

To: Prime Minister
Foreign Secretary
Defence Secretary
Cabinet Secretary

From: Paul Ingram, BASIC
Date: 8 May 2015

OPTIONS SURROUNDING THE REPLACEMENT OF TRIDENT

Issue

The Main Gate decision on the construction of a new fleet of nuclear ballistic missile submarines at a capital cost of £20-25bn is timed for Parliament for March 2016. There remain a range of options, including commissioning four, three or two *Successor* submarines, further delay in the programme, or a decision to divest the UK of its nuclear arsenal, all contingent on assessments of the role of Trident and its deployment or alternative systems in meeting future threats, and the impact on other defence, security and foreign policy objectives.

Timing

Decisions may be forced by political negotiation in the coming days. The Government will want the final decision to be informed by both the forthcoming Defence and Security Review and the Comprehensive Spending Review. Prime Minister is also reminded that he has to immediately issue his letter of last resort to submarine commanders in the event of an all-out destruction of the chain of command, to be contained in confidence within each SSBN submarine.

Recommendations

This submission recommends the Prime Minister:

1. Include Trident replacement fully in the DSR so that it can be considered alongside other capabilities, nuclear and non-nuclear, and announce that final preparations for the Main Gate decision will only start after the DSR has been completed.
 2. Commission an analysis of the practicalities and implications of a further delay in the Main Gate decision with or without a change in operational posture.
 3. Request an update to the Trident Alternatives Review immediately so that it can inform the forthcoming Defence and Security Review (DSR), with a view to reporting in public and classified form by September.
 4. Consider a positive diplomatic announcement before the NPT Review Conference closes on 22 May demonstrating commitment to treaty disarmament obligations.
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Comments

This paper is cleared for submission by Dr Trevor McCrisken, Chair of BASIC's Board. BASIC is dedicated to facilitating full discussion of the options for Britain's nuclear arsenal, and serviced the Trident Commission (2011-2014). This submission builds upon the work of the BASIC Trident Commission, and does not reflect the views of BASIC as an institution. It is written with the likely policy objectives of the government in mind. We highlight the need for the government to strive for a level of coherence between its foreign policy, security and defence objectives in order to secure greater credibility in its position on nuclear weapons.

Summary of Options (for consideration in the update to the TAR and in the DSR)

1. Like for like replacement and retaining continuous patrolling: commissioning **four** submarines at an estimated capital cost of £20 to £25 billion in the period 2016 to 2033, and annual running costs of some £1.5bn in today's prices. The Successor submarines will not require mid-life refuelling, so **three** submarines may be sufficient to ensure continuous patrolling – a final decision on this may not be required until 2022.
 2. Changing to irregular undisclosed patrolling patterns, retaining a capability to reinstate continuous patrolling for an extended period during crises: reducing a requirement to a **two** submarine fleet, with potential average savings of up to £1bn a year.
 3. Delay – subject to the findings from the assessment recommended (recommendation 3), it may be feasible to delay the Main Gate decision up to 2021 (especially with option 2). This could defer much of the capital expenditure from the current five year Parliamentary period, achieving annual savings of up to £1.5bn, and open the possibility of further savings by adopting dual-role alternatives able to deliver a truly minimum nuclear deterrent that have previously been prematurely dismissed.
 4. Decide not to renew the current Trident fleet for a range of defence, deterrence, moral, legal, foreign policy, political and humanitarian reasons – saving up to £80 billion over the expected lifetime of the programme.
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Considerations: reasons to review now

