Future Capabilities

Future Effects

Objective: More flexible Armed Forces to deliver greater effect.

Assessment and Performance Measures

Assessment: All three Services continued to take forward their modernisation programmes, with significant new capabilities being introduced into service during the year and further efficiencies achieved. Roll out of enhanced command, control and communication systems continued alongside work to improve the Department's and the Armed Forces' capability to manage and use information.

Implementation of Force Structure Changes, in particular the Future Army Structure:

- One submarine withdrawn from service;
- Launch of second Type 45 Destroyer;
- Entry into service of three Landing Ship Dock (Auxiliary) vessels, enhancing the capability of the Amphibious Task Force;
- Reformation of 22 Signal Regiment;
- Fourth battalion for 3 Commando Brigade;
- Delivery of Guided Multiple Launch Rocket System;
- Progressive introduction into service of Bowman communications system;
- Introduction into service of range of protected vehicles;
- Enhanced Territorial Army attack helicopter, engineer and logistic capabilities;
- Formation of two Naval Air Squadrons as part of Joint Force Harrier;
- Delivery of further Typhoons, with associated Tornado F3 reductions and withdrawal of Jaguar from service;
- Delivery of first Sentinel airborne stand-off surveillance aircraft.

Enhanced command, control and communications, in particular through Network Enabled Capability:

- Information Management guidance and training introduced;
- Progressive roll out of Defence Information Infrastructure, Bowman, and Cormorant systems and launch of the first Skynet 5 communications satellite;
- Upgrades to the Joint Operational Command System;
- First operational deployment of Defence Information Infrastructure;
- Development of Defence Intelligence Modernisation Programme.

Force Capability Changes

129. In line with the modernisation programme set out in *Delivering Security in a Changing World: Future Capabilities* in July 2004, the Armed Forces continued to adapt to meet future defence and security challenges through significant improvements to force structures, equipment capability and the efficiency and effectiveness with which the Department supports the Armed Forces. These changes include an increased number of deployable infantry battalions through the Future Army Structure programme; the launching of a new generation of powerful, technologically-advanced Royal Navy ships, including amphibious assault ships, Type 45 destroyers and the first of the new generation of nuclear powered submarines; and the entry into service of the first Typhoon fighter aircraft. The programme accounts for about £1.2Bn of the £2.8Bn efficiency savings across defence contained in the 2004 Spending Review (see paragraph 149 under *Efficiency and Change*).

Two Typhoon T1s

HMS Dauntless

Royal Navy Force Structure and Capabilities

130. The changes to the Royal Navy's force structure set out in the *Future Capabilities* paper were aimed at delivering a versatile maritime force, structured and equipped for rapid deployment anywhere around the world. The changing global threat, together with the benefits of new technology and improved efficiency, means the Royal Navy no longer requires the same number of some types of ship as before. The decommissioning of HMS Sovereign in September 2006 was in line with the objective of reducing the number of attack submarines to eight by 2008. In January 2007 HMS Dauntless, the second of the new and highly capable Type 45 Daring Class air-defence Destroyers, was successfully launched. The new Bay Class Landing Ship Dock (Auxiliary) RFA Mounts Bay entered service in September 2006, followed by RFA Largs Bay in December and RFA Cardigan Bay in March 2007. This will allow the deployment of more people and equipment more quickly to trouble spots around the world and greatly enhanced the capability of the Amphibious Task Force. HMS Astute, the first of the Royal Navy's next generation of nuclear powered attack submarines, was launched in June 2007. Work continued to refine and develop the design of the Future Aircraft Carrier and acquire the Joint Combat Aircraft for use by the Royal Navy and Royal Air Force.

Future Army Structure and Capabilities

131. In 2006-07 the Army continued implementation of the measures outlined in December 2004 to reconfigure to its Future Army Structure. Changes during the year included:

- Reformation of 22 Signal Regiment. Based in Stafford as part of the West Midlands Super Garrison, it will provide General Support, communications and enhanced Command and Control to 3(UK) Division, HQ Joint Helicopter Command (JHC) and Headquarters Allied Rapid Reaction Corps (HQ ARRC);

- The provision of a Fourth Manoeuvre unit to 3 Commando Brigade. Formed from the newly named 1 RIFLES, the battalion will be based in Chepstow and will enhance the Commando Brigade's ability to support the Operational Commitments Plot;

- Bringing Armoured Infantry Battalions up to strength by manning their ninth platoons to the full establishment; and

- The further enhancement of Intelligence units.

132. There is a substantial equipment programme to support the Army in future operations, augmented by a programme of equipment procured through the Urgent Operational Requirement process. Deliveries during the year included the Guided Multiple Launch Rocket System; Automatic Lightweight Grenade Launchers; Bulldog, Vector and Mastiff protected vehicles; improved body armour; Titan and Trojan armoured engineering vehicles; over 10,000 Bowman tactical radios; and new fuel and water tankers. The Future Rapid Effect System programme to provide medium weight armoured vehicles made tangible progress, identifying candidate utility vehicles for trials during the summer of 2007.

Future Army Structures (Reserves)

133. In March 2006 the restructuring of the Army's Reserve Forces was announced. This was in line with the Regular Future Army Structures while maintaining an overall establishment of 42,000. The majority of the Territorial Army began implementing this restructuring during the year. New capabilities generated so far include:

- the Regimental Headquarters and first Squadron of the new Territorial Army Air Corps Regiment designed to deliver support to the Apache attack helicopter;

- the Regimental Headquarters and Parachute Engineer Squadron within the new Territorial Royal Engineer Regiment;

- the Regimental Headquarters and first Transport Squadron within one of two new Territorial Logistic Units; and

- a number of smaller new detachments within existing units.

The restructuring has also involved work to rationalise national and regional areas and units and affiliate Territorial units with their Regular counterparts. This has improved training opportunities and support to operations.

Royal Air Force Structure and Capabilities

134. Following the reorganization of RAF Groups and the formation of Expeditionary Air Wings in April 2006, the main restructuring effort in 2006-07 was centred on the collocation of HQ Personnel and Training Command with HQ Strike Command at High Wycombe, which produced a reduction of around 1,000 posts and annual savings of some £23M. The two commands then merged into a single, integrated Air Command on 2 April 2007. Equipment capability improved in a number of areas. Defensive aids were fitted to a wider range of transport aircraft, improving the robustness of the Airbridge to Iraq and Afghanistan. The acquisition of targeting pods for Harrier and Tornado improved targeting accuracy. Two Naval Air Squadrons formed at RAF Cottesmore on 31 March and 1 October 2006 respectively, joining the two existing RAF Harrier Squadrons as a part of Joint Force Harrier. Following their initial formation, RAF Typhoon squadrons continued to take delivery of aircraft and develop towards achieving operational status over the next year. In line with the introduction of Typhoon into service there were reductions to Tornado F3 units, and the Jaguar was withdrawn from service in April 2007. Predator Unmanned Air Vehicles are being acquired to provide a long endurance, unmanned platform for surveillance and reconnaissance missions. Delivery of ASTOR/Sentinel, which will provide an airborne stand-off surveillance radar system is progressing, with one aircraft now being flown by RAF crews and further aircraft due to be delivered over the next year. Work continued on the programmes to acquire the Nimrod MRA4 reconnaissance aircraft, A400M transport aircraft and Future Strategic Tanker aircraft.

Nimrod MRA4 – Trials Aircraft

Information Superiority

135. Getting the right information to the right people at the right time in the right form while denying an adversary the ability to do the same gives the Armed Forces an important advantage. There is a substantial programme of work to achieve this.

Network Enabled Capability

136. Network Enabled Capability (NEC) is about acquiring, connecting, integrating and synchronising the right equipment and technology, and operating to make best use of the information. It is as much about culture as it is about equipment. It both enhances military effect, and plays a part in maintaining the utility of military force in an increasingly complex environment and under ever greater scrutiny. It is therefore a critical enabler of the Comprehensive Approach (see the essay on page 40) which the Department seeks to embrace through integration with other Government Departments, agencies, allies and coalition partners. During 2006-07 progress was made across all three NEC Dimensions of Information, Networks and People.

- **Information**. A Joint Doctrine Note on Information Management, the MoD's Information Management Handbook, and an associated Commanders' Précis were all produced. These publications, together with the establishment of training courses for Senior Information Officers and Information Managers at the Defence Academy, are facilitating the establishment of local Information Management arrangements at all levels of command within broad departmental guidelines. The Department's increasing ability to manage ever greater volumes of operational and non-operational information will allow work to focus on Information Exploitation, including using the Defence Information Infrastructure (see paragraph 138) and other networks and applications to change operational and non-operational business processes. The Department also continued to improve its ability to protect and secure its electronic data;

- **Networks**. As well a number of specific acquisitions to meet operational requirements, the Department continued to roll out a number of wider information systems. These included the Defence Information Infrastructure (see paragraph 138), roll-out of Bowman (secure tactical communications) and its use on operations, introduction of further Cormorant (theatre communications) systems and the launch of the first Skynet 5 communications satellite in May 2007. Between them these have significantly improved deployed forces' connectivity. Upgrades to the Joint Operational Command System also provided more resilient links between deployed UK forces and headquarters worldwide. Further Information Management and interoperability improvements are planned for the coming year;

- **People**. Realising the full benefits of investment in networks and information requires personnel with the appropriate education and training in how to use them. The NEC Competency Framework continues to be developed for incorporation into defence skills frameworks. Formal Training Needs Analysis studies were launched into developing subject matter experts and the case for broader NEC education across defence to underpin the Department's evolving Information Management, Information Assurance and Battlespace Management capabilities.

Command and Battlespace Management

137. The Command and Battlespace Management programme aims to achieve a winning tempo in the conduct of operations by the development of decision superiority. While elements will only mature over 15 to 20 years it is an integral part of work to enhance military effect by driving forward and managing the development of more integrated command and control of joint military capabilities on operations. The Development, Concepts and Doctrine Centre continued to develop concepts underpinning the ability to change military focus efficiently and effectively in a rapidly changing scenario. This included studies of how command and control and joint battlespace management will be conducted in the future.

Defence Information Infrastructure

138. The Defence Information Infrastructure (Future) (DII(F)) project will provide a standard, consistent platform for defence applications and a more effective environment for the sharing of information, transmission of messages and collaborative working to groups and individuals including those that currently have limited or no connectivity. DII(F) will underpin and act as a catalyst for the Defence Change Programme and will enhance deployed operational capability by being a key enabler of Network Enabled Capability through a single network of information. It will extend into the operational arena, interface with battlespace systems and improve shared information between headquarters, battlefield support and the front line, allowing greater interoperability between MoD and its allies. Work has started to manage the volume of data stored in the system to improve business practices. DII(F) was installed at over 200 sites during the year as roll-out across defence accelerated, including provision to support the Joint Personnel Administration system (see paragraphs 179-184 under *Future Personnel Plans*), and a DII capability was deployed operationally for the first time in Afghanistan. Ultimately it will provide around 300,000 user accounts on approximately 150,000 terminals across about 2,000 MoD sites worldwide.

Defence Intelligence Modernisation Programme

139. The Defence Intelligence Modernisation Programme will deliver a range of new capabilities and benefits including the introduction of IS-enabled business change, an integrated environment for geospatial intelligence, a rationalised fit-for-purpose estate (see paragraph 321 under *Estate*) and new working practices, in order better to meet intelligence users' requirements. The quality of geospatial intelligence and communications within the UK intelligence community were improved during the year, and the Defence Intelligence Command Group moved to Main Building as the first step in the full integration of the Defence Intelligence Staff within the MoD Head Office.

Further sources of information

140. Additional information on Future Effects is available from the following sources:

- 2004 Spending Review: Stability, security and opportunity for all: Investing for Britain's long-term future: New Public Spending Plans 2005-2008(Cm 6237) at www.hm-treasury.gov.uk;
- The Defence Committee Fourth Report of Session 2004-05 Future Capabilities (HC 45-i & ii on 17 March 2005) available on www.parliament.the-stationery-office.co.uk;
- The Government's Response to the Defence Committee Fourth Report of Session 2004-05 Future Capabilities (Cm6616, July 2005) available at www.mod.uk;
- Releasing resources to the front line: Independent Review of Public Sector Efficiency at www.hm-treasury.gov.uk;
- MoD Annual Report and Accounts available at www.mod.uk.

Essay – Royal Air Force Transformation

The December 2003 Defence White Paper *Delivering Security in a Changing World* outlined international terrorism, the proliferation of weapons of mass destruction, and weak and failing states as the key future security challenges. The July 2004 *Future Capabilities* White Paper set out the future shape of the Armed Forces to meet these challenges: smaller, more flexible, agile and adaptable. This was predicated upon 'effects' based operations, combined with development of fully integrated Network Enabled Capability, enhancing the Armed Forces' fighting ability by linking platforms and people and thus reducing the number of platforms required to achieve a desired military outcome. In his vision for the Royal Air Force, the Chief of the Air Staff described an agile and adaptable force structure, capable of delivering success across the spectrum of operations, from high-end warfighting to the support of humanitarian operations. The RAF is responding to these challenges, even while supporting operations in Iraq and Afghanistan.

There has been a step change in capability over the last ten years, delivered through changes to organisation, processes, culture and equipment. A key driver has been the changing operating environment, which increasingly now involves irregular warfare where the opponent only presents himself fleetingly, in different guises, and employs widely varying operational tactics. But the risk of regular warfare still exists. Against this background, the enduring tasks of Air Power to 'find, identify, fix and strike' the enemy, has become ever more challenging. And with operational timescales often now measured in minutes rather than hours the importance of 'find and identify' has increased. This is an area where the Air Power characteristics of height, speed, reach and ubiquity can provide unique warfighting advantages.

