion and protection of human rights and fundamental freedoms while countering terrorism. We note that he has identified a number of legal questions on which there is no clear international consensus. We recommend that the UK Government engage actively in the debate on these matters and report on progress in its response to our report. (Paragraph 157)

The Government welcomes the UN Special Rapporteur's report on the promotion and protection of human rights and fundamental freedoms while countering terrorism. This is important work that highlights the cost of countering terrorism around the world; and we continue to support the role of Special Rapporteur in reporting on the human rights implications of counter-terrorism. The UK has long held that counter-terrorism measures can only be effective when they are consistent with an approach which upholds the rule of law and we expect all States to ensure that the measures they take to combat terrorism comply with their obligations under international law.

The report identifies a number of interesting legal questions. The UK believes that existing international law sufficiently covers the use of RPAs. We are carefully considering the recommendation of the Special Rapporteur.

Targeted killings

19. We acknowledge that over the last few years there has been a growing concern in relation to the sharing of intelligence with allies and the uses to which such data may contribute. While the issues raised by Reprieve stray beyond the terms of reference for our inquiry and indeed the remit of the Defence Committee, we do believe that there should be greater transparency in relation to safeguards and limitations the UK Government has in place for the sharing of intelligence. Matters concerning the activities of the intelligence services are more appropriately addressed by the Intelligence and Security Committee of Parliament (ISC). We invite the ISC to consider in future work programmes the issues raised with us during this inquiry which fall within its remit. (Paragraph 161)

The Government notes the Committee's views. All activities of the UK intelligence community are subject to careful oversight to ensure that they comply with obligations under national and international law. As the Foreign Secretary informed Parliament on 10 June last year: "Our agencies practise and uphold UK law at all times, even when dealing with information from outside the United Kingdom. The combination of a robust legal framework, ministerial responsibility, scrutiny by the intelligence services commissioners, and parliamentary accountability through the Intelligence and Security Committee should give a high level of confidence that the system works as intended."

20. The licensing of arms exports and other controlled goods is a matter for the Committees on Arms Export Controls (CAEC). We will work with our colleagues on CAEC to ensure that this issue is given appropriate scrutiny. (Paragraph 162)

The Government stands ready to support any such work, within its responsibilities.

Conclusions

21. We consider that it is of vital importance that a clear distinction be drawn between the actions of UK Armed Forces operating remotely piloted air systems in Afghanistan and those of other States elsewhere. On the basis of the evidence we have received we are satisfied that UK remotely piloted air system operations comply fully with international law. (Paragraph 163)

22. We recommend that the MoD should continue its public awareness programme surrounding remotely piloted air system operations in order to aid public understanding and acceptance. (Paragraph 164)

23. We note the conclusion of the UN Special Rapporteur that in any case in which civilians have been, or appear to have been, killed, there is an obligation on the State responsible to conduct a prompt, independent and impartial fact-finding inquiry and to provide a detailed public explanation. We recognise that this is not a simple and straightforward request as to do so could seriously jeopardise continuing operations. Nonetheless, we recommend that, to the extent that it is operationally secure to do so,

following an event which has resulted in confirmed civilian casualties the MoD should seek to publish details about the incident and any lessons learned from the review process. (Paragraph 165)

24. The rapid development of remotely piloted air system capabilities by the UK Armed Forces over the past decade has contributed greatly to the effectiveness of military operations in Iraq and Afghanistan. The provision of enhanced intelligence, surveillance and reconnaissance support to our troops on the ground has undoubtedly saved lives and prevented casualties. With the final withdrawal of forces from Afghanistan now rapidly approaching, MoD thinking must turn to the future for the UK's existing remotely piloted air systems. We consider it to be a key capability which must continue to be supported. We expect future development, in partnership with allies, to form an important strand of the SDSR 2015 equipment programme. (Paragraph 166)

As stated above in response to the Committee's recommendations 6 and 7, the UK fully complies with its obligations under international law. All of our attack systems, including RPAS, operate with clear legal authority, such as UN Security Council Resolutions and UK forces operate in accordance with International Humanitarian Law, following the principles of humanity, proportionality, military necessity and distinction.

As recognised in the Committee's Report (HC 772) the Government has already gone to some lengths to raise public awareness regarding the operation of RPAS. Last year we provided the Committee with comprehensive and detailed evidence to support this inquiry, evidence which can be found in the public domain.

The Ministry of Defence supported media events at RAF Waddington in December and in January, which were attended by the Defence Secretary and the Minister for the Armed Forces. The aim of these events was to try and to dispel some of the myths that surround the use of UAS and to raise awareness of how we use this technology.

In February, the Department held a further media event at MOD Boscombe Down. This was in order to inform the local media and general public of the arrival of the Watchkeeper UAS; interested parties were given the opportunity to gain an insight into the system and were briefed about what would take place.

More recently, in March, the Minister for the Armed Forces met with an All Party Parliamentary Group to once again talk about the UK's use for RPAS/UAS. In addition, a group of interested Peers met with the Under Secretary of State to receive briefings on the same subject.

The Department intends to continue communicating with the public, the media and Parliamentarians on Unmanned or Remotely Piloted Aircraft Systems in the future, and promote a better understanding of what we do and why we do it. This will include information on operational activities where it is operationally secure to do so

Following any incident in which a civilian has been or appears to have been killed by UK Forces a full investigation is undertaken, and if required, a special investigations team is deployed to conduct a quick and thorough assessment of the situation. The UK has its own processes for dealing with alleged civilian casualties in Afghanistan and those thought to

have been caused by RPAS are treated no differently to, and just as seriously as, any other events involving UK forces. We do not routinely publish these reports for reasons of operational security.

Reaper and Watchkeeper are both in the core programme and, on current plans, the former will be replaced from 2018 onwards through the SCAVENGER programme. The rapid development of RPAS makes them a viable option in an increasingly wide variety of environments and roles. As a result, the Ministry of Defence expects that RPAS will form a key part of the future force mix. In particular, the Department is considering RPAS in the AIOS and as a part of the FCAS programme. As noted in our response to Recommendation 15, collaborative approaches to development and acquisition of these systems will be an important consideration.