

Scottish Affairs Committee

Oral evidence: [Scotland's space sector, HC 150](#)

Monday 8 January 2024

Ordered by the House of Commons to be published on 8 January 2024.

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Members present: Pete Wishart (Chair); Alan Brown; David Duguid; Sally-Ann Hart; Christine Jardine; Mark Menzies; Douglas Ross.

Questions 194-284

Witnesses

[I](#): David Oxley, Director of Strategic Projects, Highlands and Islands Enterprise, Scott Hammond, Deputy CEO, SaxaVord Spaceport, and Martin Coates, Main Board Director, Orbex.

[II](#): Nik Smith, Regional Director for UK and Europe, Lockheed Martin Space.

Examination of witnesses

Witnesses: David Oxley, Scott Hammond and Martin Coates

Q194 **Chair:** Welcome to the Scottish Affairs Committee, and our third public evidence session on Scotland's space sector. Today we have with us the people who will be putting rockets into space. I will allow them introduce themselves, and give a short introductory statement about their business and operation. We will start with you, Mr Coates.

Martin Coates: I am Martin Coates. I am the CEO of Orbex, or was until last week.

Q195 **Chair:** Until this morning, it looks like.

Martin Coates: Correct. I am now just a main board director, but still with full executive responsibility. Orbex is aiming to produce the most eco-friendly launch vehicle and spaceport that it can. It is a vertically integrated operation, so we do not run the spaceport separately commercially; all the capacity, we intend to use for ourselves. The launch vehicle itself is aimed at putting 150 kg to a 500 km orbit, and we are well on our way to having that ready to go in the near future.

Q196 **Chair:** Can you pass on our congratulations to your new CEO, who I understand is Mr Phillip Chambers?

Martin Coates: Yes—correct.

Chair: Excellent. Thank you.

Scott Hammond: I am Scott Hammond, the deputy CEO of SaxaVord Spaceport. My responsibilities have involved leading on all the planning—all the environmental impact assessments and all the design of the spaceport—and on the licensing applications, the safety analysis and so on. We are now a licensed spaceport; we received our licence back at the end of last year for up to 30 launches a year of rockets that can put 1,500 kg at a time up into space. That is a massive step for the UK and Scotland—huge capacity and huge capability that we now have from Shetland. We are aiming to do launches this year, in the summer, and we are working on that. I am very hopeful that the Committee will visit us to see all the progress that we have made up there. We are a vertical launch spaceport.

David Oxley: I am David Oxley, the Director of Strategic Projects for Highlands and Islands Enterprise, which is the economic and community development agency for the Scottish Government, covering the northern half of Scotland. I was involved with the development of Sutherland Spaceport initially, and I am looking to support the development of the space sector throughout the highlands and islands. As well as SaxaVord and Sutherland, we have two other potential spaceports, in Machrihanish and Spaceport 1 in the Western Isles.



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Q197 Chair: We cannot forget those, of course. I am grateful; thank you. I turn to you first, Mr Hammond—and congratulations on getting your CAA licence. The Committee is wondering what happens next. I think you said something about an expectation that these tartan rockets might start going into space sometime around the summer. Is that roughly the timeline? Will you explain to us what happens now? You have the licence and there is obviously interest in making use of the facility, so maybe you can explain to us what you expect to happen.

Scott Hammond: It is important to realise that four licences are needed to put a satellite up into space. There is the spaceport licence, which we have. Next is the range licence, which is effectively air traffic for the launch—the airspace through which we fly, and the sea over which we fly. We expect to get that in the spring of this year. Then the launches themselves have to have a licence, much as BA has a licence to operate. The launches and, I suspect, Orbex in this case are applying through the CAA for that. We will expect our launches—both Rocket Factory Augsburg and HyImpulse—to get theirs towards the summer, we hope. Then, further on, the satellites also need to have a licence, and that is from the CAA as well. We are at that stage. The spaceport now moves into what is called the monitoring and oversight part of the process. That is where the CAA comes along to make sure that we do all the things that we promised to do. It is very much now getting to the grown-up phase.

Q198 Chair: We will ask specific questions about your relationship with the CAA and your views on the regulation, but is it roughly working now?

Scott Hammond: We are very pleased with it. We find the CAA very responsive. We have fortnightly meetings with the leadership. We have built a very professional relationship. My view is that the amount of scrutiny—how much the CAA looked at us—was entirely proportionate to what it should be doing. You have to think that we are building a spaceport that will be up there for 30 to 50 years. If you were to start to licence Heathrow, it would be a completely different thing. You can expect it to be pretty rigorous as you go through it, so we have nothing to complain about. We would expect all spaceports to go through that rigorous test.

Chair: That is very helpful, and thank you for your kind invitation to the Committee to visit your facility. I think we are all keen to do that, and seeing whether we can get up to your site is a work in progress.

Scott Hammond: We also have a gin distillery, if that helps.

Q199 Chair: Such incentives are always worth it to thirsty parliamentarians. I am pretty certain that after that comment, we will make sure that we can get up there. Thank you.

Generally, everything seems to be going pretty well, and we are looking at the prospect of rockets going from SaxaVord this year, hopefully. What makes Scotland such an attractive destination for these types of facilities? I will ask you that, Mr Coates, given that you are not all that far behind and are looking to ensure that you make progress. What have we got in

Scotland that helps us to develop these facilities?

Martin Coates: First and foremost for a spaceport, it is because you can do the orbits that you want to launch into. Sutherland is on the mainland, which makes it a lot easier to get things to and from the launch site, for both us and the payload provider or buyer, whichever way you look at it. You have that physicality, which is essential, because you cannot launch from many places in Europe, at the end of the day.

The other aspect is the ecosystem of the existing satellite system—so, being able to access skilled workers. We have recruited about 120 people to Forres now, most of whom are highly skilled engineers, and we have been able to attract those people from all over the world to that location, and to hire sufficient local skills where appropriate. The oil and gas industry helps that, because there are a lot of transferrable skills from that sector. Our health and safety manager comes from a whisky distillery, so you have all sorts of useful transferrable skills in the region.

Q200 **Chair:** This session is getting better and better. That is good to hear. Mr Oxley, to get things kicked off, how is HIE supporting the development of the Scottish launch sector? What are you doing specifically to enable this?

David Oxley: Our interest in this is really more about the jobs than the space bit, so I will probably come at this from a slightly different angle from Scott and Martin today. We got into looking at the space sector for specific reasons, mainly around Dounreay. At some point, 1,000 jobs will be lost at Dounreay as that nuclear facility closes, and that will have a huge negative impact on the economy of Caithness and Sutherland. We were looking for opportunities to develop and create new, good, technical-skilled jobs, and that is how the thought of launching from Sutherland came about. HIE initially took forward the Sutherland spaceport project and then passed it over to Orbex a few years ago, but increasingly we have recognised that as an economic development agency, we are fighting for jobs against other parts of the UK and other parts of the world, and when you have a geographic advantage, it makes it a hell of a lot easier.

Q201 **Chair:** All the facilities other than Prestwick are in the highlands and islands—am I right?

David Oxley: Absolutely.

Q202 **Chair:** And obviously you are up against interest from the rest of the UK. How are you able to—

David Oxley: Let me give a non-space example. If we were trying to create a call centre, that is really challenging in the highlands and islands, where there is a population of less than half a million, as opposed to Glasgow or London. If you are doing space, and particularly launch, in the UK, you must be in the north of Scotland to do it. That is a really important aspect of the UK space economy, and Scotland leading and almost being the PR machine. We all know that there were launches today in America, which got a huge amount of publicity. Whenever the first launch in Scotland happens, it will be a traditional vertical launch. That will

be really attractive, and it is really important to think about those sorts of things.

Q203 Chair: A last question from me, before I pass on to colleagues. Mr Oxley touched on this: do the UK and Scottish Governments have the right space strategy and range of ambitions in place? I will ask you first, Mr Hammond.

Scott Hammond: Oh, wow. You are opening a can of worms there. It is good that the UK has published a space strategy, and so have the Scottish Government. I would like to see a little more resource behind it, because otherwise it is just paper, really. For me, there are almost too many cooks involved. We need to look at having a senior politician directly responsible for space and space launch, and I suggest that be at Cabinet level.

Q204 Chair: Have we not got that already?

Scott Hammond: No. It is rather difficult to know who is running launch here in the UK. We need political top cover for what we are doing. If we come on to the Scottish Government, because this is not devolved, the area where they can help us is with the marine directorate, because we have to have a licence to deposit stuff into the sea. We must be realistic here: the marine directorate was never set up with that in mind at all. It is completely new to them. We really need that political oversight and top cover to empower the civil servants to do things slightly differently so that we can get those marine licences. They should only take about 14 weeks, but they are taking up to about 6 months, because this is brand new. I am not criticising the marine directorate because it is brand new, but a little bit of your time, as the political oversight and top cover, would be very advantageous.

Q205 Chair: We will talk to UK and Scottish Ministers about that very point. I am interested in your views on this, Mr Coates. How do you see the respective strategies and the outlined ambition?

Martin Coates: Having a strategy is good. I know that it is being worked on, so that there is an uplift in specifics, to echo Scott's point. As for what resources you are going to put behind the strategy, that is coming downstream. That is all good work. I also echo the point about joining things up. If you are going to put effort into space, everything needs to support that, not so that we can ride roughshod over sensible objections and proper checks and balances, but to make it clean and simple—to get what we need done in a brand-new sector.

