

Scottish Affairs Committee

Oral evidence: [Securing Scotland's Future: Defence Skills and Jobs](#), HC 1442

Wednesday 18 March 2026

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[Watch the meeting](#)

Members present: Patricia Ferguson (Chair); Maureen Burke; Harriet Cross; Dave Doogan; Lillian Jones; Douglas McAllister; Susan Murray; Kirsteen Sullivan.

Questions 47 - 94

Witnesses

[I](#): Gavin Donoghue, CEO, Colleges Scotland; Jim Metcalfe, Principal and Chief Executive, Fife College; Professor Chris Turney, Deputy Principal Research and Impact, Heriot Watt University; and Professor James Hopgood, CDT SPADS Lead, University of Edinburgh.

[II](#): Susan Scurlock MBE, CEO, Primary Engineer; Kirsti Godson, Head of Skills and Social Impact, Thales UK; and Steve Owens, Glasgow Science Centre.

Examination of witnesses

Witnesses: Gavin Donoghue, Jim Metcalfe, Professor Chris Turney and Professor James Hopgood.

Q47 **Chair:** Good morning. Welcome to this meeting of the Scottish Affairs Committee, where we are going to look at securing Scotland's future, defence skills, and jobs. I am going to kick off with the first question. Before I do, can I ask you, starting at this side, to give us your names and your jobs?

Professor Hopgood: I am a professor and dean in the College of Science and Engineering at the University of Edinburgh. Relevant to this Committee, I am Director of Centre for Doctoral Training in Sensing, Processing and AI for Defence and Security. That CDT aims to train 80 PhD students in the defence and security sector over the next five years.

In training, the PhD students will become the bedrock of innovation, foundations of start-up companies and will be future leaders in the area of defence and security. I also do work in defence research myself at the University of Edinburgh but also all the Scottish universities together do training in substantial STEM subjects and do novel and substantial research in frontier technologies such as AI, photonics, robotics and quantum, and I have been working in this area for over 25 years.

Professor Turney: I am Deputy Principal of Research and Impact at Heriot Watt University where I am responsible for research, strategy, impact, and wider engagement across all three of our Scottish-UK campuses in Edinburgh, Galashiels and Stromness or Scapa Flow and our international campuses.

Gavin Donoghue: I am Chief Executive Officer of Colleges Scotland. We are the advocacy body for colleges the length and breadth of Scotland, from the Borders to Shetland and from the north-east of Scotland to the Hebrides.

Jim Metcalfe: I am the Principal and Chief Executive at Fife College.

Q48 **Chair:** Thank you very much. Given your introductions you have in some way answered what was going to be my first question, but I am going to ask it anyway. This is addressed to all of you but maybe we will start with Professor Hopgood. Could you say a little bit more about the role that universities and colleges play in developing skills for the defence sector?

Professor Hopgood: If you think of skills as an ecosystem whereby there will be apprenticeships at one level and graduate apprenticeships, they will be helping to manufacture things that we already know we need manufactured. Where universities can come into play is that graduates with first degrees will often become the designers of new technology, often dual-use technology, but technology that is in the defence and security sector. They will be designing things that we know we want but need to design from scratch.



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For higher degrees, such as a PhD, the role that they have is to design the things that we don't know that we need or to think about future technology, the technology that we don't know exists yet, hence the reference to the foundational and frontier technologies such as AI, photonics, robotics, and quantum. They are all technologies that are going to have big benefits to the defence and security sector and the graduates from PhDs and undergraduate degrees are the ones who are going to be filling in that gap.

The number of graduates in those areas is going to be, for example, smaller than perhaps the number of skills that you need for manufacturing but it is incredibly important. The university does that both through training through its undergraduate programmes but also through skills development of researchers who will work on research projects that are funded by the research councils, funded by the MOD and so on.

One exemplar of where we do contribute to skills across Scotland is the number of masters placements. Final-year undergraduates will have a six to 12-month placement with an industry partner. They will get that experience of working at that level within a company. That is across most universities in Scotland, and there are a substantial number if you add all those up.

Professor Turney: One thing that I think is very important to stress is that, as universities, we do not offer degrees in defence per se. We offer incredible skills and training in foundational technologies that underpin a range of different sectors, in Scotland in particular engineering, computer science, maths and physical sciences. That is our strength as a sector, but the application of those talents and skills, in a variety of sectors that Scotland excels in, is super important, so it gives that flexibility for graduates.

The other important thing with this is that the ecosystem that the universities provide is that research translation into companies, spin-outs, SMEs. That translation, that bridge, between getting great ideas out there developed and deployed, is an important part of us as a sector working with our industry and Government partners.

Gavin Donoghue: In terms of colleges in general, I think the skills engine of our economy is the education and training of over 200,000 people every year in sectors as diverse as health and social care and engineering. Specifically on defence many colleges have deep and long-term relationships with defence, prime contractors, and SMEs but also the uniformed services. We know that, just in the last two years, 14 colleges we have been engaged with regularly on this topic have provided 29,000 apprenticeships or other training opportunities at a blue-collar and white-collar level for the defence sector. They are deeply involved in defence skills.



Jim Metcalfe: I would amplify that and add my experiences in Fife, but I represent one of those 14 colleges that work quite collaboratively on skills provision for the industry. In simple terms, our role in the college sector is to provide work-ready skills and supporting people to progress from being in an out-of-work context, retraining and upskilling from one job into another and then entering the workforce at an appropriate point, all progressing on to higher education skills that allow them to participate in the innovation and research part of the defence economy. We are part of that huge pipeline and that system.

It is absolutely correct that the scale of the activity is significant and there are 30,000 people being trained in engineering and defence-appropriate skills in Scotland in the college sector right now in the provision that Gavin Donoghue has just mentioned. It is a very significant part of our work. The one not unique but very important part of what colleges do is that they are engaged with prime contractors, employers, the industry itself on a weekly and, in our case in Fife, a daily basis. The translation of what the industry says it wants into what we produce in the skills system is quite immediate and hopefully impactful.

Q49 Chair: That brings me on to my second question, so we will start with you, Mr Metcalfe. Are there gaps or skills shortages in the defence sector and how do they align, or do they align with the applications you get from young people who want to be involved in that area or is it something that they think about later on, once they are involved in a particular qualification?

Jim Metcalfe: Yes, there are gaps and again, if you will allow me, I will draw on my experience in Fife. This is replicable across the UK and all your constituencies and the colleges that work with the industry across the sector, but this is certainly my experience. There is an increasing transition of reality reflecting itself in work hiring in the expectations of the industry. Engineering and defence-appropriate skills are about 30% of all the apprenticeship and higher technical training provisions that my college provides. It is the largest single area of work that we deliver, but even at that volume, industry has been telling us in Fife—and it is a very significant defence sector area as you will know—that there are some very significant gaps. The volume is just too large.

Part of the reason for that is that these are more technically advanced and complex areas of training, so these require long planning to provide the appropriate courses for this industry. They are expensive and complex to deliver for obvious reasons. They are quite technically involved areas of provision. It takes some time to get that volume in the pipeline correct.

Also, the industry is saying that what it wants from people who are arriving ready to work is changing so they need more digital skilling. They need more awareness of changing technology in the workplace. They need us to be slightly quicker and fleetier of foot as a whole system



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across the whole of the education system in how we build the courses to provide them with the workers.

They also want workers who are adaptive, flexible workers when they arrive, with a range of skills. This is why an education system is important. We refer sometimes to skills, but the education system provides the context in which people can be trained and skilled, so they want people to arrive who have critical thinking skills, are good communicators and can show leadership in the workplace. These things are important and those need to be built in at the front end, so they want some of those skills at the earlier point.

I might come back and relate some of those points later, but definitely there is a volume issue. There are more workers needed for this industry, so it is an opportunity, as well as a problem, and there is a volume challenge, but while we listen constantly to our employers, there is a need for the whole system to be more flexible and adaptable to a changing industry.

Gavin Donoghue: I echo Jim Metcalfe's points. The Strategic Defence Review recognises that we need to develop digital and cyber skills as well as STEM skills. We have seen examples of colleges that have had far more demand than they can meet in terms of some of those STEM courses and apprenticeships and engineering courses.

Thinking of Ayrshire College, it has been publicly on record as having to essentially close its doors because it has already filled its spaces. There is definitely a demand out there. When I speak to industry and some of the defence primes, there is probably a 40:1 ratio of applicants to spaces. That chimes with what we have heard from Scottish Engineering about 35:1, so there is definitely a level of demand out there.

We also have the requisite to increase the volume that comes from defence contractors, but there is then a disconnect. Our defence contractors say that they need more people coming through the pipeline, but the demand is already there. We see that through the school system, through colleges and I am sure through universities as well.

Q50 **Chair:** To Mr Donoghue and Mr Metcalfe, are those gaps or are those demands from employers geographically specific? I am conscious that you have BAE in Glasgow, and you have Babcock in Fife, and so do they tend to be in areas around those really big primes that we have in Scotland?

Gavin Donoghue: I can touch on the broader picture and maybe Jim can add what it looks like in Fife. We have very clear clusters of excellence in some of the defence sector. In aerospace you have Ayrshire and Edinburgh especially. In terms of maritime, we have clusters in the Forth in Clyde. Across Scotland you have colleges engaging with defence contractors and SMEs, but also the uniformed services directly. Especially



in the central belt there is a clear arc from Edinburgh across to Ayrshire through Fife, Glasgow, West College and into Ayrshire as well.