1. The Government will soon embark on a Defence and Security Review (DSR) alongside the Comprehensive Spending Review. The DSR should take full account of Britain's evolving role in the world, and include the role of Trident in meeting current and potential threats and its opportunity costs for other necessary capabilities.
2. Budgetary and political considerations demand a particular review of the Trident programme at this time. The defence budget is under particular pressure, and the projected funding gap between requirements and resources acute. Spend on Trident presents a direct opportunity cost to dwindling conventional capabilities.
3. The current system and planned replacement exceeds a minimum nuclear deterrent, even when measured by the requirements of the Cold War (the capability to deliver unacceptable damage to the Soviet Union, assessed in the 1982 Duff Mason Report to the Joint Intelligence Committee, declassified in 2009) – a lower minimum deterrent might be delivered with significant savings and to the advantage of other defence requirements.
4. Alternative dual-role options might offer major savings. The 2013 Trident Alternatives Review (TAR) assumed AWE Aldermaston would take 24 years to construct a new warhead, but this is now questioned. The specific criteria for a minimum credible deterrent used by TAR may have prejudiced the outcome in favour of the status quo.
5. The requirement for an independent nuclear deterrent could be reassessed in favour of the conflicting objective of effective contributions to a strong and cohesive Alliance. At a time when Alliance effectiveness and signalling with Russia is crucial, the UK and its allies must focus on what delivers clearly efficient deterrence and defence impacts within a policy of collective smart defence rather than independent legacy systems.
6. UK diplomats are in the middle of negotiations at the NPT Review Conference in New York. The Treaty's stability is questioned, and the recognised nuclear weapon states, including the UK, are expected by the international community to take steps to build greater global confidence in moves towards disarmament. The UK government needs to consider a fresh announcement this coming week that shows leadership and breathes life into the process. This could, for example, involve a change to UK declaratory policy,

that the sole purpose of its nuclear arsenal is to deter use or threat of nuclear weapons use against the UK and allies.

Press Office handling advice

7. This issue is likely to attract media attention in the light of post election negotiations. It will be important to make clear that decisions to review or delay the Trident replacement project are necessary for responsible management of an extremely costly major programme, and are possible as our understanding of submarine life expectancy and programme management options evolve over the lifetime of the project.

Annexes

8. We include annexes that consider the features of credible alternatives and assist in summarising principal considerations, including:
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ANNEXES

Relevant Considerations

Background

1. The government inherits a Trident renewal programme formally started in 2006 and which is due to pass through Main Gate in 2016. The concept and assessment phases up to Main Gate will have involved £3.3bn of investment, leaving some £20bn to £25bn to be spent on replacing the four submarines over the next 17 years.
2. The Trident Alternatives Review (TAR) of 2013 assessed the pros and cons of a large number of alternatives to the current system. The public version published in July 2013 concluded that alternatives to the current SSBN system may not save money and would be less capable.
3. The TAR was based upon high specifications of deterrence credibility (see next section). It also claimed that AWE Aldermaston would need 24 years to design and construct a warhead for any new delivery system; meaning this would require two new SSBN submarines to ensure Britain was not left without a nuclear weapon capability in the meantime. Given Aldermaston's 70 years of experience and extensive expertise, average annual capital investment of one billion in recent years, and relationship with the United States, this 24 year assumption has come under informed question from sources in the UK and the US.
4. The last National Security Strategy (2010) identified tier 1 threats to be: terrorism, military crisis between states drawing in the UK, cyber attacks, and a major accident or natural hazard. A major strategic threat against the UK mainland was relegated to a tier 2 threat. This tier 2 threat still consumes the bulk of spending associated with security and defence, and nuclear weapons are consuming an increasing share of that budget when they are of relevance to a tiny fraction of this tier 2 threat.

A credible minimum nuclear deterrent capability

5. Assurance, of the British people and our allies, plays strongly within political decision-making and demands a higher level of capability than deterrence. But an approach based upon assurance contradicts official policy on minimum deterrence.
6. The reasons for a *minimum* capability relate principally to cost efficiency, international obligation to engage in disarmament and the unintended consequences attached to excessive nuclear arsenals related to arms racing and the proliferation of nuclear weapons to emerging nuclear states. A minimum nuclear deterrent would be the lowest deployed capability to deliver a credible deterrent.
7. The public 2013 TAR stated that, 'a potential aggressor needs to believe that the UK has the capability and resolve to deliver "unacceptable loss"'. It is important to focus on the perception of the adversary and to recognise that there are no certainties involved and that capability alone is insufficient. It is also notoriously difficult to measure unacceptable loss. The Duff-Mason report to the Joint Intelligence Committee in 1982 concluded that a limited set of targets associated with the Soviet state outside of Moscow (ten cities or thirty separate targets) would provide sufficient deterrence of the Soviets in any scenario, but the UK went on to purchase Trident II D5 with greater capabilities than required for other reasons. The deterrence of any future Russia aggression would not require such a level of damage. The threshold of "unacceptable loss" is far lower today than in the Cold War.
8. Credibility depends upon the:
 - adversaries' perceptions of credible intention to use nuclear weapons;