Q206 Alan Brown: The Committee visited Spire Global and AAC Clyde Space; obviously, they put CubeSats into space. They were very clear that it would be advantageous for Scotland to have that end-to-end capability. Scott, how important is it that Scotland has end-to-end capability? Does that even factor into your rationale for what you are doing?

Scott Hammond: It is very important. It is getting the whole value chain into Scotland; there is no doubt about that. As I am sure you are aware, in

Glasgow, Spire and Clyde Space, as they used to be, build more CubeSats than anywhere outside silicon valley, so we have that capability.

Do not forget Edinburgh. Edinburgh is really good at making sense of all that space data. What we do not have is the launch capability. Companies such as Orbex and Skyrora here in the UK are hopefully going to provide that, so that we can launch from Scotland. I would like to broaden it out a little from Scotland, though. Our customers are coming to us from Germany, France, the US, possibly South Korea, and Spain, so we are very much an international entity. That is where we can bring foreign investment into Shetland, our spaceport and the wider economy. This is really important for Scotland, but think wider. We can be a complete leader in Europe here. We have a spaceport license. We are the only vertical launch orbital spaceport in western Europe. That is a massive opportunity, so I would like to see us think bigger and dream bigger.

Q207 Alan Brown: You have already said, in answer to the Chair, that you think there should be a lead politician in charge of launches, but in terms of developing end-to-end capability, is there anything else the Scottish or UK Governments should be doing?

Scott Hammond: I would like to see launch contracts; that is the way. Up to now, we have had grants, and I do not think those have worked particularly well. There are issues with the oversight of grants and how they are applied. If we had launch contracts, that would allow companies to bid for them. You would get a good deal for the taxpayer and, from a company's point of view, if I have a contract directly with the Government, I can leverage that and borrow against that. I would like to see more contracts given, and have the Government as a customer more than a grant giver.

Q208 Alan Brown: Interestingly, the CubeSat companies would like to see the Government buy more services from them as well, but what would the Government, as a customer, get from providing a launch contract?

Scott Hammond: They need to look at what they want the satellites to do. The Department for Environment, Food and Rural Affairs could quite easily put some satellites up to aid all our activities, and to help the UN. You would actually be putting a satellite up there. The sheer fact, though, of the UK or Scottish Government doing that—and they could, because these launches are not that expensive—would hold the industry to account. It would show that the Government are serious about what they are doing, and encourage the whole industry. Young people looking at the industry would see that we are getting direct support from Governments.

Q209 Alan Brown: Would it need to be a multi-launch contract? Let us be honest: not all launches are initially successful.

Scott Hammond: I am sure Martin and I would love a multi-contract.

Q210 Alan Brown: Can you put a figure on it?

Scott Hammond: Ten.



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Alan Brown: No, I mean a financial figure for, say, an individual launch contract. How much money are we talking about, if that was put out to tender?

Scott Hammond: It is generally—I think Martin is probably better to answer this—a price per kilogram. It depends on where you look in the market at the moment, but you are probably looking at between \$20,000 and \$30,000 per kilogram. Depending on how much you want to put up, that is how much you would pay, so it would be different. As I said, Martin would be able to give you an idea of what he would charge.

Alan Brown: There's your cue, Martin.

Martin Coates: One thing to observe on the price-per-kilogram view is that when you are doing it just on a price basis, you go to places like SpaceX, because that scale of rocket is cheaper per kilogram, other factors notwithstanding. We are not into a price-competitive piece; that is why we are on the eco, the convenience and all those other factors. We would be looking at somewhere north of £7 million for each launch, regardless of what the payload actually is. That is what it costs to put one in, and that is for it all, including the operation of a spaceport, of course.

Q211 **Alan Brown:** Do you think we will get there without a Government launch contract, or would a Government incentive help as well?

Martin Coates: A Government incentive always helps. I would echo Scott's comments: a Government relationship gives you a bit of gold braiding when you are out talking to other investors. Are we going to fail if we do not get it? No, but it would make life an awful lot easier.

Q212 **Alan Brown:** Do you have anything to add in view of that end-to-end capability for Scotland? Is there anything else that needs done to see that through?

Martin Coates: Yes. There is an extra bit that you get—the ratio perspective—with spaceport and launch vehicle, at this scale as well; once you go up into larger launch vehicles, it is even more skewed. Something like 10% of my development budget delivers the spaceport; 90% of it goes into the launch vehicle. So there are 120 jobs sat in Forres: all highly skilled engineers who are working primarily on that, including the launch system for the launch itself. It is that wider ecosystem that I draw your attention to, because those people are paying tax, living and spending money in Scotland, and that creates a cascade through on that side of the economy.

The other thing we are trying to do is to source everything we can in Europe, and preferably the UK. We already look at a commercial view. At the moment, the only thing I cannot buy in Europe is carbon fibre of the quality that I need. Everything else, one way or another, I think I can organise to source.

Chair: Would you mind speaking up a little, Mr Coates? It is a big, old, echoey room.



Martin Coates: No problem. Everything else I can source in Europe, and a lot of it in the UK. We are trying to put all the manufacturing facility in Scotland. There is a scale that we are operating at today, but actually getting into production, when we are trying to produce one a month and going upwards to 30 or 40 a year, means a significant facility that has cascades all the way through, because we need ancillary companies to support that kind of supply chain. The broader piece that I think about is that kind of ecosystem: the training and where the skills, technicians and engineers are going to come from to feed into that and support that kind of run rate. That is quite an ambitious undertaking for Scotland to be looking at.

Q213 **Alan Brown:** Do you have a timescale for when, in an ideal world, you see that ecosystem coming to fruition in Scotland?

Martin Coates: We would have to be starting to plan our main manufacturing facility early next year. We will already be starting to say, "What does that need to be? How big does it need to be? What is it going to employ?" We are looking on a five to 10-year horizon—all the jobs, all the equipment and everything else that needs to go in that.

Q214 **Alan Brown:** Thanks. Just to go back to you, Scott, this question is specific to SaxaVord's proposals: why did you choose Shetland as opposed to anywhere else?

Scott Hammond: That is a really good question. It comes back to, "Why Scotland?", and it comes back to geography and physics. If you want to go into a polar orbit, you do not want Earth spin. Ideally, you would be up at the pole, because there is minimum Earth spin up there. Now, that is a tricky place to operate. The analogy here is coming up to a really strong river and wanting to swim across to get to a point on the other side. If you just point at it, you will end up downstream, so you point up and swim a bit longer through the river to get to where you want to go. It is exactly the same with earth spin—you do not want it, so you have to counter the earth spin with fuel, and that reduces your payload. So, first of all, you want good, high latitude, and Shetland is as far north as you can get in the UK.

The next thing you look at is the launch trajectories. You want them to be direct to where you want to go, just as, when you cross the Atlantic, you fly the great circle route, which minimises the fuel you need to use and therefore maximises the payload you can carry. Where we are, we have direct trajectories. To compare with Sutherland, if they can get a safe launch trajectory—which I think is a big "if"—they will still have to do dog legs, which will cost them payload. That is really why Shetland is in such a good position.

Q215 **Alan Brown:** Obviously, you have been successful in your licence, which is great news. The licence allows up to 30 launches a year. Is that a realistic proposition? If so, how long will it take to get up to that type of frequency?

Scott Hammond: In this industry, everything depends, but last year, at Cape Canaveral, they did about 66 launches, and they are gusting about 70 to 80 for this year. It will take time to get there—there is no doubt about that. We would hope to do it in five years, but certainly in 10.

The difference is that we are a multi-user spaceport. We will not have just one company launching from us. We will have three pads, which we are building at the moment. Again, if you look at the rest of Europe, the only other likely pads for orbital launch will be in Andøya. They may have two up there. That means that we will have 60% of the launch capacity here in SaxaVord.

Beyond that, we have room for other pads; we would need planning permission, but we could start to look at those. It is going to take a bit of time, but all these companies are coming to us. We do not have a marketing budget; we do not need to market ourselves, because the companies do their research and their homework, and they come to us.

Q216 Alan Brown: You said earlier that you are working closely with the CAA and that you have a good working relationship. In the wider airspace, there is a move towards airspace modernisation. To be honest, some of the airlines and airports are saying that the modernisation programme is taking too long and needs to be speeded up. Is that having any long-term impact on you as you look to increase frequency?

Scott Hammond: I do not think it is. We have an airspace change ongoing that should complete in the summer of this year. That will give us a large amount of airspace—up to about 350 km to the north of us. We will have all that in place, but if there is any airspace modernisation, it is likely to help us because it will make far more flexible use of the airspace. At the moment, with set-aside areas and danger areas, it is a bit clunky, so we would support that. However, I would say that airspace change is a three-year process: that means a lot of time and money invested into achieving that. It would be nice to see it sped up, but you have to think of all the other users—you cannot deny airspace to other people who need to use it, like the airlines.

Q217 Alan Brown: One final question, Scott. Before Christmas, there were reports of a contractual dispute with the development. Have all those matters been resolved? Are they not a barrier to your timeframe in getting the first launch?

Scott Hammond: No. Pad 1 is just about complete, which is where Rocket Factory Augsburg will be launching from. We are completing the stool on that; the hangar is being completed at the moment, with the clean rooms within it; and we will be bringing in all the range and infrastructure.