Professor Turney: They sometimes get conflated but there are effectively two different sectors where we are seeing this. You have the more traditional manufacturing with shipbuilding talent, which is something where we do see shortages coming through. Particularly for many of us in the university sector, often less visible are those emerging technology sectors—things such as AI, autonomous systems, quantum networks, navigation and robotics.

It is those things where they are so critical for the defence sector, not just for primes but also for SMEs, and I think it has value for regional Scotland, which I know we will be talking about later, which has value to the wider economy. I think that is an important part. We do have some funding for that, but the demand is growing, and to be honest the demand will continue to grow from industry.

One of the challenges for us as the university sector is how we put those courses on at the scale required to feed that pipeline for the next five or 10 years. That is going to be super challenging as we co-ordinate our work to showcase it. There are jobs in defence, high-value jobs, and people need to think about that early on rather than coming to university and falling into it.

Professor Hopgood: I think it is worth being reminded of the wider skills shortage in STEM subjects in general, especially with home students in the United Kingdom. In my area for example, electronic engineering, there has always been a plateau. We don't have enough coming through. That is partly skewed by the education system and there are probably wider politics I should not get involved in there, but obviously it depends on what you are being taught in certain subjects. Electronics as an A-level is very hard to take because schools do not offer it as much.

There is a general STEM skill shortage and that then leads to a shortage in some very specific areas. Within Scotland we have companies that do advanced radar technology. That needs skills in an area called radio frequency engineering—so, building antennas, doing communications. There is a substantial gap there and the industry partners that I am related to have a real need for more expertise in that area. RF is just one part of electrical and electronic engineering, so when you already have a shortage there, that means there are relatively few students in this area.

Another example is in an area called analogue electronics, which is the front end of most electronic devices—the interface between the real world and AI for example. Again, there is a shortage in that area. That affects all of that sector, and especially the defence and security sector because of the challenge in the proportion of students who are, for example, interested in radio frequency engineering and want to go into the defence and security sector. That becomes effectively diminishingly small. There



are initiatives to grow STEM subjects, but I think that is a broader issue. I will probably return to that later, if that is okay.

Q51 Harriet Cross: Good morning. I will touch on apprenticeships. We have already touched on a few of the parts, so I will hone in on one of the areas that you were both talking about, and that is demand. I assume the demand is there for apprenticeships by those who would take the apprenticeships on and also the businesses who are looking for apprenticeships, but we know that there has been a shortage of supply of these. What is causing this shortage of supply? Is it as simple as the money in the system? We know that there is less funding in the system than there was, say, five, six or seven years ago, or is it something more fundamental in the way that these apprenticeships will be delivered?

Jim Metcalfe: Thank you for the question. Yes, there is constrained resource in the system to support apprenticeship starts. Apprenticeships are provided in Scotland by a range of providers; we are not the only providers, just to be clear. There is a network of providers that provides those apprenticeships across the system. However, there are a limited number of starts that are financed each year, and that is fairly defined in the system.

We are required as institutions to assign those to regional need. Broadly speaking, in our college we quite keenly target the number of apprenticeships starts that we have to the growth areas of the economy—for us, defence and advanced manufacturing first, construction and civil engineering second, healthcare and care services third. There is constrained supply. We certainly need more investment into providing more places, but then we also need time to plan that.

We should remember that when we are delivering apprenticeships, we are often using industry-experienced colleagues to train and teach those apprenticeships, so we have to recruit those people, support them to become learners and teachers and great educators, and then give them time to develop those apprenticeship pathways. There is a time element but there is definitely also a volume and investment demand and need for that. As Gavin Donoghue was saying, there is no shortage of demand for apprenticeships when they are advertised. They are recruited to very easily. People want apprenticeships and they are very highly prized.

The danger—if I can take a second to come back to the previous question, but it is aligned—is that if we do not have that supply, what will often happen in this industry is that it will cannibalise other engineering businesses, so other parts of the engineering ecosystem workers will be attracted in and our major contractors in Fife don't want to do that in the defence industry. They want us to grow the supply, so that as they grow and their workforce grows, they don't impact the rest of the engineering system in our region. That is why they are positively and proactively calling for us to grow our supply so that they do not affect the rest of the economy.



Gavin Donoghue: To build on Jim's point, colleges already deliver around 14,000 modern apprenticeships every year in the system, but we are in a place of constrained funding. It is a matter of public record that revenue to colleges has reduced in real terms by 20% over the last five years. That has caused difficulties for colleges' ability to plan for more apprenticeships.

Also, with the apprenticeships frameworks themselves, the contribution rates in these frameworks has not really changed in the last 10 years, so that is something that is now being looked at by the Scottish Government. Last week they announced that they were going to look at reviewing the apprenticeship frameworks and the contribution rates alongside that, to see if it is still suitable or if that needs to be changed as well.

Q52 **Harriet Cross:** What would your view be on that?

Gavin Donoghue: I think 10 years is probably too long for it to have been static. Obviously, we have had a cost of living crisis, costs have gone up from the apprenticeship deliverers and training providers, be that colleges or independent training providers, so hopefully that review will look at that and if that can address some of those challenges as well, that might help the broader apprenticeship ecosystem.

Professor Turney: Just reiterating what Gavin said there, a review is most welcome, and also we see that our industry partners see tremendous value in the apprenticeships. They tend to have stronger self-retention also—there is that loyalty to the company—which is a welcome thing for the defence sector.

Q53 **Dave Doogan:** Defence is a long-held and valued element of the Scottish economy. Scotland has a proud martial tradition stretching back hundreds of years. Added to its tradition of innovation, it is no wonder that we have so many primes in Scotland delivering outstanding equipment to a global market, but sometimes there is a bit of a PR issue, largely dependent on what is happening in the geopolitical sphere, I think that would be uncontroversial to say.

How do we maintain a career in engineering in general and in defence engineering in particular for the purposes of this discussion? How do we maintain that as an attractive, and indeed noble, occupation and pursuit professionally? If we can start with Mr Metcalfe and work to the left.

Jim Metcalfe: That is an excellent point. Obviously, I am here representing a college that has worked with the defence industry for 40 years in the dockyards and in the factories munitions businesses around Fife and continue to be very proud to do so, so this is not a recent part of our activity. You are right to say that we are not effective necessarily at presenting this as an aspirational career area to work in, specifically defence engineering. That might be something that we need to think about as part of the work we do together in the years ahead.



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I think there is clearly an aspiration in the area that I work in in Fife to work in engineering. People understand the value connection between working in engineering and stable and higher-level earning. That connection is there. We need to translate that into defence, but it can be more challenging. Maybe the connection between the uniformed services where there is a very strong tradition in our area.

We support, for example, the Naval and Army Reserve in our college. That is a very proactive part of what we do inside the college with our student community, connecting up those pieces of activity with working in the defence industry and seeing it as part of a unified service—and service is the correct word to use—would be effective.

We have had this discussion in my region. At the moment, by far the largest area of private recruitment into jobs in our area is in defence as we speak today from our labour market information. But there is not a billboard, a radio advert, or a Facebook advert, in the area promoting careers in defence to young people. We are not doing anything. Colleagues in the later session will be speaking about earlier intervention in the skills system. We are not really doing an awful lot at the moment as a system to promote people in the school system and their influencers, carers, and allies to think positively about the future of defence careers. I think it will be an important part of the work that we do together in the future.

Gavin Donoghue: Another thing to add is that I think there was a speech given in this place yesterday by Volodymyr Zelensky and I think that underlines the importance of our native defence sector in our country, without even touching on the issues that are happening in the Middle East at the moment, so there is an element of what is going on in general society and how that impacts the societal perceptions of the defence sector and therefore the careers in it.

To Jim's point, it is about the education system. For too long we have tried to steer people into increasingly narrow pathways and things such as apprenticeships. We are beginning to get the sense now that it is looked at as much of a valued pathway as going to university or college. The more that we push that there are multiple pathways, some of which are in the defence sector, some of which are in other growth sectors in Scotland's economy, such as the net zero transition, the better I think that will serve the country.

Professor Turney: I think we are looking partly at a structural issue. We have had contraction of the sector for some time now, and I think that is partly the reflection that not everyone sees a career that their uncles and parents were involved in, but there is also a communication problem. Particularly with regards to defence, defence is not just about munitions. With a reframing of it around a range of things, about logistics, AI, security, there are a whole range of other skills that are incredibly valuable and are of high value and Scotland does really well in them.



We have the skill base for that, but I think sometimes it degrades the argument down to the point that defence is just about combat, and it is not. It has a higher value. As the universities and as Universities Scotland, and as part of the sector, you will be aware that there is a move now for something called the Defence Universities Alliance, the DUA, which is with Universities UK and the Ministry of Defence. Part of that I think is an education piece that they are looking to do to showcase and surface these high value jobs and also celebrate them.

Professor Hopgood: Building on Professor Turney's answer, universities have a role to play in highlighting what defence and security means. I think defence and security is part of the needs and values of the UK and universities have a very strong role to play in the conversation about what that means.

As Chris has said, I think there is a perception, especially within universities, that defence and security is about munitions, it is about potentially even controversial weapons and it is about weapons and it can be very hard to separate the defence side of defence and security in terms of protecting uniformed military staff, in terms of surveillance technologies that are able to track drones for example in Ukraine or a whole bunch of other advanced communications technologies, whereas I think universities have a real role in trying to demystify what that is.