This context clearly increases the operational importance of Intelligence, Surveillance, Target Acquisition and Reconnaissance capabilities. The Royal Air Force has therefore updated the Nimrod MR2 with an enhanced electro-optical suite and introduced Predator Unmanned Air Vehicles into service in support of the joint campaign. The provision of the LITENING III pod on the Tornado GR4 has greatly enhanced its ability to support ground forces directly by providing live video feed to ground-based troops via a remote viewing terminal, enabling rapid identification and targeting of enemy forces. In the near future, this capability will be further enhanced by introduction of the new ASTOR System to provide all-weather air-to-surface radar surveillance of the battlefield. These enhancements, coupled with improvements in Air-Land integration and programmes to blend and share sensor information across platforms, will provide unprecedented levels of situational awareness for future fighting forces. This will then ensure that decisions are translated into decisive action at the right time in the right place.

The changing nature of likely targets and better understanding of the effect of an action have in turn generated a need to change the way in which an enemy is targeted. Since its inception Air Power has played a key role in giving the Armed Forces freedom of movement and action on the ground and at sea. A show of force can often achieve the desired effect. When force is necessary precision guided munitions, which are between two to 15 times more effective than 'dumb' weapons, allow a smaller number of aircraft to engage a larger number of targets. A single Harrier GR7/9 equipped with Paveway IV 500lb bombs can engage six separate targets in all weather conditions at any time, minimising damage to civilian infrastructure and the risks to innocent bystanders. Striking the same number of targets with the earlier Harrier GR3 required four aircraft, target designation by ground forces, and was confined to daylight and clear weather. The introduction into service of Typhoon with an air-to-ground capability will provide the Royal Air Force with its first multi-role platform for thirty years, able to undertake a wide range of roles including counter-air operations, strategic air operations, integrated air operations and Intelligence, Surveillance, Target Acquisition and Reconnaissance. This flexibility will allow the RAF to produce the required effect by deploying fewer aircraft. In combination with the modernised air transport fleet (see below) this will significantly increase its ability to position aircraft, and support equipment and personnel across the globe, facilitating timely intervention in response to a crisis.

In order to use the speed and reach of air to provide this rapid global mobility, the MoD continues to invest heavily in the multi-engined aircraft fleets. The RAF's air transport capability has been significantly improved by the recently procured C-130J Hercules and increased investment in the larger C-17. Both aircraft have greater range, payload and flexibility and the capability to operate from large airfields or austere locations as the situation dictates. The C-17 can also lift very large loads across large distances, increasing the ability to deploy rapidly the Army's fighting vehicles. The RAF's older air transport aircraft, the VC10 and TriStar, continue to provide vital air transport and refuelling capability, and this will be significantly enhanced over the next decade as the A400M and Future Strategic Tanker Aircraft enter service.

This 'effects' based approach and associated technological advances meant that a smaller Royal Air Force of about 41,000 personnel will be able in future to deliver the required military capability. In turn this has given the RAF the opportunity to rationalise its command and support arrangements. The formation of a single Headquarters, Air Command, at RAF High Wycombe requires 1,000 fewer posts (military and civilian) and saves over £23M a year. The RAF Transformation Programme continues to improve working practices, processes and organisational structures. Logistics transformation, including streamlining of processes (known as leaning), the establishment of a forward and depth aircraft maintenance system and an improved relationship with industry has enabled rationalisation of support facilities. Introducing multi-skilling has produced a smaller more adaptable military workforce. The Defence Airfield Review should reduce the number of RAF bases by 40% by the end of the next decade, providing greater subsequent stability for RAF personnel and more focused expenditure on the remaining infrastructure. The resources freed up can be reinvested elsewhere in defence.

But new technology and better structures and systems are not enough to continue to deliver Air Power. People continue to be the heart of the Royal Air Force's capability, with the emphasis on a 'warfighter first' ethos. In a competitive climate for talent, the Service continues to work to ensure it remains perceived as a modern, forward thinking organisation that values and empowers its personnel. The Royal Air Force of the 21st Century is not the same as its Cold War predecessor. But it remains World Class, adapting and transforming itself to meet the challenges of today and tomorrow.

Efficiency and Change

Objective: More flexible and efficient organisations and processes to support the Armed Forces.

SR2004 Efficiency Target
Realise total annual efficiency gains of at least £2.8Bn by 2007/08, of which three quarters will be cash-releasing;
- Reduce civilian staff numbers by at least 10,000;
- Reduce the number of military posts in administrative and support roles by at least 5,000;
- Be on course to have relocated 3,900 posts out of London and the South East by 2010.

Assessment and Performance Measures

Assessment: The Department remained on course to deliver the efficiency gains and the personnel reductions and relocations agreed in the 2004 Spending Review. By 31 March 2007 over £2Bn efficiencies had been delivered, civilian staff numbers had fallen by over 11,000, military posts by some 10,000 and 1,885 posts had been relocated out of London and the South East.

Force Structure Changes:

- Cumulative efficiencies of £298M from:
  - Reductions to Type 42 Destroyer, Type 23 Frigate, mine-hunter and submarine fleets;
  - Re-roling and reduction of armoured squadrons and artillery batteries;
  - Reductions to Tornado F3 units, withdrawal of Jaguar and a reduced Nimrod fleet;
  - Restructuring of helicopter fleets and ground based air defence capability.

Corporate Services:

- Roll out of Joint Personnel Administration system to the RAF from March 2006, to the RN from October 2006, and to the Army from March 2007;
- Progressive roll out of people programme, enabling personnel staff reductions;
- Progressive implementation of Defence Resource Management Programme, enabling finance staff reductions and reduced spends on external assistance;
- Progressive roll-out of Defence Information Infrastructure.

Procurement and Logistics:

- Cumulative equipment procurement expenditure reductions of £206M;
- Cumulative Logistics efficiencies of £765M-£830M, including £250M-300M during 2006-07;
- Cumulative Whole Fleet Management efficiencies of £55M;
- Cumulative Estates Modernisation efficiencies of £62M;
- Cumulative efficiencies of £66M from other areas of procurement, including £23M from Defence Travel Modernisation.

Productive Time:

- Cumulative non cashable efficiency gains of £139M from reducing time taken to restore personnel to full fitness.

Organisational Change:

- Continuing rationalisation of TLB Headquarters and organisation.

Relocation:

- 1,885 posts relocated.

Personnel Reductions:

- Cumulative efficiencies of £239M from reduction of 10,000 military personnel;
- Cumulative efficiencies of £105M from reduction of 11,000 civilian personnel.

Efficiency and Change Programmes

141. The Department has comprehensive efficiency and change programmes that extend right across the organisation and affect every employee. They affirm the importance we attach to delivering the greatest possible military capability from the resources available for defence. Improvements in areas such as logistics and medical services are already contributing directly to an increase in our military capability. Efficiencies in process and back-office functions are being reinvested in the core programme. This chapter explains the relationships between the Change and Efficiency programmes and details our performance and progress against our efficiency targets.

Defence Change Programme

142. The purpose of the Defence Change Programme is to modernise departmental business processes to improve efficiency and effectiveness, thus maximising our investment in front-line operational capability. Launched in 2002, it now joins up the major change programmes across defence under strong central direction, to produce a single, coherent programme. In prioritising between the various change initiatives underway across the Department, the Change Programme ensures that scarce resources of people, money and skills are devoted to the most important and productive areas. On 31 March 2007 there were 20 pan-defence change programmes in all, covering almost every business process. As well as improving the way we do business, twelve of these are delivering around £1.4Bn (c. 50%) of our efficiency target (see paragraph 144). The programme is supported by investment from the Defence Modernisation Fund (DMF), a ring-fenced sum secured from HM Treasury worth some £1Bn over the three years of the Spending Review 2004 period. £604M from the DMF has been invested within the SR04 period to date (£289M in 2006-07).

143. The Defence Change Programme represents a long term commitment to improved delivery. It includes both longer standing programmes which are now beginning to deliver benefits and a number of new initiatives. It is therefore managed as a live portfolio whereby the overall DCP composition changes over time as old programmes are closed and new ones identified. The Command and Battlespace Management, Business Management System, and Royal Navy Single TLB programmes have been identified by the Change Delivery Group as sufficiently mature to be taken forward as mainstream business. In January 2007, a further four programmes were brought in:

- FLEET Transformation is a coordinated programme to reduce overheads and increase efficiency throughout the FLEET Top Level Budget Organisation through a wide range of tools, including a review of the Navy's Estate Footprint, manpower reduction and the application of LEAN techniques. The programme is due to complete in March 2011 when annual efficiencies will amount to £44M;

- Joint Helicopter Command Rationalisation (Project BELVEDERE) will rationalise the Joint Helicopter Command's Airfield Estate, reducing its footprint and running costs and delivering the optimum balance between operational effectiveness, affordability and value for money, and the impact on personnel. The programme team is currently reviewing all the options prior to seeking initial approval to proceed from the Investment Approvals Board (IAB) in early 2008;

- Germany Basing (BORONA) is a programme to implement plans to relocate soldiers and their families to the UK, taking advantage of estate opportunities arising from estate rationalisation programmes and thus implementing the endorsed Super Garrison Policy. A business case seeking approval is expected in Summer 2007 (see paragraph 320 in *Estates*);

- Defence Recruitment and Individual Training Management, which will harmonise the recruitment and individual training processes across the three Services and will be supported by the replacement of legacy Management Information by a new tri-Service recruiting and training system (DRITMIS) from November 2009. The programme team is currently evaluating the options and plan to seek initial approval from the IAB in Quarter 3 2007-08 for their recommended solution.

Efficiency Programme

144. As part of the 2004 Spending Review, we agreed to realise total annual efficiency gains of at least £2.8Bn by 31 March 2008, of which three quarters will be cash releasing. Within that target, we aim to:

- Reduce the number of our civilian staff by at least 10,000;
- Reduce the number of military posts in administrative and support roles by at least 5,000; and
- Be on course to have relocated 3,900 posts out of London and the South East by 2010.

145. Around half the target will be achieved by programmes already within the Defence Change Programme, and a further 40% from implementation of the force capability changes set out in *Delivering Security in a Changing World: Future Capabilities,* published in July 2004 (see paragraph 129 under *Future Effects*). The remaining 10% comes from other programmes including TLB commodity procurement, relocations, and work to simplify and improve the finance function. The relationship between the Efficiency Programme and the Defence Change Programme is shown below at Figure 7, together with the location of further details on specific projects.

Figure 7 Relationship of change and efficiency programmes

Efficiency Programme

Defence Change Programme

- Defence Training Review Transformation (Para 223)
- UK Military Flying Training System (Paras 167, 223)
- Business Management System (Paras 277-278)
- Defence Intelligence Modernisation Programme (Para 139)
- Joint Helicopter Command Rationalisation (BELVEDERE) (Para 143)
- Germany Basing (BORONA) (Para 143)
- FLEET Transformation (Para 143)
- Defence Recruitment and Individual Training Management (Para 143)
- Defence Logistics Transformation (Paras 253-259)
- Whole Fleet Management (Para 152)
- Defence Information Infrastructure (Para 138)
- Estates Modernisation (Paras 324-325)
- People Programme (Paras 151, 187,194)
- Joint Personnel Administration (Paras 178-183)
- Defence Health Change Programme (Paras 240-242)
- Defence e-Commerce (Para 152)
- Defence Travel Modernisation (Para 152)
- Command HQ Collocations (Para 154)

Force Capability Changes

- Forces structure changes (Para 149)
- Other manpower reductions (Para 156))
- Equipment procurement (Para 152)

Other

- Lyons (Para 155)
- Finance (Para 296)
- Commodity procurement (Para 152)

Governance

146. The Second Permanent Under Secretary leads and oversees the Efficiency and Change programmes on behalf of the Defence Management Board. Rigorous governance structures are in place, with a particular emphasis on risks and benefits. He has overall responsibility for delivery of the Efficiency Programme, chairs the Efficiency Delivery Board, and is the Senior Responsible Owner for the Defence Change Programme. Efficiency and Change performance are reported quarterly to the Defence Management Board within the Defence Balanced Scorecard. Progress towards the Department's Efficiency target is reported to Parliament in the Department's Autumn and Spring Performance Reports, as well as in the Annual Report and Accounts. Each programme within the Defence Change Programme has a Senior Responsible Owner who is personally accountable to the Defence Management Board for maximising the delivery of benefits and reporting regularly to the programme's

Table 3: Efficiency Achievements and Plans

Programme	Achievement by 31 March 2006 (£M) [1]	Achievement by 31 March 2007 (£M) [1]	Planned Efficiency Gains by 31 March 2008 (£M) [1] [2]
Force Structure changes	**106**	**298**	**388**
Corporate Services	**343**	**296**	**253**
Military Personnel Management	16	38	85
Civilian Personnel Management*	24	30	48
Finance Function	2	16	11
Information Services*	301	212	109
Procurement and Logistics	**836**	**1169-1219**	**1681**
Equipment Procurement *	54	206	374
Defence Logistics Transformation	662	780-830	1002
Whole Fleet Management*	54	55	116
Estates Modernisation*	31	62	95
Other Procurement	35	66	92
Productive Time*	**105**	**139**	**88**
Organisational changes	**0**	**2**	**8**
Relocation	**18**	**18**	**18**
Manpower	**86**	**344**	**557**
RN	15	32	32
Army	18	64	88
RAF	51	143	203
Civilian	2	105	234
Adjustment[3]	**-9**	**-68**	**-106**
Total	**1,485**[4]	**2198-2248**	**2887**

Notes:
1. Planned and Achieved Efficiencies include efficiencies during 2004-05, 2005-06, 2006-07 and 2007-08. Because of the size of the Defence Logistics Transformation Programme, the validation process takes some time and this is the reason why a range is given in the table above.
2. The targets reflect a number of revisions since the publication of the Efficiency Technical Note in December 2005 and the 2006/07 Spring Performance Report.
3. Adjustment to avoid double counting of manpower savings.
4. This has increased from £1107M reported last year following a final validation of Defence Logistics Transformation Programme. The figure has been confirmed as higher after audit.
* Efficiency gains marked with an asterisk include an element of non-cashable gains.

sponsoring Minister. They are individually supported and challenged in this by the Change Delivery Group, which formally assesses the entire portfolio of Defence Change Programmes twice yearly, and manages cross-cutting issues such as common risks and interdependencies, and loading and capacity issues.