We are absolutely confident that we will make the timescales. For me, the worry would always be about whether the launchers are going to get their launch licence from the CAA. I do not see us as being the long pole in the tent.

Q218 **Chair:** One thing we have heard about in several of our sessions is the importance of the end-to-end, as it is described, from manufacture to launch. Is this going to be truly transformative for Scotland, or are there particular issues that we have to think about to ensure that we have success, given that we now have this facility available?

Scott Hammond: I believe that it is going to be transformative—but then I am going to say that, aren't I? As Martin said, there are very few places in the world where you can build a spaceport, so we have a massive opportunity there. Yes: with Orbex and Skyrora, we can build the rockets in Scotland, or perhaps the UK. But let's dream a bit wider, bring in all of the European launches and become a European spaceport.

Q219 **Chair:** Would that be your ambition: to try to solicit that business from Europe and be seen as the prime—

Scott Hammond: Absolutely, yes.

Q220 **Chair:** That is a big ambition. Do you have the facility and the resource to ensure that that is at least a possibility?

Scott Hammond: We believe that we have. Clearly, Government help behind that is always advantageous. If the Government believes that we can be that within Europe, I think that is a massive thing, and we can do that. At the moment, our real competition is Andøya in Norway. We need to be faster to the market than them and be more responsive and agile. We are trying to drive down launch costs, because that is ultimately how we are going to get business.

I think that it is very achievable. We already have an office in Munich because we see a lot of our business coming from Europe.

Q221 **David Duguid:** I have two or three very quick technical questions, and you have just answered one of them. One of them was about where your competition is. When you look at a map of the world, you are looking for polar launches, which is basically straight up. The top of Shetland or Sutherland makes absolute sense.

You mentioned Norway and one other. What was the other one?

Scott Hammond: Norway, and there is another one in Sweden—Esrang—but they have some issues.

Q222 **David Duguid:** I guess you have to strike a balance with how accessible it is, as well.

Scott Hammond: Yes. I do not know if you have ever been up to Andøya, but it is well above the Arctic circle, so it is a difficult place to operate from.

David Duguid: I have never been further north than Trondheim.

Scott Hammond: Okay. It is further than Trondheim, so it is a difficult place to operate from.



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Q223 **David Duguid:** This may be a question for Mr Coates. You mentioned how the Sutherland launch requires a dog leg. Looking at the map, I was wondering where that comes in and why that is a factor.

Martin Coates: At this stage, it is an option on some of the launch trajectories; it is not for all of them, and it is not actually certain, because at the time we are heading towards those islands, we are doing Mach 10 at about 800,000 feet, so it is more of a statistical game; not a game—

Q224 **David Duguid:** Which islands are you talking about?

Martin Coates: We are going over the Faroes.

Q225 **David Duguid:** So the trajectory would initially take you towards the Faroes, but you would have to deviate from that?

Martin Coates: That is one of many. There are a lot of other trajectories that we can use. That has a certain set of advantages, but it is by no means essential, and, at the moment, it is by no means essential that we do a dog leg, either.

Q226 **David Duguid:** And from SaxaVord, does Svalbard come into the equation, or are you already up above—

Scott Hammond: No, Svalbard doesn't. You need to draw it back. Effectively, the first 60 seconds of launch are probably the most hazardous part. Once you are over the Faroe Islands, let's say, you are not going to hit the Faroe Islands, because you have a forward throw. If the rocket exploded, then all the debris would still be doing Mach 10, so it is going to go a long way north. The chance of hitting the Faroes is actually much earlier in the launch sequence. If it were to explode, say, 20 seconds after—I do not know, because I have not looked at the trajectories from there—then you are probably looking at debris falling on the Faroes.

Having gone through the whole process with the CAA—we have done our siting assessment and we have done all of the analysis—if all the algorithms we have used were applied to Sutherland, they are going to end up doing a dog leg. I cannot see the CAA licensing that. In addition, you have got to look at mature systems versus immature systems. All the systems that come to us are going to be immature: Orbex and Skyrora are immature launches. When you then do your analysis, you put in a greater probability of failure, which leads to the statistics whereby you will need a dog leg. I have not done it for Sutherland, but everything that I know from having performed it for SaxaVord leads me to think you are going to need to do dog legs, certainly for sun-synchronous. Then there are polar orbits, and you then have the issue of the people who actually live just to the north of the launch site.

Q227 **David Duguid:** I have one last question, going back to your introductory remarks about the need for a senior Government Minister who is responsible for space. I was looking in the briefing paper, which lists the various Departments that are already potentially involved. The Ministry of Defence, the Department for Business and Trade and the Department for Transport are obvious ones, but you also mentioned DEFRA, for example,



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which would be very interested in the kind of data that would be coming back. At the moment, with the greatest respect to my ministerial colleague Andrew Griffith, it is a relatively junior role within the Department for Science, Innovation and Technology. I am open to all witnesses remarking on this. Would you see that as being solely a space-focused job, or could it work as part of other responsibilities?

Scott Hammond: I think it should be at a Cabinet type of level and should bring them all in together, because in that whole space strategy there are jobs, there is the effect on the environment and climate change, and there is defence. You need everybody in there together. With the greatest respect, you are the politicians, and you know how you have to beat each other to get things done. I suspect you need somebody—

David Duguid: Only too well. That is why we are asking you!

Scott Hammond: Absolutely. I think you need somebody on top of it, looking at the whole space strategy, making sure that it is happening and bringing in people like the Ministry of Defence and so on. Are you angling for that job?

David Duguid: No comment.

Chair: It would be a particularly good job to have: Secretary of State for Space. Thanks for the suggestion, anyway.

Q228 **Christine Jardine:** Mr Coates, why did Orbex choose Sutherland and see it as the most promising spaceport location?

Martin Coates: Some of that predates me, which David might help me with, but the mainland location is one of the driving factors for us. It is three hours' drive from where we are. You don't just have to move a launch vehicle; you have to put a lot of people there, too, so it is about being able to have people move between locations without being camped out in remote places. Other operators might go out of French Guiana. If you had a rocket lab, they go all the way out in New Zealand from California. There are a lot of other hidden costs if you have locations that are further away, so that sits with our environmental credentials, as well as commercial convenience.

Q229 **Christine Jardine:** I accept the point you make about the mainland, but Sutherland is still quite remote, is it not? You recently submitted changes to your planning proposals for the spaceport. When do you anticipate the spaceport will be operational, and will those planning changes have any impact on timing?

Martin Coates: There is an impact on timing, but the main change was to improve the ranging option. In the previous submission, it was thought that the antenna array would need to be lower down and that we would need a second one, with the option of using Ben Tongue, which already has a set of antennas on it for different purposes. First, we do not want to do any more damage to the environment than we have to by putting those things up and, secondly, it gives us a much better ranging site, so we only need one. That is why we have chosen to do that. It is the planning rules



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that meant we have had to resubmit the whole thing, and we have now reduced the footprint of what we are having to do on the main spaceport as well, which is another overall benefit too. Those are some very important changes, but we are still able to carry on with pre-agreed work on things like the road, the pad and so on, because some of those things have not actually changed very much at all.

Christine Jardine: When do you anticipate being operational?

Martin Coates: Later on this year, the spaceport should be complete.

Q230 **Christine Jardine:** Excellent. Are there pros and cons to your own situation with Orbex—having the same company operating as spaceport operator and the launch provider?

Martin Coates: There are pros and cons. The primary con is that you have a hell of a lot more to get through in the day-to-day job of understanding all the different factors. The pro in having full control of the entire integration of how the spaceport is designed, and all of the integration through the launch system and the launch vehicle, makes it a much safer operation for us to run. It is a part of our licence, as well as for us in terms of knowledge transfer and ensuring that there is no misstep between the two businesses. We run it as a single unitary management team. There is a separate legal entity for it, but there is no separate management board managing the spaceport separately.

Q231 **Christine Jardine:** I am going to come to its importance to the highlands and islands and Highlands and Islands Enterprise. We have talked a lot about end to end and how important it is to have an end-to-end space programme. One of the significant parts of that for me, as an Edinburgh MP, is the amount of work that is done in Edinburgh academically and industrially—all of that. Can you and Mr Hammond give us some idea of what you anticipate the impact could be on Edinburgh, and the rest of Scotland for that matter, not just of having the spaceports but of bringing in international opportunities?

David Oxley: I am going to come in here if that is okay. I can see Scott and Martin squirming a little bit at that particular question. When we at HIE were undertaking our options appraisal on Sutherland, we did an economic impact assessment, as you would expect us to. For Sutherland by itself over the next 25 years, this is a £1 billion economic opportunity. A lot of that will be across the supply chain. We have been talking mostly about launch today, but that is a relatively small aspect of the overall supply chain. The data analysis, which is what Edinburgh is really good at—it has the Data Lab and lots of other high-tech companies—is where a lot of the money is. I cannot give you a figure, but it is a pretty big percentage of a £1 billion opportunity for one spaceport.

Q232 **Christine Jardine:** So that would be a significant benefit principally to Edinburgh and data analysis, but to other parts of Scotland as well.

David Oxley: To other parts of Scotland too. I am doing this for jobs for Scotland—jobs for the highlands and islands primarily. That is my day job,



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but I will not be taking the view that we get to Perth and we are not bothered about the jobs; if there are jobs in Perth, Glasgow and Edinburgh because of what happens in the highlands, that's great. It happens vice versa as well.