My personal view is that we want to talk more. That is part of what our Centre for Doctoral Training is trying to do. Universities need to talk more about what they are doing, who they are doing it with and what the impact of those roles are. Universities will do that anyway as part of a research excellence framework, but I think we can do that stronger. I think there has always been a tension that any university that comes out and tries to have that conversation is potentially subject to further protests or misinterpretation, and I think that misinterpretation is one that we must be very careful of. I would like that conversation to happen more.

Q54 **Dave Doogan:** Mr Donoghue, you referenced President Zelensky's visit here yesterday. Are you concerned, because we have heard a range of views all pretty much chiming with each other, that there is some sort of cognitive dissonance between the expectation that people have that we will be defended as a population, but also reserving some sort of high-minded disregard for the sharp end or kinetic element of what being defended means?

That extends to honouring our men and women in uniform but not holding the engineers and the companies that equip them to do their job in the same high esteem. If you do agree that is a problem, how do we as educators, as industry, as legislators and Governments, change that? How do we sell defence engineering better I guess is what I am talking about?



Gavin Donoghue: I suppose the Strategic Defence Review touches on this element as well, that it has to be a whole-society approach. It cannot just be within government or within a specific Department of Government.

As Jim has touched upon, I think colleges especially have been integral to the defence sector for decades, whether that is on the Forth of Clyde and the shipbuilding and welding or in the aerospace sectors. Colleges also tend to be located in almost very similar areas to the areas where the armed forces would tend to recruit from as well and a lot of colleges are part of the Armed Forces Covenant, so are very strongly supportive of that. I think colleges themselves do a lot to talk about the importance of these defence engineering roles and the high value jobs that people can get out of them as well.

Q55 **Dave Doogan:** Thank you. To that end, Mr Metcalfe, you talked about the importance of defence in Fife College. I don't think it is a stretch to say that were it not for the prevalence of defence manufacturing in Fife, there might have been a new campus at Dunfermline, but it would not have been a £155 million investment in a new campus in Dunfermline without that defence throughput of young people and demand to make a campus of that scale stack up.

Jim Metcalfe: Yes, it is a fantastic facility and we are very honoured and lucky to have that facility, but you are right to point to the expectation of it—for other colleagues on the Committee, we have a unique situation of a new campus in western Fife, which is co-located with two large high schools that are in the workforce supply chain for one of our major dockyards.

There is a reason for that. It is so that we can do the job that Gavin has just talked about, which is to showcase opportunities in defence industries and their connectivity with the dockyards at an earlier point. From our campus you can see the dockyard, you can see the carrier and the new destroyers being launched and the new vessels, and that is important. We are required and quite rightly to make that connection.

We are all here saying the system should improve. We should take on our own responsibility. We should be doing this job, promoting the positive elements of the defence industries and skills to our communities. We have thousands of learners who are all progressing to defence industries in our colleges and thousands of learners who do not.

We are probably not very good at championing that first group of learners with the latter, positively connecting the two. We are working on it at our college, but you are right to say that our campus is supposed to be a marketplace for connecting those different learners and progression into that dockyard, so you are quite right. I would agree.

Chair: A supplementary from Lillian Jones.



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Lillian Jones: It was asked by my colleague and has been answered by Mr Donoghue.

Chair: That was prescient. Kirsteen Sullivan.

Q56 **Kirsteen Sullivan:** Just very briefly, you have spoken, Mr Metcalfe, about the fact that there has not been the widespread promotion of the opportunities in a way that you would like to see and in a way that you think is necessary. Given the Government have announced plans for Destination Defence as a comms campaign to raise awareness of the career opportunities in the defence sector, do you see this as a positive move and is there anything else that you think the UK Government and perhaps the Scottish Government could do to try to promote these opportunities in perhaps a more positive light?

Jim Metcalfe: I completely agree that is a very positive development. There are a number of positive developments in the connection between skills, community, and the industry at the moment that we should try to brigade together. I definitely think that is the case.

If I draw back to my conversations with industry and what they are looking for from us, they want volume of supply of workers. They want earlier interventions with young people to encourage them to think about STEM technology engineering careers that will be of potential interest to engineering employers, and they want us to have some constancy. They want us to have a plan that we stick to and deliver over a period of time. That might sound a complex tension in that they want flexibility in the courses that we offer, how we design and how quickly we respond to changing technology in the courses. Colleagues from universities are talking about that innovation piece, but they also want us to have resolve over a number of years in the way that we communicate and encourage people into skills options and provide access courses.

We have talked a lot about apprenticeships today, but a lot of our provision is at access level. It is a little bit earlier in the system. We do a lot of work with pre-start operatives—so, before people reach apprenticeships—getting them into engineering pathways. That is a very successful area of work right now for the college sector, and that grows that talent pipeline.

There are a whole range of interventions that are about communications and marketing, for sure, and I think that is a really important part, going back to Mr Doogan's question, but also about how we grow that wider pool of positivity among younger people and a very important community also of people who are returning to work, because that will be an important challenge for us in the years ahead—people who want to return into work thinking about this as a career pathway.

Q57 **Susan Murray:** I would like to ask Professor Hopgood and Professor Turney about the Defence Universities Alliance. What is your assessment of this planned alliance, and have you had any engagement through your



organisations with the Ministry of Defence?

Professor Hopgood: We will do a double act on this one. Just leading up to the DUA, if I may make a comment about the previous set of questions. In terms of promoting defence and security in the university context, I think it is important that universities support students to make informed decisions about their future by providing access to a range of industries and professional networks. We do that through careers fairs, and I think that universities will need to work very strongly to make sure that a range of careers are promoted through those career fairs ideally without too much interference.

That is one of the objectives of a Defence Universities Alliance. I think there are going to be at least 20 universities involved. I am aware that a number of Scottish universities have sent letters of intent to join the DUA. To be honest, my impression of it is that the DUA charter in particular reflects a lot of the activities that are already going on in the universities, but almost provides a lovely framework in which to acknowledge that that is what we are doing. For example, rather than just doing defence research, we focus on doing ethical and responsible defence research. That means that we are a lot more transparent about the ethical processes that defence research projects have been through to identify those. So the DUA will exchange best practice in that area.

We have the promotion of careers—as I have already identified—and the third one was collaboration, so working across a number of universities so members of DUA will come together and so some of the frontier technologies that have been mentioned today. For example, one area is a Quantum PNT Hub based out of the University of Strathclyde and involves a number of universities. That is for position navigation timing.

That is basically to technology that would mitigate against GPS loss, and we have seen that in areas already. If we did not have GPS, a lot of the UK functionality would suddenly disappear. That collaboration across universities the DUA will inspire. My personal take on the DUA is that, as a charter, it has lots of nice terminology and phrases in it, but the question is: will it be backed up by any substantial investment in that area? We don't want it to just end up being a talking shop.

Professor Turney: We see the DUA as a valuable opportunity to bring together and harness university research with skills development and our collaboration with industry. For it to be fully realised we need that diverse range of universities and skills across the United Kingdom. As James said, it is estimated to be 20 in the first cohort coming together. That co-ordination of university activity, the joined-up thinking, is super important. At the moment it is not there so we see this as a welcome development.

Q58 **Susan Murray:** We heard earlier about the reticence of people to move into defence education, but we have also seen the launch of defence-focused undergraduate degrees at the University of Hereford. Do you



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think that creates a need or an opportunity for Scottish universities to develop similar programmes? I think this ties us into the communication and marketing of programmes as well. Do you think we are doing that well enough?

Professor Hopgood: My first comment on that is the MOD have recently invested £80 million in a defence-related skills challenge, which is being run out of the Office for Students. Some £50 million of that is to encourage additional places for 2,400 students on defence-related degrees and £30 million of that is in capital expenses to help provide provision of those degrees, for example because they are likely to be STEM degrees and STEM degrees are expensive, they need a lot of lab equipment and so forth. Because skills is a devolved area, that competition is only available for English universities and the MOD statement said that what happens in the devolved nations is up to the devolved Governments.

I would say that there is a very strong appetite for Scottish universities to do similar things to what would be happening in England and there is a concern that we could be effectively at a competitive loss or even just recognised as not really offering defence-related skills if there is a big momentum in England but not a big momentum in Scotland. Universities will be very interested to know how that defence-related skills challenge out of the OfS will convert to the devolved nations.

Professor Turney: Universities can make a significant contribution alongside colleges to realising those skills, and I think there is a lot more we could do together as a sector, so we don't have that silo of delivery. A big part of this is also recognising where the skills requirements are in five or 10 years, having line of sight of that as a country, which we do not have. Individual institutions often make decisions based on our own immediate needs. We talk to industry all the time and we have several mechanisms at Heriot Watt for doing so.

Most programmes will have an external advisory committee that we talk to twice a year. Half of them are industry, often alumni, which gives us some line of sight of where the needs and demands are but that is the co-ordination of where the needs are and it could well be explicitly in defence or it could be in some of these foundational technologies that could be applied across a range of sectors. That would help with planning moving forward.

Q59 **Chair:** Professor Hopgood, could I take you back to a previous answer? Have the universities or your university approached the UK Government to say, in effect, "What about us?", and what sort of response did you get, if you have?

Professor Hopgood: Yes. Unfortunately, I don't know the answer to that question. That is a very good one that I am happy to take away and perhaps ask.