Performance against SR04 Efficiency Target

147. The MoD's Efficiency Technical Note (published on www.mod.uk) describes the Efficiency Programme in detail and explains how we are delivering and measuring the efficiency gains. Progress continues to be made in meeting the Department's efficiency targets. By 31 March 2007 £2.225Bn of efficiencies had been delivered. Overall the Department remained on course to achieve the efficiency gains and the personnel reductions and relocations agreed in the 2004 Spending Review.

Cashable gains

148. Of the total efficiency gains achieved by 31 March 2007, 84% are cash-releasing against a requirement of at least 75% for all 2004 Spending Review efficiency targets.

Force Structure Changes

149. In *Delivering Security in a Changing World: Future Capabilities,* published in July 2004, the Department set out the transformation required to deliver better policy outcomes with smaller, more flexible and adaptable Armed Forces able to meet future defence and security challenges. The force structure changes underpinning this goal delivered efficiencies of £239M in 2006-07, for a cumulative total of £298M in addition to the £106M (£58M of which is sustainable) achieved by 31 March 2006. The force structure changes made in 2005-06 set out in last year's *Annual Report and Accounts* and further changes during 2006-07 included:

- The reduction of Type 42 Destroyer, Type 23 Frigate and mine-hunter fleets and a rationalisation of submarine capability delivered £119M of additional efficiencies;
- The re-roling and reduction of Challenger II armoured squadrons and AS90 artillery batteries, reflecting the transition from heavy to light and medium weight forces delivered £12M of additional efficiencies;
- Reductions to Tornado F3 units and withdrawal of Jaguar from 30 April 2007 in line with the introduction into service of Typhoon, and reducing costs associated with the smaller Nimrod fleet delivered £65M of additional efficiencies; and
- The restructuring of current helicopter fleets and ground based air defence capability delivered £43M of additional efficiencies.

150. Further information on force structure changes is set out at paragraphs 129-134 under *Future Effects*.

Corporate Services

151. The Department has been taking forward a range of programmes to modernise and improve the effectiveness and efficiency of its corporate services:

- Joint Personnel Administration is modernising the personnel management and administration of the Armed Forces by harmonising and simplifying a range of personnel policies and processes and by introducing a new commercial off-the-shelf information system (see paragraphs 178-183 under *Future Personnel Plans,* the essay on page 108, and the Statement on Internal Control in the Departmental Resource Accounts on page 212). Following introduction to the Royal Air Force, the system rolled-out to the Royal Navy during October and November 2006, to Army personnel professionals in March 2007, and to the rest of the Army by July 2007. It had delivered £38M of efficiencies by 31 March 2007 (£16M by 31 March 2006), mainly through reductions in RAF and Navy personnel staff. The drop in achievement (£38M) against planned efficiencies (£43M) is due to a one-off loss caused by the delay in Army rollout of the administration system which is as a result of a delay in headcount reductions;
- The People Programme will enable MoD civilians to make the best contribution to the UK's defence capability through a civilian workforce which is appropriately skilled, managed and motivated (see paragraph 187 under *Future Personnel*). Efficiency gains are being achieved through a reduction of civilian HR staff, lower maintenance costs of the human resources information system, implementation of modern and simple pay and policy processes and a reduction in administration tasks. The programme had delivered £30M of efficiencies by 31 March 2007 (£24M by 31 March 2006), mainly through HR personnel reductions. This saving is a drop against the £49M of planned efficiencies expected for 2006-07 (see paragraph 194 under *Future Personnel*);

- The Defence Resource Management Programme aims to simplify and improve current financial processes, structures and systems to reduce costs and improve decision-making (see paragraph 296 under *Finance*). The programme had delivered £16M of efficiencies by 31 March 2007 (£2M by 31 March 2006), mainly through a reduction in the number of staff in the finance function and less expenditure on external assistance;

- The Defence Information Infrastructure is delivering a modern management information infrastructure across defence (see paragraph 138 under *Future Effects*). The programme had delivered a total of £212M of efficiencies by 31 March 2007 (£301M by 31 March 2006) of which £120M is a non-sustainable in year benefit. This reflects the decreasing need to sustain legacy systems, as DII is rolled out and its functionality increased.

Procurement and Logistics

152. The Department is undertaking a range of programmes to build on Smart Acquisition, improve value for money from expenditure on the future equipment programme, increase the effectiveness, efficiency and flexibility of defence logistics activity, and modernise management of the defence estate. We are also working to improve the efficiency of commodity procurement across defence. These programmes comprise the Procurement and Logistics element of our overall efficiency programme. They do not include the substantial changes the Department is making to its acquisition processes and organisation under the Defence Acquisition Change Programme (see paragraphs 170-172 under *Future Capabilities and Infrastructure*, and the essay on *Defence Industrial Strategy* on page 101). In particular:

- *Future Capabilities* identified opportunities to improve value for money from equipment procurement expenditure. The programme had delivered £206M of efficiencies by 31 March 2007 (£54M by 31 March 2006), mainly through revised procurement strategies for the future helicopter fleet and the Future Rapid Effects System, a more efficient way to provide the offensive air capability, and reprofiled acquisition increments for indirect fire precision;

- The Defence Logistics Transformation Programme is transforming the means by which logistics support is delivered to the three Services (see paragraphs 253-259 under *Logistics*). The programme delivered £250M-300M during 2006-07 in addition to £662M (£530M of which is sustainable) achieved by 31 March 2006 through Reliability Centred Maintenance, Procurement Reform and LEANing of the support and supply chain. Work is in hand to validate the efficiencies achieved in 2006-07;

- Whole Fleet Management is providing better management of the defence land vehicle fleet and facilitating the training of force elements to the required standard on future reduced fleets. Benefits of £55M had been delivered by 31 March 2007 (total 05/06 achievement of £54M by 31 March 2006), mainly through reduced spares consumption and battery use, improved management of the vehicle fleet and productive time efficiencies. The total efficiencies possible from the Equipment Maintenance labour days work strand have reduced, reflecting that it was predominantly low-maintenance equipment going into store;

- The Estates Modernisation programme is rationalising and improving the condition of the defence estate and obtaining better value for money from estate expenditure through the introduction of Prime Contracting, the modernisation of single living accommodation and the provision of water and sewage services (see paragraphs 324-325 under *Estates*). Efficiency gains of £62M had been delivered by 31 March 2007 (£31M by 31 March 2006), mainly through personnel reductions, lower management overheads for Service families' accommodation and reduced operating costs;

- The 'Other Procurement' Initiative is extending the Defence Logistics Organisation's Procurement Reform programme across other areas of defence. It seeks to maximise the Department's buying power through aggregation of requirements; the use of reverse auctions; reduced prices; purchase avoidance; and rationalisation of contracts enabled by electronic purchasing. It had delivered £66M of efficiencies by 31 March 2007 (£35M by 31 March 2006), including £23M from the Defence Travel Modernisation programme (£12M by 31 March 2006) to deliver a modern and coherent e-booking capability.

Productive Time

153. The objective of the Defence Health Change Programme is to increase the proportion of military personnel who are fit-for-task by improving the quality of healthcare using regional rehabilitation units and other methods (see paragraphs 240-242 under *Health and Safety)*. £139M of non cashable annual efficiency gains from reducing the time taken to restore personnel to full fitness had been delivered by 31 March 2007 (£105M by 31 March 2006).

Organisational Changes

154. A number of programmes to slim down the Department's management overhead continued to be taken forward, including the continuing rationalisation of Service Headquarters and other organisations. Benefits of £2M had been delivered by 31 March 2007. The Royal Navy's Fleet Headquarters stood up in April 2006 and is on track to deliver its headcount reductions and efficiencies. The Royal Air Force Collocated Headquarters opened in October 2006, had achieved 35% headcount reductions by the end of the year, and is on track to meet its overall target by 31 March 2008. Work is also in hand to reorganise Land Command and the Adjutant General's Department and establish a new collocated Headquarters (Project Hyperion), to take forward further rationalisation of the new Defence Equipment and Support Organisation, and to make further reductions to the Head Office. These are all expected to deliver further efficiencies, but not by 31 March 2008.

Hurricane Gate Guardian at RAF Air Command

Relocations

155. The Department remained on track to deliver a net reduction of 3,900 posts in London and the South East by 2010. 1,885 posts had been relocated by 31 March 2007 (1,229 by 31 March 2006).

Personnel Reductions

156. The changes in force structures and equipment capability and the Change and Efficiency programmes are producing further substantial personnel reductions:

- The number of military personnel will reduce by over 10,000 between April 2005 and April 2008, enabling the withdrawal of over 5,000 military administrative and support posts (see paragraph 178 under *Future Personnel Plans)*. By 31 March 2007 personnel numbers had been reduced by 10,000, generating efficiency savings of £239M (£84M by 31 March 2006);

- The Department plans to reduce civilian personnel numbers by 15,000[1] by 31 March 2008 (see paragraph 310 under *Manpower*). By 31 March 2007 a reduction of 11,020 had been achieved (over 6,000 by 31 March 2006), generating efficiency savings of £105M (£2M by 31 March 2006).

Maintaining service quality

157. All programmes contributing efficiency savings are required to demonstrate that where inputs have been reduced, the quality of outputs is being maintained. Examples of this include:

- Performance under the Defence Logistics Transformation Programme is monitored against Customer-Supplier Agreements with Front Line Commands, including measures such as improved delivery timelines and increased availability of vehicles and aircraft;

- Monitoring of service support availability and response times delivered by the Defence Information Infrastructure programme, the accessibility and quality of services in line with business requirements, and customer satisfaction surveys;

- Joint Personnel Administration performance against Service Level Agreements between the Armed Forces Pay and Administration Agency which delivers the programme and the single Service customers; and

- The number of vehicles available for use under Whole Fleet Management.

1 This is based on agreement with Treasury and includes Trading Fund reductions, but excludes Locally Engaged Civilians in operational areas.

Further sources of information

158. Additional information on Efficiency and Change is available from the following sources:

- *Delivering Security in a Changing World: Future Capabilities* available at www.mod.uk;
- Quarterly PSA reports at www.mod.uk;
- *SR2004 Efficiency Technical Note* available at www.mod.uk;
- *2004 Spending Review: Stability, Security and Opportunity for all: investing for Britain's long-term future* (CM 6237 on 12 July 2004) available at www.hm-treasury.gov.uk;
- *The independent review of Public Service Relocations – Well Placed to Deliver? – Shaping the Pattern of Government Service by Sir Michael Lyons* available at www.hm-treasury.gov.uk;
- *The Gershon review: Releasing Resources for the Frontline: Independent Review of Public Sector Efficiency* (July 2004) available at www.hm-treasury.gov.uk.
- National Audit Office report *The Efficiency Programme: A Second Review of Progress* (HC 156) available at www.nao.org.uk;
- NAO report on *Transforming Logistics Support for Fat Jets* (HC 825) available at www.nao-org.uk.

Essay – Change in Defence

Since the early 1990s, the MoD has pursued a continuing programme of restructuring and modernisation to adapt to the strategic challenges emerging since the end of the Cold War, and to the public sector reform agenda to improve effectiveness and value for money. Over this period the size of the Armed Forces and the defence Civil Service have reduced by over a third, while supporting a level of sustained operational activity higher than at any time since the end of the Second World War.

There are four main strands to defence modernisation:

- the Defence Change Programme, pulling together the other major change programmes within Defence (see paragraphs 142-143 under *Efficiency and Change*);
- implementation of the Future Capabilities work stemming from the 2003 Defence White Paper *Delivering Security in a Changing World* (see the chapter on *Future Effects* on pages 129-134);
- the Defence Acquisition Change Programme, implementing the reforms necessary to deliver the Defence Industrial Strategy (see in particular paragraphs 170-172 under *Future Capabilities and Infrastructure*, and the essays on the Defence Industrial Strategy on page 101 and the Defence Technology Strategy on page 114.
- implementation of the Action Plan responding to the Departmental Capability Review (see paragraph 276 under *Business Management* and the essay on the Capability Review on pages xx-xx).

Together these represent a coherent approach to modernisation and improvement that both respond to wider Government initiatives to improve the delivery of public services and enable the Department to deliver maximum military capability as effectively as possible within the defence budget.

Defence Change Programme

The Defence Change Programme was established in 2002. It is a portfolio of programmes and projects to improve and modernise the Department. It provides central direction and a coherent framework for the wide range of change initiatives across defence, and for any new initiatives, prioritising them to ensure that resources are devoted to the most important and productive areas, and providing "challenge and support" to ensure they deliver. In total, it has so far delivered just over £1.3Bn worth of savings.

Future Capabilities

In July 2004 the Department announced an extensive re-structuring of the Armed Forces to adapt them to meet new potential threats through smaller, lighter and more capable forces. This included reductions in the surface fleet and rationalisation of our submarine capability; modification of the role and a reduction in the number of tank squadrons and heavy artillery batteries, an increased Armoured Reconnaissance capability and development of an Interim Medium Armoured capability; and reductions to Tornado F3 units and the Nimrod fleet, the withdrawal of Jaguar, and the introduction into service of Typhoon. The helicopter fleet has also been restructured.