Q233 Christine Jardine: Presumably you are working closely with Scottish Enterprise.

David Oxley: Absolutely, and SDI in particular on the international opportunities and inward investment opportunities, which Scott referenced earlier. I think that end-to-end capability will attract European and potentially American space companies to come to Scotland to set up a business. How big that business is will depend on what part of the sector they are in and what they need. We already have Skyrora and Orbex making rockets. There could be others that come, flowing on from that. There could be more and more satellite companies in Glasgow, and more and more data analysts in Edinburgh. There is a huge opportunity for the Scottish economy as part of the UK economy.

Q234 Christine Jardine: Could you tell us a wee bit more about the role that HIE has played in developing and supporting a Scottish spaceport?

David Oxley: My first involvement in the space sector goes back to 2015 and 2016, when the CAA were looking at options for a horizontal spaceport. At that time, I was looking after the Moray area—Mr Ross's constituency. One of the options for a horizontal spaceport was the former RAF Kinloss base. That is where that initial interesting opportunity for space in the remotest parts of Scotland came from. That gradually developed into opportunities around vertical launch. That came through Sutherland, as I have said previously, and the impact of the significant population decline of Caithness and Sutherland—and ways to address those demographic challenges in particular.

Since that time, at HIE we took the Sutherland spaceport through its planning process, and the various judicial reviews and court cases that we had to go through to get past that, to make sure we were doing the right thing. Following on from that we have tried to work more closely with all the spaceports to see the opportunity that is coming. There is significant opportunity.

I see each part of the highlands and islands having a specific opportunity. In Machrihanish in Argyll, it is very much about the engine testing side of things. They have a huge former RAF base where you can test an engine, and nobody can hear you or see you—you do not disturb anybody. Spaceport 1 is very much looking at suborbital flights. Sutherland and SaxaVord are much more looking towards orbital, and potentially some suborbital in SaxaVord. We are trying to get this cluster activity working together; we are trying to get all the spaceports working on things that are of general interest. We haven't really mentioned skills yet, but I am sure that is a question that will come up at some point. Everybody needs to benefit from a skilled workforce that comes up, and I think we can do more on that side of things.



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Q235 Christine Jardine: I suspect that Mr Ross is going to come in in a second, but I wanted to ask about how you have been deciding where to target the investment in spaceports. You touched on skills, and one of the major problems in the highlands over the decades has been depopulation—young people moving out. The University of the Highlands and Islands was a response to that. How significant do you think the developments with the spaceports and the clusters you have talked about will be in reversing that, and how important is that in your decisions about where to target investment in the spaceports?

David Oxley: Space is a very attractive sector. It gets people's attention. If we were talking about other sectors that were creating as many jobs, it wouldn't get as much attention, but it is a huge thing that gets everybody interested in the region. As we have talked about before, the geography plays to our advantage in this space, so there is definitely an opportunity there. Will it be an attractor for folks coming into the area? Yes, we have seen that.

I have worked in economic development for nearly 20 years now, and you have to have the right opportunities for people to come and live and work. Space will attract folks, but I suspect Martin and Scott are recruiting people who are part of families—and you need two jobs, not one. We need to diversify the economy much more broadly than space: with renewable energy, hydrogen, food and drink, tourism, and all those other opportunities that we have in the region to develop the economy further.

Q236 Christine Jardine: Is that one of the places where the UK and Scottish Governments could do more to support the project by encouraging other investment?

David Oxley: I think so, yes. There is a lot of attention on space this year in particular. There has been a lot of attention every year for the last four or five years when we have been expecting a launch to be not too far around the corner, but I think we really are at the point where a launch will be happening in the next 12 to 18 months.

Christine Jardine: Thank you.

Chair: And Mr Ross indeed wants to come in.

Douglas Ross: Thank you, Chair, and good afternoon to our witnesses. For full transparency, I should say that Orbex is based in my Moray constituency, Mr Hammond hosted me when I went to SaxaVord as Highlands and Islands MSP, and Mr Oxley was previously the area manager of HIE in Moray, so this a very strong Moray and highlands and islands-linked panel.

David Oxley: We could have had the meeting in Forres. It would have been much easier for myself and Scott.

Q237 Douglas Ross: We could have done; that would have been very useful.

Can I start with you, Mr Oxley? To follow on from what Christine Jardine was asking about the selection of sites, obviously there is a lot of interest



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throughout the highlands and islands but we have the two principal ones with us today. Why did HIE put so much focus on Sutherland rather than SaxaVord, particularly at the start, and do you accept some of the criticisms that you maybe put all your eggs into one basket with Sutherland, particularly early on?

David Oxley: The HIE board took its decision about investing in a spaceport back in 2018. At that time, we considered business plans from Shetland Space Centre, as it was termed then, Spaceport 1 and Sutherland to look at the potential for each. Based on the business plans at that time and the decisions that were made then, it was decided that Sutherland spaceport was in a better place back in 2018. That was six years ago now. Things have moved on significantly.

Q238 **Douglas Ross:** Was it the right decision at the time?

David Oxley: It was absolutely the right decision at the time.

Q239 **Douglas Ross:** And with hindsight now, looking back, could you have separated more of the resources and support to ensure we get to the stage we are at now—very close to two vertical launches?

David Oxley: It is great to have two sites that are close to vertical launch. We cover Shetland, so as an economic development agency we have always been open to supporting SaxaVord spaceport. In fact, we have supported SaxaVord spaceport. We have invested nearly £200,000 in various initiatives to help SaxaVord spaceport, and we are in discussions with SaxaVord about further opportunities that might come. We recognise this as a key opportunity sector for the region, and we are willing to work with any of the spaceports that have realistic and sustainable business plans, and that includes the two represented by those sitting to my right.

Q240 **Douglas Ross:** Do you think that the criticisms early on were unjust, or was that about how you explained that decision-making process to support Sutherland more than—

David Oxley: There were concerns raised that were investigated and were found to be not valid. We used a thorough process to do that. We are the custodians of public funds and we take that duty very seriously. We don't make decisions without an assessment of best value for the public purse.

Q241 **Douglas Ross:** Mr Coates and Mr Hammond, I have listened to you both very carefully. You seem to get on well, and you're obviously both very interested in space, but there has been a wee bit of needle as well. Mr Coates has mentioned twice how Sutherland is, factually, a mainland spaceport, criticising potentially Shetland—not criticising but showing the difference. And, Mr Hammond, you are pretty certain that it is going to need a dog leg, whereas Mr Coates doesn't necessarily think it does.

Are you healthy competitors? Are you bitter rivals? Is there enough business to have two spaceports, not just in Scotland but in the highlands—in the far north of Scotland?

Martin Coates: I would say yes. We are not really competing, because I can use all the capacity I've got in Sutherland for my own business. I don't need to have a secondary operator on that site. We are not putting it out as a commercial offer in the way that SaxaVord is, so it is a completely different business model. Of course, the current capacity that we have permission for is not sufficient for our plans, so we will be launching elsewhere relatively soon—that is, in the years that it takes to do things in space, not necessarily soon in terms of Parliament.

Douglas Ross: Well, things can go slowly here as well.

Martin Coates: So we may well want to be a customer of SaxaVord in the future, who knows? Or of Andøya. There is plenty of demand capacity, and we see that with a building pipeline of inquiries. Almost every week, a new company is talking to us about potential launch opportunities.

Q242 **Douglas Ross:** So if SaxaVord launches before you, you'll be cheering. And if it's Sutherland, Mr Hammond, will you be cheering and supporting what Orbex has done there?

Scott Hammond: I would be surprised if they are before us, but you never know. We are different; there is no doubt about that, but do we need two vertical launch spaceports? No, we don't. We have 30 launches a year, with launches that can do up to 1,500 kg, so that is 45 tonnes that we can put up in space—maybe 300 satellites—a year. Up in SaxaVord, we can account for the demand. I don't see that we need to have these extra spaceports.

We talked about engine testing; we've done engine testing up in Shetland. We have had both Latitude and HyImpulse doing that, and they like to come to the spaceport to do that engine testing because then they learn about the spaceport, they build those relationships, and they understand all the health and safety processes and procedures that we put in place.

We can do suborbital as well. Again, a lot of the companies want to do the suborbital launch from us because, again, they learn how to operate from SaxaVord as they move to vertical. HyImpulse is a good example of that.

We have to get away from this idea that we've got to have spaceports everywhere. I just don't think that you need that. You can see that if you look at America. America has about 40 spaceports; of those, only 14 are actually licensed—and last year, of those 14, only three actually did any launches. There is this great desire to spread the love, but you achieve nothing. I think that we only need SaxaVord spaceport, certainly for the next decade. We would be delighted to have Orbex come and launch from us. I see no need for this sort of dissipation of resources.

David Oxley: Back in February 2021, Highlands and Islands Enterprise did a market study with some well-known market analysts of the space sector. At that point in time, the market analysis indicated that accessible launches from the UK over that next decade were approaching 1,000 potential launches. So even if Scott gets to 30 launches a year and Martin



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gets to 10 or 12 launches a year, there is plenty of demand capacity out there; there is more capacity than we can meet at the moment.

