

Public Accounts Committee

Oral evidence: Delivering Carrier Strike, HC 394

Wednesday 11 October 2017

Ordered by the House of Commons to be published on 11 October 2017.

Watch the meeting

Members present: Meg Hillier (Chair); Bim Afolami; Martyn Day; Chris Evans; Caroline Flint; Luke Graham; Nigel Mills; Bridget Phillipson; Gareth Snell.

Sir Amyas Morse, Comptroller and Auditor General, Adrian Jenner, Director of Parliamentary Relations, National Audit Office, Jeremy Lonsdale, Director, NAO, and Richard Brown, Treasury Officer of Accounts, HM Treasury, were in attendance.

Questions 1-92

Witnesses

[I:](#) Stephen Lovegrove, Permanent Secretary, Ministry of Defence, Lieutenant General Mark Poffley, Deputy Chief of the Defence Staff (Military Capability), Ministry of Defence, and Rear-Admiral Graeme Mackay, Director Carrier Strike, MOD.

Written evidence from witnesses:

– [Add names of witnesses and hyperlink to submissions]

Report by the Comptroller and Auditor General Delivering Carrier Strike (HC 1057-I)

Examination of witnesses

Witnesses: Stephen Lovegrove, Lieutenant General Mark Poffley and Rear-Admiral Graeme Mackay.

- Q1 **Chair:** Good afternoon, ladies and gentlemen, and welcome to the Public Accounts Committee on the afternoon of Wednesday 11 October 2017. We are here today to discuss the National Audit Office's Report on the value for money of carrier strike—the Elizabeth-class aircraft carrier and its military capability. Before I get into that, I want to take the opportunity while you are here, Mr Lovegrove, to raise with you our concern about Tony Douglas's resignation as chief executive of the Defence Equipment and Support organisation, which was a surprise to us. Was it a surprise to you?

Stephen Lovegrove: It was a surprise when he told me. It wasn't a surprise the day it was announced, because clearly he had told me a couple of weeks before. I can't pretend it was welcome news. Mr Douglas has been a real force for change, and has provided an enormous amount of positive momentum in DE&S. I know that it was only because of the particular attractions of the offer he was made by his new employer that he felt he had to take it up. In his words, it was an offer he couldn't refuse.

- Q2 **Chair:** So it was money, in the end?

Stephen Lovegrove: You would have to ask him.

- Q3 **Chair:** But it was a significant offer.

Stephen Lovegrove: I don't know the details, but I would be very surprised if it wasn't considerably in excess of what we pay at DE&S. I think there were other factors involved as well. He leaves with a heavy heart, because I know that he thinks that his work is far from complete there.

- Q4 **Chair:** That is my next question. What happens now? He made a lot of change, as you say.

Stephen Lovegrove: He has made a lot of change.

- Q5 **Chair:** A change for the good, but it is not yet delivered, so what are you going to do now?

Stephen Lovegrove: The first thing we are going to do—I have been spending a lot of time with the chair of DE&S, Paul Skinner—is put in place very rapidly a process for getting his successor in. I think we will be



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aiming to kick that process off within a matter of days, let alone weeks. I do not know how quickly we will be able to get a successor in place and extract them from their existing employment. I think we will be doing very well if we manage to get someone to take over from Tony when he leaves, which will basically be 1 January. Realistically, I suspect it may be a bit longer than that. It needs to be as quick as we can possibly make it.

- Q6 **Chair:** What is happening in the meantime? I understand that we would all be on long notice periods for a job of that kind. Who is going to be in charge?

Stephen Lovegrove: Mr Douglas will be working up until Christmas, and then he will be starting his new job on 1 January.

- Q7 **Chair:** So are you planning—

Stephen Lovegrove: We have a planning assumption, which has not yet been confirmed, and nor has it been agreed by the Secretary of State, so I am not in a position to tell you what that is.

- Q8 **Chair:** Do you know when we will know that? It is important for confidence in how you spend money on these programmes.

Stephen Lovegrove: I think we should be in a position to be able to tell you the identity of the interim CEO, should we need one, within a matter of days, if not a couple of weeks. I am very happy to write to the Committee on that matter.

- Q9 **Chair:** We would be very grateful. We are keen to know who they are and to talk to Mr Douglas before he leaves, because I think there will be lessons that he learned. If you can alert him that we will be interested in calling him in before he leaves, that would be helpful.

Stephen Lovegrove: I will. I think that you want to talk to me about the uncomfortable and unpleasant subject of contingent liabilities.

- Q10 **Chair:** Not today, actually. We will be seeing you again shortly, so we will pick up that one. I also want to ask you about the two big, important nuclear roles that have now been filled. Julian Kelly is now Director General Nuclear. We are just catching up a bit after the election—although we saw you on Monday—on defence matters. Then, of course, Ian Booth has been at the submarine delivery authority since August.

Stephen Lovegrove: Yes.

- Q11 **Chair:** It is early days. We had some concerns about these two jobs covering some of the same area. How is that bedding in? Have you got any areas of concern that you are watching, as the permanent secretary, to make sure that this critical part of defence is well managed?

Stephen Lovegrove: It is bedding in very well. Julian—

Chair: Mr Kelly.

Stephen Lovegrove: Mr Kelly has been in post for longer than Mr Booth, and Mr Kelly has made a very positive impression not only on the



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important constituencies around nuclear in the UK, but on the very crucial relationships we have in the US, because it is very much part of a single effort, in some ways. That is going well; the clarity of thinking and analysis regarding the financial position around the successor that you would expect to be brought to the situation from a former director of public spending at the Treasury has indeed been brought to it. We are having plenty of discussions with Treasury about how we best manage that and make sure that the cash flows are aligned appropriately on what will be a very long-term and very large build process.

Mr Booth, of course, has been in post for much less long—indeed, he has only just moved across from carrier to the submarine delivery agency, or SDA. We have a great deal of confidence that he is the right appointment for it.

Chair: I hope so! If you didn't have confidence now, that would have been a problem.

Stephen Lovegrove: Looking back at how he has been able to manage the Aircraft Carrier Alliance, we are confident that he is the right person to bring—

Q12 **Chair:** I just want to flag our interest, really. These are two big jobs, but they are covering some of the same ground, and we had some concerns about how they will hang together. We will want to talk to them at some point, so we are just flagging up and giving good notice of other interests.

I know that the Comptroller and Auditor General also wants to ask you a couple of questions about the nuclear deterrent capability.

Sir Amyas Morse: I just wanted to flag my concerns about access to the nuclear enterprise for the purposes of examining value for money, efficiency and effectiveness. We had a good discussion going with the Department up to July 2016, but at that point, after your appointment, you asked me to agree to a delay until the appointment of DG Nuclear. I did so, but I felt that up until then, things were going well. Since that appointment in May, I think that things have not moved forward particularly promptly, and I would like to know what idea the MOD has got about this. In other words, is this a plan, or is it just a series of very unfortunate coincidences?

It is not possible for such a huge and expensive project to proceed without appropriate levels of scrutiny. We have shown a great deal of sensitivity to the question of military secrecy—we fully understand that—and I think we demonstrated that sensitivity to you when we had a chance to talk to you about it, but for quite some time now, we have not made material progress, nor particular progress, even having met DG Nuclear. What we need to do is get this moving forward again, or hear from you what reason there is for not moving it forward.



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Stephen Lovegrove: I can assure you that there is no plan. I am afraid that I cannot answer the question very much more fully than that at the moment, because I am unsighted on the obstacles you are talking about.

- Q13 **Chair:** So you are committing to co-operating fully with the National Audit Office on scrutiny of this important spend.