Defence Acquisition Change Programme

The Defence Acquisition Change Programme builds on earlier acquisition reform to meet the continuing challenge set out in the December 2005 Defence Industrial Strategy to improve performance in a changing industrial, technological and operational environment. It involves major changes in process, organisation and behaviours on four main themes:

- removing the barriers between consideration of new equipment procurement and equipment support to plan delivery of equipment capability through the life of the system. A key element was the formation of the Defence Equipment and Support organisation from the Defence Procurement Agency and Defence Logistics Organisation;

- undertaking more comprehensive capability planning in the MoD Head Office, looking for solutions that consider both new and existing equipments' potential, examine affordability and support through-life from the outset, and assess the impact on the non-equipment aspects of capability, such as manpower and training;

- developing a closer relationship with Defence Industry, to share the Department's future intent more clearly and understand industrial constraints more effectively while becoming more commercially astute and aware in business dealings; and

- improving the skills, qualifications and experience of defence staff to deliver a leaner, high-performing acquisition system. A programme of new training, Human Resources reform and behaviours work has been set up to do this.

Way Forward

The Department continues to look for ways to improve effectiveness and value for money further, including in the Comprehensive Spending Review. The Capability Review was generally positive, but highlighted areas for further development including strengthening corporate leadership, clarifying and simplifying the strategic operating model and improving engagement across Whitehall and with industrial partners.

The comprehensiveness of the Department's change, restructuring and modernisation programmes has affected every employee. Virtually every part of the Department is involved. The Department continues to pursue improvement, including substantial further reductions in administrative costs and efficiencies in logistics, corporate services and estates, to improve the delivery of military capability and release resources for reinvestment in the Front Line. But the pace and volume of change will continue to be managed carefully to ensure that key outputs, and particularly support to operations in Iraq and Afghanistan, continue to be delivered.

Future Capabilities and Infrastructure

Objective: Progress future equipment and capital infrastructure projects to time, quality and cost estimates

Public Service Agreement Target (SR2004 Mod Target 6 and SR2002 MoD Target 7)
Deliver the Equipment Programme to cost and time by achieving in 2005-06:

- At least 97% of Key User Requirements, for all Category A to C Projects that have passed Main Gate Approval, to be achieved throughout the PSA period.
- An average in-year variation of forecast In Service Dates for all Category A to C Projects that have passed Main Gate Approval, to be no more than 0.5 months.
- An average in-year variation of forecast costs for Design and Manufacture phase for all Category A to C projects that have passed Main Gate approval, of less than 0.3%.

Assessment and Performance Measures

Assessment: The Department invested about £5.3Bn in equipment for the Armed Forces over the year, and over £2Bn in supporting infrastructure. Equipment acquisition performance continued to improve. For the second year running the Department met or exceeded its Public Service Agreement targets for equipment procurement, despite them being more demanding than those for 2005-06. The Department continued to invest heavily in strategic infrastructure. Significant changes to improve acquisition were made under the Acquisition Reform programme, including the establishment of the new Defence Equipment and Support organisation in April 2007.

At least 97% of Key User Requirements, for all Category A to C Projects that have passed Main Gate Approval, to be achieved:

- 99% of Key User Requirements achieved (97% 2005-06)

On average, less than 0.3% in-year variation of forecast costs for Design and Manufacture phase of projects over £20M:

- 0.0% average increase in costs measured against estimated cost at beginning of year (0.2% average increase 2005-06)

No more than 0.5 months in-year slippage of forecast In-Service Dates for projects over £20M:

- 0.5 months average slippage (0.7 months 2005-06)

DPA delivery of at least 93% of planned in-year asset deliveries, by value:

- 102% of planned in-year assets delivered (107% 2005-06)

Equipment Procurement

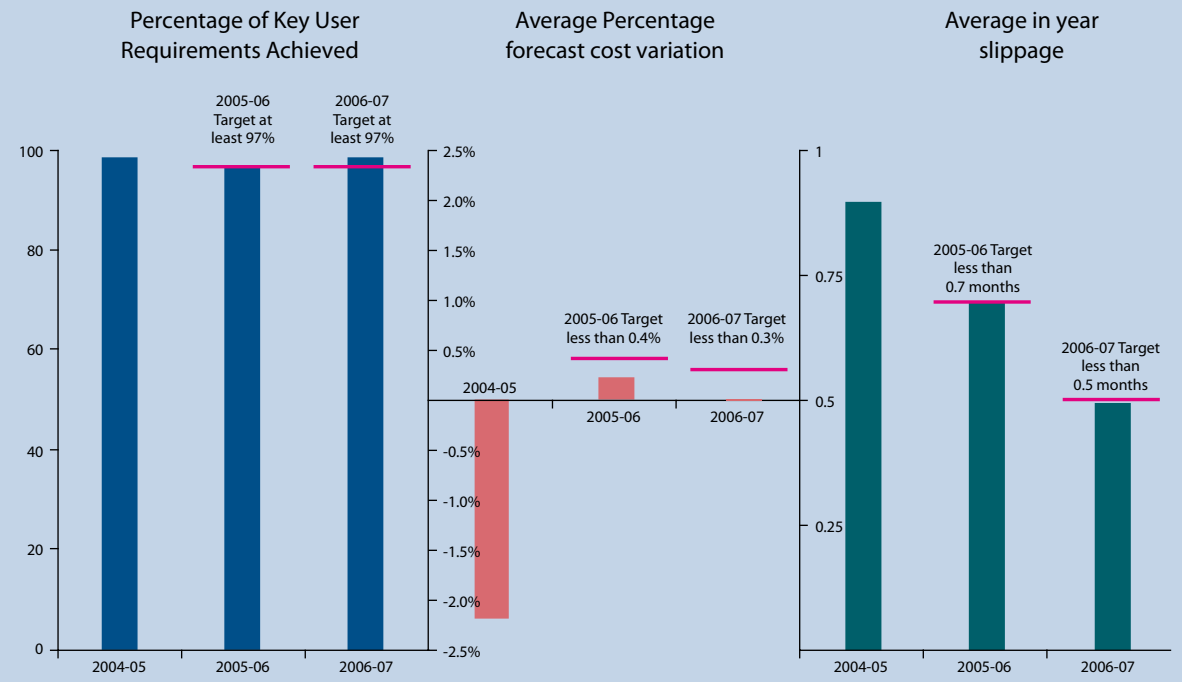
159. The Equipment Programme, of some £5.5-6.0Bn a year, delivers battle-winning equipment to the Armed Forces. It is rigorously reviewed every two years, as part of the MoD's overall planning and programming process, to ensure that the Department makes the best possible use of available resources and provides the UK Armed Forces with the capabilities they need for operations today and in the future. Table 4 sets out the Department's performance against the 2004 Spending Review Public Service Agreement targets, and the Defence Procurement Agency's performance against its complementary Key Targets. This performance has been certified by the National Audit Office. In 2006-07 the Department and the Defence Procurement Agency met all the acquisition targets for the second consecutive year, despite several targets being more challenging than those for 2005-06.

Public Service Agreement Targets

160. The 2004 Spending Review target for equipment acquisition covers a broad range of projects in order to provide a comprehensive picture of the Department's overall performance in delivering the Equipment Programme. It comprises all projects with a capital value greater than £20M that have passed their main investment decision point but not yet reached their In-Service Dates at the start of the financial year (a total of 44 projects in 2006-07). In 2006-07 the equipment required was managed to cost and with minimal slippage in expected in service date (see table 4 below), more than meeting the PSA Equipment Acquisition targets for the year.

RFA Mounts Bay Leaving Portsmouth Dockyard

Table 4: Public Service Agreement Targets



Defence Procurement Agency Key Targets

161. The Defence Procurement Agency met all of its Key Targets in 2006-07 for the second consecutive year (see table 5 below). These included the target set used to measure the Department's performance against its PSA targets. Further details on the Agency's performance can be found in the *DPA Annual Report & Accounts*. Summary information on the performance of major equipment projects by capability area is contained in Annex G and detailed information on these projects is continued in the annual *Major Projects Report* published by the National Audit Office. The Defence Procurement Agency ceased to exist on 31 March 2007 with the formation of the Defence Equipment and Support organisation as part of the Enabling Acquisition Change Report 2006.

Table 5: PSA and Defence Procurement Agency Key Targets and Achievements

	2006-07	2005-06	2004-05
Predicted achievement of Key User Requirements[1]	**97%**	**97%**	**N/A**
Met	**99%**	**97%**	
Equivalent DPA Key Target	*97%*	*97%*	*97%*
Met	*99%*	*97%*	*99%*
Average In-Year variation of costs not to exceed[1]	**0.3%**	**0.4%**	**N/A**
Met	**0.0%**	**0.2%**	
Equivalent DPA Key Target	*0.5%*	*0.6%*	*0%*
Met	*0.0%*	*0.2%*	*-2.2%*
Average In-Year slippage of In-Service Dates not to exceed[1]	**0.5 months**	**0.7 months**	**N/A**
Met	**0.5 months**	**0.7 months**	
Equivalent DPA Key Target	*0.9 months*	*1.0 months*	*0.9 months*
Met	*0.5 months*	*0.7 months*	*0.9 months*
Asset delivery achievement (percentage by value of planned asset deliveries)	*>93%*	*>90%*	*85%*
Met	*102%*	*107%*	*100%*
i) Asset Turnover Ratio (months)[2]	*<52 months*	*<83 months*	*<70 months*
Met	*47 months*	*70 months*	*59 months*
ii) Assets delivered per £ of Operating Costs[3]	*>£15.44*	*>£13.20*	*>£10.72*
Met	*18.58*	*15.29*	*£14.36*
iii) Assets produced per £ of Operating Costs[4]	*>£18.01*	*>£23.16*	*>£16.23*
Met	*20.63*	*23.87*	*£19.13*

Notes:
(1) All projects over £20M that have passed their main investment decision point, but not yet achieved ISD at the start of the financial year.
(2) This is an approximation of how many months assets/equipment sit on the DPA balance sheet before they are finished and delivered. A decreasing number indicates improving efficiency.
(3) This measures the assets/equipment delivered to the DPA's customers against the DPA's operating costs. An increasing number indicates improving efficiency.
(4) This measures the assets added to the Balance Sheet over the DPA's operating cost. An increasing number indicates improving efficiency.

Deliveries and key contracts placed

162. The Defence Procurement Agency delivered new equipment valued at £4.98Bn during the year (£3.30Bn in 2005-06), with eleven new projects formally accepted into service. This represented 102% of the asset value planned for delivery in-year and exceeded a target of 93% asset delivery achievement. Key milestones achieved during the year included:

- Delivery of three 16,000 tonne auxiliary landing ships, RFA Mounts Bay, Largs Bay and Cardigan Bay;
- Delivery of the Guided Multiple Launch Rocket System on schedule, with its associated Future Fire Control System;
- Delivery of Titan and Trojan armoured vehicles under the Engineer Tank Systems under a £250M project;
- Delivery of 192 large fuel and water tanker lorries;
- Delivery of 10,700 Bowman tactical communications systems and other infantry weapons and equipment;
- Delivery of 16 Typhoon combat aircraft;
- Delivery of Automatic Lightweight Grenade Launchers to soldiers on operations under an Urgent Operational Requirement;
- Ordered twelve sophisticated Nimrod MRA4 patrol aircraft under a £1.1Bn contract;
- Entered a Strategic Partnering Arrangement and Business Transformation Incentivisation Agreement with AgustaWestland, placing a £1Bn contract for 70 Future Lynx helicopters;
- Placed a £450M contract for 28 Hawk 128 Advanced Jet Trainers;
- Contributed £325M to an £830M programme with Typhoon partner nations to transform the aircraft by providing it with advanced multi-role capabilities, and placed a £73M contract to equip Typhoon for autonomous all weather precision ground attack strike;
- Placed a £300M contract for the provision of a 20 year service covering aerial targets for the armed forces;
- Increased the supply of battlefield helicopters under contracts valued at up to £235M for six new Merlin aircraft and the conversion of eight Chinook Mk3s to the battlefield support role;
- Placed a £140M contract to refine and develop the design of the Future Aircraft Carrier;
- Placed a £127M contract for a technology demonstration programme named Taranis, to investigate key technologies for next generation unmanned air vehicles;
- Ordered a fifth C-17 transport aircraft and agreed that MoD will buy out leases on the RAF's four existing C-17s in 2008;
- Placed a £250M contract for more than 2,000 new design versatile trucks to support the Armed Services;
- Signed a Memorandum of Understanding for the Production, Sustainment and Follow-on Development for the next phase of the Joint Combat Aircraft project;
- Placed a £65M contract for new design of more effective robot bomb disposal vehicles;
- Placed a £56M contract for advanced new targeting pods for Typhoon aircraft;
- Launched the second Type 45 destroyer, Dauntless;
- Launched the first new generation Skynet 5 strategic communications satellite;
- Delivered the first Airborne Stand Off Radar aircraft and ground stations for training.

163. Since April 2007, the following deliveries and key contracts have been placed:

- A £200M contract for HMS Audacious, the fourth of the Astute class submarines;
- Approval of a PFI solution to replace the RAF's fleet of VC10 and TriStar aircraft;
- Launch of HMS Astute – the Royal Navy's newest super-submarine; and
- The selection of the Army's Future Rapid Effect System vehicles to participate in trials to find designs which offer the greatest protection.