- capability of the system to reach and penetrate defences so that the adversary believes they are highly likely to suffer greater harm to assets considered vital than any possible benefit they might have from attack; and
 - invulnerability to first strike or the ability to strike rapidly before being hit.
9. The first criterion partly depends upon credible declaratory policy and posture. The Trident Commission concluded that ambiguity over potential use had both desirable and undesirable impacts. It concluded that a tight, less ambiguous policy is not only beneficial to diplomatic efforts to constrain proliferation and attempts to build confidence between states, but also is important to any efforts to shore up the legitimacy of the UK's nuclear arsenal, and could help demonstrate resolve. The Commission recommended that the UK consider a sole purpose declaration – that the UK's nuclear weapons exist to deter the use or threat of nuclear attack.
 10. A nuclear deterrent posture needs to work in times of peace and in crisis. A future UK government may be self-deterred in crisis from taking steps to raise the readiness of a system if that is seen as provocative, though such actions could also be essential in signalling serious resolve.
 11. The UK has taken a number of steps over the last 25 years to reduce its nuclear capability, each time describing this as meeting a minimum deterrence requirement. HMG currently believes 40 warheads on a single submarine to be a credible minimum deterrent against any possible future strategic threat (none are currently recognised as live).

Foreign policy positioning

12. The relationship with the United States has a particularly strong influence on Britain's nuclear weapons decisions. 'Confidence in the strategic relationships with the US and with France is a crucial variable in our consideration of further steps down the nuclear ladder'. [Trident Commission]
13. Relations between NATO and Russia have deteriorated markedly in the last year, and NATO's resolve and capability is once again under consideration. In a time of austerity defence spending across the Alliance has been falling and choices in investments have become more acute. Britain's contribution to the Alliance has many facets, including explicitly its Trident nuclear force. The UK's Alliance pledge to spend more than 2% of its GDP on defence is currently under question, making the choices of how this spend is allocated all the more pertinent.
14. NATO is committed to a policy of smart defence and procurement, in the interests of cohesion and efficiency. Allies should consider the efficient allocation of resources alliance-wide when considering their national defence procurement and strategies. An expensive independent nuclear deterrent may not serve the interests of the Alliance nor UK national security if it leads to gaps in essential capabilities elsewhere. Is there really a need for NATO's three nuclear states to each have a continuous patrolling posture when no other country has, including China and Russia? It would be important for the review of the Trident project to involve detailed consultation with close allies on their perspectives on UK contributions to NATO's critical capabilities.
15. There are no credible future scenarios when Britain would face a catastrophic threat without support from allies. The updated TAR should assess options (including non-nuclear) that are measured by their cost-effective contribution to NATO's overall capabilities, and to drop the requirement for an operationally credible independent deterrent.
16. Britain is committed to achieving multilateral nuclear disarmament, as a recognised nuclear weapon state within the non-proliferation treaty (NPT). The BASIC Trident

Commission concluded strongly that: 'Reducing nuclear dangers through global diplomacy is in the direct security interests of the UK and our allies, and needs to remain a top priority in foreign and defence policy. Every nuclear-armed state must account for its explicit treaty commitments and its obligations to the international community when considering its national security posture, and its possession of nuclear weapon systems.' A strong non-proliferation regime moving towards a world free of nuclear weapons is essential to the UK's national security.

17. The new government emerges in the middle of the NPT Review Conference in New York, at a moment when frustration with the lack of progress on multilateral disarmament is high and the treaty is vulnerable. An early statement that demonstrates the government's intent to continue on a path towards disarmament would be well received by the international community in New York, which some delegations are reconsidering the bargain at the heart of the NPT and looking to mount more robust challenges to the position of the nuclear weapon states.

Political and devolution considerations

18. The Trident renewal programme has received strong public attention in early 2015 and played strongly in the election campaign. Whilst the Conservatives and Labour were clear that they would not compromise on national security for the sake of coalition negotiations, smaller parties made clear their priority for a change of policy. Options that protect national security whilst moving further down the ladder of nuclear disarmament have attracted considerable interest.
19. There are particular local considerations of employment and political sensitivity when it comes to the location of bases from which nuclear weapon systems are deployed and the major facilities involved in the construction of platforms. However, there are regeneration options. Employment can be generated at a rate of £100,000 per person (eg. £500m would guarantee alternative employment for the maximum 5,000 envisaged workforce in Barrow).

