MINISTRY OF DEFENCE

Delivering Security in a Changing World

Future Capabilities

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Future Capabilities

Presented to Parliament by
The Secretary of State for Defence
By Command of Her Majesty

July 2004

£7.00

Cm 6269

Chapter 1
Introduction 2

Chapter 2
Force Structure Changes 5

Chapter 3
Organisation and Efficiency 11

Chapter 4
Conclusions 13

Annex
Determining the Force Structure 14

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MINISTRY OF DEFENCE

Foreword by the Secretary of State for Defence the Right Honourable Geoff Hoon MP

In the Defence White Paper of last December I set out the need to defend against the principal security challenges of the future: international terrorism, the proliferation of Weapons of Mass Destruction, and weak and failing states. Our need in the future is for flexible and adaptable armed forces properly supported to carry out the most likely expeditionary operations. To create a more sustainable and affordable force structure which better meets these operational requirements we have secured additional resources: the 2004 Spending Review allocated £3.7 billion to defence across the Spending Review period, which represents an average real terms increase of 1.4% a year. Additionally, we shall also generate resources to strengthen the front line through our comprehensive efficiency and rationalisation plans, the benefits of which will be ploughed back into the defence budget. As indicated in the White Paper, we are pursuing radical change in the future force structure, reducing force levels in some capabilities in order to invest more in higher priority capabilities better able to achieve the effects we will require. We will increase our capacity to undertake expeditionary operations alongside an equipment programme that is delivering, and will continue to deliver, an advanced range of capabilities. The result will ensure that the resources the Government commits to Defence are deployed to optimum effect. The Chiefs of Staff support the radical change we are pursuing and have been instrumental in its preparation.

Chapter 1

Introduction

1.1 The Defence White Paper set out our analysis of the future security environment, the implications for defence, our strategic priorities and how we intend to adapt our planning and force structures to meet potential threats. This policy was an evolution of the strategy contained in the 1998 Strategic Defence Review (SDR), and built on the conclusions of the 2002 SDR New Chapter and recent operational experience. Crucially, it demonstrated the need to adapt to the more pronounced threats presented by international terrorism and the proliferation of weapons of mass destruction (WMD) and the challenges posed to the international community by weak and failing states.

1.2 The White Paper set out a revised set of assumptions which underpin future planning. These include:

- An expanded regional focus beyond the core regions set out in the Strategic Defence Review of Europe, the Near East, North Africa and the Gulf, to reflect the requirement to operate further afield across sub-Saharan Africa and South Asia, and to meet the wider threat from international terrorism on a global basis.

- The need to strike the right balance of capabilities for expeditionary operations to meet the demands of our eight strategic effects - Prevent, Stabilise, Contain, Deter, Coerce, Disrupt, Defeat and Destroy.

- The need to optimise our force structure to support three concurrent small and medium scale[1] operations (rather than two in the SDR) including the capability to lead or be framework nation for coalition operations where the US is not involved.

- The retention of the flexibility to reconfigure for less frequent large scale operations, while concurrently conducting a small scale operation. The full spectrum of capabilities is not required for large scale operations, as the most demanding operations could only conceivably be undertaken alongside the US, either as a NATO operation or a US led coalition, where we have choices as to what to contribute.

- The importance of the continued transformation of our forces to concentrate on the characteristics of speed, precision, agility, deployability, reach and sustainability. Key to this is our ability to exploit the benefits of Network Enabled Capability, precision munitions and the development of effects-based planning and operations.

- The importance of those capabilities which can rapidly come together to achieve specific military effect and then rapidly adapt with other capabilities to achieve what is required by the next operation. By doing so decisive military effect may be achieved through a smaller number of more capable, linked assets acting quickly and precisely to achieve a desired outcome.

- The need to ensure that the organisation of our Armed Forces reflects the reasonable aspirations of our people in the 21st Century in terms, for example, of greater geographic stability in their home lives.

- Continued support to the Home Office and other civil authorities charged with the safety and security of the UK, both through routine military tasks and our preparedness to support them in a time of crisis.

1.3 Based on this analysis the White Paper set out a revised set of 18 Military Tasks, both standing and contingent, with the range of strategic effects our armed forces need to be capable of delivering. Extensive work has been undertaken to identify the future force structure and the development of capability in the longer term. An illustration of how we match capability against military tasks is attached at Annex. As new capabilities come into service such calculations will change, particularly with our increasing focus on effects achieved by combinations of flexible and adaptable forces.

1 An example of a small scale operation was the UK's deployment to Macedonia in 2001; Afghanistan (2001) was at medium scale; and Operation TELIC large scale.

Force Structure Changes - Key Judgements

1.4 In determining where we have the most scope for change within the force structure to allow necessary rebalancing and continued investment in transformational capabilities we have focused on key policy judgements from the White Paper, in particular:

- The need to rebalance and optimise our Armed Forces to meet the demands of the more likely multiple concurrent and enduring small and medium scale operations. This requires the capability to form a third line of communication including deployable Headquarters, and Command, Control, Communications, Computers, Intelligence and Surveillance and Reconnaissance (C4ISR) assets and logistics. It also demands that all deployable units should be fully manned, minimising the requirement for individual reinforcements and backfilling.

- The requirement to enhance our ability to lead or be the framework nation for European (and other coalition) operations where the US is not engaged. To do so we must continue to have the full spectrum of military capabilities to achieve the desired effects at medium scale. For some of our assets such operations have now become the principal driver in determining the size of the force needed.

- The assumption, based on the experience of the last 10 years, that on enduring operations, once the joint force has been deployed and stability established, lower force levels and generally lighter forces are required. This has particular implications for the levels of maritime sea control, air and heavier offensive land forces required on an enduring basis.

- The assumption that the most complex large scale operations will only be conducted as part of a US-led coalition. Our primary goal is to maximise our ability to influence at all levels the planning, execution and management of the operation and its aftermath, in support of our wider security policy objectives. Our force structure at large scale should therefore focus on those capabilities which add real weight to the campaign and hence the UK's ability to influence its outcome. The most important capabilities are those which contribute to:

  - initial theatre entry and shaping operations;

  - intelligence, surveillance and reconnaissance;

  - precision attack of strategic targets;

  - joint land and air offensive operations; and

  - post-conflict stabilisation.