Bowman – the UK's future tactical communications system

Urgent Operational Requirements

Capital Infrastructure

164. The Department invests heavily in strategic infrastructure to support defence outputs. In order to improve the decision making process regarding priorities for investment in infrastructure, the Department has brigaded funding for major infrastructure in the Non Equipment Investment Plan. This is used to make informed judgements on the relative priority of competing infrastructure proposals. It comprises about 70 projects costing around £2.5Bn a year, mainly consisting of a wide range of estate programmes costing some £2Bn a year, including estate maintenance projects such as the Regional Prime Contracts and project Aquatrine (see paragraphs 326-327 under *Estates*); and estate modernisation programmes such as Project SLAM to improve the standard of single living accommodation (see paragraph 318 under *Defence Estates*), Allenby/ Connaught (see paragraph 323 under *Defence Estates*), the Defence Training Review (see paragraph 223 under *Personnel Management*), and a number of projects underpinning Top Level Budget organisations' rationalisation and collocation programmes (see paragraph 154 under *Efficiency and Change*). It also includes major Information System projects costing about £500M a year, such as the Defence Information Infrastructure to provide a coherent IS network across defence (see paragraph 138 under *Future Effects*), the Human Resource Management System (see paragraph 192 under *Future Personnel Plans*), and Joint Personnel Administration (see paragraph 178 under *Future Personnel Plans*, the essay on page 108, and the Statement on Internal Control in the *Departmental Resource Accounts* on page 212).

Private Finance Initiative

165. The Private Finance Initiative (PFI) remains a significant delivery tool in the provision of innovative and efficient services for defence. The Department remains committed to involving the private sector where appropriate, and using PFI where the requirement is for long-term services based around the provision or refurbishment of a capital asset or equivalent that can be funded by third party finance. The new MoD Project Agreement was published during the year, based upon Standardisation of PFI Contracts version three which is the standard contract and guidance that project teams have to use when drafting their PFI contracts, allowing for a more efficient and effective procurement of PFI updated from Version two, produced in 2003). Standardisation and improvements to the procurement process are producing better value for money and at the same time helping to drive down the length of the bidding process and bid costs – when a significant proportion (around 60-70%) of contract is common to all projects, standardisation of these elements of the contract will help reduce both procurement time and cost and these elements of the contract do not have to be renegotiated each time a new project commences. The Department signed one PFI deal in 2006-07 with the Northwood Development project with a capital value of £162M, bringing total private sector capital investment through PFI to over £5.8Bn. Further details on signed PFI transactions are in note 1.27 to the Departmental Resource Accounts on page 233. The Private Finance Unit also supported two public private partnerships, MoDEL (MoD Estates in London) and the Combined Aerial Targets Service projects, to reach contract close during the reporting year. At the 2007 Public Private Finance Awards, the MoD Private Finance Unit won Best Government Team, MoDEL won Best Public Sector Project Team and the Judges' Award for Innovation; Combined Aerial Target Service won best UK Deal to Sign; and C Vehicles won the best Operational Defence Scheme. The Defence Sixth Form College PFI was also highly commended in the category of Operational Project with the Best Design.

Launch of Skynet 5

166. The Department received a total gain of £2.2M from the refinancing of the PFI projects for the Very Low Frequency Naval Communications Service (VLF) in December 2006 and the Tornado GR4 Synthetic Training Service (TSTS) in March 2007. These were undertaken in compliance with the Voluntary Code on Refinancing. The Department's forward PFI programme (see Table 6) has an estimated capital value of approximately £4Bn to £6Bn.

Table 6: Major PFI Projects in Procurement as at 31 March 2006

Project Name
Corsham Development Project
Defence Training Rationalisation Project
Future Provision of Marine Services
Future Strategic Tanker Aircraft
Search and Rescue (Helicopter) Project (new for 2006-07)
UK Military Flying Training System

Integrating Future Capabilities

167. The introduction of new and enhanced military capability does not simply mean the purchase of new equipment. It also involves the integration of equipment with all the other components that contribute to defence capabilities: Training, Concepts and Doctrine, Organisation, Personnel, Infrastructure, Information and Logistics. These components are known as the Defence Lines of Development, and Interoperability is also considered when any of them is being addressed. Directors of Equipment Capability are accountable for the coherent delivery of all components of new or enhanced military capability in the programmes for which they are responsible. Five major, equipment-led capability change programmes (UK Military Flying Training System, Medium Weight Capability, Rotorcraft Capability, Combat ID and Carrier Strike), which have individual projects of significant complexity at their core and/or requiring integration have Senior Responsible Owners responsible to the Defence Management Board for the coherent through-life development and management progress on these projects has been as follows:

- Following analysis of the industry bids for the **UK Military Flying Training System** received in August 2005, the Department announced in November 2006 that the Ascent Consortium (Lockheed Martin and VT Group) was the Preferred Bidder (see paragraph 223 under *Personnel Management*);

- On **Medium Weight Capability**, to ensure the coherent and effective implementation of Armoured Fighting Vehicle programmes, the MoD has established the Sustaining Armoured Vehicles Coherence Pathfinder programme. Additionally, the new DE&S has established an Armoured Fighting Vehicle team to provide an improved focus on armoured vehicles, particularly the Future Rapid Effect System (FRES) and force protection more generally. The FRES programme is in its Initial Assessment Phase (IAP) and continues to make good progress with all key decision milestones achieved on time and all of the Technology Demonstrator Programmes performing well against their contract schedules. The Acquisition Strategy was approved and announced by Min(DES) in November 2006, and the initial wave of three competitions has formally been launched. Candidate Utility vehicles will undertake proving trials this summer, with the outcome to be announced in November 2007. The MoD intends to build on the successes achieved during the IAP, driving the programme forward at pace.

- Significant steps have been made to improve the availability of **Rotorcraft Capability** including a decision in principle to buy six recently delivered EH101 Merlin Helicopters from Denmark, which subject to concluding negotiations should be available for operations within twelve months. This will increase the UK's Merlin helicopter fleet by 25%. Additionally a decision has been made to convert the Chinook Mk3 aircraft for use in an operational battlefield support role, thus increasing our operationally available Chinook fleet by 20% within two years.

- The Department's **Combat Identification** programme is addressing current operations as well as establishing enduring capability for the long term. The Bowman secure tactical radio communications system has been deployed on operations in Afghanistan as well as Iraq and is supporting situational awareness. Other equipment deployed to meet specific operational requirements includes blue force tracking systems, improved targeting pods for ground attack aircraft and ground-to-air radios which enable UK forces to talk directly to Coalition aircraft. For the long term, the Department has continued to work closely with the United States and other NATO partners on achieving interoperable Combat Identification solutions. For example, the principal allies have reached consensus on a technical solution for a target identification system. In addition, the Department is actively involved in preparing for Exercise BOLD QUEST, a multinational technology demonstration due to be held in the United States in September 2007 that will help to inform UK decisions on investment in interoperable capability and will explore a more networked approach to Combat Identification.

- The **Carrier Strike programme** (comprising Joint Combat Aircraft (JCA), Future Carrier (CVF), a Maritime Airborne Surveillance and Control component, and associated enablers) made good progress. The Joint Strike Fighter (JSF) is our current

choice for JCA, and in December 2006, the Minister for Defence Procurement signed a multilateral Memorandum of Understanding on the next phase of the JSF programme, for production, sustainment and follow-on development. This included a detailed bilateral agreement on operational sovereignty, following the successful conclusion of negotiations with the US Government on UK operational sovereignty of JSF to ensure that the MoD will be able to operate, maintain, repair and upgrade the UK's aircraft independently. JSF's flight test programme also began in December with the successful first flight of a Conventional Take-Off and Landing variant. In the CVF programme, work to mature the risks, costs and contractual framework for building the carriers enabled steady progress in continuing negotiations with industry.

Boeing's prototype of the new Joint Strike Fighter

Acquisition Reform

Defence Industrial Strategy

168. The Defence Industrial Strategy (DIS) provides the blueprint for the future of defence acquisition. Under the DIS the Department is driving the transformation of the acquisition processes as well as working with industry to ensure the industrial base is lean, efficient and sustainable. The Department has completed a comprehensive review of the internal acquisition processes – the Enabling Acquisition Change study and are now taking forward a Defence Acquisition Change Programme aimed at embedding a through life approach in all aspects of acquisition and planning. The Defence Technology Strategy has been completed and published. Amyas Morse has been appointed as the first Defence Commercial Director, with a remit to transform our relationship with industry. This process began with the signature of a Strategic Partnering Agreement with Agusta Westland in the helicopter sector on 22nd June 2006, and has been followed by the signature of a foundation contract with BAE Systems for the fixed wing sector on 1st March 2007. Further partnering agreements will follow. The Department also welcomed industry's commitment to reform through formation of Team Complex Weapons in the complex weapons sector on 19th July 2006 and Team CBRN on 5 September 2006.

169. It was reported last year that the Defence Industrial Strategy White Paper, published in December 2005, set out a significant acquisition reform agenda, and that implementation was underway. The strategy provided greater clarity for industry on forward planning and how the MoD would take into account broader industrial issues in acquisition decisions and set out how the Department and industry need to change. A considerable amount of progress has been made over the last year. There has been significant developments in Sector areas including the formation of 'Team Complex Weapons' to manage capacity in this important area. Good progress continues to be made in other sectors and it is intended to pursue progress in the Maritime, Armoured Fighting Vehicles and General Munitions sectors over the course of 2007-08.

Defence Acquisition Change Programme

170. In response to the Defence Industrial Strategy's call for internal change, the Enabling Acquisition Change report was published in July 2006. This made a wide ranging set of recommendations aimed at improving the delivery of capability to the front line and value for money to the tax-payer. Following a period of consultation, the recommendations of the report were endorsed by Ministers and implementation of the recommendations is being taken forward under the Defence Acquisition Change Programme.

171. The report sought to introduce changes that would help improve the way in which the MoD plans, buys and supports military capability throughout its life (Through Life Capability Management). The report also recommended changes to process, organisation, culture and behaviours to bring a greater unity of purpose across the planning and acquisition communities. This means that in future the Department will consider how a defence capability – for example, a deep strike capability – should be delivered and supported through its entire life. The benefits of this new approach include a better understanding of the capabilities required to deliver defence objectives and their affordability, and increased coherence and agility in the planning and delivery of capability across all of the Defence Lines of Development. The change programme has been working to challenging deadlines with the majority of changes in place by April 2007. The most visible sign of progress to date has been the creation of Defence Equipment & Support, through merging the Defence Procurement Agency and the Defence Logistics Organisation. Launched on 2 April 2007 DE&S is responsible for equipment throughout its life, from design, through delivery to disposal, and is led by the Chief of Defence Materiel. Other changes have been introduced by the Defence Acquisition Change Programme including changes to the financial planning process, capability planning and the approvals and scrutiny process.

172. But the Defence Acquisition Change Programme is not just focussing on process or organisation. It recognises the importance of having the right skills in acquisition and a major programme of upskilling in key areas such as commercial will commence in the course 2007-08 (see paragraph 190 under *Future Personnel*). The Defence Management Board are committed to the success of the change programme recognising that successful change will require strong leadership and the demonstration of the right culture and behaviours of all of those involved in acquisition. We are working closely with Industry and other stakeholders to ensure that the reforms lead to enduring change.

Key Supplier Management

173. Sustained progress has been made with the Key Supplier Management initiative, which provides a vehicle for cementing coherent strategic relations with our major suppliers and a process for measuring and driving performance improvement and better decision-making. A start has been made in developing high-level negotiating strategies with the most strategically important defence suppliers to ensure that we adopt a sensibly 'joined-up' approach that recognises the full breadth of our current and potential business with each company. We have also paid attention to the lower-tier suppliers that contribute to and underpin defence capability. We have been working to develop our 'intelligent customer' status by capturing a better understanding of our supply networks and dependencies in each sector of the Defence Industry, and we have provided support to prime-level suppliers in initiatives (such as the Society of British Aerospace Companies' *21st Century Supply Chains* programme) to help make industrial supply networks more robust, responsive and effective.

Defence Exports

174. The Defence Export Services Organisation helped the UK Defence Industry to win defence export orders worth £5.5Bn in 2006. This was the UK's best performance since 1998. Significant new export business was also secured through MoD's Industrial Participation Programmes, under which overseas companies place work in the UK as a result of winning orders from MoD. This provides UK companies with competitive bidding opportunities in markets where there might otherwise be some barriers to entry. BAE Systems and Rolls-Royce continue to have success in the United States with further orders associated with JSF development and the supply of aero engines. BAE Systems also won an order to supply Saudi Arabia with Tactica armoured vehicles and a C4I system. Moreover, with the signing in 2005 of an understanding, we are looking forward to a stronger partnership, modernising Saudi Arabia's Armed Forces, including by supplying Typhoon aircraft. Three Sandown Class Minehunters, withdrawn from Royal Navy service, were sold to Estonia and early in 2007, the VT Group signed a contract with Oman to supply three Ocean Patrol Vessels, with the first ship scheduled for handover around 2010. The second of three ex-Royal Navy Type 23 frigates sold to Chile was handed over in a ceremony attended by their Minister of National Defence in March 2007.

Further sources of information

175. Additional information on Future Capabilities and Infrastructure is available from the following sources:

- *Defence Industrial Strategy* available at www.mod.uk
- *Enabling Acquisition Change Report at* www.mod.uk
- quarterly PSA reports to HM Treasury at www.mod.uk;
- UK Defence Statistics 2007 available at www.dasa.mod.uk (from September 2007);
- Defence Procurement Agency Corporate Business Plan 2005 available at www.mod.uk;
- DPA Annual Report and Accounts 2006-07 available at www.mod.uk (from July 2007);
- the Public Accounts Committee 26th Report Ministry of Defence: The rapid procurement of capability to support operations (HC 70 on 30 June 2005) available at www.publications.parliament.uk;
- Annual Report on United Kingdom Strategic Export Controls published in July 2005 available at www.fco.gov.uk;
- NAO Report: Driving the Successful Delivery of Major Defence Projects: Effective Project Control is a Key Factor in Successful Projects(HC 30 on 19 May 2005) available at www.nao.org.uk;
- NAO Major Projects Report 2006(HC 595-I on 25 November 2005) available at www.nao.org.uk;
- NAO Report Progress in Combat ID(HC 936 on 3 March 2006) available at www.nao.org.uk;
- NAO Report Using the contract to maximise the likelihood of successful project outcomes (HC 1047 on 7 June 2006) available at www.nao.org.uk;
- Defence Industrial Strategy White Paper (Cm 6697 on 15 December 2005) available at www.mod.uk;
- Defence Departmental Investment Strategy available at www.mod.uk;
- Enabling Acquisition Change: An examination of the Ministry of Defence's ability to undertake Through Life Capability Management available at www.mod.uk;
- The Acquisition Handbook (Edition 6, October 2006) available at www.mod.uk;
- Delivering Security in a Change World: Future Capabilities available at www.mod.uk.