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Q60 **Dave Doogan:** Forgive me, Professor Hopgood, I was listening intently but not intently enough to what you said about the investment that MOD is making in universities in England. Do you happen to know, was that investment from the Ministry of Defence or was it from the Department for Education?

Professor Hopgood: I do not know. I would have to check but it is quite well documented on the OfS site.

Q61 **Dave Doogan:** What is the scheme called?

Professor Hopgood: It is called the defence-related skills challenge, and it is being run by the Office for Students.

Q62 **Kirsteen Sullivan:** Professors Turney and Hopgood, I will start with you. As you are aware that last week the Government shared initial details of a £50 million Scottish defence growth deal. What role do you see universities in Scotland playing in the deal?

Professor Hopgood: So far the announcement last week was £20 million of that £50 million, so two of those are innovation centres. One is related to the Arrol Gibb Innovation Campus in Rosyth with a big partnership from Babcock International and the other colleges. That is part of quite a big ecosystem I suspect, but my colleague, Jim, might be able to explain more about that. If I remember correctly, there is another hub on the Clyde. There are also the two Defence Technology Excellence Colleges that my colleagues, Gavin and Jim, can expand on.

Therefore, universities' role in that so far will be activity in the two innovation centres. We also hope that we can work together with the colleges. We talked about that ecosystem of skills training, and we would very much hope that the universities can become part of that DTEC discussion. At the moment I think that Universities Scotland have been involved mainly in that discussion.

Going forward, with a defence growth deal, most of the conversation we have had today is about how we can provide additional skills across that whole ecosystem, and I know that there are various gaps that universities could get involved in. It was previously mentioned about offering potential degrees and we know that the Ministry of Defence are very interested in some very specialist MSc level provision, for example in advanced electronic hardware, so beyond conventional compute.

There was a call out for that recently, to investigate what that would look like, but we also know that within a STEM subject a lot of defence companies need engineering experience but there are many more STEM graduates in other areas, in physics and mathematics and in chemistry, whose skills could easily be translated across to the defence sector.

At the moment, companies are doing that through their own internal training schemes. However, we know that there is a demand for conversion-style MScs, for continued professional development



opportunities for staff already in those companies, for micro-credentials, so this would be a model where students or staff, rather than doing a whole degree programme, could take selected courses to upskill themselves.

We also know that there is an opportunity for upskilling mid-career staff who want to move from another sector within Scotland and universities are well positioned to deliver all of these, but they are expensive to do and do need to be funded appropriately. I think there is appetite from Scottish universities that something along those lines will become part of the future with the remaining opportunities that come from the defence growth deal within Scotland. There are some real opportunities there and we hope that those conversations can continue with the appropriate bodies who are making those decisions.

Professor Turney: Universities are educators. We are research partners, and we are anchor institutions in regional economies in driving that innovation that the defence sector needs. The Defence Growth Fund is an opportunity that we can lean in and contribute to. James has given a summary of where the funding has gone so far.

Moving forward, Universities Scotland has been very proactive in working with the Scottish office of the Ministry of Defence to put forward a team Scotland approach, so that we put our best foot forward in where the needs and demands are. As institutions, we are looking at that full supply chain all the way from the talent through to developing the skills and in creating jobs. That includes SMEs and start-ups as well as feeding the primes.

One of the things that I think we see in the universities a lot and where there is real value is working together and where we collaborate and no single institution can solve this and we all know that. No one stakeholder can solve this. We all need to come together so that co-ordination is going to be super important. The University of Edinburgh and Heriot Watt University have worked together for multiple decades on multiple areas in defence with a lot of success with industry partners.

Moving forward with the Defence Growth Fund, there is an opportunity here to put support around precincts, districts, whatever you want to call them, where you bring together that ecosystem of education, training skills, and facilities so we can accelerate and turbocharge. Otherwise, the danger is it just gets dissipated.

As part of that there is the training side. James is absolutely right to bring this up—and we have not really talked about this up until now—that we often focus in on younger students coming through from school into further education, higher education, and that has been a focus for many of us for a long time.

Of course, we have a demographic change happening now, but we also have a wealth of experience from people who are mid-career who are



looking at changing careers, perhaps have been in the forces or worked in some other capability where they have skills that can be applied. That we see as another opportunity where we can help train and bring people together into those new needs and online learning, recognition of prior learning, is super important as we move forward with that.

Q63 Kirsteen Sullivan: Very briefly, would you agree that the growth deal offers an opportunity to strengthen the collaboration that already exists and potentially expand it?

Professor Turney: Very much so.

Q64 Kirsteen Sullivan: Thank you. If I can turn now to Mr Donoghue and Mr Metcalfe. Last week Fife College announced a memorandum of understanding with Babcock International and Forth Valley College. Given these partnerships already exist and you have all spoken about them throughout this session, is a defence growth deal really needed in your view?

Gavin Donoghue: I can touch on the DTEC element of the defence growth deal and maybe pass to Jim Metcalfe for the specifics of Fife. The defence growth deal obviously includes a proposed £10 million investment in Defence Technical Excellence Colleges proposed to be one on the east and west coast of Scotland.

We are still in discussion with the Scotland office in the MOD about how that will work and which colleges will be involved. It is the sector's proposal that it will be a hub and spoke approach, so it would not just be one particular institution that gets all the funding. They act as a hub for a far wider set of organisations, colleges, and university or industry partners as well. That spreads that across different parts of the country, not just on the east and west coast. I think the DTECs have been part of this broader discussion that we have had with Universities Scotland and with the Scotland office of the MOD about how we bring the Treasury system together in a bit more detail, but Jim Metcalfe may be able to say more about Fife College in particular.

Jim Metcalfe: Briefly obviously, but I would say, yes, we are very pleased about confirming our MOU with Babcock International and with Forth Valley College, which allows us to plan better their skills provision for that one business, but it is for that one business. I think that the opportunity here is that this has already drawn together in my part of the world seven colleges on the east coast of Scotland who want to work together from different perspectives and all have different university partnerships as well to want to work together. That is the other part.

As well as constancy and increase of volume, the industry wants us to collaborate better. That means collaboration in how we present the industry, but it also means in how we teach. Very often a lot of the course offering that the industry is asking for is very specific and might



be quite a small number of trainees in each business in a particular area of work. We will not always be able to teach that ourselves.

We might need another college or university in a different part of Scotland or indeed the UK to support some of that delivery through immersive and adaptive technology. That collaboration is very important, and I think the DTEC allows us to unlock some of that collaboration in the way that we teach and innovate our teaching as well as in the volume because we have all said here there is a need for investment in volume of places for us to instruct more people for the industry. I do think it is a positive development beyond the very positive announcement that we made last week on the Forth.

- Q65 **Kirsteen Sullivan:** You have both moved on to my next question, so I think it is a natural point just to continue that. You have both spoken about the collaboration that is already out there, and I think Mr Donoghue mentioned the fact that he thinks DTECs should potentially be a hub with colleges, perhaps as the anchor institution but spreading that collaboration out more broadly. Why do you think that colleges should be at the centre of this and should be the anchor rather than industry or any other bodies?

Gavin Donoghue: I will go back to my opening remarks. I genuinely believe that Scotland's colleges are the skills engines of Scotland's economy. We train and educate hundreds of thousands of people every year. We have deep experience in the defence sector around the Forth, around the Clyde, but in the aerospace sectors as well.

The DTEC model obviously comes from the Defence Industrial Strategy, which is focused on further education colleges down south, and I know the application of the DTEC model in the different devolved nations will change, but I think having it sitting within the college sector with a hub and spoke approach that allows us to leverage the existing massive experience and knowledge that colleges have collaborating with industry is the correct place to go.

We will not be doing this without industry. In fact, industry would need to be completely embedded within the DTEC model. There would need to be bids that had the support of industry for them to be successful. Some of the details still need to be looked at with the Scotland office in the MOD and the Scottish Government but I think colleges are and should be at the heart of that.

- Q66 **Kirsteen Sullivan:** On your last point there, have you had any conversations with the Scottish Government around the establishment of DTECs?

Gavin Donoghue: All the way through the process we kept the Scottish Government officials fully briefed about it. We had joint calls with Scottish Enterprise around this as well. It is obviously an intergovernmental matter between the UK and the Scottish Governments, but we have



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certainly been involved in calls with both Scottish Government officials and UK Government officials.

Q67 Kirsteen Sullivan: I am aware that as part of the announcement last week the UK Government was looking for match funding from the Scottish Government to get these colleges off the ground. Have you heard any positive noises? I appreciate you cannot make any announcements here, but do you expect that there will be positive movement?

Gavin Donoghue: Yes, I mean obviously the announcement was only made last Thursday, so I think a lot of the detail is to be ironed out. I was not aware of that conditionality in advance of the statement that there was the requirement for match funding with the Scottish Government but that is clearly a discussion that the Scottish Government and the UK Government need to have with one another.

Professor Turney: Sorry, Chair, could I add an extra point to Ms Sullivan's question?

Chair: Please do.

Professor Turney: I think one of the other important points to highlight from this is that investment helps leverage and attracts other funding. We have lots of examples in Scotland where that investment has brought it in. The Advanced Manufacturing Innovation District near Glasgow has attracted £185 million and Boeing is just starting its first R&D project there. Bringing that funding together helps leverage and brings those ecosystems together. That is going to be super important for the Scottish economy moving forward in defence as we build that out.