That was February 2021, when a lot of companies were launching from Kazakhstan and Russia. They are obviously not doing that now and they are not going to be doing it any time in the near future. The market for launch in western Europe has grown even more than when we did that report three years ago. So do we need more than one spaceport? Yes, I think we do, because there is a lot of market to go at, and the UK and Scotland should be trying to capture as much of that as possible.

Q243 Douglas Ross: We like to stimulate debate among our panellists, and I think that has certainly done that. I don't know how we then come to a conclusion as a Committee, but we will certainly keep an eye on that.

I want to look at skills, which I have raised in this inquiry and a number of others, including looking at defence, shipbuilding and science. In many ways, a lot of these different sectors and industries are trying to attract and recruit the same people with the same skills—particularly in Scotland, but also across the UK and, indeed, in many parts of the world. We are fishing in quite a small pond for significant numbers of people. Is this an issue you have on your risk register? We are obviously very pleased with the numbers employed out of Forres, but is there a risk that ultimately—in one, five or 10 years from now—we won't have the people with the appropriate skills to continue the work you are creating at the moment?

Martin Coates: There is always going to be a risk, so it depends how big you think that is. It is such an exciting place to go and do engineering work. Prime is just our first vehicle—not the one and only that we are ever going to do—so there is always going to be a demand for highly skilled engineers, but we get 700 people applying for 12 intern places. You can have a first-class grade from the best universities and you won't get through that screening programme. We are pretty sure that there is one level of it that works. But as you are creating more and more jobs, you are going to want more of that feed coming through from universities such as Edinburgh and others that already have a space school. So yes, it is a risk. Are there things in place that are mitigating that? Yes, there are today. Do they need to do more? Yes, because we are going to demand more and more of those skills. But that will lift everything around it as well.

Q244 Douglas Ross: You mentioned earlier that there are a lot of transferrable skills with the oil and gas sector, and that you recruit people from there. Likewise, the Scottish Government and others are seeing that these people in the oil and gas sector at the moment can transfer into offshore renewables, so they are being drawn in several different directions. I wonder how big a risk that is. Perhaps we can come back to that. Mr Coates and Mr Oxley, is the freeport at Cromarty a positive, a negative or neutral? Is there a chance that people who could actually be going a bit further north, to Sutherland, will stay closer to Cromarty because of the financial benefits of working for businesses there?



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David Oxley: I will answer that one. I have been involved with the green freeport in Cromarty as well—I get all the nice easy stuff in my job as director of strategic projects. In terms of the jobs that are going to be created at a spaceport itself, you are talking dozens of jobs in either Unst or Sutherland. All those jobs are top-level, quality rocket scientists and engineers. In fact, I very much doubt there will be any rocket scientists in Sutherland, but there will be engineers, security, facilities management, accountants—a whole variety of things. We need to broaden the skillset to thinking it is not just engineers you need in there, but a variety of jobs—and you will need to get those. I don't think it will be a challenge for either of the admittedly remote locations to attract more folks, and that is what we want to do. In fact, I can see a situation where families come back to the area because of the opportunities that are there.

The freeport will create thousands of jobs, I am sure. That is what we want in the highlands and islands, as Ms Jardine mentioned earlier. The highlands and islands have suffered from depopulation for decades. My organisation's job is to try to reverse that.

Q245 **Douglas Ross:** But to all three of you, do we have the infrastructure for this influx of jobs, either into the spaceport or the freeport, with people working in a number of different industries? When I was in Shetland, one of the biggest things that came up was the lack of available housing. We can do everything we want to create jobs and encourage people to come to the highlands and the islands, but if there isn't the infrastructure—the schools, doctors, dentists and housing—we are not going to get them.

Martin Coates: From the short piece of knowledge I have on that, I would say that that is an issue regardless of space, isn't it? It is a general issue that needs to be addressed by the Government.

Q246 **Douglas Ross:** When I was at Orbex at the tail end of last year with Orbex that was one of the biggest issues we spoke about in recruitment. I think your manager was driving from Aberdeenshire on a daily basis because it was easier for him to get a house in Aberdeenshire than Moray.

Martin Coates: Yes, that is still happening.

Scott Hammond: I agree. It is chicken and egg, isn't it? We need to encourage people to work up in these locations. You talked about the skills. When we go out to hire people, I cannot go and hire a safety person for a spaceport. They just do not exist in this country. We look at transferable skills and what people have done, so we very much employ the person and then train them. I think we will be doing that for a few years. I am hopeful that children who are currently in school in Shetland, say, have an opportunity to go into the space industry because they see it happening up in Shetland. There will be more people staying up there, and it will perhaps stop the drain, to start with. But it will take a bit of time to turn around that supertanker, I would suggest.

David Oxley: On your point about housing, Mr Ross, the highlands and islands do not have enough houses at the moment and need more, but



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opportunities like spaceports and green freeports give confidence, maybe not to build speculatively but to be on the bespoke to speculative range, it will be more on the speculative side of things. If they know there will be hundreds or thousands of jobs coming, builders will be more able to invest further. That is what we have not had. We have declining populations, so it has been more challenging for builders to invest. It is a matter of fact that it costs more to build a house in many parts of the highlands and islands than it does in the central belt or elsewhere in the UK. We need to try to square that circle. It is an ongoing discussion. Every time we meet with businesses across any sector, housing is the No. 1 issue.

Q247 Douglas Ross: My final question is to Mr Coates and Mr Hammond, looking at the local aspects of your businesses. You have both been asked about why Shetland and Sutherland. Mr Coates, why Forres for Orbex? You are still three hours away. We are delighted to have you in Moray, and in Forres you have the facilities at the enterprise park. I presume also that there is an opportunity to utilise Kinloss barracks. Was that important in your decision making for Forres?

Mr Hammond, can I ask about the discussions that are currently ongoing in Shetland about replacing the ageing ferry fleet with tunnels? What difference would it make to your proposals and the operation of SaxaVord if we had a fixed link between the islands rather than relying on the ferries?

Martin Coates: Having Kinloss five minutes away for doing engine tests, integration tests and all those other things was a huge part of the decision. The main thing was having the space to expand. We wanted to be near enough to the spaceport itself, but in a location that had better communication links. There is Inverness airport, and Aberdeen is not too far to drive to. Further out, you can drive down to Edinburgh or Glasgow and pick up flights from there. Location-wise, it was good for us to have that combination come together.

Scott Hammond: Fixed links are very much on the agenda for everybody up in Shetland. We see ourselves as an enabler towards that. We add to the whole business justification for those fixed links. Currently we can certainly use the ferries. They are not a limitation on any of our operations, but a fixed link would be a far better, more reliable way of getting to the islands. I would see us as contributing to the business justification for those fixed links.

Q248 Alan Brown: Going back to the numbers that Douglas brought up, Mr Hammond, your licence allows up to 30 launches per year, but you were saying earlier that Shetland alone would be able to meet the demand. Mr Oxley was saying that HIE has estimated that Europewide there is demand for 1,000 launches per year. Surely that means that there is enough demand to justify spreading the love, as you called it, across our spaceports in Scotland.

David Oxley: Could I just clarify that it was 1,000 launches over the next decade, not 1,000 launches per year? Even 100 a year is a lot.



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Q249 **Alan Brown:** Sorry. But even then, 30 a year doesn't meet that at all.

Scott Hammond: We are a private company, and it is our money we are investing. We listen to these reports and we talk to all our launch providers. A launch provider will tell you that they are going to do 20 or 30 launches a year, but a lot of them are fishing in the same pond, so you have to take a lot of that with a pinch of salt. I would be delighted if we were achieving 100 launches a year, but I don't think we are really at that scale yet. My view is that in the next 10 years, we can deal with that capacity out of SaxaVord.

Q250 **Chair:** Before I hand over to Mr Duguid, can I ask you this? You guys are here as representatives of the interests of spaceports across Scotland, and there are another three still in the reckoning. I think this question is mainly for Mr Oxley. Two are within the HIE area—Uist and Machrihanish—and obviously there is Prestwick. Given what we have heard—Mr Ross attempted to break out brotherhood and love between two of our witnesses—are the three other spaceports in with any sort of chance, given where these two are and what we heard about capacity and over-resource?

David Oxley: I think they have their own niche in the market to go up. I suspect Machrihanish is not going to launch anything; it is going to be engine testing and maybe doing some of the other aspects around that, but that is a good niche to have. Spaceport 1 has some opportunities but also some challenges to develop. Back in 2018, it was not that far behind the other two spaceports in its thoughts, but it is quite a distance behind at the moment. That can be brought up to date.

Q251 **Chair:** Is there any way Scotland could accommodate five spaceports?

David Oxley: Who knows how the market is going to grow? Our reports have said that it is going to hockey-stick up, and I think it will continue to do that. Satellites are getting smaller. The whole model that some of the spaceports now operate is a taxi service. Rather than getting on a bus and going somewhere vaguely near where you want to go to, this is a taxi service that takes you exactly where you want, and you pay a premium for that. The number of satellites being launched every year is growing year by year and the number of places you can launch from is still going to be limited. In the long term, there are opportunities for more, but how quick it will be will depend. There is a lot of focus on the first launch, but I am not interested in the first launch; I am interested in the 20th launch, because that is when you have a sustainable business. That is really important to me.

Chair: Thank you for that.