Stephen Lovegrove: We will certainly co-operate as fully as we possibly can with the National Audit Office, but that obviously has to be consistent with issues to do with national security.

- Q14 **Chair:** Absolutely, but let us be clear that the National Audit Office has many cleared auditors who deal with matters that are legally so secret that we cannot even discuss them.

Sir Amyas Morse: I made that clear.

Stephen Lovegrove: I am very much aware of that, and obviously have had these conversations with Sir Amyas in the past. I hope that I have been relatively clear as well. I have to be honest, though, that I am not aware—it has not been brought to my attention since May—that there have been difficulties of access. I have not received any brief internally, nor have I received any representations from the NAO personally, so I am slightly unsighted.

Chair: Let us hope that we can take this offline and get it sorted.

Stephen Lovegrove: We can happily take this offline.

- Q15 **Chair:** I am sure he can ask you himself, but may I ask you to write to Sir Amyas and to the National Audit Office this week to clarify this?

Stephen Lovegrove: With pleasure.

Chair: As I have flagged up, we want to follow the spend on nuclear. It is a huge pot of money for the taxpayer, it is very important to our defence capability, we want to keep an eye on it, and we cannot do so without the good support of the National Audit Office.

Stephen Lovegrove: I understand.

- Q16 **Chair:** Thank you. That brings me to our hearing today. We are looking at the new Elizabeth-class aircraft carriers, which were planned some years ago and are finally arriving, and the F-35 jets that, together, make up the carrier strike capability for the UK. After the nuclear deterrent—this is one of the reasons why we are interested in the nuclear deterrent—this is the most strategically important defence programme in the country. It has a 50-year capability, so it is not surprising that we want to keep a close eye on it. I am sure that Mr Lovegrove will agree that it is now at a critical stage.

The overall MOD budget has also been under enormous pressure since the last strategic defence spending review, which is alarming this Committee, so we will want to probe that in this hearing. We also want to probe the trade-offs necessary to make sure you are keeping in budget,



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find out how this will deliver safety to the UK, and look closely—as this Committee does—at the financial risks to the country.

I welcome our witnesses. On my left, we have Rear-Admiral Graeme Mackay, the Director of Carrier Strike at the Ministry of Defence. In the centre, we have Stephen Lovegrove, permanent secretary at the Ministry of Defence, and on my right, Lieutenant-General Mark Poffley, Deputy Chief of the Defence Staff at the Ministry of Defence. For anyone following on Twitter, our hashtag today is #carrier.

Let us start with Mr Lovegrove; if you want to deflect to someone else, that is fine. The decision to buy these carriers was taken in the late 1990s—before I became a mother, which makes me feel very old. How relevant to capabilities today are these carriers that were planned then?

Stephen Lovegrove: I certainly will defer to my military colleagues, but from my comparatively untutored perspective, clearly they are very important. They afford a degree of flexible strategic military and, indeed, diplomatic presence for the UK, which we have been short of since the retirement of the last carrier. Obviously, they are untethered by geography in a way that our other assets typically are not. They re-establish an ability for carrier strike pretty much anywhere in the world. They are flexible, in that not only can they project air power, with the fast jets that no doubt we will talk about later, but they are capable of embarking very large numbers of helicopters and troops, and therefore are able to land troops in coastal areas, which is an important part of defence capability. They can also do a mixture of those two roles. Really, I think there is unparalleled strategic choice being developed for the nation, which will last for many decades to come, as you say.

Q17 **Chair:** But it is taking up about 25% of naval capability, is it not? So it is a very big leap of faith—perhaps that makes it sounds too trivial—or rather, an important step to put that much capability into two carriers, of which one is not yet operational and one is not yet built.

Stephen Lovegrove: I hope my colleagues will confirm this: devoting 25% of the Navy to support for the carrier envisages a position in which you are basically fighting a war and somebody is trying to sink that carrier. There are lots of situations in which we would deploy the carrier where there would be nothing like that kind of support involved. For instance, humanitarian assistance is one of the roles envisaged for the carrier. It is extremely unlikely that it would have anything like that level of support in that type of role. I think that 25% is a very maximalist view of what the carrier would need to support it; it is hopefully a situation that would not happen at all, but I defer to colleagues.

Lt Gen Mark Poffley: Perhaps I could add a little? First, I endorse all the points made by Mr Lovegrove about the versatility and utility of a platform such as this. I think one needs to place it in the strategic context of an escalation of a crisis. Clearly, it has a number of roles right the way through that escalation process, through strategic messaging, through to the far end of that process: delivering direct military effect to an opponent. I would add that one of its key characteristics is that it provides

dilemmas to the opposition. That is something that other platforms simply are not able to replicate at the same sort of level.

With regard to its place inside the rest of the Navy and what is required to support it, there is a variable geometry here between that sort of humanitarian role at one end and the sovereign deployment of a carrier strike group by the United Kingdom. Of course, our working assumption is that when we get into war fighting, in the vast majority of cases we will not be there alone. The Royal Navy, like many navies, practises routinely in a multinational task group. It contributes, through the earlier part of that spectrum of options, in a multinational role, as much as in a UK role.

Q18 Chair: What percentage of naval capacity would it take to send HMS Queen Elizabeth to one of the recent hurricane sites, for instance?

Lt Gen Mark Poffley: Well, taking a humanitarian aid example, it quite clearly would go with some force protection alongside it. That can routinely be as little as a single anti-submarine destroyer. Depending on the scenario—this is very much risk-dependent—you could come down even further below that. Percentages are a misleading metric here, because in a routine deployment, a sovereign carrier strike group would have two air-defence destroyers and two anti-submarine warfare frigates. You probably would want to deploy with a submarine and similar air assets around it, and of course they would have to go with their own support shipping. But that is a sovereign carrier strike group at the maximum level.

Chair: Okay. I suppose that is there in case it is necessary, but let's hope that doesn't happen.

Lt Gen Mark Poffley: But I would not recognise even that carrier strike group as a percentage—as 25%—of the Royal Navy. That is not quite how I see it.

Q19 Chair: These carriers are very expensive—they are the second biggest expense after the nuclear deterrent—and we have seen pressure on the budget. To deliver them, especially given that the costs have now escalated and you are under increasing financial pressure, what things are not going to be delivered? What capability is not going to be available? I suppose you could put it the other way around: what would the £14 billion have got if it had not bought these carriers?

Stephen Lovegrove: The process of managing capabilities within the Ministry of Defence is, as the Committee will be more than well aware, a constant process of prioritisation against risk. It is not the case that everybody always gets what they want. If they did, defence spending would not be 2% of GDP; it would be 100% of GDP, pretty much. However, the carrier project, broadly defined—the F-35s, the helicopters, Crowsnest and the carriers—is on budget and on time, so it does not constitute one of the biggest risks in the Department at the moment. We do not consider it—

Q20 Chair: You say it is on budget, but there is an estimated increase in costs,



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isn't there, of between £60 million and just over £120 million?

Stephen Lovegrove: At the moment there is potentially a pressure of 1% to 2% on the carriers, but that is not something that we have accepted yet. We are certainly working with the Alliance to eradicate that. My view is that this whole project is within its cost envelope and is on schedule.

Q21 **Chair:** What compromises are you going to make about capability in order to eradicate that? I do not know whether it is Rear Admiral Mackay's place to answer that.

Rear-Admiral Graeme Mackay: I can assure the Committee that we have looked very carefully at how we would operate the carriers in contingent war fighting. We have discussed the full scale of how that would be done against a very high threat envelope. We have also looked at how it would be operated in a medium-scale conflict and, backing off, in terms of the other bits we have described. That is what we call contingency, and we have done a lot of work around modelling it. We have engaged colleagues in the Treasury on that. The modelling work we have done includes costs, and we have scaled that so that it does not denude the Navy from the entire outputs. That is an important point.