Of course, as well as that, that then sets up the opportunities for start-ups in creating those new companies, new businesses that will drive defence moving forward. The Centres for Doctoral Training is just one example where that drives PhDs and innovation in those areas and my colleague, James, leads one called SPADS, Sensing, Processing and AI for Defence and Security. That brings together industry and companies with universities to drive that innovation for those new start-ups as well as providing training for defence.

Chair: A supplementary from Dave Doogan.

Q68 Dave Doogan: Thank you, Chair. Mr Donoghue, I don't think it was just you who was surprised that the funding from the UK Government was contingent on match funding. That came as a surprise, as I understand it, to the Scottish Government themselves, who had not been consulted on the conditionality that the UK Government had applied unilaterally.

Over and above that element, and from my point of view, I hope the Scottish Government do put the money in just as soon as the UK Government put in the full £50 million that they have put into Wales, Yorkshire, and Portsmouth, because currently we only have £20 million



detailed for Scotland. Are you aware of any outline designs that the MOD might have or the UK Government more broadly might have for the balance that Scotland is due?

Gavin Donoghue: I am not. All that I am aware of is what has been announced already.

Chair: A supplementary from Douglas McAllister.

Q69 **Douglas McAllister:** I wanted to go back to the point you were making, Mr Donoghue, in relation to one or two hubs, or I think you described it as the hub and spoke model. It did strike me while listening to your evidence, should the response from Scottish colleges in relation to the UK Defence Industrial Strategy not be a consortium, perhaps under one banner, perhaps labelled Defence Colleges Scotland, rather than simply focusing on one or two hubs and, as you say, rather than east and west, in one or two locations? Is this not an opportunity for that whole new concept of Defence Colleges Scotland, and have you been working on that?

Gavin Donoghue: Absolutely. That is the sector's position. With these hubs and spokes, you would have a college hub in the east and west and then you would probably have six or seven colleges around them that are the spokes in various regions and that is the consortium. It would be very much a consortium-based approach because, again, as I think the panel has touched on, the skills and the expertise here do not lie in one institution but are across multiple institutions, whether it is in the maritime shipbuilding realm, aerospace, or other engineering skills. We need to bring together clusters of these organisations to work together, and we very much see the DTEC model as being one strand of a broader college and university partnership on defence. The consortium model is exactly what we are proposing.

Jim Metcalfe: Just to add, as Gavin said, this is obviously at the request of the UK Government that this model is built through Colleges Scotland, which it has been and very collaboratively built as well, between 14 different institutions that want to play a part. Probably the east and west hub is reflective of the way that the industry is uniquely distributed around Scotland.

It is not quite the same as other parts of the UK in the way that we have providers and also services operating across different parts of Scotland. There is definitely that co-ordination at the centre, but the east and west model has been one that I know Gavin has worked on and we have all collaboratively put our efforts into as well.

Q70 **Douglas McAllister:** If we choose just one location in the west and centralise it, in the city, for instance, my own college in West Dunbartonshire is part of West College Scotland, and we have three campuses—Inverclyde, Paisley, and Clyde Bank, up and down the Clyde. That is an obvious example of a Scottish college that should be central to



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filling the skills gap in engineering and fabrication. It already works with two of the major primes, in BAE Systems and Babcock, but every location and every MP can cite their constituency in Scotland where they will have a similar college. My concern is that this must be spread out, particularly to the areas of high deprivation and economic activity. That is where those skills gaps can be found and resourced.

Jim Metcalfe: I would not speak for Gavin. I know there is an absolute commitment to doing that and to ensuring that communities of significant deprivation and disadvantage are privileged in this work. That has been central to the thinking of the colleges that have wanted to take part in it, absolutely.

Gavin Donoghue: There has been no formal announcement of what colleges would be the hubs and what would be the spokes, but West College Scotland has a very deep history in the defence sector, especially the relationships with the primes that you have stated. I foresee them being an integral part of the DTEC model. As we work through the detail, we will need to work out how those work and collaborate together, does there need to be a steering group that sits atop that to make sure it is completely collaboratively across the system. All these are still to be discussed.

Douglas McAllister: I am glad to hear that. We have a quite outstanding college principal in Anne Campbell, and I know that she has been part of these discussions and she is very keen to seize this opportunity.

Chair: A brief supplementary, please, from Lillian Jones.

Lillian Jones: It is really just a statement, rather than a supplementary, in response to the point about how nobody knew about the £10 million match funding. I have the letter here from the Ministry of Defence, Scotland Office, to the First Minister, and it is to request £10 million match funding. It is clearly written within that letter to First Minister John Swinney.

Dave Doogan: The date on it is?

Lillian Jones: It is 12 March. It was the date of the announcement. Thank you.

Dave Doogan: So there was no negotiation, then.

Q71 **Chair:** Thank you. I think the point has been made, and we will not all be bidding for our own local colleges; you will bear them all in mind. What more could the UK Government do to accelerate defence workforce development in Scotland? Do you believe that the UK and Scottish Government are co-ordinating and collaborating on defence-related skills as effectively as they can? We will start with Professor Hopgood for a change.



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Professor Hopgood: The hardest question of all comes last. I will start by talking about parity between opportunities that happen across the UK. Scotland is in a strong position for not only skills training but the innovation work that comes out across the universities. As has been described in other evidence this Committee has received, defence and aerospace is very strong in Scotland. The ADS described how many jobs and companies were involved.

For me, it is to make sure that Scotland is still receiving those opportunities that are seen elsewhere. I think it is useful to have a positive narrative about the need for defence and security, especially within universities. I think that was touched on earlier. There is a growing positive narrative, but I would like to see that continue.

Q72 **Chair:** Professor Turney, do you want to add anything?

Professor Turney: I relocated from Australia eight months ago, and one of the things that drew me to Scotland and Heriot Watt is the outstanding innovation and sector leading technologies. Scotland is world class in quantum; absolutely extraordinary. It is one example. We have an amazing opportunity to realise a completely new industry if we seize that chance.

Moving forward, as a country we need that co-ordinated approach of recognising a defence sector and the whole supply chain. It needs to be co-ordinated, otherwise the danger is that it works through in different ways, we sort of hobble along and we make sure that works. But when we are talking about safeguarding a nation, making sure that all the bits are joined up might seem obvious, but I think that is an absolute need, particularly as a lot of these technologies are not just in defence, but rather are dual use and have massive value on a whole range of other things. Moving forward, that is an important point.

I would also like to make a plug though, if I may, for startups in particular. We have an incredible innovation system in Scotland, with lots of great companies starting up, and it is about having that certainty of a market. Government procurement could draw and pull through those technologies and build those businesses, including regional Scotland. That is an incredible opportunity. A lot of countries are struggling with it but if we could do that—we are spending money anyway—it could help.

Q73 **Chair:** We had a very helpful session with a lot of the startup companies a couple of weeks back, so it is certainly something that we are alive to.

Professor Turney: Wonderful, thank you.

Gavin Donoghue: I think colleges would want to see both the Scottish and UK Governments working collaboratively to make sure that funding for defence in Scotland's colleges is done well and on a sustainable basis going forward. The DTEC model sits across the reserved matters of defence and the devolved matters of skills policy, so I appreciate it puts it right on the edge of the two Government responsibilities. However, we do



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have established mechanisms in UK and Scottish Government interactions through city region deals and other mechanisms for doing that, that allows for that core investment. I think everybody across the UK and Scottish Government would recognise that increased investment into Scotland's colleges is a good thing, especially in the defence sector, which is a growing sector across the UK.

Q74 **Chair:** Mr Metcalfe, would you like to add anything?

Jim Metcalfe: James is quite right that the defence skills investment will unlock other investment in their system. The more rapidly the decisions can be made between the Governments—when they do collaborate in this space, it is very effective, investment is made and we start to deliver the skills project that the industry needs—the more quickly those additional benefits will start to flow through. Speed is of the essence because we need time to plan, but if that can be found it will be impactful.

As I mentioned earlier on, the Arrol Gibb Innovation Campus, which is an innovation centre that we are a partner in that brings together universities; local, regional, and national Government; defence industries and startup businesses in one location in Rosyth. It is an example of what happens when everyone collaborates effectively in this system in Scotland.

Q75 **Susan Murray:** It is good to hear it being highlighted how defence industry spending can benefit other industrial sectors, and how investing in the defence sector can benefit growth generally at the same time. £20 million of the £182 million UK Government Defence Skills Package will be spent in the devolved nations of Scotland, Wales, and Northern Ireland. Do you think that is sufficiently commensurate with the size of the defence sector in the devolved nations?

Professor Hopgood: I will start with a remark. There are four Centres for Doctoral Training in Defence and Security across the UK. We have one in Scotland. Last week was the announcement from UKRI about doctoral focal awards in nuclear skills, which also spans a number of different areas. That provides more training in that area. Those CDTs that are user led are very much driven by industry investment, so the cost of our CDT to run it for the studentship—the investment that goes into the students—is in the order of £12 million from the Ministry of Defence.

We have £2.5 million in cash from industry partners who are funding scholarship and placements. In-kind contributions push up the total amount to in the order of £20 million. That is one CDT that is training 80 students over five years. This is a personal opinion but if I hear £20 million, it is not very much, especially if you are wanting to train at the scale that is needed, as has been discussed by the other panel members. It feels a drop in the ocean. That is a personal opinion.