Essay – Implementing the Defence Industrial Strategy

The Defence Industrial Strategy, launched in December 2005, aims to promote a sustainable industrial base that retains in the United Kingdom those industrial capabilities needed to ensure national security. The Strategy recognised that achieving this required the MoD also to change, to be more open in its dealings with industry, particularly about its future plans. These underlying principles of clarity and transparency over future requirements and the need for an effective MoD/Industry relationship now inform all defence acquisition business. The Department is now more focussed on through-life issues, and more joined up in its acquisition activity and in its dealings with industry. But The Strategy is not just about the MoD. The Treasury, Department of Trade and Industry (now the Department for Business, Enterprise and Regulatory Reform) and the Foreign Office, were involved in its creation and played a role in its implementation. This both produced more effective policy making and strengthened the business relationships with these Departments. It has also been welcomed and supported by Parliament.

The MoD's Defence Acquisition Vision is to achieve a step change in the delivery of military capability and value for money within three years. This is no small task, but there has been a good start. The necessary unified, strategic leadership of acquisition has been established, with a clear sense of corporate ownership and collegiate decision-making at the highest level. And acquisition development has made progress, underpinned by core processes consistently applied, streamlined approval processes, and a through life approach in our planning and delivery.

2006 saw radical change in the way the MoD approached its acquisition business and its relationship with its suppliers. The first Defence Commercial Director was appointed with a remit to lead transformation of the relationship with industry, to work with industry and Allies to retain and protect critical capabilities and operational sovereignty, and to consolidate the Department's position in the marketplace and maximise its leverage by brokering tough commercial deals which deliver best long-term value for money, informed by the wider commercial context.

During the year the Defence Acquisition Change Programme put in place the majority of the recommendations of the June 2006 Enabling Acquisition Change Report. The new DE&S (Defence Equipment and Support) was created on time, merging the Defence Procurement Agency and the Defence Logistics Organisation. A new financial planning process and a single, integrated planning process have been established to address the delivery of capability long term. The focus now is to bringing these changes to life through the practical demonstration of benefits and tackling the critical enablers - people and information. There is an agreed skills plan and upskilling of MoD acquisition staff has now started. Progress on this will be closely monitored and evaluated. The Department is also working with the Defence Industries Council to build closer working relationships with industry. The Defence Industrial Strategy was also the platform for the Defence Technology Strategy (see the essay on page 114), which sets out how the Department will focus on emerging technologies and promote innovation, based on greater transparency, to encourage industry to plan, invest in ideas and take risks.

Industry has also been changing, if not always quite as fast as it or the Department would like. Achievements include partnering arrangements for Armoured Vehicles and helicopters, progress in the Fixed Wing and Maritime sectors (see below), and the formation of `Team Complex Weapons':

- The Strategy challenged the maritime industry to reduce overheads and invest in the facilities and skills needed to meet the demands of the Royal Navy's future warship programme. Industry acknowledges the need to collaborate and be realistic about future defence orders, because beyond the relatively healthy programme prospects of the next five to ten years, the market will get smaller. The Department is determined to press home the need for managed reform to improve efficiency and productivity and avert an otherwise very difficult situation arising in the next decade. But further integration is needed. Financial engineering and mergers will not, on their own, deliver the required benefits. The Department will encourage and support consolidation proposals which add value, transform the business and deliver the substantial performance improvement the sector needs;

- In the Fixed Wing sector military capability will increasingly be achieved through enhancements to in-service aircraft. The Defence Industrial Strategy highlighted that the Department does not envisage a need for UK design and build of a further generation of manned fast jet aircraft beyond Typhoon and the Joint Strike Fighter. This will have a long term impact on industry, which is why the Department is committed to negotiating the terms of a Long Term Partnering Agreement with BAE Systems by the end of 2007. A key illustration of this intent was the signing in December 2006 of the contract to build an experimental Unmanned Air Vehicle called TARANIS through a Technology Demonstrator Programme jointly funded by the MoD and an industry team led by BAE Systems. Steady progress is being made and a Foundation Contract was signed in March 2007. More generally, the Strategy has helped the Department and BAE Systems develop of a more constructive business relationship.

The Defence Industrial Strategy recognised the important role of Small and Medium Sized Enterprises in the defence supply chain, and the need for a combined effort to identify innovative companies and their capabilities and improve engagement with them. The Society of British Aerospace Companies "Supply Chain 21" initiative, aimed at making it easier for them to enter the defence market, is precisely the sort of arrangements the Strategy intended to stimulate. Work is also underway, in close consultation with defence industry representatives, including small and medium sized companies, to review MoD policy on their engagement and analyse market drivers and behaviours in the supply chain.

The Defence Industrial Strategy is here to stay. Experience shows that its fundamentals are right. It must, however, be kept up to date, and the Department and industry must both change further. A review is therefore being undertaken, which is planned to produce an update to coincide with the second anniversary of the Strategy in December 2007.

Future Personnel Plans

Objective: Develop the skills and professional expertise we need for tomorrow

Assessment and Performance Measures

Assessment: There was considerable progress in delivering the Service Personnel Plan. The Joint Personnel Administration system was rolled out successfully across all three Services, although there were significant temporary accounting problems during the year. Service personnel terms and conditions continued to improve, including a good pay settlement and introduction of the Operational Allowance. The Armed Forces Act simplifying and harmonising military law received the Royal Assent. The civilian People Programme also continued to make progress, with a particular focus on support to operations and improving acquisition skills, and the new People Pay and Pensions Agency was successfully launched.

Deliver the Service Personnel Plan – More holistic and flexible military personnel administration systems:

- JPA was rolled out on time to the RAF from April 2006, to the Royal Navy during October and November 2006, to Army personnel professionals in March 2007, and to the rest of the Army by July 2007;
- Significant accounting problems arising during the year were successfully resolved, but represented a temporary failure in financial control.

Deliver the Service Personnel Plan – Develop the military personnel package:

- A fundamental review of the Terms and Conditions of Service to improve working arrangements was started;
- Further development of the Operational Welfare Package continued;
- The Armed Forces Pay Review Body recommendations of: an increase in basic salary of 3.3%, and 9.4% for the lowest paid; an introduction of new Financial Retention Initiatives for Royal Marines and Infantry; and an increase of 3.3% in specialist pay rates; were all implemented;
- Introduction of new Operational Allowance;
- Royal Assent was given to Armed Forces Act in November 2006, creating a single system of Service law.

Deliver the Service Personnel Plan – Better Understanding of People

- Research programme continues.

Deliver the People Programme:

- People Pay and Pensions Agency was established 1 April 2006, and achieved its target of 90% of its business on time and to quality;
- Civilian Workforce Strategy was published in November 2006;
- Civilian Support to Operations programme was launched in November 2006;
- Production of Acquisition Skills Growth Plans;
- A more flexible employment framework was developed to support the Defence Equipment and Support organisation on its establishment in April 2007.

Service Personnel Plan

176. In September 2006 a revised Service Personnel Plan was published. This was developed from the previous Plan published in 2004, and provides a structure for the delivery of Service personnel policy over the next 15 years. It reflects the challenges and opportunities that cultural and demographic changes are likely to pose to delivering sufficient, capable and motivated personnel across the Armed Forces in order to provide the required operational capability.

177. Work in 2006-07 focused on developing opportunities for flexibility and choice for Service personnel, both in terms of career patterns and in terms of remuneration and benefit packages available to them. This was done through a continuing fundamental review of the Terms and Conditions of Service. There were also further improvements to the Operational Welfare Package (see paragraph 24 under *Personnel Management*). However ensuring that the Armed Forces have the right number of personnel with the right skills and the willingness to use them requires working across a broader range of issues. The Department therefore also continued to take forward the other key workstrands initiated in 2004;

- developing more comprehensive and flexible manpower accounting and administration processes, in particular through the implementation and exploitation of the facilities provided by the Joint Personnel Administration system (see paragraphs 178-183 below and the essay on page 108);

- making better use of Reserve and Regular personnel, integrating them more effectively (see paragraphs 222-223 under *Personnel Management*) and working to encourage young people to serve in the Armed Forces (see paragraphs 109-111 under *Wider Government*), and the essay on maximising Service Diversity on page 173;

- taking forward the strategy for training and education (see paragraphs 220-221 under *Personnel Management*);

- delivering the strategy for Health through the Defence Health Change Programme (see paragraph 246 under *Health and Safety*);

- improving single and family living accommodation and developing a more coherent Defence estate (see paragraphs 318-321 under *Estate*); and

- gaining a better understanding of the aspirations and expectations of Service personnel, both now and in the future, to inform policy and resource decisions (see paragraph 186).

Joint Personnel Administration

178. Joint Personnel Administration (JPA) is a major programme to modernise the personnel management and administration of the Armed Forces (see the essay on page 108). The system covers both 'front office' pay and personal administration processes for every member of the Armed Forces, and the 'back office' financial and manpower accounting processes. Overall it will allow over 1,400 jobs to be removed from the administrative organisations of the Armed Forces. Together with the associated business improvements this will generate savings of approximately £100M per year once steady state is reached. By 31 March 2007 it had delivered £38M of efficiencies, mainly through reductions in Royal Air Force and Royal Navy personnel staff (see paragraph 151 under *Efficiency and Change*).

179. The programme was rolled out incrementally over the year to manage risk effectively, particularly the relationship with the roll out of the underpinning Defence Information Infrastructure programme. As reported last year, the Department deliberately decided to delay roll out of the system to the Royal Navy until October 2006 and to the Army until March 2007 in order to reduce the risks involved. JPA was therefore rolled out progressively to the RAF from April 2006, to the Royal Navy during October and November 2006, to Army personnel professionals in March 2007, and to the rest of the Army by July 2007

180. As with any project of this complexity, there were inevitably some technical issues to overcome when the 'front office' systems went live. The system performed well initially on roll out to the RAF, however once large numbers of self-service users accessed the system, it slowed unacceptably. This was resolved through a series of software fixes that produced full functionality and acceptable system performance levels from the middle of May 2006 onwards.

181. Despite these problems the first RAF pay run using JPA was achieved in April 2006 as planned. This again generated a number of problems, particularly regarding flying pay and expenses, mainly as a result of errors in the original data entered on the system. These problems were resolved as quickly as possible and measures were put in place to ensure that those individuals affected were not financially disadvantaged.

182. All of these initial difficulties were overcome well before the end of the year, by when JPA was delivering a much simplified and improved personnel administration capability for the RAF. A number of lessons were learned from this, and JPA roll out to the Royal Navy and Royal Marines in the autumn of 2006 and to the Army from the spring of 2007 went much more smoothly. The first Royal Navy payroll in November 2006 and the first Army payroll in April

2007 were both successful, and the system has since continued to perform well.

183. Unfortunately, roll out of the back office financial manpower and accounting processes did not go as smoothly and a number of more fundamental problems were identified. In particular, the financial reporting information required was not initially available. These had a temporary impact on the Department's ability to exercise full financial control and created a significant risk to the timeliness and quality of the Departmental Resource Accounts. Once these issues had been identified, mitigation plans to resolve the core problems were produced and implemented successfully. By the end of the financial year full financial control had been re-established, but the problems had been of sufficient importance and duration that they represented a significant failure in financial control that required specific reference in both the Department's and Armed Forces Personnel Administration Agency (AFPAA's) Statements on Internal Control. Work to resolve a number of less fundamental accounting issues by the autumn of 2007 continues and remains on track.

Military Personnel Package

184. The independent Armed Forces' Pay Review Body (AFPRB) 2007 report was published on 1 March 2007. It recommended an increase in the basic military salary of 3.3% for all ranks, restructuring the pay range to give those on the lowest pay level an increase of 9.4%, new financial retention incentives for the Royal Marines and Infantry Other Ranks, and an extension of the existing incentive scheme for Aircrew. It also recommended an increase of 3.3% to Specialist Pay rates (such as Flying Pay, Submarine Pay and Diving Pay) and increases to food and accommodation charges. Its recommendations were implemented in full, effective from 1 April 2007, as were those of the 2007 Senior Salaries Review Body, including an increase in Senior Officers' basic pay of 2%. The AFPRB also endorsed the Operational Allowance introduced in October 2006 (See paragraph 6 under *Current Operations*).

185. In November 2006 the new Armed Forces Act received Royal Assent. This harmonised, streamlined and modernised the military justice and discipline system across all three Services under a single system of service law. It also introduced a Complaints Commissioner to hear complaints involving bullying and unacceptable behaviour. This will improve the transparency of the military complaints process and increase confidence in Service procedures. The target date for full implementation is December 2008. Work is in hand to develop and roll out the regulations, manuals and training required to ensure that the legislation works effectively in practice. The Act also pardoned over 300 soldiers who were executed in World War One.

Better Understanding People

186. The Department continued to take forward its programme of research to gain a better understanding of behaviour, and examine how changes to the Armed Forces and the wider environment within which they live and work are likely to affect issues such as recruitment, morale and retention. This included research to identify how the aspirations and expectations of personnel change as they progress through their careers. Research also continued into the nature and extent of sexual harassment in the Armed Forces in partnership with the Equal Opportunities Commission, (see paragraphs 306-307 under *Manpower*). The information produced is used to inform policy development and decisions on the allocation of resources.