Q252 **David Duguid:** There has been a lot of discussion about the link between Forres, Kinloss and Sutherland, and the freeport at Cromarty. Martin Coates and Mr Hammond, does the north-east Scotland investment zone factor into your plans, either for Sutherland or for Shetland, given that we have already spoken about how difficult it is to get people to come and live in these areas? To be fair, it is difficult enough getting people to



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live in Banff and Buchan, which is my constituency. Has there been any view of taking advantage of that investment zone for north-east Scotland?

Scott Hammond: We have certainly looked at it as being part of the freeport with Aberdeen. We supported that bid.

Q253 **David Duguid:** Combined with Peterhead.

Scott Hammond: Yes. We are more than happy to look at that. We are clearly interested in anything that can help us. After it didn't win the bid, I can't say that we put too much thought to it, but if you have something else on the table, I am sure we are happy to talk about it.

David Duguid: Mr Coates?

Martin Coates: I don't particularly have an opinion about it, because it predates my involvement. What I would say is that there is a focus on the spaceport company—the launch company—but there are ancillary business services that we need to buy in. It may not be of direct interest to us, but it may well be for other supply services that operate out of those areas, so I wouldn't rule it out as an interesting aspect.

Q254 **David Duguid:** Mr Wishart has talked about what I was going to ask you about next, which is this: just how viable are multiple launch facilities going to be in Scotland? I will not repeat the questions and answers that have been given, but once we have seen a successful first launch or multiple successful first launches from different sites—again, this is a question for Mr Coates and Mr Hammond—what is your business model for moving beyond that, to ensure that long-term viability?

Scott Hammond: First, we are not just a spaceport; we also have ground stations where we bring the data down. We have already got about eight up in Unst, which are operational. We aim to widen that around the globe, looking at places in Alaska, Finland etc. That is all about diversifying our business.

Further on, I disagree with David a bit about the idea of satellites getting smaller. We are seeing an increase in the size of satellites and if you look at people like Rocket Factory Augsburg, you see that they are looking to make the rockets bigger. The sweet spot was probably around 250 kg two or three years ago—I suspect that now it is between 1,000 kg and 1,500 kg for the payload capacity, so I see a change going on.

That is where we have got to be agile, because we have to be able to meet those changes in the market as they occur, and that is one of our big advantages. Being a multi-use spaceport means that if one of the companies should come to us and they are in a niche area but are not getting any business, we are not pulled down by that, because we have got others that are operating. That is how we make it sustainable—by being a multi-use spaceport and by driving down costs, because ultimately it is how much they have to pay to put their payload into space that they are interested in. Yes, they want to go when and where, but you can't charge a huge premium on that.

That is where we are: being reactive to the market and delivering for our customers.

Q255 **David Duguid:** Mr Coates, for Orbex, moving forward?

Martin Coates: Looking forward, Prime on its own is a viable launch vehicle at the volumes we have been talking about, but where we go to engage next is on things like the ESA challenge, which was just announced in December and talks about creating a much bigger European space industry. That would be where we would be looking at the next launch vehicle. Yes, we have ancillary services around the whole thing, not just at launch and at the spaceport. The vertical control that we have at the moment gives us tremendous flexibility on when things can happen for our customers, just for that one launch vehicle today.

Q256 **David Duguid:** Going back to what I think you both said earlier about how this could change the face of the European space industry, you are not here to speak for ESA, but you mentioned it, so I will ask you this question: do you see it as being a massive change for them to think about how they are going to change and how they will look ahead once they have got one or two, or however many, launch facilities in Scotland?

Martin Coates: The challenge, as announced, is a major change in its own right. If they follow through on that, that is a huge disruption in the normal way of procurement within the European theatre, so it is a massive opportunity for companies with ambition and we intend to be one of those companies that will work with them to be a winner of that activity, in effect.

Q257 **David Duguid:** I have already asked who our or your major competitors would be and which different countries would be able to provide a similar offer with polar or synchronous orbits etc. However, can both of you comment on what the UK Government and the Scottish Government are doing, and on what more could be done to promote that longer-term viability and maybe, if you have looked at it at all, compare it with what other Governments in those other locations are doing?

Scott Hammond: We spoke about contracts, but perhaps the softer side of it is engaging with other countries to allow us to do what we want to do. Some of our stages will fall in the Pacific ocean. Rather than Scott going along to talk to the US Government, it is far better that the UK Government go along and do that, and get those agreements in place.

The Government can enable by reaching international agreements, say on stage deposition into exclusive economic zones, which can really help by making it far easier for us when we go to those countries and say, "We're going to do x." It is really about getting the Government to understand what we want to do and how we are going to do it, and then enabling us to do it. That is where I would really like to see some effort.

Martin Coates: I will add to that the financial story. If you compare with Europe, Germany probably cannot have a spaceport, whereas Italy and France already have an ability to launch one way or another, and are



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investing hundreds of millions of euros in those sectors. That is not necessarily just the launch vehicle, but all the other things you need too, so the whole infrastructure around the sector and its needs is getting a lot more money and attention. That is something you should at look closely—it is publicly available data—to support any analysis you are doing.

Q258 David Duguid: Is there any particular country in Europe we should be looking at?

Martin Coates: I would give you those four examples, because they seem to be the ones spending the most money on it and have capabilities. There is Vega in Italy, and obviously you've got Ariane, which is largely the French organisation, but those countries are the ones that seem to be putting an ambition out there to be leading players in this sector, so they are the ones we are competing against as a country.

Q259 David Duguid: Forgive me if you don't know the answer to this—perhaps it is something we can look into ourselves separately—but, going back to our earlier conversation about having a senior Space Minister, are there any examples of other countries, particularly in Europe, that have that position, which we do not currently have here in the UK, that you know of?

Scott Hammond: I don't know of that, but would add that we need to make sure the regulations are fit for purpose. I have said that we have had a really good relationship with the CAA, and that continues to be the case, and I know that the UK Government is already looking at any amendments they need to make to the regulations. We would like to see effort put into making it easier for satellites and launchers to be regulated and licensed.

I have spoken about mature and immature systems. When an immature company comes along, we probably need to think about whether we could do just a single-launch licence, so that it does not need to do a full environmental analysis, but could just fall within the spaceport's environmental analysis. That would encourage innovation and bring in the new companies. That is where I would like to see a fair bit of effort: looking at the regulations and making it easier for launch companies and satellites to come to the UK and be launched from the UK.

David Duguid: Do you have anything to add to that, Mr Coates?

Martin Coates: I am tempted to say that what Spain has more closely represents what Scott is talking about, but I do not know the details, so I will follow up with an answer to your question, because I can quite easily get hold of that information for you.

Q260 David Duguid: That is useful. Mr Oxley, do you have anything to add to that—lessons learned from elsewhere in Europe, or even elsewhere in the UK that you have looked at—from a Highlands and Islands Enterprise point of view?

David Oxley: If you look back over history, apart from New Zealand, every spaceport in the world has had some form of public support from



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Government, whether by building it or otherwise. Some countries have built their own spaceports, fully funded through the Government; some have given major contracts through their equivalents of the MOD or the Department of Defense to support those spaceports; others have given grants. It is very rare to find a spaceport that has no Government support in one way or another. That is the reality. We use satellites every day, using our mobile phones—that is where the data comes from—so this is a sector that will continue to grow. It will continue to be a great opportunity for Scotland and the UK, and we need to continue to make the best advantage of it.

It is about co-ordination. I am not necessarily saying there needs to be a Cabinet Secretary for Space—that is a great job title—but it does just need co-ordination. It might just mean having somebody sitting at Cabinet level with overall responsibility for space who can bring in the other Departments needed to do it right.

Chair: Thank you all ever so much for coming along and giving us your wisdom and benefit of your experience in all this. There are a couple of things that we may follow up on—Mr Coates, you had a couple of examples that we might ask you about. Thank you for your time today.

Examination of witness

Witness: Nik Smith.

Q261 **Chair:** Unfortunately Mr Smith will be on his own—Mr Kobald is unable to make it to the session. I do not know if there are difficulties with travel or other arrangements. You are on your own, Mr Smith, if that is all right.

Nik Smith: That is fine with me. It doesn't feel much like a panel—I will not take it personally that I am on my own, but maybe I should.

Q262 **Chair:** You have our undivided attention, so it does not get any better than that. Please tell us who you are, what your company interest in this is and anything else that you want in the way of an introductory statement.

Nik Smith: Thank you for the chance to speak. My name is Nik Smith. My official title is regional director for UK and Europe for Lockheed Martin Space. That means that I am responsible for the growth of the organisation across those regions, but I also head up the UK space team for Lockheed Martin. Lockheed Martin is a large, multinational corporation. It is US-headquartered but with a significant UK footprint for 1,600-plus people operating in the UK at the moment. As far as our space division goes, more broadly it is one of the largest space companies in its own right in the world. It has a significant heritage—it has been involved in every NASA mission to Mars, as well as lots of defence and aerospace defence-type missions from a space perspective.



As far as specifically what we are involved in at the moment, we were one of the recipients of the UK Space Agency's launch grant back in 2018. We were actually awarded two separate grants. One was to bring a launch to the UK, which means working with a launch provider with some heritage or proven technology as far as is practical and bringing that to the UK to create a launch. The second programme was very much focused on building an ecosystem and delivering some of that economic benefit that comes from launch—thinking about the wider, indirect jobs that come from launch and then working with a company that will deliver payload that we will launch on that first launch. That is Weather Stream, which is looking at weather data. Our role is really to bring our heritage, broad global oversight and, where we can, expertise to try to help to establish that first launch with those entities from the UK. In this instance, we will be launching from SaxaVord.