Q76 **Susan Murray:** Do you feel that the UK Government should be doing more?



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Professor Hopgood: I think it is worth putting it in the context of investment in other areas within the defence and security. If you put it in context, then there is potentially opportunity to do more.

Professor Turney: I have nothing else to add to what James has said.

Jim Metcalfe: I agree. Of course we need more investment, but I also think it is reasonable to test our statement so that our system can collaborate, amplify, and have impact. It is an initial investment. To evaluate the impact of that investment is a reasonable thing to do. None of us would want to not welcome an investment of this kind, and I think it will be up to us to deliver effectively against it, show we can work with our contractors and our supply chains, deliver work that the industry says—to the Ministry of Defence and others—is impactful for their skills pipeline, and then hopefully that will attract more investment over time.

Gavin Donoghue: From where I sit, I am not entirely clear that that £20 million is sitting within that £182 million, because obviously there is a £50 million defence growth deal. I am not sure if that is the same money or different money and whether it is £50 million of the £182 million or £20 million of the £182 million. It is where exactly that money is coming from as well.

Q77 **Susan Murray:** Where do you think that that money should be spent to best benefit Scottish needs?

Gavin Donoghue: I am happy to talk about the fact that colleges are the natural place for a lot of this investment because they are the natural places for skills provision. In Scotland they do a lot of work with our defence contractors already, we have those deep industry relationships that I think are essential because if we are producing a workforce that is not the workforce that the industry are looking for then there is a real problem. That collaborative approach between colleges and universities, but as part of a broader tertiary education system in Scotland, is the right place for that money to be spent.

Chair: Supplementary from Dave Doogan.

Q78 **Dave Doogan:** Thank you, Chair. Are you all aware that when we say £20 million from the £182 million, that is £20 million between the devolved nations, not each for the devolved nations? It is a share of £20 million; it is not even £20 million. Were you aware of that?

Gavin Donoghue: I come back to my previous statement. I am not aware that it is the £20 million from the £182 million or where that funding is from.

Q79 **Dave Doogan:** It is from the £182 million. I will move on to question No. 10 if that is okay, Chair. One of the great things about the way apprenticeships have developed is that you don't miss the boat now in the way that you did when we were all younger. On the role of upskilling mid-career workers for defence related roles, does the demand for that



mirror the demand for conventional school leaving apprenticeships? I am assuming it does. Or—to Mr McAllister’s point—is there a more targeted approach to where people are furthest from the workplace? Is it targeted in that way? Is that the demand signal, is it the employers that are the demand signal, or is it a blend of both?

Jim Metcalfe: It is largely employer-led, mid-career changing. There are a variety of upskilling solutions. For people furthest from work, prestart operative work—PSO activity—is often what we will deploy. But you are right; at present, I do not think there is a specific intervention in the system for that group, and I do think—coming back to our previous discussion—that might be one of the innovations that this fresh investment unlocks.

- Q80 **Dave Doogan:** We talked about the PR role of “not just a career in engineering” although there is so much more that can be done with that. If I think of the people who I served my time with now as aircraft engineers, they are all over the world doing all manner of things in all range of different disciplines. I worry that younger people do not realise the opportunity that a career in engineering—defence or otherwise—provides. That is not their fault, it is our fault for not highlighting that so much. But more mature people, mid-career entrants to engineering apprenticeships, have a bit more life under their belt. How do we maximise and highlight the opportunity to that cohort?

Gavin Donoghue: In terms of advice and guidance, obviously the Scottish Parliament has recently passed the Tertiary Education and Training Act. That will make changes to the careers guidance service in Scotland, which I think are required to make sure that people are guided and advised towards these growth sectors, whether that is in defence, renewable energy, or digital and cyber-security. There will be changes there.

On the mid-career one, I think the signal does tend to come from employers. I know of one college in the Glasgow region that has an accelerated apprenticeship programme to get people that have already got those skillsets into an apprenticeship and into working with one of the major primes. But that is quite small scale, I would say. You would want to see things like that replicated across Scotland, which—to Jim’s point—is maybe something that the DTEC model in Scotland could look to accelerate at both a regional and national level.

- Q81 **Dave Doogan:** Mr Donoghue, you expressed concern with capacity and demand outstripping supply in apprenticeship places within Scotland. I see that the Scottish Government’s budget supported around 25,000 modern apprenticeships, and there are more than 39,000 in train at the minute. That is roughly 60,000-odd in a population of 5.5 million. What should it be, in your view? How far off mark is that?

Gavin Donoghue: I don’t know the specific figures, but I believe that is under the OECD average, from the discussions I have had with



apprenticeship providers. Colleges Scotland published its manifesto quite recently ahead of the Scottish Parliament elections and has called for an extra 10,000 apprenticeships to be funded, and also for the frameworks to be relooked at for the contribution rates. There is no magic number; it is decided by industry and the skills assessments that we make as a country.

Through the Withers Review and the Tertiary Education Act, the skills system in Scotland is changing and adapting, and national skills planning will now sit at the heart of the Scottish Government. They will have a role in deciding the skill levels required for the country. The Scottish Funding Council will then take on the role of apprenticeships as well as further and higher education funding. It will sit in this mix now between the Scottish Government and the Scottish Funding Council, but I think the signals that we hear back from industry is that 25,000 is not enough. Whether there is a specific magic number, I cannot—

Q82 Dave Doogan: To be clear, have your opposite number in, say, Wales or England got the same issue, or do they have the right amount of apprenticeships? Because 4.1% of Scotland's population is in college; that is higher than anywhere else in the UK.

Gavin Donoghue: It is not a specific conversation I have had with counterparts in Wales or the likes of the UK, I don't know if James—

Professor Hopgood: No, sadly not.

Chair: A supplementary from Douglas McAllister

Q83 Douglas McAllister: Thank you, Chair. Do you think you have the staffing in Scottish colleges to meet those demands? A recent figure published by Audit Scotland this year indicated that there has been a 27% reduction since 2007 in staffing across Scottish colleges. You started your evidence this morning, Mr Donoghue, by indicating that colleges in Scotland have received a 20% reduction from the Scottish Government in the last five years alone. How will Scottish colleges meet the demands of industry in the new world of work that we are facing in apprenticeships?

Gavin Donoghue: You are absolutely right, and again the challenges that colleges have faced in Scotland are well known, both in terms of funding and in reduction of headcount in staffing and some of the industrial relations issues that has led to in the past. As Jim said, what is critical for colleges is a bit of longer-term sight of this. We cannot turn things around within weeks or months; we work to the academic year. We are flexible organisations and quite business-led and industry-led organisations, but there is a ramping up time that we need.

If we get funding now, then you are looking at the start of the academic year or the start of the next academic year. Do we have the right facilities, do we have the right staff, and if not, can this investment be used to help fund either an increase in staff or new facilities?



Jim Metcalfe: I completely concur with that. With the likelihood in the Scottish budget of some additional resource coming into the college sector for 2026 to 2027, this is a great moment for this defence investment nationally coming to Scotland at the same time. If we can cohere the two things together, it gives colleges as employers, like me, the confidence to invest in the staff that you need because those are not short-term decisions: if you are investing in training teaching staff. Those two things coming together is why the pace of this is important. It would allow us to recruit staff that can teach these courses and give us some volume.

You are right to say we have reduced our headcount. It is very painful to do that, but if we want to grow in this specific area—which is very congested and competed—people that teach these skills in the education system in the universities and colleges are also highly prized in the industry and well paid. We have to make a positive long-term case for them as colleagues to work with us. You are right to draw attention to it, but I do think this is an unusual moment, where there is some more investment coming into the sector at the moment through the national budget, and this defence investment might unlock that together, to let us grow this workforce.

Professor Turney: An important point is having that flexibility of learning and online delivery. A lot of the universities have platforms to allow that flexible learning—as James said, microcredential courses that are stackable and can build up to a postgraduate certificate, a diploma, or even a masters. That has been very successful, recognising prior learning, and in some cases your performance alone. If you have experience in some of those courses you can go through. We are working with some of the colleges now to see if we can roll that out and make that a more applied and flexible avenue for upskilling of those mid-career people as well. That is super important, to give that context.

Chair: Thank you very much, gentlemen. That brings us to the end of this panel. Thank you for your time and giving us your knowledge and expertise this morning. It has been very helpful.

Examination of witnesses

Witnesses: Susan Scurlock, Kirsti Godson and Steve Owens.

Q84 **Chair:** We will now reconvene this meeting with the Scottish Affairs Committee on Securing Scotland's Future: Defence skills and jobs. We will now move into looking at the area of STEM education. Good morning and welcome to our second panel. Could I ask all three of you to introduce yourselves and briefly say what you do? I will start with Mr Owens, please.

Steve Owens: I am the Head of Operations at the Glasgow Science Centre. We are a Scottish charity, and our mission is to deliver engaging and inspiring science experiences to everyone in Scotland. Relevant to



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this panel, we are committed to inspiring the next generation of scientists and engineers in Scotland.

Susan Scurlock: Good morning. I am Chief Exec and founder of an organisation called Primary Engineer. We are a purpose-led not-for-profit that brings engineering into schools by training teachers how to deliver it. We have been working in Scotland since 2012 and work with around about 20% of schools across Scotland and engage engineers in the process of that. We are also a member of the MOD STEM Strategy, ADS, and Scottish Engineering.