- Our aim at large scale is therefore to contribute:

  - Special Forces;

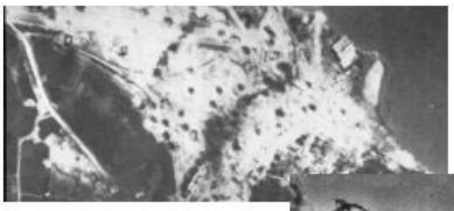
  - a range of C4ISR assets, forming our own network and integrated with the US network;

  - amphibious and carrier strike task groups;

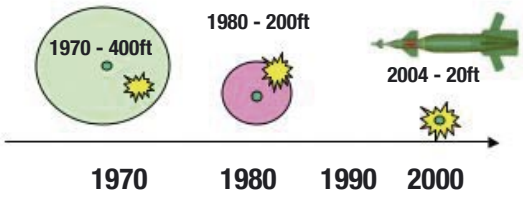
  - an air expeditionary task force capable of both long range strike and support to land operations; and

  - a land manoeuvre division capable of conducting offensive operations.

Improved Effect through Improved Improved Accuracy



During the Vietnam War over 800 sorties were flown against the Thanh Hoa bridge before it was destroyed by aircraft using precision weapons. **Today** we would aim to destroy a similar target with a single formation of 6 Tornado aircraft with Enhanced Precision guided bombs.



Improved Effect Through Improved Accuracy over the last 30 years.

In the 1991 Gulf War, fewer than 20% of air dropped munitions were precision guided. **In Operation TELIC**, greater than 80% were precision guided, greatly improving accuracy.

Improved accuracy on target translates into a direct improvement on the desired kinetic effect and therefore we can more accurately and more efficiently achieve our military aim with minimum risk of collateral damage.

We therefore need fewer munitions, sorties and aircraft per target to achieve the desired effect.

A Tornado GR4 dropping a precision guided munition, such as Enhanced Paveway II, will be around 10 times more accurate than it would be with a "dumb" bomb.

- Although the serious impact that the presence of a hostile submarine could have on maritime operations requires us to retain the capability to neutralise such a threat, the potential threat from hostile submarines to most future UK operations is likely to be very low. We have therefore judged it appropriate to reduce the numbers of platforms optimised for anti-submarine operations, while continuing to enhance the quality of those that remain and ensure that they are able to contribute fully in other capability areas.

- Similarly, the air threat to deployed forces has greatly reduced and the capability of our air superiority aircraft and other air defence assets is continuing to improve. So we need fewer aircraft and fewer ground-based air defence systems to meet the threat.

- The effectiveness of modern precision weapons and sensors, which can be used in all weathers, day and night, mean that highly accurate air delivered offensive effects can be achieved with fewer fast jets than before (see diagram above).

- While recognising the need to continue to provide appropriate levels of support to the Police Service of Northern Ireland, the more favourable security situation in Northern Ireland allows further reductions in the forces permanently committed to the Province, while retaining an ability to reinforce at short notice.

Methodology

1.5 In addition to routine planning, in January this year the Department set up multi-disciplinary Service and civilian teams to examine 16 thematic workstrands, using the policy baseline established by the Defence White Paper and focusing on the key judgements set out above. The aim was to identify the optimum sustainable and affordable force structure to deliver the revised policy requirement, while releasing resources to invest in our future priorities. The workstrands involved a rigorous examination of force structure, specific equipment requirements and supporting infrastructure, manpower and organisational structure. Set out in the following chapter, by capability area, are the changes we have concluded we should make to the current force structure and our key capability requirements for the future.

Chapter 2

Force Structure Changes

Network Enabled Capability

2.1 At the heart of this transformation is Network Enabled Capability (NEC). NEC is about the coherent integration of sensors, decision-makers and weapon systems along with support capabilities. NEC will enable us to operate more effectively in the future strategic environment through the more efficient sharing and exploitation of information within the UK Armed Forces and with our coalition partners. This will lead to better situational awareness across the board, facilitating improved decision-making, and bringing to bear the right military capabilities at the right time to achieve the desired military effect. This enhanced capability is about more than equipment; we will exploit the benefits to be obtained from transformed doctrine and training, and optimised command and control structures. The ability to respond more quickly and precisely will act as a force multiplier enabling our forces to achieve the desired effect through a smaller number of more capable linked assets. (An illustrative scenario showing the benefits NEC will bring to the delivery of military effect is overleaf.)

2.2 We recognise that as technology and our understanding of NEC change over time, our military capability will have to evolve. We have defined a clear set of priorities to deliver NEC over three interconnected phases, which will improve the connectivity of currently planned equipment, further integrate organisations and systems, and then synchronise all aspects of military effect.

2.3 Within the next five years there are several major programmes which will contribute to the high capacity network required to support NEC: Skynet 5 delivers the next generation of military satellite communications services to support all UK operations; Cormorant will link the strategic satellite based communications with operationally deployed headquarters, and Falcon will provide a secure communication system at the operational level; Bowman meets tactical voice and data communications needs. Building on these foundations, the Defence Information Infrastructure will provide the capability to exchange and share electronic information across Defence from foxhole to stores depot and from sensor to shooter. Elsewhere in the network, the MOD is continuing to invest in developing stand-off sensors, such as Watchkeeper, an Unmanned Air Vehicle and improved electronic warfare capabilities such as Soothsayer. The recently trialled ASTOR airborne surveillance system will meet the Army and RAF requirement for surveillance, reconnaissance and target acquisition information, as well as providing the UK's contribution to NATO's Alliance Ground Surveillance project. Improved stand-off sensors will not, however, remove the requirement for timely and accurate human intelligence (HUMINT), particularly in the field at the operational and tactical levels. We intend, therefore, to provide additional deployable HUMINT teams.

NEC – A SCENARIO

Autumn 2010, UK maritime, land and air forces are engaged in a focused intervention somewhere in sub-Saharan Africa.

13.54 Two fast-moving light utility vehicles carrying heavily armed terrorists with shoulder-launched surface-to-air missiles and rocket-propelled grenades are detected by an army reconnaissance squadron on patrol. They classify it as a possible target, and immediately report it to their Unit HQ using their Bowman digitally encrypted radios. ①

②13.57 This information is quickly relayed to Brigade HQ and supporting land forces and then on to Joint Forces Land Component Command (JFLCC). Within minutes a Watchkeeper UAV, operated remotely, has been diverted to find and positively identify the target using its own sensors.

③14.08 Meanwhile, the JFLCC has reassigned the on-station ASTOR battlefield surveillance aircraft to track the moving target and briefs the Joint Task Force HQ (JTFHQ).