What we would envisage—this is advice that would go through to Ministers—is that you would generate a task group, which would then be ready as a contingency should the country need to call on it. You would then be able to deploy a scalable task group, which would be commensurate with what the geopolitical situation was at the time—it would depend on what the threat was—and you could then reconstitute that, as required, to conduct a live operation as it happened. The unique point of carriers is that you can put them in harm's way as a crisis emerges, and it is that first reaction that is the unique part of the capability.

That is what we have done so far. The other work that we have done, which complements it, is called the routine operating model. Again, that is very carefully understanding how we sustain across the Department the output of the carrier capability, balanced with the other elements of the Department. Again, that is a process that we go through to the defence board, to report that work up.

That will be incremental because, of course, the carrier and the capability will be delivered at IOC in 2020 and then will be moved into FOC over a period of six years.

Q22 **Chair:** For people here who might not follow what those initials stand for, would you explain IOC and FOC?

Rear-Admiral Graeme Mackay: Sorry. The initial operating capability is a lesser capability, so it is that initial entry, which is very wise to do, because that means you have got elements of training, equipment and sustainability coming on line. You can then understand how you are going to operate the capability put in service and then we will naturally grow that to the full operating capability in 2026.



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- Q23 **Chair:** One of the challenges when you talk about full operating capability is that these have got to last for 50 years, so how flexible are you and what are the financial risks of ensuring that you can future-proof them for future need?

Stephen Lovegrove: Let me have first crack at that. If I may dwell briefly on these IOC and FOC figures, it is quite important.

- Q24 **Chair:** The worry is that FOC just becomes a shopping list.

Stephen Lovegrove: I appreciate that. There is a little misunderstanding, particularly in the press, that there is a moment at which the carrier and indeed the carrier group emerges fully formed: it is off or it is completely on.

That just is not the case with this. It is an immensely complex dynamic network of capabilities, all of which will evolve over a long period of time. IOC is definitely going to be less capable than FOC in due course. Indeed, the initial operating capability of the carrier group, with helicopters on, is a good two years before it is with the fast jets on.

The whole thing is like a town that will evolve and change in shape and role over 50 years. That is a very important mental map or image to get to grips with what the carrier group can do and how it will evolve over time.

In terms of knowing how much this is going to cost when it is operating, it is absolutely right—the NAO Report is completely correct in this—to identify that the build costs are pretty well known and controlled at the moment. This is, however, a new fifth-generation carrier, with fifth-generation jets on it, all of which are evolving. We simply do not know, with the same level of fidelity, how much it is going to cost to operate and maintain.

- Q25 **Chair:** But you have made a commitment that the costs will not beyond the £6.2 billion approved cost, haven't you?

Stephen Lovegrove: Yes, and that is still the case.

- Q26 **Chair:** That is still the commitment.

Stephen Lovegrove: Yes. That is still the case but those are predominantly the build costs.

- Q27 **Chair:** So, there is still the full operational capability.

Rear-Admiral Graeme Mackay: What we are doing at the moment is modelling that in service. It is not particularly difficult to do. Clearly, if I talk first about manpower, we deliberately designed the ship so that the manpower is very similar to that of the previous class of ships. The ships' company is around 600, 700, 800 people. That is a very important fixed cost that will happen throughout the life.

The other part is the equipment and support budget and, again, we have done extensive modelling to understand what it costs to support this capability in service. As for the rest of the maritime task group, we are not



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changing the scale or size of the surface ship navy from the 16/19 DD/FF we currently have.

We have a very good understanding of what it costs to operate those in terms of manning Portsmouth dockyard and maintaining those ships. Indeed, we are just going through quite a successful first planned engineering period with Queen Elizabeth today and that will be a precursor to her sailing again later this October for her second period of sea trials.

- Q28 **Chair:** I think it would be helpful, especially for people watching this, for us to bottom out what exactly it would be delivering on. Currently, it is planned that it will take Merlin helicopters. Am I right that all helicopters should be able to land on this aircraft carrier?

Lt Gen Mark Poffley: We are conducting first of class flying trials next year. The anticipated fleet of aircraft will certainly include Merlin. We will be considering also clearing other types on to it, including the Apache and the Chinook, which, again, gives us greater versatility. There will then be a debate about which further types of aircraft, in the multinational sense, we may wish to clear on to the platform over a period of time. Clearly, those are the mainstays of the UK rotary fleet and it makes sense therefore for us to include them in the portfolio of options for the carrier.

- Q29 **Chair:** So your plan, subject to these tests, is that all UK-enabled helicopters will be able to land—obviously, the F-35s, which we are going to go into in a moment. What about carrying equipment that will allow troops and/or equipment to access shore from sea?

Lt Gen Mark Poffley: We need to be quite clear. These are designed as aircraft carriers, not as bespoke amphibious shipping, and therefore their ability to launch surface manoeuvre, as we call it, in the littoral environment, is not there. That will come from other platforms. What we have got to be clear on is that there needs to be a very clear articulation of how we wish to conduct littoral warfare going forward and the level of support we need in the surface-to-surface environment. The carriers are not there for that purpose; they are there to deliver air power and rotary support to a littoral operation.

- Q30 **Chair:** So they won't carry amphibious craft, then?

Lt Gen Mark Poffley: They will not carry amphibious craft.

- Q31 **Chair:** Is there any adaptation—just imagine a situation where one goes to a hurricane site without the full back-up or a devastated area on humanitarian aid, and there is a need to do something like this. Is there no capability to add that on later?

Lt Gen Mark Poffley: Again, one needs to be careful that we do not try to compare it with its extant platforms. This is not an amphibious ship, it is an aircraft carrier, and, like HMS Ocean, which is a helicopter carrier, not a dedicated surface manoeuvre platform, its role is there to provide air support, both in the rotary sphere and the fixed wing sphere.



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Stephen Lovegrove: I think—in fact, I know it is the case that in the SDSR of 2015 we stated that we would look at modifications that might enable a degree of amphibious operation for the carrier. Clearly, the more flexible we can make it the better it will be; so, again, if you would like us to write back to you on that we are happy to do so.

- Q32 **Chair:** Yes, that would be very helpful, because I sense that we are going to be coming back to this repeatedly.

We talked a bit about the compromise of the cost envelope that you have now absolutely committed to, but in order to do that and because of the other pressures on the budget, you are already making compromises on capability, as the report touches on. What compromises are you having to make, or are prepared to make, to ensure that you stay in budget but we still have capability?

Stephen Lovegrove: I am not aware that we are making compromises to stay in budget in the carrier programme at all.

- Q33 **Chair:** There was a projected budget increase, which I highlighted earlier, of £62 million-plus. You are saying that you don't accept that, so you are trying to make sure that is tied down.

Stephen Lovegrove: Yes.

Chair: How are you doing that? If it is not a compromise, what are you doing?

Lt Gen Mark Poffley: This comes about largely as a result of experience that we have already learnt through taking Queen Elizabeth to sea. There is clearly work experience that is being transferred to HMS Prince of Wales.

- Q34 **Chair:** So you are making savings with HMS Prince of Wales—

Lt Gen Mark Poffley: Well, there is some learning experience. In terms of productivity and making sure that we have learnt from the experience of building Queen Elizabeth, that experience is being transferred on to the Prince of Wales. Clearly, there is a certain amount we can do in terms of scheduling, which perhaps reduces costs in Rosyth. There are some judgments that we can make in terms of modifications that are either critical or able to be adjusted on some of the build profiles. However, none of those are outwith the normal tolerances that you would expect of a programme of this type. It is between us and the Alliance to now drive those costs down to the lowest level. I am sure the Committee would expect us to do nothing but that. It is part of the normal process of programme management to ensure that every single cost is justified and that every piece of work is essential and is configured to the objectives of the programme. As the permanent secretary said, we believe that there is some way to go in that discussion with the Alliance.