Terms of reference for an updated review

20. The proposed review should assess again
 - the requirements for minimum deterrence and defence using a sliding scale of confidence and include non-nuclear capabilities within the broader consideration, as well as options that do not have a nuclear element at all;
 - the time AWE Aldermaston would need to modify existing warheads for use on alternative delivery systems;
 - the timescale of the replacement programme, with a view to considering whether it is possible to delay it further;
 - the requirement for independent operations, and consider options that deliver cost-effective contributions to Alliance-wide capabilities; and
 - the foreign policy implications from different options, including the diplomatic and global security agenda, and the UK's international legal position, with a clear objective of achieving greater consistency with broader positive foreign policy objectives and Britain's role in the world, in terms of impact, reputation and resource allocation. The updated TAR should take full account of and be consistent with the emerging National Security Strategy and the UK's international obligations.

Option 1: Like for Like Replacement

System Description

A new fleet of four SSBN nuclear submarines dedicated to carrying eight vertical-launch Trident missiles and their successors, with an operational arsenal of 120 warheads and a requirement of up to 40 warheads on each submarine. This system gives some flexibility on warheads and missiles should requirements change. The posture involves continuous patrolling, so that there is always at least one submarine out at sea at any one time.

Credibility

The current Trident SSBN system is commonly seen as fulfilling the requirements for a credible deterrence posture because it is:

- currently stealthy (almost undetectable) and is considered invulnerable to first strike;
- mobile and with global range using accurate and currently invulnerable ballistic missiles deliverable in under an hour;
- is on patrol continuously, and therefore does not require political mobilisation decisions in times of crisis

There are doubts, however, that this system will remain stealthy as detection technology progresses. The development of cheap under-water automated drones, for example, could render the sea transparent and a single platform submerged miles from the homeland highly vulnerable to pre-emptive attack.

Minimum nuclear deterrence

A commitment to continuous patrolling means that there are limited financial benefits to considering further reductions in warheads and missiles. Yet, the capability of delivering 40 100kt thermonuclear warheads on any potential adversary is beyond a minimum capability to achieve deterrence (it certainly appears to meet criteria beyond the minimum outlined in the official MoD Duff Report of 1978). There may be an option to reduce further the number of warheads carried by Trident submarines.

Cost

Ballistic missiles are generally considered the most expensive delivery system, and dedicated submarines the most expensive platform, because these systems are extraordinarily complex, unique and are not traded internationally. This affect is partially offset by the fact that the UK already has many of the essential systems necessary for supporting the construction and operation of a new fleet of submarines, and acquires much of the technology comparatively cheaply under arrangement with the United States.

The annual capital cost of the Trident successor submarine renewal programme is set to rise from under £1bn currently to £2bn by 2020 and will be above that throughout the following decade. This will account for over a third of the MoD capital budget throughout the 2020s. When combined with annual operating costs of £1.5bn, the overall costs of Trident will be between £3bn and £4bn a year up to 2032. Over the lifetime of the current proposed set of submarine, missile, warhead and infrastructure investments to the middle of the century (excluding the following generation, running and decommissioning costs) capital costs will be some £50bn.

Option 2: Changing to Irregular Patrols

System Description

We have already detargetted the missiles aboard submarines. This option would continue to operate patrols but relax the requirement for them to be continuous, whilst maintaining the capability to reinstate continuous patrolling (CASD) for a period should the strategic situation require it. This covers a range of options, from relaxing the requirement of near-certainty of CASD throughout the life of the system to a posture of slightly lower confidence (based perhaps on three submarines on a CASD posture)... to an irregular patrolling timetable for training purposes only, enabling some reduction in submarines, personnel and facilities.

Credibility

Relaxing or dropping CASD has been criticised for creating instability in a crisis situation because a UK political decision would be required to deploy the submarines in crisis, risking escalation (though it may also send useful signals of intent). It also might expose submarines to a surprise pre-emptive attack when in port or approaches before they are able to launch their missiles. On the other hand, a CASD posture ought to take account of NATO capabilities as a whole (the only three states with a consistent continuous patrolling record are all NATO members), any potential future adversary would need to account for the capability of all alliance members.