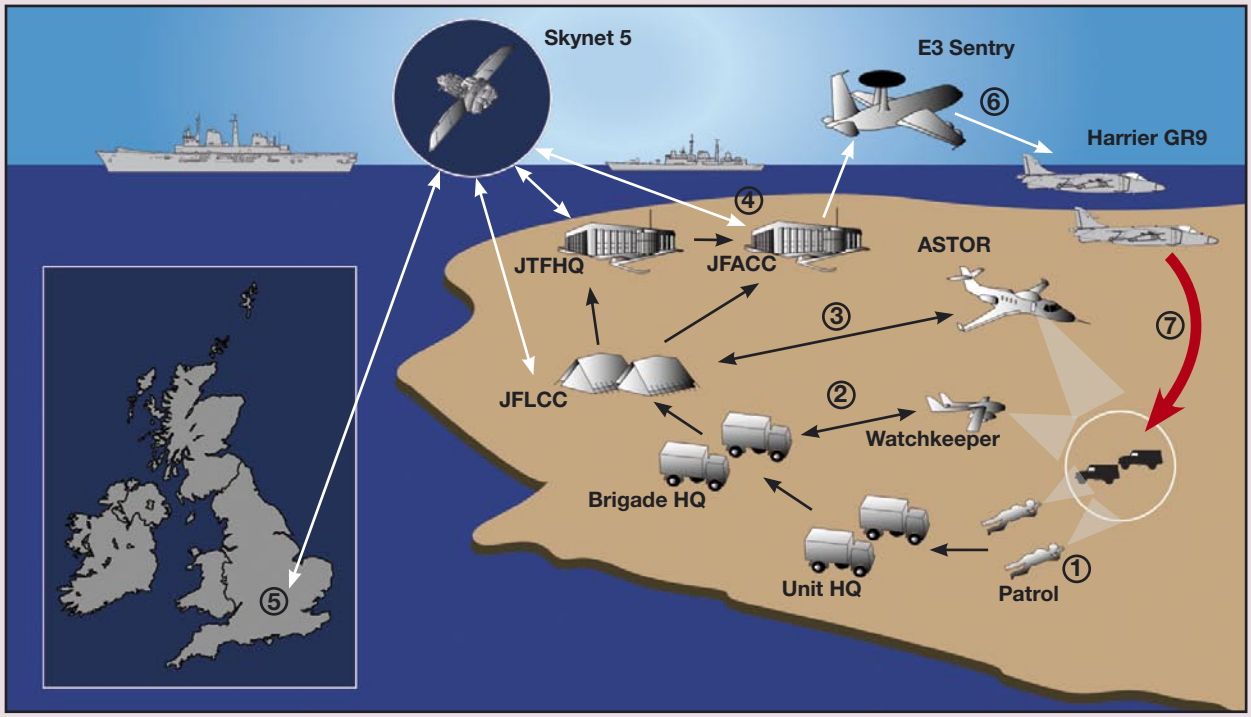
④14.10 The JFLCC and in conjunction with the Joint Forces Air Component Command (JFACC), develops a plan for engaging the target on the basis of an intelligence picture updated in real-time from numerous sources, which include the reconnaissance team on the ground, the UAV and ASTOR, even intelligence reports relayed from the UK by the Skynet 5 satellite system.

⑤14.15 Authorisation for the strike may be required from JTFHQ or from the UK, depending on the rules of engagement in force.

⑥14.16 Using Tactical Information Exchange Capability (TIEC) and secure voice radio, the JFACC directs an E3D Sentry to re-task two Harrier GR9 aircraft, from the nearby carrier group, who have been on stand-by in a holding pattern.

⑦14.24 The Harriers engage the terrorists with Maverick precision-guided munitions using updated co-ordinates received over TIEC.

⑧14.29 The Watchkeeper UAV provides a battle damage assessment, and confirm the destruction of the target – a little over 30 minutes from when it was first observed.



Special Forces

2.4 We are increasing the strength of our Special Forces and investing in new equipment for them. These are significant enhancements, but the details of these changes must remain classified.

Maritime

2.5 As set out in the White Paper, the future Navy will provide a versatile and expeditionary force with an increased emphasis on delivering effect onto land at a time and place of our choosing. The future force structure will be focused on the carrier strike and amphibious capabilities, including the Commando Brigade. In the short term, the capability will be built around the existing carriers and Joint Force Harrier operating the upgraded Harrier GR9. The new carriers deploying the Joint Combat Aircraft (JCA) will transform our capability to project power from the sea. They will have greater reach, sustainability and survivability than the existing carriers and will be able to deploy a much more powerful mix of fast jets and helicopters. The state-of-the-art, multi-role JCA will provide significantly increased performance, improving strike and reconnaissance capabilities, as well as incorporating stealth technology. Similarly, a robust and modern amphibious capability based around two new ships, HMS ALBION and BULWARK, supported by the Bay Class landing ships will provide a step change in our ability to launch and support forces ashore.

2.6 Destroyers and frigates provide a range of effects, both from within a task group, protecting the carrier, amphibious and strategic lift capability, and also at smaller scales in their own right. In future, these platforms, in particular Type 45, will provide far greater capability to counter modern threats through improved and networked sensors, command and control and weapons, as well as greater versatility when individually deployed on smaller operations. A Co-operative Engagement Capability to link sensors and weapons systems of the Type 45 destroyers will provide much more effective maritime air defence, and on the Type 23 frigates will improve their point defence and situational awareness. In the light of the reduced conventional threat, our revised concurrency assumptions and improved networked capability, we assess that we need fewer of these platforms. Consequently we have a requirement for 8 Type 45 destroyers and will need 25 destroyers and frigates overall. This will be achieved by paying-off our oldest Type 42 destroyers HMS CARDIFF, NEWCASTLE and GLASGOW, and reducing the number of Type 23 frigates by paying-off HMS NORFOLK, MARLBOROUGH and GRAFTON earlier than currently planned by March 2006. The numbers of ships remaining will continue to be sufficient to carry out our high priority standing tasks, and will maintain the technological edge to counter threats if and when they arise, through continuing development, including the introduction of the Type 2087 Low Frequency Active Sonar.

2.7 We judge in the light of the reduced threat that an attack submarine fleet of 8 SSNs will be sufficient to meet the full range of tasks. This force size will be achieved when HMS SUPERB and TRAFALGAR pay-off as planned by December 2008. For the future, the introduction of the ASTUTE class submarines will represent a significant addition to the delivery of effects based warfare. Their increased weapons payload coupled with our investment in the latest generation of Tomahawk land attack missiles will give each submarine even greater flexible precision firepower for land attack.