Luke Graham: I know there have been cost challenges with the actual carriers themselves, and there has obviously been the challenges with the 30 Lightning II jets as well. We have been given some assurances



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today that the carrier's overall cost will come in at £6.112 billion. Does that include the guarantees with the Lightning II jets also? *[Interruption.]*

Chair: Apologies, I forgot to mention at the beginning that we are on a running vote. We will aim to start the Committee again in 10 minutes, or as soon as we are quorate, if Committee members agree to that.

Committee suspended for a Division in the House.

On resuming—

Chair: Welcome back to the Public Accounts Committee on Wednesday 11 October. We are resuming our hearing on carrier strike, the MOD's capability for aircraft carriers and attendant aircraft, and Luke Graham was rudely interrupted as the bell went, so I will ask him to pick up, but since we have had a 45-minute break, if you want to call it that, I think we need to cut to the chase and keep answers short, if we can, and keep questions short too. I think we know where we are heading with this, as I outlined at the beginning.

Q35 **Luke Graham:** I think we were just on the question about overall spend; and obviously we had some reassurances about the overall programme, and we are looking specifically at some of the £3 billion spend on the 30 Lightning II jets. I think that Lieutenant-General Poffley was just replying on that.

Lt Gen Mark Poffley: I was going to make the point that we have currently got a programme; it is just over £9 billion. I think it is catalogued in the NAO Report. We remain inside that envelope, and that is for the delivery of the first tranche of 48 aircraft. That remains on track and within our programmed figure, so, from my point of view, in terms of cross-displacement elsewhere, I am not concerned about that at this stage.

Q36 **Luke Graham:** Understood; and just to follow up on that, in terms of those costs that have been outlined, are they original purchase costs, or do they include all future spares, upgrades and forecast development costs as well?

Lt Gen Mark Poffley: The budget breaks down—and, again, this is in the Report should you need it—as about £1.8 billion, associated with systems development and demonstration, which is the early developmental stage of the programme; and then the balance, some £7.25 billion, is there for production, sustainment and then future development. Inevitably, as you go through the first tranche of aircraft in a series of tranches of aircraft, that development accrues as problems are resolved and new challenges are addressed.

Q37 **Luke Graham:** Reflecting on some of the technical issues that the fighter has had, which have been picked up by the press and also in previous Committee hearings, do you think this budget is sufficient to be able to fix future problems and develop the technology over the next 20-plus years?



Lt Gen Mark Poffley: Certainly there is provision in there for future development. Much of the press reporting I suspect reflects the very early stages of the programme. Indeed, many of the challenges set out in some of the media articles have been well and truly corrected since the programme started. Certainly many of them we did not recognise.

Stephen Lovegrove: It may be worth saying that in relation to the figures quoted in the NAO Report, it would be misleading to think about those as buying an aircraft. What you are doing is buying a system. There is a huge amount of infrastructure spend associated with that: remediation work, support, spares and training is in that. As General Poffley said to me the other day, it is not so much like buying a car, but like setting up a driving school. You have to buy the car, the trainers—the whole system is being set up. Some of these things will last for the 40 years that we will be flying F-35s. The investment in RAF Marham will be there until it is no longer needed. Again, we need to be quite careful about the conceptualisation of the expenditure.

Q38 **Luke Graham:** Understood. I have one more follow-up on that. I understand that during the development phase we paid the £2 billion in advance so we are a tier 1 partner in the development of the jets, which obviously has given us more influence over how the jets developed to make sure the capabilities were compatible with other British assets. I think we lose that tier 1 status in 2019. Moving forward, how can we make sure we can manage costs? If we are not a tier 1 partner, it could be that America makes adjustments to reflect their new assets and the costs will just be shunted to us. What comfort do you have that you can prevent that?

Chair: We were a 4.5% stakeholder.

Rear-Admiral Graeme Mackay: Correct. Initially, we paid the fee, which has given us a very important influence over the design. That is the most important phase for delivering the aircraft system. We will retain an important influence in the programme going forward into production, sustainment and follow-on development, which is the technical phrase for the aircraft being in service, and then throughout its life until circa 2050. So we will retain a significant influence inside the joint programme office through that period. That investment has secured us that position, most importantly during the early phase.

Chair: I will bring in Mr Snell and leave the issue around the aircraft.

Q39 **Gareth Snell:** Thank you for what you have said so far. It is very interesting, but the Defence Select Committee heard, and it was reported in the press that, having paid £100 million for each of the F-35s, the first four that we take delivery of will be too heavy to land correctly on the carrier. I don't know whether that is something you want to discuss today or whether you have a response to that, but I want some assurances that if that is the case, how will that be met within the existing cost envelope? How can we ensure that any retrofit that is necessary to fix that problem does not end up being an additional cost to the overall programme? And



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how has that been allowed to happen?

Rear-Admiral Graeme Mackay: The design of those aircraft remains within their specification—those aircraft are flying now—and they are largely aircraft that are instrumented, so they are recording and being used specifically for that purpose. That is the employment they are on at the moment and they are meeting those tasks fully.

It is important to set the record straight on weight. We have deliberately designed a technique for recovering the aircraft to the carrier through a thing called shipborne rolling vertical landing. We started that programme circa 2007. We had a VARC Harrier aircraft, which had an F-35 control system. There has been speculation that we have come to this not knowing what we are doing, and I would characterise that as not being correct. Indeed, we have done a lot of testing at Pax river as well. So the aircraft will be meeting its design. We will continue to manage weight through the life of the programme. We have a particular technique to get the aircraft off through the ramp at the front of the ship, and to recover the aircraft in service.

Q40 **Gareth Snell:** For absolute clarity, you are saying that the issues reported in the press and in the Defence Committee—that they are too heavy to land safely—are not true?

Rear-Admiral Graeme Mackay: Those aircraft that we are procuring will be able to land vertically in the carriers. We will also be able to design—

Q41 **Chair:** Sorry, maybe I am being picky about the wording, but you have just said “those that we are procuring”. I think Mr Snell was referring particularly to the first four.

Rear-Admiral Graeme Mackay: Those aircraft are not overweight. They can recover and will be used by the trials programme in the carrier as we go through the life of programme. So it is not an issue.

Q42 **Chair:** So in simple terms, they can land on the carrier. They are not too heavy.

Rear-Admiral Graeme Mackay: They can, and that report was incorrect.

Q43 **Gareth Snell:** You said that they are part of the trials programme, so presumably there will be no particular change to the specification or make-up of the design of the planes that you will procure subsequently as a result of the first four that we have received?

Lt Gen Mark Poffley: If I can put this in layman soldier language, the reality of life is that on any vertical take-off and short take-off and landing aircraft, you are going to have issues around weight distribution and weight characterisation that will limit the flight envelope—indeed that is true of a fixed-wing aircraft in a conventional landing and taking-off role. The realities of life are that in the early part of the development phase you will have questions about weight. Yes, mitigations were put in place to reduce weight and to improve the performance, but that is something you would expect in the early part of the development of an aircraft of this



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type. The first batch of aircraft that were fitted for this test and evaluation role are still within the limits and we are seeing improvements through the development phase of the programme to the performance and weight characteristics of the aircraft. That is something that we would have expected and is included in our cost envelope.