Civilian Personnel Developments

People Programme

187. Work continued to take forward the People Programme, which is the major change programme to implement the Civilian Personnel Strategy launched in 2002. Its aims to:

- develop the skill and behaviours that individuals will need in the future;
- develop managers' ability to deliver through their teams;
- modernise the delivery of personnel services; and
- modernise Human Resources to move from policing and processing to strategic planning and support.

The programme remains challenging, but on track.

Skills and Behaviours

188. Skills Champions are personnel appointed within the Department to provide a functional, strategic overview of skills shortages within particular functional areas (such as project management, engineering and science) to inform top level discussions with Corporate HR, Civilian Workforce Advisors in the Top Level Budget organisations and the Personnel Director as Civilian Workforce Process Owner.

189. While the numbers of civilians who deploy on operations is small compared to that of Service men and women, demand for civilians with the right skills has continued to grow. They routinely carry out a number of roles in operational theatres in direct support of military operations, including as political advisers and civil secretaries, finance and claims officers, fire fighters, police officers, commercial experts, intelligence and scientific analysts, estates staff, and media and communication specialists. On average about 170-200 civilians are deployed at any one time. Reflecting this requirement, in November 2006 the Department successfully launched the Support to Operations programme. This has strengthened the capacity to recruit the right people for these roles and provide them with the best possible support. Together with the very extensive communications campaign that preceded its official launch, this programme is effectively closing the gap between the supply of, and demand for, suitably qualified and motivated volunteers. The challenge now is to maintain the flow of volunteers in the medium term.

Civil Servants working in Baghdad

Acquisition Skills

190. Considerable work was taken forward on developing Acquisition skills in support of the Defence Acquisition Change Programme;

- The six Skills Champions involved in this area completed an initial broad assessment of the current and future skills requirement in their areas and the key skills gaps. They then developed Skills Growth Plans to address these gaps. These plans provide a strategic perspective of the skills requirement, set out measures to address the identified skills gaps, and provide a basis for estimating the level of new investment required. As such they are entirely consistent with the recommendations of the Department's Capability Review. In parallel the Department developed a more flexible employment framework to support the Defence Equipment and Support organisation on its launch on 1 April 2007 and is investing some £7M for acquisition up-skilling in 2007-08;

- A formal programme to take forward the upskilling element of the Defence Acquisition Change Programme was launched by the Defence Academy in June 2007 working in partnership with LogicaCMG and Cranfield University. This is focused primarily on training civilian and military staff in key roles at the awareness/practitioner level, across the acquisition community. In line with the aims of the Defence Industrial Strategy, it also aims to increase the level of joint training with industry and will significantly enhance the recent Guide to Acquisition Training and Education (see paragraph 320 under *Personnel Management*).

- The Acquisition Operating Framework is a website that was developed during the year and rolled out in June 2007. It will act as a key enabler for the wider benefits of the Defence Acquisition Change Programme by improving consistency in application of policy and best practice. It will achieve this by establishing a strong professional doctrine for the acquisition community and by defining the obligations of organisations and individuals within that community. It will be embedded throughout the organisation, bringing with it real accountability for delivering against its requirements. Leaders and teams within the acquisition community will be expected to comply with its requirements. This will be measured from April 2008, linked to the impact on business performance.

Developing Managers

191. People management is a fundamental line management responsibility, and a key theme during 2006-07 was to improve the professionalism of managers in this role. The Department continued to develop the civilian appraisal and development review processes, while also introducing a new set of improved products that define the line management role and better equip line managers to effectively carry out their responsibilities.

Modernising Personnel Services

192. In April 2006 the People Pay and Pensions Agency was established to provide transactional services and casework support across the Department. Over the year it continued to grow in size, coverage and customer acceptance as an organisation with high standards for service, quality, responsiveness

and availability, maturing from providing routine administrative services to developing and launching a significantly more complex and sensitive discipline, harassment and grievance service. By the end of the year it was meeting its target of completing 90% of its business on time and to quality. It is also delivering a major programme to modernise its IT infrastructure on time and to quality, working towards Full Operating Capability on time and developing a subsequent continuous improvement programme. Together with the associated business improvements this is on course to generate savings of approximately £305M.

RAF and Civilian Personnel working together

Strategic Planning

193. During the year the Department launched a review of how civilian talent was managed at a corporate level, working closely with the Cabinet Office on succession planning and leadership development; and developed measures to increase the rate of internal promotions to the Senior Civil Service and feeder grades (see paragraph 227 under *Personnel Management*).

The 2006 Civilian Workforce Strategy, agreed in November 2006, identified a series of strategic priorities for improving the civilian contribution to defence over the next five years. Its key themes were the continuing need to improve civilian defence leaders' ability to see through complex and transformational change, the importance of further developing the professional skills required to realise the vision of the Defence Industrial Strategy, and the need to ensure that the Department continued to bring in and develop new talent at certain management levels, in appropriate skill areas within the context of the continuing wider civilian staff reduction process. These themes were broadly affirmed by the Department's Capability Review in March 2007 and reflected in the associated action plan (see essay on page 147).

Efficiency

194. By 31 March 2007 the People Programme had delivered £30M of efficiencies, mainly through reductions in civilian personnel staff (see paragraph 151 under *Efficiency and Change*). During the 2006/07, scrutiny of the People Programme, including a Defence Internal Audit, concluded that the Department was on track to deliver the hard input efficiencies in line with the original approval of the programme. However the audit found there was room for better definition of the soft benefits and for improved data collection and analysis of these benefits. The Department has reduced to £30M the efficiencies claimed for 2006-07, and to £48M those forecast for 2007/08. This demonstrates the rigour applied to ensure efficiency claims are supported by adequate evidence. Work is in hand to implement the recommended improvements.

Further sources of information

195. Additional information on Future Personnel Plans is available from the following sources:

- Quarterly PSA reports to HM Treasury at www.mod.uk
- UK Defence Statistics – www.dasa.mod.uk
- Statement of Internal Control at www.mod.uk
- AFPAA Annual Report and Accounts – www.mod.uk
- Armed Forces Pay Review Body Report – www.mod.uk
- Senior Staff Review Body Report – www.mod.uk
- An overview of the Military Criminal Justice System and the Armed Forces Act 2006 on www.mod.uk
- Civilian Workforce Strategy 2006 at www.mod.uk
- Capability Review at www.civilservice.gov.uk
- Capability Review – The Department's Response at www.mod.uk
- Acquisition Operating Framework at www.mod.uk

Essay – Joint Personnel Administration

2006-07 saw the successful rollout of Joint Personnel Administration (JPA) to the Armed Forces – one of the key projects in the MoD's Defence Change Programme and a major contributor to the Efficiency Programme. JPA has involved significant policy, process and organisational change. These included establishment of a shared service centre to support military personnel, the Joint Personnel Administration Centre (JPAC), and the replacement of over 250 bespoke legacy systems with a single Commercial Off The Shelf software package.

JPA was initiated because the cost, risk and hindrance to business change from continuing with antiquated IT platforms had become unsustainable. The different rules that applied in each Service were an increasing source of irritation on joint operations, and the different processes prevented administrators from one Service supporting personnel from another. The fragmented nature of the personnel systems and inconsistencies in the data they contained made it impossible to fully exploit the information that was held. Consequently in June 2001 the Defence Management Board set a vision and strategy for JPA that it harmonise and simplify policy in all aspects of pay and personnel administration across all three Services, underpinned by a world standard commercial software package providing a single authoritative and integrated source of reliable, accurate and up to date personnel information. At the individual level, this meant one complete whole-life record for every Serviceman or woman which they are able to access online, and self-service facilities to undertake many administrative functions themselves without having to submit paper forms. This entailed deliberate risk, since the linkages needed to produce a more efficient and effective system also meant that incorrectly entering personal data could lead directly to incorrect payment of allowances. At the Departmental level, JPA would produce a comprehensive up-to-date picture of the size and shape of the Armed Forces for the first time, with data captured only once at source and transmitted electronically with minimal intervention. Over time the data within JPA will build up to provide the Department with a rich supply of management information to support operational decisions and the development of evidence based policy.

The strategy for delivery was to redesign radically many existing processes, ensuring that by harmonising them wherever possible, by keeping policy as simple as possible and by aligning with commercial practice wherever possible the cost of ownership would be reduced to the benefit of the front line, and that the Department and Services would create an environment more agile in responding to change initiatives. The service delivery was based on self-service, automation and centralisation of routine activity leading to considerable benefits in terms of quality of information and ease of operation. These were then expected to produce eventual financial benefits of around £100M a year.

There have been few, if any, business change projects of such complexity anywhere else in the private or public sectors. Many personnel policies and regulations have been revised, a new set of business processes designed and new organisations established. The supporting software application is one of the largest Oracle HR implementations worldwide, makes the fullest use of the functionality of the software, and is the largest single payroll. The system contains around 350,000 records (and over one million if pensioners are included) and supports 250,000 users worldwide from the regular and reserve forces. Nowhere has a more complex dataset – around 24 million pieces of data – been so successfully migrated.

JPA has now been successfully implemented for all three Services over the year, to the Royal Air Force in April 2006, the Royal Navy in October 2006 and the Army from March 2007. It has also been successfully deployed to units in Bosnia, Iraq and Afghanistan as well as on board Royal Navy ships, and all reports indicate that it is working well. Peak usage has so far seen over 3,650 users logged-on to the system at any one time and over 11,000 users in a day. The JPAC is typically handling 16,000 calls a week, with significantly more at peak periods.

JPA is extremely powerful and the new underpinning business processes are not yet fully understood. Attention is therefore now turning to fully exploiting the opportunities and wider information potential it offers. In particular work is continuing to ensure that the new culture and working practices are embedded, and that the right training and communications are in place to help all personnel learn how to use JPA effectively according to their requirements and responsibilities, and get the best from it.

Science Innovation and technology

Objective: Exploit new technologies

Assessment and Performance Measures

Assessment: The defence science and technology community provided essential support to help counter the increasing threat from improvised explosive devices on operations, and to counter terrorism activities. In addition to a continuing peer reviewed, high quality and well managed research programme of almost £500M a year, a considerable programme of work was taken forward to implement the Science and Technology aspects of the Defence Industrial Strategy, including the launch of programmes to stimulate innovation in defence research.

Support to Operations:

- Scientific support provided to commanders in the field and operational Headquarters;
- Counter Terrorism Science and Technology Centre achieved full operational capability.

Support to Current and Future Equipment Programmes:

- High degree of customer and stakeholder satisfaction with research programme;
- Research collaboration with allies work enhanced capability for our armed forces, de-risked novel and new technologies, and increased awareness of developing opportunities and threats from new technologies across the world;
- Continuing support to MoD investment decisions through scrutiny and analysis, and implementation of Defence Acquisition Change Programme Approvals and Scrutiny Workstream.

Research:

- Launch of Defence Technology Strategy, including the Competition of Ideas and the Grand Challenge;
- Publication of study into Maximising Benefit from Defence Research and extension of Peer Review approach to wider Research and Development programme;
- £498M of research contracts awarded (£480M in 2005-06);
- 85% of research projects were aligned to the Department's strategic guidance and defence technology strategy;
- Continued development of Defence Technology Centres and Towers of Excellence in partnership with industry and academia;
- 90% of Research Projects of sufficient quality or better, and 22% classed as world-leading;
- Majority of research is well managed using best practice project management techniques;
- Good medium term exploitation of research in defence and industry;
- Continued broadening of research supplier base.

196. Science, innovation and technology throughout defence is primarily provided through the Science Innovation Technology Top Level Budget organisation. This is the focus for creating battle-winning technology for the front line and bringing rigour to decision making, both at Head Office and in the field. Its work underpins the United Kingdom's defence capability by providing scientific support to decision making, developing and implementing technical solutions, supporting operations with analysis, and reducing risk. Military and commercial technological developments across the world are monitored to identify upcoming threats and opportunities to enhance the United Kingdom's defence capabilities. International research collaboration with allies facilitates cost and risk minimisation and expands our research capabilities. Defence Research enhances existing technologies, identifies and develops emerging technologies, and supports their cost effective implementation.

Support to Operations

197. The Armed Forces faced an increasing threat from improvised weapons and explosive devices during the year. Such devices currently account for the greatest loss of coalition forces in Iraq from enemy action. The Department therefore drew on its science and technology resources to provide commanders in-theatre advice and improved protective measures, and a major countermeasures research programme improved the Armed Forces' ability to detect and thus deal with such devices. Scientific Advisers and Operational Analysis teams were deployed with UK forces in Iraq and Afghanistan throughout the year. Their work focussed on campaign assessment, analysis of significant events and scientific advice on force protection and trials. The Operations Support Coordination Cell at Dstl Porton Down provided a 24 hour service to the teams in both Iraq and Afghanistan, gathering and relaying responses from the experts within the Dstl and wider communities. An example of this was when, following modelling, advice was provided to British commanders on the ground on how to operate against an urban facility while minimising damage to surrounding buildings.

198. Following its launch in April 2006, good progress has been made in establishing MoD's new Counter Terrorism Science and Technology Centre as the United Kingdom's focal point for counter terrorism science and technology research. It established an innovative research programme and let some 25 contracts with Government laboratories, industry and universities on a diverse range of topics including countering improvised explosive devices, Chemical Biological Radiological and Nuclear forensics, and social network analysis. It led the work to develop responses to the increasing operational threat from improvised explosive devices. It also provided valuable support to technology acquisition and counter terrorism operations at home and abroad. It made a number of valuable contributions to other Government Departments, in particular to the Home Office in their development of the United Kingdom's Counter-Terrorism Science and Innovation Strategy. Defence scientific staff provided important specialist support to the Metropolitan Police, Home Office, and the Health Protection Agency following a case of poisoning with radioactive Polonium 210 in London in November 2006. As well as deploying experts in the field, much of the forensic analysis carried out on the radioactive samples was undertaken at the Atomic Weapons Establishment Aldermaston.