2.8 The changes in the scale of the anti-submarine capability will allow us to reduce the current Nimrod MR2 fleet from 21 to 16 and shift their primary role towards wider surveillance in support of joint military and security operations. The MRA4 aircraft should offer greater range and endurance to support operations over a wider area coupled with improved sensors providing greater surveillance utility in the land, as well as the maritime environment. Subject to industry demonstrating satisfactory performance at acceptable prices, the requirement could in future be met by a fleet of about 12 aircraft.

2.9 The reduced threat and changed requirement for large scale operations means we can meet our operational and standing tasks with a reduced fleet of 16 mine counter-measure vessels, through paying-off HMS INVERNESS, BRIDPORT and SANDOWN by April 2005. The improved security situation in Northern Ireland makes it possible to pay off the Hunt class patrol vessels, HMS BRECON, DULVERTON and COTTESMORE by April 2007. Our continued investment in oceanographic survey and environmental technology, with the new ships HMS ECHO and ENTERPRISE, has delivered a unique, world-class capability providing direct support to both our own forces and our allies.

2.10 In summary, we are building a versatile, expeditionary maritime capability with far greater and more flexible “punch” into the land environment, delivered at range from the UK and a time and place of our choosing. This will comprise a transformed strike capability based around future carriers, with Joint Combat Aircraft, and nuclear powered submarines alongside a robust amphibious capability including 3 Commando Brigade. We will also be able to provide appropriate independent forces to smaller scale operations through more individually capable frigates and destroyers, which will also offer networked force protection to the carrier and amphibious task groups. In total, this means a maritime force transformed in its ability to conduct maritime operations and contribute to the land environment in terms of strike, amphibious capability and surveillance.

Land

2.11 As previously announced in the White Paper, our priority is to rebalance Land forces so that they are better structured and equipped to conduct the full range of military tasks on concurrent small and medium scale operations. This will involve a major restructuring of the Army to better enable brigade level operations. The plan is to ensure that each deployable brigade is fully manned and has its own integral enablers and logistics to allow it, or battlegroups drawn from it, to undertake the most likely tasks. The balanced Land force of the future will consist of two heavy armoured brigades, three medium weight brigades and a Light Brigade,

in addition to the Air Assault and Royal Marine Commando Brigades. The new emphasis on Medium Weight Forces, based around the Future Rapid Effects System (FRES) family of vehicles, means that we will re-role heavy capabilities and establish additional surveillance, target acquisition and enabling capabilities, including manned reconnaissance, and an additional Unmanned Air Vehicle battery. FRES will operate alongside a new generation of command and liaison vehicles, which will begin entering service in 2007.

2.12 The shift in emphasis to Light and Medium Weight Forces means that we will establish an additional three light armoured squadrons; re-role a Challenger 2 regiment as an armoured reconnaissance regiment; re-role an AS90 regiment into a light gun regiment; and in the medium term, equip three artillery regiments with the new Light Mobile Artillery Weapon System when it enters service. At the same time, we will increase our ability to engage land targets with precision and at range with the introduction into service of the Apache attack helicopter this Autumn and future improvements to our missile inventory, beginning with entry into service of the new infantry anti-tank guided weapon (Javelin) in 2005. Collectively these improvements will allow a reduction of seven Challenger 2 armoured squadrons and six AS90 batteries by March 2007.

2.13 The need to fight at close quarters will remain an enduring requirement. Our forces have recently received upgrades to personnel protection, firepower and night vision equipment and 3 Commando Brigade are currently receiving a new protected vehicle, the Viking. Our dismounted infantry capability will be further enhanced through the Future Integrated Soldier Technology Programme.

2.14 Northern Ireland has been the largest single operational demand on the Army since the end of the Cold War, but the security situation is now significantly improved. This has already made it possible to reduce the number of infantry battalions committed to operations there by two. The Chief Constable of the Police Service of Northern Ireland (PSNI) and the General Officer Commanding (GOC) have now conducted a further review of security requirements and concluded that from the Autumn the number of battalions assigned to the GOC can be reduced by a further two, while still providing in full the support the PSNI requires. Neither unit is routinely based in Northern Ireland. Taken together, the 4 infantry battalion tasks which will cease this year required the commitment of a total of 16 infantry battalions to maintain 24 month tour intervals. We judge that cessation of these tasks will reduce our future requirement for infantry battalions from 40 to 36. This change in long term operational demands will enable the Army to enhance significantly the balanced all-arms capability it needs for future expeditionary operations.

2.15 A central element in the Army's restructuring will be a fundamental change to the way it organises the infantry. The practice of arms plotting – moving infantry battalions and their families ***en bloc*** between roles and geographical locations every few years – will be phased out. This will enable individual Servicemen and their families to plan on being based within a particular geographical area. Not only will this be a more efficient use of infantry battalions, it will also enable Service families to put down roots in the community within which they are based.

2.16 The new infantry structure will continue to be organised on a divisional basis, but a critical change will be made with the adoption of large regiments of two or more battalions, making it possible for individuals to move between units within their division, thus enhancing the advantages of geographical association, while preserving the opportunity at an individual level to move between different roles. Both regular and reserve forces will be incorporated into the new structure, enabling the Army to improve the links between regular units and the reserves who reinforce them. The reduction in the number of regular battalions from 40 to 36 will comprise one battalion recruited in Scotland and three recruited in England. Details of the new organisation will be worked out by the Army and announced by the end of the year.

2.17 All of the manpower freed up by the restructuring of the infantry will be reinvested, enabling the Army to achieve the robust formation and unit establishments needed to meet current and future requirements. Rebalancing will give the Army:

- Stronger and more resilient infantry battalions;
- Sufficient engineers to create an additional Explosive Ordnance Disposal squadron, and to improve combat engineer support for mobility and counter-mobility tasks, such as bridge-building and obstacle crossing, at brigade level;
- More signallers to enhance network access in 16 Air Assault Brigade, to bolster our logistic communications capability, and to provide additional strategic communications for the Allied Rapid Reaction Corps (ARRC);
- Additional intelligence staff, to enhance our deployable intelligence and security units and to provide a

fully operational human intelligence gathering (man on the ground) capability; and

- Extra logistics support, including additional fuel sections within each brigade and a greater port and maritime capability.

2.18 As a result of the reduced air threat to our forces on operations, we intend reducing Rapier anti-aircraft missile launchers from 48 to 24 fire units which will mean disbanding four RAF Regiment Ground Based Air Defence (GBAD) Squadrons. Rapier will be operated by the Army and GBAD will be commanded by a new Joint Headquarters within the RAF Command Structure. We will also reduce the High Velocity Missile capability from 156 to 84 fire units, by reducing the size of Regular batteries and deleting the roles of two TA regiments. These latter regiments will be re-roled, although plans for re-balancing are still being finalised.