- Q44 **Chair:** Mr Lovegrove, one thing we discussed when you were in front of us before was the challenge of the exchange rate and the price that that adds to the programmes. Particularly given Brexit and the change in the exchange rate—it is not going in the right direction at the moment—how is the MOD factoring that in to ensure that taxpayers do not take an extra hit?

Stephen Lovegrove: You are absolutely right to say that foreign exchange is not working in our favour at the moment. After the last hearing in front of this Committee, you recommended that we get into conversations with the Treasury about that, and indeed we are in conversations with the Treasury about it more broadly. In the context of this particular programme, the cost pressures arising from the forex are being managed within the cost envelope.

- Q45 **Chair:** Are you having to make any compromises on the aircraft to do that?

Stephen Lovegrove: I am not aware of any.

Lt Gen Mark Poffley: We are not. Indeed, the first part of the programme secured our interest at a price and that has not been altered. I think the pressure has been absorbed elsewhere in the overall programme, particularly through the United States. From that point of view, the UK is insulated. Where those pressures have arisen in subsequent tranches, and clearly there are still commercial conversations under way, those are accommodated within the funding envelope that we have.

- Q46 **Chair:** Earlier, in response to Mr Snell, Rear-Admiral Mackay talked about the £2 billion that secured the British Government a real say in the design and cost of the aircraft. Now, as phase 1 goes, we are a 4.5% shareholder in the next phase, so do we still have the same power over the purchase price of those aircraft and a say in how expensive they will be? We bought that initially, but does it carry on as we move into the second phase?

Rear-Admiral Graeme Mackay: No, but the environment and context have changed because you are now in a large production run—the aircraft production run is about 3,000 aircraft—and there is a reduction in price as you take action to procure the aircraft. For example, the programme has entered into a situation of block-buying aircraft—they are looking at buying 455—so we get a different benefit. The lens you need to look through is very different as you go into that production and sustained follow-on development. It is just a different commercial environment because you will get the benefit of volume. That goes down into the tier 2

supplies as well, so you will see a reduction in price and that is very much the way the best programmes work.

- Q47 **Chair:** You confidently say we will, but if there is any issue about price, what control or influence would the UK Government have over the Americans on that?

Rear-Admiral Graeme Mackay: Well it is enshrined within the MOU. There are two MOUs, one is for the first part, and we will then enter into the second MOU, which we have signed and continue to be part of that.

- Q48 **Chair:** So it is signed and that guarantees the price effectively, in simple layman's terms?

Rear-Admiral Graeme Mackay: Part of that MOU is designed to bring the cost down among the nine international partners. So within that documentation is the effort to work together to bring the cost of the aircraft programme down.

Chair: Mr Lovegrove, you wanted to add to that.

Stephen Lovegrove: It might be worth dwelling very briefly on the way in which the purchases are handled. Because this is predominantly an American programme, all the nations are effectively signed up to the negotiations and the prices that can be negotiated by the Joint Programme Office. That is based in the States and it is run by an American general.

Chair: We might be meeting him, hopefully in February, when we are at the Pentagon.

Stephen Lovegrove: The Joint Programme Office is clearly predominantly negotiating with Lockheed Martin and Pratt & Whitney to drive the cost of this capability down for everybody. We can have a degree of reliance that our incentives are aligned with the American Government's incentives, because they want to get it down as low as possible. Indeed, one of the first things President Trump did when he got into office was talk about how much he wanted to see the price of the F-35 come down. I am not going to comment on his involvement in that negotiation, but it is certainly the case that in the most recent tranche that we have seen, that meant that we saw nearly a 7% drop in the aircraft's price from the previous tranche. The pressure that the JPO is putting on it, and we have people in the JPO, and the mere fact that the programme is becoming more mature—the next of a kind copies are obviously cheaper than the first of a kind copies—gives us some confidence that we will be getting these aircraft as cheaply as we reasonably can.

- Q49 **Luke Graham:** When the Committee looked at this topic back in 2013, it noted that crucial enabling equipment was not funded. Are you confident now that any of these gaps have been closed and that all enabling equipment is sufficiently funded?

Rear-Admiral Graeme Mackay: We can give examples, topically the tactical data links is an area that we have just taken funding action on last year, and that is throughout defence, so that is to start moving to a much



more networked approach. Clearly there are areas where we would like to develop the capability and capitalise on the investment that we have made. That is a very good example. There are other areas where we are looking at how we are going to support the capability when it is in the carriers. For example, moving stores around. We have taken action to close those gaps as well. So it is very much a priority. We now have a risk-based response plan, and then clearly performance, cost and time enter into our calculations for closing those gaps.

- Q50 Luke Graham:** Understood. This is a question for Lieutenant General Poffley. When looking at the enabling, are you now confident that the jets, carriers and all other support vessels will have the right enabling equipment, so that they can effectively communicate and operate with each other? I know that in previous Committees and in the press it has been reported that there have been issues such as software, specifically operating on the carrier, and also broadband capability, and that these would seriously restrict some of the operational capabilities of both jets and carrier.

Lt Gen Mark Poffley: I can say that within the programme as we have currently configured it, through to the initial operating capability and then subsequent full operating capability, I am confident that the enabling constituent parts of the programme are in place to allow us to reach those milestones in the way that we have described. But one needs to remember that this is a platform with open architectures, which we are looking to design resilience into, such that as the circumstances change we can make those modifications that we feel are appropriate. But we are certainly in place to provide that capability as per the milestones set out in the programme, including right the way from its role in an amphibious operation through to the full carrier strike capability.

- Q51 Luke Graham:** Understood. You mentioned open architecture and the fact that some of these systems will have to have additional resilience built in. Do you feel that the budgets and the forecast operating budgets are sufficient to enable you to continue this kind of evolution and adaptation, especially considering the level of technological advancement and investment from less friendly powers around the world?

Lt Gen Mark Poffley: Yes. We constantly review the threat against not just this capability but the broader portfolio of capabilities that will go and support it. That is part of an ongoing process. Yes, it does require us to take some hard decisions in prioritising the programme in a broader defence context, but as we sit here today we believe that the capability is very credible, is world-leading in many areas and will meet the milestones that we have set down.

- Q52 Bim Afolami:** I want to look again at this point around the amphibious capability, because it has very much been an area of focus for many people. If you had a magic wand and resources were not an issue—I accept that we live in the real world—is that amphibious capability something that you would definitely want to have?

Lt Gen Mark Poffley: Let's be quite clear: this platform has a significant part to play in amphibious operations. It provides all the fast-attack aeroplanes that you might want to support such an operation, and it also has capacity to deliver the rotary support to that type of operation. You can quite clearly envisage a raft of different things that you might wish to do to a platform such as this, but it may or may not be the optimum way of delivering a broad suite of capabilities across the fleet, and in service with the Royal Marines, to best effect. There is a judgment to be taken as to what that looks like going forward. Indeed, as part of the national security capability review, that is being actively looked at to make sure that we have the right capacity to deliver amphibiousness that is fit for the contemporary operating environment. It is important to acknowledge that these things don't stand still. There is no point in us designing something for the past. It has got to be appropriate for the contemporary environment and the environment going forward. I am absolutely confident that this platform would play a major role in that type of operation, if we were to commit to it, and the precise nature of it is clearly going to evolve as we go forward.

Q53 **Chair:** Can I extend that before we go back to Mr Afolami? Where would the Royal Marines fit into this? Are they expected to be travelling as part of the crew or travelling with the aircraft carrier?

Lt Gen Mark Poffley: It absolutely is fitted for the ability to embark Royal Marines and deploy them through rotary aircraft into the—

Q54 **Chair:** That was my next question. So they will be landed by helicopter, and not by boat or amphibious—

Lt Gen Mark Poffley: Correct. It is internally configured to allow both mission planning and the execution of that logistic move of the troops from ship to shore.