Kirsti Godson: Good morning. I am the Head of Skills and Social Impact for Thales UK—Thales you might know; it is a very large global technology company. We operate in technology, the defence sector, and also space. In terms of Scotland, we employ approximately 2,000 people and we probably contributed about £145 million to the Scottish economy.

As for my background, I am an ex-teacher—an ex-science teacher, actually—and we have a team and a big commitment to support STEM education in outreach ways, and any way that we can diversify our workforce as well is important to us.

Q85 **Chair:** Thank you all very much. I will start with Mr Owens if I may. Mr Owens, could you suggest to us how important you think STEM skills are for young people, and how we can strengthen those skills and also help to increase, therefore, access to the whole world of defence, but defence careers particularly.

Steve Owens: STEM skills are a vital part of Scotland's economy. We heard in the previous panel the importance of this pipeline to encourage people into careers in STEM, and specifically defence careers. We feel science centres are a vital part of that pipeline. Jim Metcalfe spoke about the early interventions that are required as part of that pipeline. Getting access to young people when they are perhaps not even thinking about what career they might do, but making them understand the importance of science to them in their lives, starting at very early years.

We have a STEM learning pathway model that we deliver across Scotland that engages with learners from early years and nurseries, all the way up to the end of their school career and beyond. That is a vital part of that pipeline that was spoken about earlier. I think we all recognise on this panel and the previous one the importance of STEM engagement, the importance of having a scientifically literate population in Scotland to make informed choices about, for example, defence. Getting access to young people as early as possible to encourage them into careers in STEM I think is vital.

Chair: Thank you. Ms Scurlock?

Susan Scurlock: One of the most important things is about inclusion. Teachers predominantly do not have very strong engineering skills or



STEM skills or feel confident in delivering that to very large classrooms, especially with children with additional special needs or support needs. Being able to train teachers to be able to feel confident that those hands-on skills and that broad application of STEM skills to a practical outcome is majorly important for the young people, and also for the teachers.

Equally in that mix is the need to have role models in the classroom as well. We are not an extracurricular activity. We look to be in the classroom with every child, the teacher at the head of that class, but we do invite engineers that volunteer to go into those classrooms to be those role models. You would expect primary schools to be begging you to bring female engineers in, but they are begging you to bring male engineers in. They want male role models in those classrooms because it is a predominantly female environment.

So when you are bringing in these volunteers, you are talking to children about the opportunities that are open to them. We are not in the position to promote any particular career; we are talking about engineering right the way across the board. What I feel very strongly—and my organisation does—is that we want the children to have the choice. They cannot have a choice unless they know, and they cannot know unless they have seen that, and they see it regularly.

Quite often what you see with STEM engagement, or engagements of that nature, is they are one-hit wonders. They go in, it is there for a year, everybody has a good time, and the teacher is left going, “Okay, what next? All the kids are excited about it, what will we do next?” Having that regular engagement, having activities that follow children through their pathway through school with those engineers at different points, different types, different backgrounds, different genders, opens up that wider conversation for young people that realise that engineering is not just for the boys and it is not just for the girls; it is for both. It is that for me.

Chair: Ms Godson?

Kirsti Godson: From our perspective, it is around inspiring young people at a much earlier age. We are quite naïve to think that you start talking about apprenticeships and engineering when you have not done the groundwork. It has probably surprised us how much you need to go in at primary school level and start to talk to young people—very young people—about career choice and skills, the skills that they need to be developing, the skills that employers will look for in the future.

Also, it is about getting them excited about science. It is an exciting topic, but we know in the primary education many teachers have not gone through a science background. The STEM subjects are the ones that they probably are less confident about delivering themselves as they may come across slightly differently. If we can go in and inspire very young people about what science is and get them excited, that is important to us.



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We know that there is that transition from primary to secondary where young women make decisions about what STEM subjects offer them. It is a key point in time. Part of the things that we are passionate about at Thales is around diversity. We need a diverse workforce. If young people are making decisions so early on that science subjects are not for them, that maths is too hard, then we will never see them through the education system.

We know that at the moment about one third of our university population in STEM subjects are female. To me that is not good enough. Also, once we get into the sector we are seeing that it has gone up, more young women are going into the engineering, but it is still about 19.8%. Again, that is not good enough.

As a company we do not have a problem in recruiting young people to our roles. We are going through our recruitment process for roughly about 200 apprentices and graduates. We had 25,000 people start the application process, and going through the process there are certain steps, it went down to 7,000. So there is 7,000 people going for 200 roles. It is not that the defence sector is not attractive, because I think we are an attractive organisation. We work very much in partnership with people like Primary Engineer and Susan to go into schools. We have a whole volunteering programme, so all of our employees get 24 hours paid volunteering, and they volunteer to go and work and support.

To engage young people—as Susan was saying—they have to see it to believe. They have to feel that is something that they could possibly aspire to. We do get engineers in; every partnership we work with we make sure that our employees are there as well because they are the most enthusiastic people to sell to young people what it is like to work in the sector.

Chair: Thank you. I will now pass to Maureen Burke.

Q86 Maureen Burke: Thank you, Chair. Kirsti, I will direct my question to yourself. What kind of skills do you think are needed most in the defence sector?

Kirsti Godson: Obviously, the basic engineering skills, but we are seeing much more of the digital skills, making sure that people are coming in with a digital literacy level. We need people to have critical thinking skills, analytical thinking skills, the transversal skills. It is not just the hard engineering skills, it is how well are they can collaborate, because it is all about teamwork in our business. Those are the things that we instil, so when we are going into schools or working with partners, we partner with an organisation called Skills Builder.

We start talking about skills at form 5, "That task you have done, you have achieved this particular transversal skill." We probably don't put it in those terms, but to meet skills of the new currency, we need to be



talking about skills from a very early age and making sure that they understand that they are building those skills as they progress.

Yes, we need quantum specialists, we need algorithm specialists, but we also need those basic transversal skills and learning agility, because your skills are almost invalid after five years now. The actual half-life of a skill is getting shorter and shorter and shorter. You need to be able to learn, and when we are recruiting, we are looking for young people who can learn quickly and are interested and curious. When we put people through assessment centres, those are the key things we are looking at—are they able to learn quickly? Probably the biggest thing we can do to make ourselves future proof is to ensure that we have learning agility.

Maureen Burke: Thank you for that. Do you want to come in, Susan?

Susan Scurlock: Yes. One of the things that we try to do with all the activities that we are doing in schools is to create a love of learning, because if young people enjoy the process of learning, when they move on, the only skill we know they will need is to upskill. If they are not curious and they are not loving learning, it will be difficult for them to progress. The other two skills they need is to be nice and turn up.

Q87 **Maureen Burke:** That sounds like a plan. I will direct my next question to the panel itself. What barriers do you think that young people face when accessing STEM opportunities connected to defence?

Steve Owens: There are a number of barriers to access STEM in general, and specifically defence skills and careers. The most obvious two for the work we do in Glasgow and around Scotland are socioeconomic barriers and geographical barriers. We are a physical building in Glasgow, but we have a national programme that delivers across Scotland, working with partners managing nationally but delivering locally.

We work with partners across different sectors, engineering broad skills, we work with Drax locally in the areas that they are installing new hydropower facilities. We work with MathWorks to promote aerospace engineering skills. We have partnerships with BAE Systems, looking at manufacturing engineering. When we are developing these programmes, we are developing them in partnership with industry and they are aligned with the needs of those industries. One of the needs of those industries is accessing young people who have barriers to engagement.

Broad geographical barriers in Scotland: we have delivered 35% of all of our programmes that are related to these sectors to pupils and schools that are not urban—in remote, rural, and smaller communities—and 60% of the programme delivered to pupils from the top two quintiles of deprivation. That is a key focus for us. We want to make sure that we are engaging pupils across Scotland who perhaps cannot access for geographical or socioeconomic reasons. That aligns with the industry needs as well.



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In terms of the reasons for the geographical and socioeconomic barriers for access, it comes down to money. It is costly to engage pupils in formal science education. We deliver that in-house at Glasgow Science Centre, but we also take it out, as primary engineers do too, out into the schools. Getting access to those pupils and schools who could not afford to travel to a central location I think is vital.

Maureen Burke: Susan, would you like to come in?

Susan Scurlock: Yes. Barriers to accessing STEM, the best one that I mentioned before is teacher awareness of being able to deliver that comfortably with a large class of children, so training teachers. Finding time for teachers to be trained can be challenging, so that is one of the key parts. Geographic areas, as Steve has mentioned, the rural areas, we have some classes that have seven year groups in them, so you are challenged in how you access the right type of material for them.

Time within the curriculum is a big one. We are not an extracurricular activity, as I mentioned before. We are very much within the curriculum, so everything we design is designed to be delivered in classroom time. That way, you have access to everybody. One of the largest barriers is teachers' awareness of the career opportunities and the pathways into those opportunities.

In terms of defence, when we are talking in primary school, I am not necessarily talking about defence but with the MOD STEM Strategy one of the comments in that was, "When the tide comes in all boats rise." It is that attitude of, "Let's get everybody talking about engineering and then let people make those choices afterwards," because then there will be that groundswell.

Maureen Burke: Thank you for that. Kirsti?