Air

2.19 The UK's air capabilities have been significantly enhanced since the SDR. Advances in weapons, networking and in the aircraft themselves will see continuing substantial improvements in the decade to come. Our future combat air power will be built around multi-role Typhoon and Joint Combat Aircraft able to deliver the offensive air and air defence capabilities currently delivered by single role aircraft. As we make the transition towards a force structure based on these types, total numbers of fast jet crews and aircraft will vary year by year, but we have revised our air component requirements to take account of developing capabilities and to establish a firm baseline for force levels over the next decade.

2.20 Recent upgrades to the Tornado GR4 and continuing development of the Harrier GR9 force ensure a potent current offensive air and tactical reconnaissance capability. We are assessing how best to enable these platforms to connect to the wider network through the Tactical Information Exchange Capability programme. The new Storm Shadow long range air-to-surface missile, Brimstone and Maverick anti-armour weapons and new precision guided bombs considerably enhance our offensive ability to achieve precise effects. We judge that, as a result of these and other improvements, an air expeditionary task group capable of deploying up to 64 offensive fast jets will enable the full range of small, medium and large scale contingent operations to be conducted. Under these revised requirements the offensive force will require around 170 front line crews, rather than about 210 at present. This will enable us to draw down the Jaguar force two years earlier than planned, closing 54(F) Squadron in April 2005 and 41(F) Squadron in April 2006, with the final Jaguar squadron, 6 Squadron, to be disbanded in 2007.

2.21 The Tornado F3 force has substantially improved in capability through the introduction of Advanced Medium Range Air-Air Missile (AMRAAM), the world-leading Advanced Short Range Air-Air Missile (ASRAAM), and the Joint Tactical Information Distribution System. Typhoon, equipped in due course with the Meteor beyond visual range missile in addition to ASRAAM, will represent a further step change in capabilities. We judge that, given these enhanced capabilities and the reduced air threat to our forces on deployed operations, we will need the ability to deploy up to 16 air defence fighters within the air expeditionary task group. When standing quick reaction alert tasks are taken into account this translates into a front line force of 55 crews, compared to about 80 crews at present. This will allow the disbandment of XI(F) Tornado F3 squadron in October 2005.

2.22 The overall reduction in the number of fast jet aircrew required will

reduce requirements for fast jet training and the number of training aircraft. We remain committed to the procurement of the Hawk 128. Final numbers, beyond the initial 20, will be determined over the next year.

2.23 Helicopters provide a key capability in the battlefield and maritime environments, and their flexibility means that they contribute to the majority of the Military Tasks. The recent report on battlefield helicopters by the National Audit Office assessed that the UK helicopter fleet was arguably the most capable in Europe. Certainly, it is one of the most experienced, with recent operations spanning from the towns and villages of Northern Ireland to the Iraqi desert, from the mountains of Afghanistan to the jungles of Sierra Leone, and from the Gulf to the Caribbean. Over the next ten years, we plan to invest some £3bn in helicopter platforms to replace and enhance our existing capability. In light of the improved security situation in Northern Ireland we plan to make some reductions in overall helicopter numbers.

2.24 This substantial investment within a relatively condensed timeframe offers an opportunity to maximise efficiencies and coherence across our future helicopter fleet in the key capability areas of lift, reconnaissance and attack, which will be central to future expeditionary operations. We have accordingly been working with industry, to review thoroughly both our capability requirements and our forward plans. This work continues, and we aim to report on progress in the next few months.

Strategic Enablers and Logistics

2.25 Operational experience since the SDR has shown the key role of logistics and the importance of sustainability as an enabler across all elements of military capability. As with other capability areas, logistics requires strengthening in order to meet the demands of concurrent operations. There will be further significant investment in this area. As part of the re-balancing of our Army structure we are strengthening our logistic capability at brigade level, and improving deployable port and maritime capabilities, which will help meet the demands of expeditionary operations. And drawing on our experience from Operation TELIC, we are also applying the latest technology to our logistic visibility and asset tracking capability to ensure the right materiel is in the right place at the right time.

2.26 Fundamental to expeditionary operations is having sea and air transport, with the capacity to lift oversized loads. The core of this capability remains the fleet of C-130 aircraft, and, from 2011, the A400M. We have already announced that we are considering the options for retention of a small force of C-17s after A400M enters service, in order to maintain a capability to lift the largest air transportable items. We now intend to buy the current fleet of four leased C-17 aircraft at the conclusion of the current lease arrangement together with one additional aircraft.

2.27 The value of our fleet of six Roll-on/Roll-off vessels was amply demonstrated in the period leading up to operations in the Gulf and is crucial to achieving the rapid build up for medium scale operations. In addition the Bay Class landing ships under construction will each be capable of deploying twice the quantity of vehicles and stores than the older landing ships which they replace.

Reserves

2.28 As set out in the Defence White Paper, the Reserves will continue to play a key role in current and future operations. In the past 10 years there has been a major change in the role and structure of the UK's Reserve forces. We are continuing this process of development and we shall remain closely engaged with Reservists and their employers (through SaBRE- "Supporting Britain's Reservists and their Employers") to ensure that the support that we provide them and the frequency of calls upon them take account of their requirements as well as our own. Our Reserve forces have evolved from a large but little used force to one that is ready and capable of providing an integrated component of Defence, structured to support more frequent expeditionary operations either as individual reinforcements in key specialist areas, or as formed sub-units. To date nearly 11,000 Reservists have deployed on Operation TELIC, with striking effect. They continue to play an invaluable part in ongoing operations, both in Iraq and across the globe.

Chapter 3

Organisation and Efficiency

3.1 In the Budget, the Chancellor of the Exchequer announced that the Ministry of Defence, in common with other Departments, was committed to a target of efficiency improvements amounting to at least 2.5% of the total Defence budget for each of the three years of the Spending Review – amounting to a target of £2.8bn by 2007/08.

3.2 It is indeed vital that we spend money wisely and make every pound count towards our defence objectives. We have constructed a robust efficiency programme that meets this target, and we are determined that the target will be met, and if possible exceeded.

3.3 Following Spending Review 2002, the key business change programmes in the Department have been brought together into a single, coherent and prioritised Defence Change Programme with strong central direction and guidance. The Programme aims to maximise investment in the front-line by modernising business systems and processes in all the areas that come together to produce operational capability. We are also developing an MOD-wide Business Management System to provide us with a framework for delivering continuous improvement in all Departmental business processes. This will enable us to drive further gains in efficiency and effectiveness, releasing more resources to the front line.