Q55 **Chair:** Okay, but you fly them rather than land them?

Lt Gen Mark Poffley: By rotary. There are other platforms that are better suited to delivering a surface manoeuvre capability. There is a real distinction between the delivery of troops by air, which this platform is clearly optimised for, and delivering a surface manoeuvre, which would require surface vessels. Clearly there may be modifications that you could do to a platform such as this, but we need to consider whether that is the most optimum way of doing things.

Chair: I am going to bring in Mr Snell briefly, and then come back to Mr Afolami.

Q56 **Gareth Snell:** Briefly, because I understand this is the same thing, Marines who are stationed on Queen Elizabeth will be deployed by rotary aircraft or by air. What if there is bad weather and they cannot fly? How would you deploy them then?

Lt Gen Mark Poffley: There are always environmental limitations in any operation. Clearly, that is a judgment of whether you conduct the operation in a particular way or, indeed, at all.



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Q57 **Gareth Snell:** I understand that there is a judgment. If there is bad weather and no amphibious capabilities on a particular carrier, how do you deploy the Marines?

Lt Gen Mark Poffley: You will deploy them, if you choose to do so, by surface manoeuvre, but it would be through other platforms.

Q58 **Gareth Snell:** So that would be taking them off one carrier, putting them on to something else, and then taking them to shore by boat?

Lt Gen Mark Poffley: You may well have to consider the ability of a transfer of some description. However, bear in mind that the sorts of conditions that you are describing would, I suggest, bring into real compromise whether that operation was tenable.

Q59 **Gareth Snell:** I am thinking humanitarian. We have just seen the deployment to hurricane areas. Obviously, a hurricane is a sort of special situation in which I presume you can't fly an aeroplane or helicopter. In that situation—humanitarian aid is required and Marines are being dispatched—how would you do that if you can't fly?

Lt Gen Mark Poffley: I think if you find conditions are of that sort of quantum, surface manoeuvre would be equally compromised, because the sea state is likely to be significantly higher than is tolerable within the risk tolerances if you want to deploy significant numbers ashore in that way.

Q60 **Chair:** Not good news, then?

Lt Gen Mark Poffley: Hurricanes are generally bad news for amphibious operations.

Rear-Admiral Graeme Mackay: I would just add that the useful part of having a ship is you can drive around weather and operate on the fringes of weather or downwind. Having served in all of the carriers, there is incredible flexibility in where you go, because you can physically manoeuvre your platform around.

Q61 **Gareth Snell:** But the military or whoever it happens to be would not be sailing to where the weather is.

Rear-Admiral Graeme Mackay: I understand that, but I have also flown in some fairly challenging weather conditions in helicopters.

Chair: You have more experience of this than any of us landlubbers, Rear-Admiral—except for Mr Snell, who was on the armed services scheme.

Gareth Snell: No, no; I am fully terra firma.

Chair: A few of us are part-time soldiers, but not in the same sense as you.

Q62 **Bim Afolami:** Just a quick point around value for money. Obviously, from what I have heard, you are all confident that this represents value for money in an operational sense. In other senses, to what extent have we considered value for money in other contexts—in terms of the ability to



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help train other countries' armed forces, the impact on UK plc or other ways? To what extent has that been quantified and looked at?

Stephen Lovegrove: It is inherently quite difficult—

Bim Afolami: I can completely appreciate that. Doing a model for it would be quite tricky, I accept.

Stephen Lovegrove: Yes. Military effect is quite difficult to think about, in terms of value for money. Global Britain, to use that phrase, is quite difficult to think about in a very precise way. There is no doubt, though, that it is widely acknowledged that the projection of British influence and power around the globe is going to be significantly enhanced by the possession of the carriers. I think that that was very much in the minds of Prime Ministers and Chancellors who have successively approved this project when they have done so. It is a very visible, tangible expression of British power.

- Q63 **Bim Afolami:** In the process—the long process, I imagine—of approving a project as large as this, to what extent is there an even an attempt to do that by the Treasury or anybody else?

Stephen Lovegrove: I will pass.

Lt Gen Mark Poffley: In terms of delivery, some of those effects are quite soft effects. For example, influence—in the context of either military, coercion or deterrence—is very difficult to define. Similarly, diplomatic traction is quite difficult to define.

- Q64 **Bim Afolami:** Are they assessed at all?

Lt Gen Mark Poffley: They tend not to be in numeric or financial terms.

- Q65 **Chair:** Would you say they are dividends of the Defence—

Stephen Lovegrove: What the Treasury would call externalities.

Bim Afolami: A positive, rather than a negative, externality.

Stephen Lovegrove: A positive externality. Exactly.

Rear-Admiral Graeme Mackay: As part of the SDSR '15, we spent time with the Treasury under a major programme review group specifically looking at the scalable delivery of carrier strike and the carrier programme. That was examined and numerical work was done, in terms of the costs and the bounce in investment that that delivers throughout the full functionality of the capability, from war fighting down to those softer power issues. The only thing I would also add is that I think there is attraction, and certainly our advice to Ministers resonates, to putting a task group together that isn't just inherently UK-based. That task group would benefit from either NATO or other allies. There is clearly a gain there, depending on what the countries are, and clearly how you operate in that group depends on the geopolitics at the time.

- Q66 **Chair:** We could talk about this at length, but really we need to get the focus back on the hard kit. We have talked quite a bit about the jets.



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Obviously they have a different lifespan from the carrier, which has a 50-year plan. How well are you future-proofing this? It seems that the bet is all on vertical take-off F-35s—you have talked about the buy-in you have had to that technology and the price—but what about future technology? We are talking about unmanned craft and drones. Is that planned in or will that require adaptation further down the line?

Lt Gen Mark Poffley: It probably falls into my broader portfolio, but suffice it to say that we are actively looking at how we can take forward a range of different initiatives that are operating in all three environments—maritime, land and air—to incorporate that sort of technology into the future of these platforms. It behoves all of us to look back 50 years, imagine how technology was then compared with where it is now, and extrapolate that problem. We are looking 20 years out at the moment. Unmanned systems absolutely apply in this space, as do the manipulation of the electromagnetic spectrum and a raft of other innovative technologies. We anticipate incorporating all of them into this sort of platform and this sort of capability in the round.

Q67 **Chair:** Have you got a plan? Presumably you are not planning to incorporate them all at once.

Lt Gen Mark Poffley: At the moment, the programme is focused on delivering in the capability as we have described it. *[Interruption.]*

Chair: Our apologies. There is an unexpected vote.

Sitting suspended for a Division in the House.

On resuming—

Q68 **Chair:** We are now quorate again and are waiting for Mr Graham, who was mid-sentence. I am reluctant to start without him, but I am aware we have waited quite a while. We already went back to the amphibious point, but can we go back to the issue about the foreign exchange rate? You talked about having a conversation with the Treasury, Mr Lovegrove.

Stephen Lovegrove: Yes.

Q69 **Chair:** But what is the exposure you are still at risk of now? Do you have a figure for that?

Stephen Lovegrove: I don't have a global figure for it. I am happy to write to the Committee.

Q70 **Chair:** Could you? Do you have a range that you could give us?

Stephen Lovegrove: I'm afraid I cannot do that at the moment because it is quite a complex calculation, as we have a rolling three-year programme of hedging with the Bank of England. We are getting to the stage where we are renegotiating some of that. I am afraid I do not have those figures in front of me at the moment, but I am happy to write. It is obviously an issue that the Committee has picked up before in previous hearings. It is one we are thinking about very hard.