Minimum nuclear deterrence

This proposal has appeal because the UK has an extremely low probability of facing a relevant strategic crisis in the foreseeable future.

Cost

This posture requires a similar level of infrastructure and operations at AWE Aldermaston, and the need to retain capacity to restart CASD in crisis. The principal savings arise from reduced running costs (depending on the level of patrolling and training), and shifting capital costs into the future by several years by:

- extending the expected life of the existing Vanguard-class submarines and
- shifting replacement timetable by only requiring two subs available at any one time.

It may be possible to mothball two submarines, to be deployed when the other two reach the end of their lives, and thereby enable a delay of up to decade in the timetable, with resultant annual capital savings throughout the 2020s of approx. £2bn. The Trident Commission estimated average annual savings from abandoning CASD to be between £500m and £1bn.

Political considerations

CASD has become a yardstick for those supportive of the status quo. There is clearly a fear that should the UK relax its CASD requirement this could become a thin end of the wedge towards further disarmament should the political situation enable it. Relaxing CASD would be a very real signal of intent by the UK to take real steps towards meeting its NPT disarmament commitments.

Option 3: Delay

System Description

Suspend plans to take the Main Gate decision in early 2016. This may be achieved by reassessing the life-expectancy of the current Vanguard class submarines, planning for further life-extension activities, measures to monitor and extend the life of the reactor pressure vessel, changing the patrolling patterns (relaxing CASD requirements) and deployment of submarines (perhaps mothballing two), or by reducing the estimated time for the construction of *Successor* submarines. It would facilitate further review of options taking into account new information and different terms of reference.

Credibility

It has been said that further delay to the programme would present too great a risk to CASD. The longer a submarine is in service the higher the risks. Critical factors that limit the life expectancy of the Vanguard class revolve in particular around confidence in the safety of the reactor pressure vessel. But confident expressions of risk are challenging when the oldest submarine still has over a decade of service left in it. There needs to be a full assessment of the acceptable risk before decisions are made committing major expenditure assuming that there is no room for further delay.

Cost

If it were deemed possible to delay the replacement programme, depending upon the length of delay and measures to manage contracts and maintain the design and build capacity, this would lead to significant short-term savings at a critical time by shifting the cost function into the future. A delay would open up the opportunity to properly consider alternative systems.

Dual-role platforms and delivery systems

Dual-role options might be considered attractive if the criteria for a minimum deterrent were reassessed and the time required for the development of any new warhead considerably less than claimed (24 years for a new delivery system). One example would be a precision-guided bomb based on the new B61-12 delivered by F-35 stealth aircraft. The UK is purchasing some 138 F-35 Joint Strike Fighters (Lightning II) and could develop a warhead based upon the new precision-guided US B61-12 design. Free-fall bombs have a far less demanding design than ballistic missile warheads, and could be ready well before the Vanguards are out of service. An attack by stealth aircraft against an opponent with sophisticated defences would result in high operational losses but would deliver unacceptable damage on the opponent with very high confidence. Global reach could be achieved by basing some aircraft on carriers. Dual-capable systems have greater flexibility adapting their scale over time to the level of threat. The air-delivered system with extensive dual-role conventional platforms (increases the UK's contribution to NATO's conventional defence) has been costed at £16bn.

Political considerations

Depending upon the justification, further delay could be politically desirable for domestic reasons, and in order to seek opportunities internationally for progress on the multilateral disarmament agenda prior to committing major investment.

Option 4: Abandoning deployment of nuclear weapons

System description

The current Trident renewal project would be cancelled and the UK would end patrols. The warheads would go to AWE Aldermaston for dismantlement. Dedicated nuclear facilities would undergo long-term decommissioning, and dual-use facilities devoted to conventional defence missions or closed. Aldermaston would remain operational, focused upon dismantlement, decommissioning and verification activities.

Virtual deterrence / active threshold capability

Britain would pass through a transitional period when it would be capable of reconstituting a nuclear arsenal. Termed virtual deterrence because a recessed capability provides a weaker level of deterrence, as a state considering attack would have to account for the possibility of a delayed response. An attack on Iran today, for example, would incentivise a crash nuclear weapon programme, and this possibility partially deters those states ranged against Iran. Of course, such a posture is far less credible than a continuous patrol, and might encourage an aggressor state to target any possible sites associated with the capability to reconstitute nuclear weapons.