3.4 The Defence Change Programme, together with other savings identified by the thematic workstrands, form the Department's response to the cross-Government Efficiency Review. The programmes within the Defence Change Programme have been thoroughly reviewed, and plans are now in place for these programmes to deliver efficiency benefits in excess of £1.4bn (compared with 2004/05) by 2007/08. Major items include:

- The Defence Logistics Transformation Programme, which aims to improve the operational effectiveness, efficiency and flexibility of logistics support by revolutionising the delivery of support to all three Services. It incorporates the continuing work on the 'end-to-end' review of Air and Land logistic support, which examined how best to streamline support across organisational boundaries, from industry to the frontline. A successful demonstration phase validating the recommendations in the review was completed in April 2004. Work continues to develop options for the future support of military aircraft. We are also taking a new approach to the management of the Defence land vehicle fleet by adopting industry best practice, enabling a reduction of over 2,000 vehicles.

- The modernisation of military and civilian human resources management, which will deliver an enhanced service at lower cost through new systems and harmonised and simplified personnel policies and processes. These programmes will deliver considerable financial savings, chiefly through a leaner administrative function, as well as significant practical benefits, including improved tracking of Service personnel deployed on operations. For example, the rollout of the Joint Personnel Administration remains on track, starting in 2006. This will enable marked improvements, replacing legacy human resources systems and saving some 1,400 military and civilian posts.

- The Defence Information Infrastructure (DII) programme, which will provide a single modern information infrastructure across the Department, replacing over 300 separate information systems across 2,000 locations worldwide. This programme is an essential enabler for other modernisation programmes. It is also a fundamental component of Network Enabled Capability.

- Defence estate modernisation through rationalisation, more effective contractual arrangements to raise its condition and through building new accommodation for Service personnel. Our aim is to rationalise onto fewer, larger sites over the next twenty years. As part of this we will be examining our future requirements for airfields, with a view to making substantial reductions. All proposals will be subject to the normal consultation processes and the details announced once the outcome of the work is available.

3.5 An important element of the thematic workstrands was to look at opportunities for achieving efficiencies through the rationalisation and relocation of headquarters and supporting staffs. The Royal Navy will merge the Fleet and Naval Personnel headquarters in Portsmouth. The Army is considering the scope for collocating its Land and Adjutant General headquarters. The RAF is planning to collocate its Strike and Personnel and Training Commands. Investment appraisals of the various options will be carried out in the near future to determine the most suitable locations of these collocated headquarters. We will reduce the number of MOD buildings in Central London to two; have already reduced the numbers employed in Central London to 4,900, and will continue to seek further reductions. We are considering the scope for moving elements of the Defence Logistics Organisation (DLO) to Bristol alongside the Defence Procurement Agency. We expect to reduce the number of DLO maintenance locations and make greater use of capacity freed up on operational bases that need to be retained. Changes in fast jet numbers will allow us to close RAF Coltishall airfield by December 2006 and the reduced requirement for Air Defence squadrons will permit Tornado operations at RAF Leeming to cease from 2008.

Manpower Implications

3.6 Transforming and restructuring the Armed Forces to meet the challenges of the 21st Century will inevitably lead to reductions in manpower. Royal Navy manpower will reduce from 37,500 to around 36,000 by April 2008, reflecting force level reductions and efficiencies. Once full normalisation in Northern Ireland is achieved, the bulk of the manpower from the Northern Ireland task will be available for contingent operations, allowing effective re-balancing across the Army structure and ensuring longer intervals between tours. Under these circumstances, we would expect to see an army of around 102,000, with significantly more capacity to meet the challenges of concurrent operations overseas than it has today. RAF manpower will reduce from 48,500 to around 41,000 by April 2008. This takes into account planned manpower savings arising from the introduction of new aircraft types. It also includes savings from various existing efficiency programmes such as End to End Logistics, and from the implementation of multi- and adaptive skilling, whereby individuals will be trained to undertake a variety of specialist tasks across their career, increasing flexibility. It recognises changed assumptions relating to the requirement for RAF personnel for contingent operations. Civilian numbers will reduce by more than 10,000 by April 2008, largely as a consequence of changes introduced as part of the Defence Change Programme.

3.7 The reductions will take place over a number of years. For some of our people the changes will mean re-training. Some will leave as a result of the natural turnover of personnel but unfortunately some will need to be made redundant. We will do all we can to minimise such measures while preserving the effective age structure of the Services. We do not underestimate the impact that these changes could cause at an individual level. We will do everything possible to ease the difficulties while investing in the skills of our people at every level. It will take some time to work these measures through, but we will announce details as soon as possible. All these changes will be subject to consultation in the normal way.

Chapter 4

Conclusions

4.1 The Defence White Paper explained how we should exploit the opportunities presented by effects based planning and operations combined with highly networked and adaptable forces across all three Services. It also set out the complex nature of future threats and challenges to our security which would require our forces continually to adapt and modernise. The benchmark against which modern systems will be measured will be their ability to link up with others and exploit real time intelligence to achieve rapid and precise effects, across the full range of threats and environments. The 2003 Iraq Conflict showed the dramatic advances our forces have made in their ability to launch expeditionary operations, achieving rapid and precise military effects in the combat phase before moving seamlessly into stabilisation and reconstruction phases. These advances have been made possible by the changes set in hand by the Strategic Defence Review, the New Chapter, and confirmed by the White Paper of December 2003. The force structure changes set out in this document continue this process of modernisation, investing our resources in the capabilities and structures which provide flexible and adaptable high quality Armed Forces, equipped to deal with the challenges and threats of the future.

Annex

Determining the Force Structure

In Supporting Essay 2 to the Defence White Paper "Delivering Security in a Changing World", we concluded that a single Defence Aim and 18 Military Tasks, would help to clarify the planning process. In order to translate this policy framework into a detailed basis for determining the force structure required to deliver Britain's defence needs, we have used the methodology developed during the SDR.

Military Tasks and Strategic Effects

The first stage of this methodology is "force summation". This involves assigning force elements to the full set of Military Tasks, taking account of the strategic effects that we plan to be able to deliver. This includes both those force elements committed to standing tasks and those that are held contingent for overseas operations. We use an effects-based approach, which enables us to be more flexible in our long-term force planning, recognising that the force structure needed to deliver effects may change over time, as threats, technology and coalitions evolve. It encourages a realistic, up to date assessment of the capability required, rather than the fixed force structure approach of the past. Analysis is based on a combination of military estimating by operational staffs and operational analysis by the Defence Science and Technology Laboratory.