'Wheelbarrow' searching for Improvised Explosive Devices

Effective Support to Current and Future Equipment Programmes

199. Defence research investment provides technology options to meet defence capability needs and expertise to assist defence business and acquisition. Defence science and technology personnel continued to support decision making by providing technical scrutiny of the defence equipment programme. This included developing techniques to analyse future helicopter options and to improve the planning and deployment of medical assets on operations. An integrated programme of research, analysis and experimentation was also put in place to support the identification of friendly and hostile forces in the operational theatre. This includes work from Dstl and industry, and collaborative research with our Coalition partners through the Technical Cooperation Programme.

Quality of Advice

200. The study into *Maximising Benefit from Defence Research* demonstrated that there is a high degree of customer and stakeholder satisfaction with the programme. This is corroborated by the peer review conclusions of the quality of defence research (see paragraph 208 below).

International Collaboration

201. The Defence Technology Strategy restated the Department's intention to obtain enhanced value for money through collaboration with international partners, and clarified the Department's approach. The MoD's key collaborative partner is the United States. During 2006-07 there were 62 collaborative projects (of which 13 were established in-year), 155 formal information exchange arrangements and 30 international personnel exchanges. These programmes provided enhanced capability for our armed forces, helped de-risk novel technologies, and increased awareness of developing opportunities and threats from new technologies across the world. The International Technology Alliance between the MoD and US Army aims to build close collaborative relationships between governments, industry and academia in both nations, to research state-of-the-art technology and encourage its application in military and dual-use systems. The preferred bidder for this work is a consortium of 24 industrial and academic organisations from the United States and United Kingdom led by IBM.

Better Business Cases

202. The Defence Acquisition Change Programme is taking forward the conclusions of the Enabling Acquisition Change review (see paragraphs 170-171 under *Future Capabilities and Infrastructure*). It includes workstreams on Approvals and Scrutiny and on Research and Development which will significantly affect how the Department manages science and technology. The Approvals and Scrutiny project is addressing the requirement for a slicker, more effective process, delivering better Business Cases and more robust scrutiny. The Research and Development project is working to provide transparency from strategy to delivery, increased access to Science for acquisition, a coherent research and development approach to Through Life Capability Management, an increased rate of pull-through from research into capability and a more responsive research and development environment.

Research

203. The Defence Industrial Strategy emphasised the need to ensure that research is aligned to capability needs. Following that the Department undertook a study into *Maximising Benefit from Defence Research*, covering the £500M annual research programme. Over 240 individual research projects were subjected to external peer review and the results were published in September 2006 (see paragraph 208). This established a proven methodology which the Department can use in future reviews of the research programme, and a benchmark against which future performance can be assessed. In the light of this the Department is conducting a wider review of the product of MoD's approximately £2.5Bn annual research and development investment, drawing on the same methodology.

204. The Defence Industrial Strategy also promised a major review of the Department's approach to future research and technology. This was delivered in November 2006 with the publication of the *Defence Technology Strategy*. This set out clearly the MoD's research and development priorities, and provided a strategic view of the UK's defence research and development requirements for up to the next ten years. The strategy will enable the MoD and industry to plan their investment in research and development cooperatively, rapidly bringing the benefits of advanced technology to the front line. It also launched two initiatives to stimulate innovation in defence research. The Competition of Ideas aims to expose and seek solutions to defence problems that need innovation and the injection of new ideas from a wide range of potential UK suppliers. The Grand Challenge aims to create a system with a high degree of autonomy that can detect, identify, locate and report a comprehensive range of military threats in an urban environment. Details are set out in the essay on the Defence Technology Strategy on page 114.

205. During the year £498M of research contracts (£480M in 2005-06) covered work including:

- The ability of airborne pilots to command several Unmanned Aerial Vehicles (UAV) each capable of launching attacks, was successfully demonstrated in a trial where an RAF Tornado pilot remotely commanded an autonomous UAV (a specially adapted passenger aircraft) and three virtual aircraft in a simulated mission;

- Medical counter measures currently require individuals to take pre-treatment in anticipation of a nerve agent attack. Research undertaken demonstrates the possibility of countering nerve agent attack without the use of pre-treatment;

- World-leading armour research supports both existing platforms and future programmes. The research team played a key role in providing successful upgrades for vehicles deployed in operational theatres.

- The British Experimental Rotor Programme (BERP) IV rotor blades on a RAF Merlin Mk3 helicopter demonstrated improved aircraft performance;

- The Joint Convoy Operations Virtual Environment (JCOVE) concept capability demonstrator was exploited to provide a deployable mission preparation training solution for units deploying to both Iraq and Afghanistan this year. The system was delivered to the users from concept in nine months and is providing specific convoy and combat training as an integral part of pre-deployment training;

- Research work on integrated helicopter survivability, drawing on the research programme and associated studies continues to deliver significant benefits in terms of increased survivability and availability of helicopters to British forces deployed in Iraq and Afghanistan. Dstl staff have deployed into Iraq to undertake further trials and to optimise the application of this equipment and tactics.

The Unmanned Ariel System

Alignment with Defence Needs

206. Recent analysis has shown that there is a correlation between the quality of military equipment and prior investment by governments in defence Research and Development. The research programme is reviewed to ensure that work is aligned to defence needs and meets critical success factors. The *Maximising Benefit from Defence Research* report concluded that 85% of research projects were aligned to the Department's strategic guidance and its technology strategy. About half of the remainder were aimed at helping identify capability gaps and to formulate research requirements. The remainder have now been realigned or discontinued as appropriate.

207. The Defence Technology Strategy stated that the changing threat itself can often be driven by advances in science and technology. It is therefore vital to monitor science and technology developments, to target research at areas of relevance and develop innovative new ways of meeting our defence capability requirements. The Department has a number of initiatives, such as rapid assistance to operations, the Defence Technology Centres and Towers of Excellence, all aimed at developing a better understanding of the critical capabilities we require and the ways in which they can be most effectively delivered:

- Towers of Excellence are selective partnerships with industry and academia, directing resources into priority areas of technology research-guided weapons, electro-optic sensors, synthetic environments, radar, under water sensors and electronic warfare. The development of technology through to a final product and more general technology transfer to industry are a major benefit of operating Towers of Excellence.

- Defence Technology Centres are examples of an alternative partnering approach which are jointly funded by MoD and industry (usually as consortia). The Centres are based around topics (Electromagnetic Remote Sensing, Data and information Fusion, Human Factors Integration and Systems Engineering for Autonomous Systems) which are critical to defence and where investment is likely to produce significant returns. A range of suppliers, including small and medium sized enterprises and academia provide input to the Centres, which are managed to allow a flexible response to merging needs and priorities.

The Cornershot weapon which can fire around corners

Quality of Research

208. For the *Maximising Benefit from Defence Research* report external peer reviewers assessed a third of the projects in the research programme. They concluded that over 90% were of sufficient quality or better. 70% high or world class with 22% being classed as world-leading, providing the United Kingdom with a competitive edge internationally. Nearly half were deemed good quality research that would have merited publication in a top tier research journal, . Fewer than 8% of projects were found to be of poorer quality, for a number of reasons. The Department is working to ensure that projects assessed to be low quality or unlikely to meet their objectives are reviewed with a view to cancellation where appropriate in order to allow the resources to be reallocated to emerging higher priority projects. There remains scope for further improvement in research quality, and the introduction of greater competition (see paragraph 209 below) should help in this regard.

Exploitation of Technology

209. The *Maximising Benefit from Defence Research* study found that in the medium term, exploitation of research has been good and that there is increasingly widespread use of exploitation planning for current research. Just over half the current projects assessed showed evidence that they had had an impact or were likely to in future. A small sample of mid-90s research projects was also reviewed. In the case of projects intended to provide innovative solutions, nearly half were assessed as having led to a new or improved capability, and over two-thirds of such work subsequently had unexpected exploitation within defence or led to spin off into the civil sector. 50% of innovative projects produced Intellectual Property Rights taken up by industry.

Programme Management

210. The study also conducted an assessment of research suppliers' project management. This showed that the majority of research is well managed using best practice project management techniques. This reflects a number of initiatives designed to improve research project management, such as the introduction of ISO 9001 standards.

Supplier Management

211. In July 2006 the Department staged an Academic Engagement event, with 250 attendees, specifically aimed at increasing participant knowledge and understanding of defence and explaining how academia can work with the MoD. Of the delegates who gave feedback, 88% felt that the event successfully fulfilled its objectives. The Department also strengthened its campaign to reach out to and broaden the supply base. In 2002-03 around 90% of the MoD research was done in Dstl or QinetiQ. The Department remains on target to compete 60% of the research programme across industry and academia by 2009-10. The annual Research Acquisition Organisation 'Suppliers day' has become a major event in the Defence Research calendar as the Department has increased the use of open competition. The aim is to ensure that the Department's supplier base is better informed of opportunities in the research programme. Compared to 250 attendees in 2004, in November 2006 it attracted over 500 representatives of major defence companies, Small and Medium sized Enterprises, and academia, with 84% of delegate feedback agreeing that the event was informative and worthwhile. More are expected next year.

Further sources of information

212. Additional information on Science Innovation and Technology is available from the following sources:

- UK Defence Statistics at www.dasa.mod.uk;
- *Defence Industrial Strategy* at www.mod.uk;
- *Defence Technology Strategy* at www.mod.uk;
- *Maximising Benefit from Defence Research* at www.mod.uk;
- Information on Competition of Ideas at www.ideas.mod.uk;
- Information on Grand Challenge at www.Challenge.mod.uk;
- Information on The MoD Counter Terrorism Science & Technology Centre at www.ctcentre.mod.uk;
- Information on Science Technology Innovation at www.science.mod.uk;
- Defence Science and Technology Laboratory Annual Report and Accounts 2005/06 available at www.mod.uk.
- The Effects of Defence R&D on Military Equipment Quality Middleton, Burns et al., Published in the journal of Defence and Peace Economics April 2006

Essay – Defence Technology Strategy

In December 2005 the Defence Industrial Strategy set in hand a review of the Department's approach to Research and Technology. The conclusions of that review were published as the Defence Technology Strategy in October 2006. This represents the first clear statement of the MoD's overall research and development intent, setting out those technologies that are a priority for defence, and identifying where the United Kingdom should maintain an appropriate sovereign capability. It brings clarity to the Department's research and development priorities, and provides a strategic view of defence research and development requirements for the next ten years. This gives industry and academia a better understanding of where the Department will invest its limited research budget, thereby encouraging increased industry investment in areas important to defence.

The Defence Technology Strategy aims to provide ways of improving the capabilities of our Armed Forces into the future, particularly highlighting those technologies we need to develop to underpin Through-Life Capability Management. The Department is likely to continue to resource technology development with significant defence potential, but turning this into deployable equipment requires significant industrial funding as well. The Defence Technology Strategy enables the Department and industry cooperatively to plan investment in research and development, bringing the benefits of advanced technology to the frontline more rapidly. The Department is working with the National Defence Industry Council on principles for further development.

Structure of the Defence Technology Strategy follows the format of the Defence Industrial Strategy:

- Part A provides a strategic context. The UK faces adversaries who rapidly change their tactics and employ ever more varied, advanced and innovative technologies. This demands rapid evolution in our response, both tactically and in the technologies we deploy to combat the threats.

- Part B addresses the examination of our research and development effort and needs. It is the culmination of detailed analysis often through workshops of experts from industry, academia and MoD, examining each particular sector

- Part C lays out how the Strategy will be taken forward.

The Defence Technology Strategy is based on the industrial sectors of the Defence Industrial Strategy, and identifies the technologies for each. Analysis of technology requirements show that there are common technology themes to many of the sectors, identified as Cross-Cutting Technologies – those areas that underpin all capability requirements. There is also a section on emerging technologies which includes areas that are not necessarily critical for any specific sector or capability as yet, but as they develop further will undoubtedly be widely exploitable.

In particular the Strategy announced two major initiatives to stimulate innovation in defence research:

- The Competition of Ideas is designed to expose and seek solutions to defence problems that need innovation and the injection of new ideas from a wide range of potential United Kingdom suppliers. With an initial budget of £10M per annum, it aims to inspire the best innovators from across the UK to bid for a contract to develop further their ideas to meet key defence challenges. It attracted over 450 applications including from universities and small and medium sized enterprises. More information is available at www.ideas.mod.uk;

- The Grand Challenge is a major science and technology competition directly relevant to the military challenges faced by the UK Armed Forces. It aims to provide an opening into the UK defence market for new suppliers and investors. The current challenge is "***to create a system with a high degree of autonomy that can detect, identify, locate and report a comprehensive range of military threats in an urban environment***". This has received significant interest from across the UK science and technology base, large and small companies, research laboratories and academic science faculties. The Grand Challenge will culminate in a competitive physical demonstration of the various systems in the summer of 2008. The winner will receive the R J Mitchell trophy, named after the innovative designer of the Spitfire – decisive technology in the Battle of Britain. Further details can be found at www.challenge.mod.uk.

The Defence Technology Strategy emphasises the importance of developing and maintaining high quality science and engineering skills relevant to defence technologies. A Skills Growth Plan to identify any professional skills gaps in science and engineering skills across the MoD has now been produced, and the Department has worked with the Royal Society to identify candidates for postdoctoral research fellowships under a one-year pilot scheme.

Overall, the Defence Technology Strategy works on three levels:

- Making the UK defence science and technology a great sector to work and invest in, enriching the science and technology skill base of the UK;

- Ensuring that for each innovation we derive, it is exploited at the earliest opportunity for the front line. In current operations, the technology employed in improved body armour, medical treatments and in countering improvised explosive devices continues to transform how we deliver our capability in an evolutionary manner;

- Clearly identifying those technologies which we need, for national security reasons, to retain in the UK, and, where these are threatened, developing sustainment strategies to foster and maintain them.