If the Vanguard submarines were maintained with their reactors defueled and switched off it might remain possible to rapidly reconstitute an active deployment for some years, but in the longer term such an option would depend upon dual-capable platforms. This would present major savings when compared to current plans.

Credibility and minimum deterrence

This option is attractive if nuclear weapons are seen as unnecessary, as ineffective means of achieving a credible strategic deterrent, or that the UK can rely upon the United States and NATO for extended nuclear deterrence and more effectively contribute to the security of the Alliance and its deterrence capabilities through conventional defences and other means. It can be argued that other non-nuclear dimensions have more impact on strategic outcomes – Germany has played a defining role in the Ukrainian crisis. A virtual deterrent may be attractive for a transitional period if there remained fears that a strategic threat for which a specific independent UK nuclear deterrent would be relevant might re-emerge. There are many industrial states that have maintained threshold nuclear weapon capabilities.

Cost

Decommissioning costs would be spread over several years, and much of them are already liable for legacy systems (currently costed at around £6bn). Additional costs would be liable for decommissioning or mothballing nuclear facilities at HMNB Clyde and Devonport, but rumours that these costs would be comparable to current recapitalisation plans are a fiction.

International implications

If the UK were to prioritise good alliance and bilateral relationships this option would require careful management, and possibly some credible assurance on maintaining the current share of the Alliance burden. The UK would remain a permanent member of the UN Security Council and a recognised nuclear weapon state under the NPT, with all the rights and obligations that this entails.

The UK's diplomatic status with much of the rest of the world might improve, at a time when much of the majority world is engaged in strenuous attempts to call the nuclear weapons states to account. This would be strengthened if the UK establishing a verification system to demonstrate transparent achievement of the objective and changed status.



British American Security
Information Council

This submission

The UK goes to the polls on 7th May to elect a new Parliament and government. Most expect there to be a hung Parliament (no party having overall control), and it is quite possible that defence policy, and the Trident renewal programme in particular, will be one of the key subjects in negotiations over governing arrangements. This briefing, written by BASIC's Executive Director as if from civil servants, outlines the options and realistic recommendations that an incoming Prime Minister could consider. The issues covered in this document were discussed at a meeting in Parliament held on 4th March chaired by former Foreign Secretary Margaret Beckett and addressed by former Defence Secretary and NATO Secretary General George Robertson, former Defence Minister Sir Nick Harvey MP, former Conservative Special Adviser in FCO and MoD Crispin Blunt MP and others. The meeting mirrored the broad range of views involved in this debate, and this document does not reflect that debate nor the views of anyone who took part in it. It has had the benefit of comments from a number of sources, and substantial editing from Steve Barwick of Connect Communications. However, the responsibility for the briefing lies entirely with its author.

BASIC Trident Commission

This submission follows on from the independent, cross-party BASIC Trident Commission to examine the United Kingdom's nuclear weapons policy and the issue of Trident renewal. The Commission was co-chaired by Sir Malcolm Rifkind MP, Lord Browne of Ladyton and Sir Menzies Campbell MP. The concluding report was intended to inform a more considered on-going debate over Britain's nuclear weapon policy focused on national security, mindful of the politics and the strategic and diplomatic context.

BASIC

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BASIC is a small but influential think tank with one very large idea: we want a world free from the threat of nuclear weapons. A growing number of politicians, government officials and other decision-makers share our vision. We work constructively with them - and with others who are not yet convinced - to achieve our goals of nuclear disarmament and non-proliferation. We leverage our reputation as a respected, trusted and independent source of information, ideas and perspectives to inform debate and foster creative solutions. BASIC is the only peace and security non-governmental organization that is British-American in composition and focus. We work on both sides of the Atlantic to encourage sustainable transatlantic security policies and to develop the strategies that can achieve them. We partner with other international NGOs that share our goals and we promote public understanding of the danger of growing nuclear arsenals.



BASIC in London
3 Whitehall Court
London SW1A 2EL

BASIC in Washington
1725 DeSales St., NW, Ste. 600,
Washington, DC 20036

www.basicint.org
Tel: +44 (0) 207 766 3461