Concurrency

Having established what is needed to undertake particular operational scenarios, we map the conclusions against the number of operations, of a given scale of effort and duration, that we should be able to conduct at any time - what we call concurrency. In Supporting Essay 2 we also set out our concurrency assumptions as follows:

- That as a norm, and without creating overstretch, we should be able to mount:
  - an enduring Medium Scale operation simultaneously with
  - an enduring Small Scale operation and
  - a one-off Small Scale intervention operation.
- That we should be able to reconfigure our forces rapidly to carry out:
  - the enduring Medium Scale operation and
  - an enduring Small Scale operation simultaneously with
  - a limited duration Medium Scale intervention operation.
- That, given time to prepare, we should be capable of undertaking:
  - a demanding one-off Large Scale operation while still maintaining a commitment to
  - a simple Small Scale peace support operation.
- Additionally, we must take account of the need to meet standing commitments with permanently committed forces, eg Quick Reaction Alert aircraft for integrity of UK Airspace.

Planned Force Levels

The force structure resulting from the force summation process is set out in the attached tables, showing each of the three concurrency suites. The total requirement for each force element is determined by the largest figure derived from these concurrency permutations. The results are set out on the final table, which shows the planned force structure.

Generation Factors

A range of what are termed generation factors are required to take account of our experience of the numbers of units or force elements required to be held in the force structure to generate the number to be deployed. The main elements of these factors are:

- **Generation.**
  - For the Royal Navy this covers the ships' training and maintenance requirement to make a ship available for scheduling.
  - For the Army this allows for those additional sub-units required to support formation training within readiness preparation times.
  - For the Royal Air Force the driving factor for fast jets is the availability of combat ready crews. This varies depending on the scale of effort and duration of commitment, and is influenced by the rotation factor described below. The number of crews required to meet any of the possible concurrency scenarios assumed for planning purposes is broadly similar, and equates to those required to meet a large scale commitment of all Fast Jet Force Elements.
- **Rotation.** To meet enduring operations whilst ensuring operational effectiveness and without placing undue strain on the personnel concerned, we must retain a pool of forces to rotate through the deployed force. Experience shows that the optimum ratio for prolonged commitments is in the region of 3 or 4 ships and 5 Army and RAF units or crew for each one deployed.

FORCE STRUCTURE - MEDIUM/SMALL/SMALL CONCURRENCY

Force Element	Enduring Medium Scale Operation	Enduring Small Scale Operation	Small Scale Intervention	Standing Commit-ments	Factors[2]	**Total**[3]
Maritime						
Aircraft Carriers	0	0	0	0	0	**0**
Destroyers and Frigates	2	2	2	1	9	**16**
Amphibious Shipping	0	0	2	0	0	**2**
Minewarfare Vessels	0	0	0	2	1	**3**
Strategic Deterrent Submarines				4		**4**
Attack Submarines	0	1	1	1	3	**6**
Maritime Patrol Aircraft (Nimrod MR2)	2	2	4	6	2	**16**
Land						
Armoured Squadrons	3	0	0	0	9	**12**
Armoured Recce Squadrons	2	0.25	0.25	0	9	**12**
AS 90 Batteries	3	0	0	0	9	**12**
Lt Gun Batteries	0	1	1	0	1	**3**
AD Artillery Batteries	0	0	1	0.5	2	**4**
GS Artillery Batteries	2	0	2	0	4	**8**
Engineer Regiments	1.5	1	1	1	6.5	**11**
Infantry Battalions	3	1	1	7.33	23.33	**36**
RM Commandos	0	1	1	0	0	**2**
Equipment Support Battalions (REME)	1	0.25	0.25	0	4.5	**6**
Royal Logistic Corps Regiments	1	0.25	0.25	0	4.5	**6**
Support Helicopters[4]	8	5	12	24	N/A	**49**
Attack Helicopters	8	0	8	0	18	**34**
Air[5]						
Air Defence Aircraft	0	0	6	8	N/A	**14**
Offensive Support Aircraft	10	10	10	0	N/A	**30**
C4ISR						
Signal Regiments	2	0.3	0.5	0	6	**9**
Airborne Early Warning Aircraft	0	2	2	0	2	**6**
Reconnaissance Aircraft	1	0	1	0	1	**3**
Logistics and Strategic Enablers						
Transport and Tanker Aircraft	23	7	26	2	25	**83**
Royal Fleet Auxiliary Vessels	1	2	3	0	2	**8**
NBC Regiment	0	0	0.5	0	0	**1**
RAF Regiment Field Squadrons	2	1	1	0	5	**9**
Field Hospitals	0.5	0.25	0.5	0	1.25	**3**

[2] The factors include the number of units required in the force structure to allow generation of the deployed force and the units held to rotate the enduring operations.

[3] The sum of preceding columns rounded to the nearest whole number.

[4] There is an element of choice in the type of aircraft deployed from the pool held at readiness. The actual numbers of aircraft are driven by peacetime training and maintenance requirements. Aircrew numbers are driven by rotation

[5] The fast jet numbers reflect aircraft required at readiness. The actual numbers of aircraft are driven by peacetime training and maintenance requirements. Aircrew numbers are driven by rotation.

FORCE STRUCTURE - MEDIUM/MEDIUM/SMALL CONCURRENCY

Force Element	Enduring Medium Scale Operation	Enduring Small Scale Operation	Medium Scale Intervention	Standing Commit-ments	Factors[6]	**Total**[7]
Maritime						
Aircraft Carriers	0	0	1	0	1	**2**
Destroyers and Frigates	2	2	9	1	11	**25**
Amphibious Shipping	0	0	8	0	0	**8**
Minewarfare Vessels	0	0	8	2	3	**13**
Strategic Deterrent Submarines				4		**4**
Attack Submarines	0	1	2	1	4	**8**
Maritime Patrol Aircraft (MR2)	2	2	4	6	2	**16**
Land						
Armoured Squadrons	3	0	8	0	3	**14**
Armoured Recce Squadrons	2	0.25	2	0	2.25	**7**
AS90 Batteries	3	0	4	0	3	**10**
Lt Gun Batteries	0	1	3	0	1	**5**
AD Artillery Batteries	0	0	3	0.5	2	**6**
GS Artillery Batteries	2	0	3	0	2	**7**
Engineer Regiments	1.5	1	4.66	0.66	2.5	**11**
Infantry Battalions	3	1	4	7.33	5.33	**21**
RM Commandos	0	0	3	0	0	**3**
Equipment Support Battalions (REME)	1	0.25	1	0	1.25	**4**
Royal Logistic Corps Regiments	1	0.25	1	0	1.25	**4**
Support Helicopters[8]	8	5	28	24	N/A	**65**
Attack Helicopters	8	0	20	0	8	**36**
Air[9]						
Air Defence Aircraft	0	0	16	4	N/A	**20**
Offensive Support Aircraft	10	10	32	0	N/A	**52**
C4ISR						
Signal Regiments	2	0.3	3	0	2.3	**8**
Airborne Early Warning Aircraft	0	2	3	0	1	**6**
Reconnaissance Aircraft	1	0	2	0	0	**3**
Logistics and Strategic Enablers						
Transport and Tanker Aircraft	23	7	47	2	4	**83**
Royal Fleet Auxiliary Vessels	1	2	9	0	3	**15**
NBC Regiment	0	0	1	0	0	**1**
RAF Regiment Field Squadrons	2	1	3	0	3	**9**
Field Hospitals	0.5	0.25	2	0	0.25	**3**

[6] The factors include the number of units required in the force structure to allow generation of the deployed force and the units held to rotate the enduring operations.