Q263 Chair: Thank you for that. As you said, obviously Lockheed Martin has a long history and tradition and experience in this sector. What in particular have you identified in Scotland that you believe will be useful in developing your business here?

Nik Smith: I would come back to some of the things we have heard already. We consider the UK a home market anyway, so actually it is just being involved in establishing the space sector and in the growth of the space sector and space economy in the UK. We have been investing for some time, and we continue to do so. Being involved in launch we felt was a significant part of that value chain. When it came to finding a partner, as was talked about earlier, what is strange about space is that it is incredibly reliant on terrestrial geography as much as it is on orbit. As you have heard, the locations for the spaceport in Scotland have amazing geography for the things that we want to do, be that access to polar or sun-synchronous orbit or, as Scott mentioned from a SaxaVord perspective, thinking about operating ground stations. The further north that you can get, especially for those LEOs, the more utility you get from your ground stations.

Q264 Chair: You were initially involved with the Sutherland spaceport, weren't you? Your relationship goes back to 2018, and you have subsequently changed your mind and opinion—you have explained that. Is there anything else you want to add on why you felt that it was necessary to change?

Nik Smith: The decision at the time was that we found that both ourselves and Orbex were looking at Sutherland, and we had competing requirements, just because of the nature of what we wanted to do and how we wanted to set up the spaceport. That was putting a lot of pressure on the management of that. The concern we had was that, as we were trying to work and arbitrate through those competing requirements, that could add some delay. We were well aware of the work that was going on in SaxaVord. It felt like we had an opportunity to move to SaxaVord and allow Sutherland to focus on Orbex. We could then work with SaxaVord closely to deliver what we needed to do. It felt like that was a way of reducing some of the risk for both ports as much as possible.



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Q265 Chair: We were wondering when we can therefore expect the first launch from Lockheed Martin. If you want to reveal exclusively to the Committee that you will be the first launch from SaxaVord, feel free to do so, but can you give us some sort of indication about how you expect this to work? We have heard from SaxaVord and the other companies involved, but what is your intention? When do you expect to see something go up into space from Scotland?

Nik Smith: We are working with a company called ABL Space Systems, who have developed a rocket. They are a US-based company. We have invested in them, and we invested in them some time ago, and we have a significant contract with them for some of our internal launches. To some extent, we are dependent on how well their development goes and, as we have heard generally, launch is still complex. A lot of people are quite complacent about how difficult launching satellites can be, because we see it relatively routinely, but it is still a complex initiative and still takes a lot of investment and work to happen. ABL actually had their first launch attempt in January last year. They had a successful—

Q266 Chair: Is ABL California-based, as I am reading in my notes?

Nik Smith: They are California-based, yes. It had their first launch attempt, from Alaska, in January last year. The rocket launched successfully, I think for 10 seconds, at which point it then failed, so ABL has been working hard to rectify the faults they found and to go through their own fault rectification. They are looking to launch early this year. I believe their return to flight will be imminent. I do not think that they have declared yet, but we are talking weeks for when they hope to go to return to flight. Our schedule for launching from SaxaVord will then be dependent on how that goes. We need to make sure that ABL have a mature solution, which we have high confidence will launch. We will then look to launch. We are hoping that we will be able to launch this year with ABL from SaxaVord.

Q267 Chair: That is very encouraging, because I think that SaxaVord was telling us that summer would be the first launch, so you would be among the first—hopefully—from SaxaVord, if that is going to be the case.

Nik Smith: From an orbital perspective, we hope to be one of the first orbital. It will all depend on how well some of those other providers go. We are delighted to hear just how much interest there is in SaxaVord, with the progress that we are seeing from Rocket Factory Augsburg and HyImpulse, who are going to be here, is fantastic. We think that is brilliant for the UK. We are essentially a customer of launch services, and the more options we have, the better it is for us. We would like to think that we will be the first, along with our partners at ABL, but if someone beats us to it, we only see that as being good.

Q268 Chair: We heard—I know you were listening intently to our previous witnesses—from the from the spaceport stations. How are your relationships with the facilities in Scotland? Is there anything you have observed that you would like to see improved? Might you suggest anything to them so that business for you might be made all that more



easy and convenient?

Nik Smith: I think it is fair to say—Scott is just behind me, and he will have a view, as will David. From our perspective, we have had nothing but strong support from all the potential spaceports and launch providers that are looking to operate out of Scotland. They have all been very receptive and all keen to find a way to work with us. At the moment, we are clearly looking to use ABL as our partners and looking to launch from SaxaVord, but as I said, we are a consumer of launch services and are open to looking to work with anyone from anywhere, frankly. I am very interested in the UK and I see huge viability in the Scottish spaceports, so I am very focused on how we can build the relationship with them. So far, personally I have felt that there has been no issue with us having those conversations with any of the potential launch providers or spaceports out of Scotland.

Chair: Excellent. Thank you. Sally-Ann Hart.

Q269 **Sally-Ann Hart:** Thank you, Chair, and I am sorry I missed the first panel; I had a constituency matter to attend to. Just looking at the skills and education needed for a successful space sector, particularly the launch sector, in your experience do Scottish workers have the skills required to support a successful launch sector, or do you have to rely on overseas workers?

Nik Smith: I think it is fair to say that, at the moment, there are still challenges for skills across the UK space sector; we would be naive to say anything but that.

I would say that, over the last five years, because of the efforts that have been going on to develop these spaceports, we have very rapidly been growing the expertise in the UK. Part of what we tried to do in bringing our expertise was to see how we could bring a lot of experts from the US across to help provide advice and guidance, because we have that heritage. Less and less of that is required, as both the launch providers and the spaceports are developing their own skills internally. Within our own UK launch team, I have someone who has come across from oil and gas, so we are finding adjacencies and using a bit of time to bring them up to speed.

That is as it stands at the moment. We have heard about the opportunities for scaling up. It has taken quite some time to build up the skills and expertise that we are reliant on at the moment. Some of the spaceport providers were talking about how they have brought people in from adjacencies. They spent a lot of time trying to build up that skillset and expertise. If you want to rapidly scale, there will be a challenge in trying to do that again. There is also an economic burden in doing that. As you are growing, you possibly have a bit more capacity for that. When you move very quickly into execution operations, where you actually need everyone to be very focused on just outputs because that is revenue-generating, I think that being able to build within what has to be a lean organisation—these spaceports and space launch providers will have to



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run very competitively and very lean—and to have the capacity in that structure to keep maintaining and generating those skills will be a challenge.

I think we need to maintain quite a high level of focus. I believe that we now have the expertise and skills within the spaceports to get that first launch, bearing in mind that a number of the launch providers will bring over some of their own skills. In our case, we will have a number of people coming across from ABL: a lot of people will come across from the US who have done this. That will be the same for people like Rocket Factory Augsburg, who I'm sure will bring over their own people who have been developing expertise. The spaceports themselves have their experience, but I think that trying to grow that will be a challenge.

The only other point that I would make is that the sustainability of these spaceports will also be reliant on the demand that we can pull through, so we need to think about the skills and trying to pull through into the wider ecosystem. There is no point in having spaceports if we are not building the satellites, and you won't build the satellites if there isn't a requirement for the data to be used and consumed in building, or there aren't the entrepreneurs who come behind that.

I think that we can probably get through the first few launches. Scaling up will be a challenge, but are we going to have the skills required to build the broader ecosystem to keep that demand going? I think that is a wider question. I don't think we are quite there yet.

Q270 Sally-Ann Hart: So it is going to be, most likely, a rapidly growing sector, and the skills will need to keep pace with that growth.

I am looking at the fact that space is a reserved matter for the UK Government, but that there are some powers devolved to the Scottish Government that have a bearing on that sector—education, training and business support, for example. Last year, the Prime Minister announced the new advanced standard for English schools in terms of technical education and so on. Maths up to 18 is important when it comes to this sort of sector. Bearing in mind that education is a devolved matter, what more do you think the UK and Scottish Governments can do to ensure that launch companies can find the necessary skilled workforce in Scotland?

Nik Smith: I am speaking from a broader space perspective. We are a broader company, rather than being a launch provider or a spaceport, so I will give you a general response.

There is no doubt that trying to stimulate those STEM and STEAM related curricula in schools is incredibly important for generating the right level of skills going forward. My personal view, though, is that there is sometimes too much focus on that and that we are missing an opportunity to pull from adjacencies and open up some of those gateways that allow people to move across and come in from other sectors.

In some instances, that actually helps some people who, later on in life, probably had not realised just how much they have the right attributes for

some of these roles. We do not have the gateway open for them, so I would personally like to see a bit more emphasis on some of those opportunities for gatewaying out of other sectors and moving into some of the engineering and technical sectors.

I have seen some interesting uses of technology to try to help map attributes of certain individuals to help them realise that they have the attributes to be far more technical than they thought they were because, later on in life, they have come to realise that is more where their personal attributes are. I think that we could probably have some more emphasis on that.

The other thing is that we in the space sector get very focused on the engineering side of space. Clearly, we are a technical sector, but we also need accountants, business development and communicators.