Kirsti Godson: Social mobility is a key thing. As I said, diversification of our workforce is important. That is where we make best decisions, if we have a diverse thought process going on. How we have worked that is that, rather than doing a scattergun approach to working with schools, we have decided to work with and partner with schools in a much deeper way. We will partner with a few schools in our local community based on percentage of free school meals.

We are working with probably the most deprived schools within our local community. We partner in a holistic way. Rather than us saying, "This is our menu of activities we can come in and do for you," we make sure we go in and talk. We support the leaders, we support CPD. We have teachers coming out into Thales and doing teacher encounters.

If you are talking to an average science teacher, "What is engineering?" I was getting things back, "Isn't it dirty, oily rags?" Getting them into our offices, into the sites to see what was going on, is important so that they



can give the right advice. We have a pot of money that we are calling "Science Capital".

If one of our schools approaches us because they want to deliver engineering, but they have not got the kit, physics, biology, and chemistry gets the share of the budget and they did not have the budget, so they had young people who were interested in doing engineering, but they did not have the actual kit. We help and set them up. Each school that we work with, we work with slightly differently, to make sure that they are getting to hear the right things.

The rural issue: obviously, we are based in Glasgow, but we have partnered with an organisation called Springpod. Basically we work with them to design a virtual work experience, because we were conscious that young people were not able to get on to site. We have a limited capacity to have work experience all the time, so the virtual work experience is a great opportunity where they can learn about cyber-security defence and space. They can learn about Thales. They get a qualification at the end of it. All the way through, as I said, we are building the skills.

To support communities we work with Primary Engineer, Engineering UK, so the competitions that Susan's organisation are able to provide means that we can reach all of our communities. I have to say, I think we have even paid for post, because quite often in primary schools it was the primary school teacher that was paying for the postage for the competition, the pack. We have paid for post as a company so that everyone can get involved.

Maureen Burke: That sounds absolutely brilliant, especially in schools within Glasgow, as there are a lot of them. Getting this opportunity is fantastic. I was going to ask you how the rural part works, but I think you have covered that. I have been to the Science Centre and seen the amount of work that you do there and how many children were going through the doors, so it was very uplifting to see that. Thank you.

Chair: A supplementary from Kirsteen Sullivan.

Q88 **Kirsteen Sullivan:** I am absolutely fascinated by this. I should say that I started out as a software engineer in a Y2K project many, many years ago. I often wonder if the language that we use can become a barrier in itself. We talk about STEM; what do young people understand by that? What do their parents understand by that? What do teachers understand by that? I think it is the same point we heard earlier about defence. What do people understand when they hear that term? Do you think there is a way to go to better communicate the opportunities that are out there by being clearer in our language and who we are speaking?

Susan Scurlock: It has always been a complicated acronym. I look at it as, "You need an E to make a word." We talk about engineering all the time. We are Primary Engineer; we are talking to kids about what



engineering is and where engineering can take you. If you look at STEM in a school, it is science, technology, engineering, and maths. That is it. It does not mean that they are interconnected. If you are studying STEM, you are studying four different topics; it is not that they are interconnected. That is the problem with them: they don't join up.

Kirsti Godson: Interdisciplinary projects where STEM is looked at, they almost do not even know that this is chemistry, this is physics, this is maths. Unfortunately, the school system is that we go into a biology lesson and so on, but at primary school that is now how we learn. We learn by taking a project and all of those subjects intermingle and it is a much more holistic approach. It is more real for young people to handle. That is something where, perhaps in terms of secondary school, we could start looking more at interdisciplinary projects where those subjects intertwine, and solve real, live problems.

Q89 **Kirsteen Sullivan:** Following on from the barrier point, the role models, I believe it is important that people see role models from their own communities and not just people that have been brought in from a company. Again, that comes back to language. Do the parents understand that they are perhaps a role model in terms of the job that they do? How do we get those more visible role models into schools, so that young people can see that it is achievable and recognisable?

I am very lucky with St Kentigern's in Blackburn in West Lothian. We have had an inspirational female leader in the school in terms of computer science with Toni Scullion, who set up dressCode, and has led S2 girls to great success in the CyberFirst Competition. But not every school has that and not every child has that role model present. Do you think there is more that could be done to open up that conversation about role models and how we get those into schools and early years settings?

Susan Scurlock: One of the challenges is that schools don't know why these volunteers are knocking on their door, and industry cannot understand why they are not opening the door and running in. There needs to be a reason they are in the room so that the school understand how it will fit to what they are delivering and why. Having a purpose is important. It is not just the idea of having a queue of people to walk into the school.

When you are looking at how the school creates that role model from the teachers, that is about giving the teachers that autonomy to be able to deliver project-based learning, to be able to engage with engineering, and recognising how the children that they are teaching advance, because that hands-on learning changes the game quite considerably for young people once they get the opportunity to do it. But there needs to be reasons for it, for it to work.

Steve Owens: I echo that, and come back to a point that Susan made earlier—the move away from single interventions, turning up at the door



and saying, "Here is a fun activity for an hour in the classroom to pass some time," and moving towards a multiple touchpoint curriculum link, so the teachers can see the value in delivering the activity and it is not seen as a "nice to have", but as fundamental to the support that the informal science education sector can provide to schools and teachers specifically.

Coming back to the point about language, young children especially don't talk about STEM, do not know about STEM, don't probably even know what an engineer does or what science does. At a very young age it is as much about feeling, inspiring, and motivating young people into an interest in what might become STEM later on in their school careers.

You mentioned about the influencers outside the classroom. I think that is key. It is not just about pupils and teachers, although that is vital to STEM engagement. We need to influence the influencers, whether that is parents, guardians, other people that young people might engage with. Having an increase in the science capital that Kirsti talked about in society generally, among the parents and families of these young people, will also help raise all the boats and bring young people further into their STEM careers.

Q90 Kirsteen Sullivan: My final question: can I ask you what you think the UK Government should do to encourage young people in Scotland to engage more in defence related STEM fields?

Susan Scurlock: From my perspective, I think one of the negativities at the moment is the amount of young people applying for apprenticeships that are being bounced out. They are not getting an apprenticeship. We have worked so hard in effect to get these young people to think about these careers in engineering, manufacturing—whether that is in defence-related jobs or not—and they are knocking on the door, and those doors are not opening.

What they will do is walk back home and say, "I can't get a job in that, I don't know why I did it. You don't do that, sibling." That is the negative bounce back that I think we will start to see. These young people are bouncing off the door when they are knocking on it, so how do we find a way to help them to move forward in their career towards engineering?

Kirsteen Sullivan: Apprenticeships in Scotland are devolved, of course.

Kirsti Godson: Yes.

Q91 Kirsteen Sullivan: What role do you think the UK Government has to try to improve that situation?

Kirsti Godson: Because we are obviously a UK-based company, it is problematic for us because we want our engineers to have consistency. We hope that provides them with a consistent approach to learning but obviously we have to do something different in Scotland to what we do in England.



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Q92 **Kirsteen Sullivan:** Having to navigate two different systems.

Kirsti Godson: Yes, and that becomes even more complicated when we are talking about the need to reskill our workforce through apprenticeships. We have more actual employees reskilling and upskilling through an apprenticeship route than we do have young people now. We have about 230. I am an apprentice—I am very proud of it; I am doing a coaching professional apprenticeship at the moment.

We have 230 adults doing apprenticeships at the moment, and we see that as a big part of our way of upskilling our current workforce. We have network engineers who now need to reskill to become cloud engineers, and we are doing it through the apprenticeship route but that is difficult when we have people in Scotland, England, and Belfast as well.

Q93 **Kirsteen Sullivan:** Is it easier to get young people in different parts of the UK than in Scotland? Are you seeing a geographic difference there?

Kirsti Godson: I would not say so, it is more that for us we have standards and frameworks. They are not necessarily the same. It is harder to navigate.

Q94 **Kirsteen Sullivan:** What do you think the UK Government could do that is within its reserved remit?

Kirsti Godson: I suppose, on the funding side, simplifying that for organisations. The apprenticeship funding side; putting more funding into apprenticeships—I think we will see there is more demand than there is supply.

Steve Owens: From a science centre specific perspective, the Association for Science and Discovery Centres sent an open letter to UK Government to ask for ongoing support. Most of us are Millennium projects; we are celebrating our 25th birthday this year, so we have been around for a quarter of a century and hope to be around for many more quarter centuries after that, but we require some support from the UK Government for that.

The network of science centres and discovery centres in the UK does not have a home at the moment in Government; we have asked for that home to sit within the Department for Science, Innovation and Technology to enable us to realise the full potential of science and discovery centres, to do all the things we have spoken about: to motivate, encourage, and inspire the next generation of scientists and engineers, and to recognise us in the network of science centres as a vital part of that ecosystem and skills pipeline that we spoke about throughout the morning.

Coming back to the funding point, everything that we deliver has a cost, and accessing these remote rural places or social disadvantaged areas of Scotland is a key part of our mission. Some ringfenced funding from the UK defence budget for STEM engagement across Scotland would allow us



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to grow all our engineering and skills-based engagement, but specifically contribute towards the defence sector.

Susan Scurlock: I agree with him.

Kirsti Godson: In terms of outreach for Scotland it is the defence sector companies and businesses that are putting most into the outreach in Scotland.

Chair: On that note of agreement, thank you all very much. That brings us to the end of our session. We are very grateful to you for taking the time and effort to come and speak with us this morning. It has been useful to us, and it will no doubt be reflected in our report when we go forward.