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Q71 **Chair:** We will also be pressing the Treasury on this as well. For Mr Graham's benefit, we are just probing the forex situation again.

Stephen Lovegrove: While I have the floor, could I ask Rear-Admiral Mackay to respond on the point that Mr Graham was making about whether this platform is future-proofed for future airborne capability?

Q72 **Chair:** Rear-Admiral Mackay.

Rear-Admiral Graeme Mackay: The answer in simple terms is yes. The inherent design of the ship means that it has a large amount of space and power to allow you to develop other systems as the carrier goes through its life. It has a design life of up to 50 years. Inherent in that design, there is growth within the platform. That would allow you to operate a range of future air vehicles as we develop those out in that sort of timeframe. I say that just to give you the assurance that the ship does have a lot of power generation capability and a lot of ability to grow over time in terms of delivering capability.

Q73 **Luke Graham:** That is great to hear. It goes back to one of our earlier questions about the operational capabilities of the carrier. Again, I go back to the point about broadband, because obviously there will be more and more demands placed. Presumably, if you were operating in a full taskforce in a war-type situation, that would become an issue. Reports previously have said it has been about 8 megabits per second. Are we clear that broadband and internet capability is much higher than that and would support a full complement?

Rear-Admiral Graeme Mackay: The ship has a design with large aerials to communicate with at the moment. As part of the work that we are doing on looking to bring US Marine Corps jets on, there will be another dedicated satellite system for them. Because you have got a large ship with a lot of power, we have also designed the ship fully networked with fibre-optic cables, so through the life of the ship, for the first time, you can blow fibre-optic cable almost anywhere in the ship. It is really a different way of thinking about communicating.

We also have ideas, looking into the future. I don't know what the size and shape of modern satellite aerials will be in 10 years' time, so if you look at the design of the two islands of the ship, you can see that we have provisioned space so that you can fit arrays. I would have thought by then that you would be looking at planar arrays.

Q74 **Chair:** For those of us not expert in this, what is a planar array?

Rear-Admiral Graeme Mackay: A planar array is a flat array, rather than something you steer towards a satellite electronically. In very simple terms, I am trying to say that inherent in the design is the ability to grow through life, for both the carrier and the F-35. That is the key message to take away. We have designed that deliberately into the platform, so that you do it. You would not wish to fit electronics that go out of date very rapidly. We need to be much more agile in the way we think about developing capability over time. That has been thought about in both the aircraft and the ship.



Q75 Luke Graham: Understood. That's great to hear. Are you confident, then, that the forecast budget will enable you to do that growth within the assets?

Rear-Admiral Graeme Mackay: At the moment, we have a capability in communication terms that meets our requirement. As we prioritise and understand our budgets going forward, we will clearly prioritise the requirements to deliver the capability over time. That is just a natural process that we go through on a yearly basis under the leadership of the general.

Lt Gen Mark Poffley: Just to nail that one out of sight, the reality of life is that the passage of data around the force is a generic problem and, therefore, it needs to be taken as a system. Platforms such as this or, indeed, the aircraft it will operate will inevitably see a slightly different approach through time to how we manipulate data. Some of it will be very targeted data; some of it is unique to a particular function inside things.

As part of the programme, we are looking to ensure we have sufficient resilience in the system—that it has the firewalls and the breaks to ensure that it cannot be compromised. Inevitably, cyber-attacks and their ilk will become an increasing factor as we go through time. We are provisioning for that as part of our routine modernisation, not just of this particular platform, but for the force more generally.

Q76 Luke Graham: I appreciate that there are lots of different types of data, and they will have different levels of resilience, but if I understand correctly, you are quite comfortable that existing budgets will be able to give you the capacity to evolve security and capability over the life of the assets.

On the interoperability that we are trying to have with the United States, will we have sufficient funding to ensure that interoperability, with the advancements that they have, and in the light of their significantly higher military spending than ours?

Stephen Lovegrove: Existing budgets go up to 2026, and we are confident that we can do everything that we can realistically foresee between now and 2026 within that cost envelope. The platforms will have a much longer life than that. I do not know what the capabilities of the technology available in 2026 will be. That is 10 years out, and I simply don't know; nobody knows. We will have to take a view as to what needs to happen at that point, but within the cost envelope that exists to 2026, we are pretty comfortable.

Some misconceptions, particularly about the F-35, have been in the press recently—for instance, that it has less memory than the iPhone, and things like that. These are wildly inaccurate—I mean, 10 gigabytes. On an F-35, depending on the model, there are somewhere between 500 and 1000 separate processors on one single aircraft. Most of them have got memory associated with them, and two of those bits of memory I know are 96 gigabytes. Among 500 to 1000 processors there is an enormous amount of



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capability, redundancy and so on that is built in already. What it's going to be like in 2026, I don't know, but for the moment we are comfortable.

- Q77 **Luke Graham:** That's fine. I will take that to mean that by 2026 you are comfortable, and—to be clear—that the carriers, the jets, the interoperability with allies, in terms of the ability to communicate, the software that we are using and the infrastructure support will be world-class to 2026, as foreseeably as possible.

Stephen Lovegrove: Yes, though, for clarity, what will be world-class in 2026 will not be what looks world-class at initial operating capability. Things will have moved on, and we will have moved on with them. It is within the operating cost envelope, yes.

Luke Graham: Okay. That is absolutely fine.

Chair: We'll be talking to your successor in 2026.

- Q78 **Luke Graham:** Maybe some of us will still be here then. I wanted to go on to operating facilities, Chair. Going back to our earlier questions looking at overall naval capability, we looked at the model taskforce that was put forward, which I think is broadly similar to that used by the United States taskforce, in terms of having the complement of missile destroyers, frigates, support vessels and attack submarines, and knowing that would come to 25%-ish of our overall surface fleet. Are we confident that the operating budgets that we have—again, in the period that we have put in, up to 2026—will enable us to form such a taskforce?

Lt Gen Mark Poffley: Absolutely. This capability forms a very high priority in the defence portfolio of capabilities. If it were coming down to, "Is this the place where you would make a compromise?", I think the answer to that question is no, at this juncture. We are quite clearly aligned with the Americans—indeed, we have done a lot of work with the Americans. We have got people in the United States in a significant number to make sure that we are interchangeable as regards their thinking and ours, particularly giving us the option, should we choose to do so, of accepting American aircraft on to our carriers. I think the suite of capabilities that we are assigning to a carrier strike group is absolutely funded inside the programme at the moment, and I don't imagine us not being in that position in the foreseeable future.

Luke Graham: Understood.

- Q79 **Chair:** To be clear, it is absolutely a top priority that you will not seek compromises here. If the budget is pushed, it will come from somewhere else.

Lt Gen Mark Poffley: I did not say it was the top priority, because that would be wrong; we do not think of it in that way. However, quite clearly it is one of the senior priorities inside defence. It is well above the threshold at which you would be having a conversation about resource allocation.

- Q80 **Luke Graham:** I understand about the priority, and that is reassuring. Do



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you foresee any problems coming in the time gap after the T-23 frigates go offline? We have a four-year gap before the T-26s are due to come into service, and that, as I think was outlined earlier, would be required for a fully operational taskforce. If we combine that with the fact that we have the retrofit to fix on the propulsion systems of the T-45s, are you concerned that, although we may have the budget in place to have such a taskforce, we may not have the operational capability because of commitments, decommissionings and retrofits?

Lt Gen Mark Poffley: We have scheduled the roll-out of the Type 26 precisely in line with the drawdown of the Type 23s. It is absolutely the case that we will have to actively manage the fleet between now and the point at which all the Type 23s have been decommissioned. As for the Type 45, there is an active programme in place—

Q81 **Chair:** Sorry, can I just go back to pick that up? If you are “actively managing”, there is going to be a gap?