[7] The sum of preceding columns rounded to the nearest whole number.

[8] There is an element of choice in the type of aircraft deployed from the pool held at readiness. The actual numbers of aircraft are driven by peacetime training and maintenance requirements. Aircrew numbers are driven by rotation

[9] The fast jet numbers reflect aircraft required at readiness. The actual numbers of aircraft are driven by peacetime training and maintenance requirements. Aircrew numbers are driven by rotation.

FORCE STRUCTURE – LARGE SCALE CONCURRENCY

Force Element	Large Scale operation	Enduring Small Scale peace support	Standing Commitments	Factors[10]	**Total**[11]
Maritime					
Aircraft Carriers	2	0	0	1	**3**
Destroyers and Frigates	12	0	1	4	**17**
Amphibious Shipping	8	0	0	0	**8**
Minewarfare Vessels	10	0	2	4	**16**
Strategic Deterrent Submarines			4		**4**
Attack Submarines	3	0	1	4	**8**
Maritime Patrol Aircraft (Nimrod MR2)	8	0	6	0	**14**
Land					
Armoured Squadrons	16	0	0	2	**18**
Armoured Recce Squadrons	9	0.25	0	3.75	**13**
AS90 Batteries	10	0	0	5	**15**
Lt Gun Batteries	6	1	0	2	**9**
AD Artillery Batteries	8	0	0	3	**11**
GS Artillery Batteries	11	0	0	0	**11**
Engineer Regiments	6.66	1	0.66	1	**10**
Infantry Battalions	15	1	7.33	2.33	**26**
RM Commandos	3	0	0	0	**3**
Equipment Support Battalions (REME)	4	0.25	0	0.25	**5**
Royal Logistic Corps Regiments	3.66	0.25	0	0.25	**5**
Support Helicopters[12]	81	5	24	N/A	**110**
Attack Helicopters	36	0	0	12	**48**
Air[13]					
Air Defence Aircraft	16	0	4	N/A	**20**
Offensive Support Aircraft	64	0	0	N/A	**64**
C4ISR					
Signal Regiments	8	0.3	0	0.3	**9**
Airborne Early Warning Aircraft	4	0	0	2	**6**
Reconnaissance Aircraft	3	0	0	0	**3**
Logistics and Strategic Enablers					
Transport and Tanker Aircraft	74	7	2	0	**83**
Royal Fleet Auxiliary Vessels	12	0	0	3	**15**
NBC Regiment	1	0	0	0	**1**
RAF Regiment Field Squadrons	4	0	0	0	**4**
Field Hospitals	3	TA[14]	0	0	**3**

[10] The factors include the number of units required in the force structure to allow generation of the deployed force and the units held to rotate the enduring operations.

[11] The sum of preceding columns rounded to the nearest whole number.

[12] There is an element of choice in the type of aircraft deployed from the pool held at readiness. The actual numbers of aircraft are driven by peacetime training and maintenance requirements. Aircrew numbers are driven by rotation

[13] The fast jet numbers reflect aircraft required at readiness. The actual numbers of aircraft are driven by peacetime training and maintenance requirements. Aircrew numbers are driven by rotation.

[14] We assume that the TA will meet this task after the first roule.

OVERALL FORCE LEVELS

Force Element	**Planned Force Level**
Maritime	
Aircraft Carriers	**3**[15]
Destroyers and Frigates	**25**
Amphibious Shipping	**8**[16]
Minewarfare Vessels	**16**
Strategic Deterrent Submarines	**4**
Attack Submarines	**8**
Maritime Patrol Aircraft (Nimrod MR2)	**16**
Land	
Armoured Squadrons	**18**
Armoured Recce Squadrons	**13**
AS 90 Batteries	**15**
Light Gun Batteries	**9**
AD Artillery Batteries	**11**[17]
General Support Artillery Batteries	**11**[18]
Engineer Regiments	**11**
Infantry Battalions	**36**
RM Commandos	**3**
Equipment Support Battalions (REME)	**6**
Royal Logistic Corps Divisional / Brigade Regiments	**6**
Support Helicopters[19]	**115**
Attack Helicopters	**48**
Air	
Air Defence Aircraft	**20**[20]
Offensive Support Aircraft	**64**[21]
C4ISR	
Signal Regiments	**9**
Sentry E3D Airborne Early Warning Aircraft	**6**
Reconnaissance Aircraft	**3**
Logistics and Strategic Enablers	
Transport and Tanker Aircraft	**83**
Royal Fleet Auxiliary Vessels[22]	**15**
NBC Regiment	**1**
RAF Regiment Field Squadrons	**9**
Field Hospitals	**3**

[15] We plan to replace the Invincible Class with two larger vessels in the longer term.
[16] 4 LSD(A)s, 2 LPD(R)s, 1 LPH and LSL (Sir Bedivere which is currently planned to retire from Service in 2011)
[17] 7 HVM and 4 Rapier
[18] 3 STA, 4 UAV and 4 Rocket.
[19] 37 Chinook, 18 Merlin SH, 31 Puma and 29 Sea King 4
[20] This covers both the number of deployable aircraft and the aircraft held at readiness for the QRA air defence of the UK task, the number of the latter being unchanged.
[21] This is the number of deployable Force Elements.
[22] Excludes the amphibious ships shown separately in the maritime component.

Printed in the UK for The Stationery Office Limited
on behalf of the Controller of Her Majesty's Stationery Office
7/04, C161471
Printed on recycled paper containing 75% post consumer waste and 25% ECF Pulp

MINISTRY OF DEFENCE

Published by TSO (The Stationery Office) and available from:

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ISBN 0-10-162692-4

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