Lt Gen Mark Poffley: No, there is not going to be a gap.

Q82 **Chair:** Can you be clear, then? You will keep the Type 23 going until—

Lt Gen Mark Poffley: There is an overlap between the introduction of the Type 26 and the decommissioning of the Type 23s.

Chair: Right. Just so we are clear.

Q83 **Luke Graham:** So we will have some T-23s available up until 2027, which is when the Type 26 is expected to enter service. Is that right?

Lt Gen Mark Poffley: Correct.

Q84 **Luke Graham:** Touching on what is going on in the whole carrier capability, we talked before about some of the amphibious capabilities. Obviously, there have been reports about some of our amphibious vessels, Albion and Bulwark, being decommissioned. I appreciate the point you made earlier about this being an aircraft carrier strike group and not a solely amphibious group. However, if we want to mobilise our assets around the world and project power, and if the aircraft carriers themselves do not have the flexibility to deploy amphibiously, do we still need to ensure that there are amphibious vessels, such as Albion and Bulwark, in a broader task group to make sure that we have that capability?

Lt Gen Mark Poffley: Let me reiterate the point: the carriers have a very significant role in any amphibious operation. They will be there and they will be providing both air and rotary support to the Marines in an intimate way. If there is an aspiration for us to deliver what we are describing as surface manoeuvre, then clearly you will need additional platforms. The complete mix and make-up of those is under review, and again, I think quite a lot of the speculation in the press at the moment is exactly that—speculation.

We have yet to take any decisions as to the full make-up of the capability suites that we are going to recommend as part of that capability review.



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That will depend on what our ambitions are, and how they fit into the contemporary operating environment. We are not designing something for the past; we are designing something for the future. It needs to service a range of different contingencies and have the maximum utility, given the amount of money that we have in the defence budget.

- Q85 **Luke Graham:** Lieutenant General, I understand that point. The question I am asking is: if we were trying to deploy Royal Marines from HMS Queen Elizabeth II, it is my understanding that even with a Chinook we would not be able to take a full complement of Royal Marines with all their equipment and deploy it just by rotor; it would require amphibious support. If I am wrong in that assertion, sir, then please correct me; but if that is the case, and we are to make sure that we want the Royal Marines to deploy first—and I would imagine that in many tactical situations that would be the case—do we then need amphibious support with the aircraft carrier?

Lt Gen Mark Poffley: As someone who is charged with delivering coherence across the entire capability, straight across defence, I would love as many options as I can possibly have to deliver people in a particular way. This is all about scale. If you want to conduct operations at a certain scale, you are quite clearly limited by the pure logistics of this. How many people you can get on an aircraft and then deliver ashore is a function of how many aircraft you have, how many people can fit in them and how far you are going to go. There is a multitude of different variables.

If surface delivery is required, then clearly it will need to be through a platform other than the aircraft carriers. It will need to include some form of amphibious-rolled shipping, but again, there is a multitude of different options that might apply. We happen to have some in our inventory at the moment, and clearly the press have speculated on some of those issues; but we have yet to take a decision as to exactly what fit—

- Q86 **Chair:** You are talking about taking decisions. Who is the most senior Royal Marine officer involved in this discussion? You have a job across the forces in your current role, but is there somebody high up in the Royal Marines at the table, having these discussions with you?

Lt Gen Mark Poffley: The Vice-Chief of the Defence Staff is late Royal Marines. He is No. 2 in the military hierarchy inside the Department.

- Q87 **Gareth Snell:** My colleague mentioned needing some sort of amphibious support on the carrier, and you said that that would all depend on the aspiration for the make-up of the carrier's team when it is on deployment. Is it not simply the case that one of the things that curtails your ability to make up that team is the number of personnel available to you, and that what we actually need is more people in the Navy?

Lt Gen Mark Poffley: I don't think there is a limitation on the carrier operations as a result of manpower numbers inside the Navy. There are clearly pinch point trades in the Navy, as there are in all three services, but volume is not the issue. There are some specialist trade groups, but



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again, this comes down to prioritisation. Would I place those specialist groups inside the carrier group? The answer is almost certainly yes.

- Q88 **Chair:** We have had a notification that there may be another vote. I think this is going to get to the point of ridiculousness, so can I quickly go over to you, Rear-Admiral Mackay? Problems with the carrier were identified in March that meant that you could not go to sea at the time. Have those technical problems been resolved? What were they?

Rear-Admiral Graeme Mackay: Yes, they have. One of them was because we had taken a decision, which was the right decision, to do a lot of the power propulsion trials in Rosyth alongside. It was a brand-new plant and we did not know whether it was going to perform, so extensive working was done trialling the plant alongside. That was for reasons of efficiency, particularly financial efficiency. We did not build a shore-based power plant to replicate the ship, so we needed to do that with the ship alongside in Rosyth.

That work went ahead very successfully. The end of that work then required us to take off the special blades that were on the propeller. We removed those blades and put the full service blades on. During the process of fitting one of those blades, which is done underwater, in very dark, dismal water—

Chair: I love the description, but time is not on our side.

Rear-Admiral Graeme Mackay: The blade was not fitted properly, so we had to take the ship into Invergordon and change the blade. We then took the ship back to sea, and the plant and the ship performed exceptionally well at sea.

- Q89 **Chair:** Was there a cost to resolving that and any other problems?

Rear-Admiral Graeme Mackay: No, because it was conducted within the relationship that we have with the Aircraft Carrier Alliance.

- Q90 **Chair:** But she did leave Rosyth before she was fully ready.

Rear-Admiral Graeme Mackay: No, she was—*[Interruption.]*

- Q91 **Chair:** I hate to say this when we have not really finished our hearing, but we are getting to the point where we are not going to manage to continue this today, because I am aware that colleagues will not be able to stay. I think we may have to write to you on a number of issues with dispatch.

Rear-Admiral Graeme Mackay: Of course.

- Q92 **Chair:** I hate to do this, because we should have a hearing in public, and there were a number of other questions to ask. Just one thing while the bell is ringing and we still have time to get to the vote: what about the wider benefits to jobs in Britain? A certain percentage of the F-35 parts will be made in Britain, but what consideration has been given to jobs in Britain, Mr Lovegrove? We may not be able to get to the answer to your question, but let me at least ask that on the record.



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Stephen Lovegrove: Very, very real benefits. Clearly the carrier itself is going to create, and has already created, an enormous amount of additional work for the BAE and Babcock yards in the UK. The F-35 has—

Lt Gen Mark Poffley: Shall I pick this up? The reality is that, at its peak, the F-35 programme will deliver some 25,000 jobs into the United Kingdom across 500 businesses in the supply chain. From our point of view, it is a significant out-turn. That includes a 15% benefit on the 2,700 or so aircraft that we envisage being built across the entire programme.

Chair: One of the things that we will perhaps explore in a letter is the maintenance of the defence capability in our industry in the UK, especially in the light of Brexit.

I am really sorry, gentlemen, but votes are votes—that is what we are here for—and realistically I do not think we are going to get this hearing going again after so many interruptions. Mr Lovegrove, may I direct questions through you to the other witnesses? May I urge you all to be candid in your responses to our letter, because it is not the same at all? We may come backwards and forwards and then incorporate any of the answers to those questions in our report. We will try to do that with real dispatch, if that is possible. I say that so that you are prepared. We will get that letter off quickly to you in the next couple of days. I am sure it is all in your mind; if you imagine you are sitting in front of us and answer in that way, it will be really helpful. I can only apologise again.