There is also the question of how to publicise the fact that there is a broad set of opportunities in space. It is interesting that if we open up a role in the space sector—I am sure some of my colleagues will say the same—we generally get a lot of applicants especially in some of the technical areas. They do not generally have quite the depth of experience but they are often graduates who are desperate to get into the space sector. It becomes a bit harder when you are looking for people in the other parts of the industry that are not directly related to the engineering and technical side.

It is not just a technical skillset issue that we have. It is about trying to make people understand that space is open to a full range of skillsets. A lot of people, especially at the early stages of education, believe that it is all technical in space. They therefore completely shut off any idea of going into the space sector, and they then probably move into a different area. We have to try to let people know that, yes, space is technical, but there are lots of other opportunities in space as well.

Q271 Sally-Ann Hart: It is not just about science. You need nurses and doctors.

Nik Smith: You need everything, right across the full set of skills. I believe that, if we manage to open it up a bit, some people who may not have gone into a technical area may, if they understand that the space sector is open to them, move into it later in life, and they could find that they move into a technical field that becomes relevant, because they know that it is open to them. I know the UK space industry has done a big campaign on this. It is about letting people know that space is open to everyone.

Q272 Sally-Ann Hart: I just asked what more the UK and Scottish Governments can do. Bearing in mind that employer-led education is really important, what could the space sector companies do together to create a five-year or 10-year plan for the skills they need to build their businesses and keep pace with the growing sector?



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Nik Smith: Others may have more detail, but the Space Agency has done quite a bit of work on that. The space sector has offered views on the kinds of roles it needs. There is some data being pulled together that gives more analysis of what those skills may be. The challenge always comes in knowing how to start addressing the skills shortfalls. We have to recognise that we are not alone as a sector; every technology sector is suffering in the same ways, and there are huge adjacencies in the software development, the development of AI engineers and so on that we need. A lot of those skills are the same ones that we need in the space sector; there is a lot of overlap. As we have already heard, there is probably more that we can do as a sector to spearhead the campaign around how those skillsets could lead to a fruitful and interesting career. We could probably put space more at the forefront of that. For whatever reason, although it resonates well, there is possibly more that we could still do.

One more thing. This comes into the work being done on space sector policy—it is sometimes missed, and it was mentioned earlier. There are probably two or three companies in the UK that every person who has space experience has worked for at some point. I know that, from when I have recruited people. We probably do not recognise how important it is to do industry-led training. We have heard already that people are trying to absorb that training as much as they can, but I do not think there is enough recognition either in the funding that is put in to allow companies to do it or in some of the contracts that you receive. If you get a Government contract, there should be some recognition—some premium—to allow you to develop the skills, probably over and above what you need directly for that one contract but possibly with an eye to generating a level of skills that then push out into the broader ecosystem.

Q273 Mark Menzies: Mr Smith, you mentioned at the outset that Lockheed Martin is a huge global player in the space sector, and you have a significant UK footprint already. How do you see that Lockheed Martin footprint developing in the years to come, specifically within the space sector in Scotland? What does that look like in terms of relationships with R&D or manufacturing facilities and so on? I know there is a lot of focus today around launch, but I would like to try to tease out what you think that Lockheed Martin presence could look like.

Nik Smith: At the moment, most of our activity for Scotland is focused around Launch and what we are doing in Launch. As has been partly recognised, we have recently started putting more emphasis into the north-east of England as well. We are looking at that as a hub, and we have some existing hubs already. The best I can offer at this stage is to say that we will go wherever it works for us from a business perspective. I am careful of using the word incentive, because incentive is not just financial. Where is there access to skills? Where is there the right ecosystem building up? Where is the best place to operate from? All those things will be part of our analysis. We are at an early stage of growing our space business in the UK. Although we have an existing footprint here, it is mainly focused on the other parts of our business. We are at an early stage of growing our space business. We are still looking at the right

locations to operate from. There will be a lot of factors that come into where that should be. Our interest in Launch will be part of that.

Q274 Mark Menzies: In the early stages of our inquiry, we visited three manufacturing development players on the west coast of Scotland. The impression I got on that visit is that we are seeing the emergence of a cluster, which in fact has been established for some time now. Potentially that is something to add to. I hate talking about the North sea when I am sat next to a resident expert, but drawing a parallel with the North sea, some people have said that when it was developing there was an influx, particularly from the United States, of people that had specific skills. Then we got to a point, which is now, where you can go to Azerbaijan or parts of Nigeria and you see more Burns nights taking place than even in Douglas Ross' constituency, dare I say. Are we likely to see such a development, where we have an influx of skills and expertise, perhaps from the likes of yourselves in the United States? If we get it right and develop that cluster and core within Scotland, in years to come we could see an outward movement of talent. These are the people who are global leaders in their field.

Nik Smith: Absolutely. I would offer that the position that should be taken is, "How do we make that happen?" Rather than, "Would we see this happen?", it is, "How do we proactively actually make it happen?". As the UK guy working for a US-headquartered company, that is very much my aspiration. How do I build a UK-focused part of a company that is going to export from here into a number of markets that are more easy to access than for some of my colleagues on the US side? That is very much what we are trying to do with our space footprint. I would encourage you to take a view on how to incentivise some of the early expertise influx, with a view to creating both IP and the intellectual capital in the region to make it a hub to go elsewhere. That should be a key part of the strategy.

Mark Menzies: Excellent. Thank you.

Q275 Chair: What do you feel the Government could do more to support the viability of the Scottish space sector?

Nik Smith: I will probably just reflect on things that have been said already. Part of the challenge at the moment in the UK is that there is this view that somehow we can let market forces lead the way, and if you somehow just put the right small levers in place, the market forces will take care of themselves, and through that we will get some sort of global advantage. But as we have heard already, part of the challenge is that the space sector across the globe operates outside of standard market forces. There is some level of intervention at every level in pretty much every strategic space sector globally.

The question is, what is that level of intervention? I do believe there is some advantage in having anchor contracts through Government. There was a question about what the benefits are, and I think it was well responded to. The trick is to find out what are the services that are the responsibility of Governments, or devolved Governments or centrally in



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the case of Westminster, and where the services from space can actually improve the delivery of those to the public. You identify those and then try to drive through the programmes that deliver some enhancements. We as a sector probably have not done a good enough job in identifying where those are. I think we probably know them, but it is definitely something that can be done. With those anchor contracts, you then start seeing that base of demand coming through, so I think that is important.

The other thing that is really important with some of those contracts could be how you take some elements of early development technology and actually flight prove them. If you are going to go to a global market, you need to have heritage in some of that technology. Again, that is a role that Governments could take, so I think there is a role in that.

As you have already heard, there is something around how you try to streamline the regulation as much as possible—Scott already offered some really good examples of where that could be done as well—because, as we have heard, Launch is going to be an export, and therefore it needs to be globally competitive. That is as much about ease of doing business as it is cost of doing business, so it is anything we could do to try to improve that.

The final thing I will just mention—it probably could be a separate question, but I think it links into this—is around the strategies. We have talked a little bit about the strategies so far. One of the challenges with the strategies that I have seen is there is a lot of focus on what we do very well right now and building on that. The risk, and what that means, is you are trying to fight a piece of the market you already have. One of the real tricks is looking at where the markets are going in the future and how you could possibly get ahead of where some of these new, emerging space markets are, and doing a little bit of analysis on that. I think it was the AAC Clyde submission that talked about things like lunar services. I think that is going to be an emerging market. I think orbit manufacturing is going to be an emerging market. Rather than focusing on what you do very well right now, it is where do we think we can actually get ahead of a market that is not quite there yet. The reality is a number of other countries are investing heavily in space, and they are going to dominate if we cannot get there first.

Q276 Chair: Where exactly are they investing? We have heard a lot of talk about direct investment and Government contracts. Obviously, that has been said to us repeatedly in this inquiry. This is something the sector is saying is important, and it will allow it to develop and break out a bit more, but what are other Governments doing to support their sectors? How are they directly investing in what activity there is in their nation?

Nik Smith: It varies depending on where countries are in their current development. If we look across Europe—a lot of other people will have views and this is from what I have seen as well—you have some very developed space economies: France, Germany, Italy and, to some extent, Spain. Quite often, what they are doing is using large Government contracts to sustain the industrial base, especially in the upstream, with the view that they can then generate some of the skills and knowledge to



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be able to deliver in some of the downstream revenue areas. They do that through very established space agencies. They have their own large national programmes in Earth observation. They sometimes do it in collaboration with the European Commission or the European Space Agency, but they are very much focused on how they can drive that investment directly into their industrial base.

When you look at some of the emerging space nations, what they are actually looking for is very large scale, very ambitious deep-space programmes. You look to the middle east, who are desperately looking at options for lunar landers or thinking about deep-space probes. They are trying to do large-scale programmes that allow them to very rapidly develop some skillsets. Alongside that, they are demanding every contractor who is assisting in some of these areas to deliver large training packages as well, so they are very much trying to build up their industrial capacity and expertise.

The other thing, which has been touched on but we have not yet gone into any detail on, is that, of course, a lot of this is being driven by defence. If you look at where the majority of the global expenditure goes, a lot of it is, quite frankly, in defence, and a huge chunk of that is the US Government. They are buying lots of technology, and that sustains quite a large industrial base, which can turn itself to commercial endeavours and deep-space endeavours.

Q277 Douglas Ross: Thank you for your evidence so far. Can I get your assessment of where Scotland is? We are in 2024 now. We have heard a lot about both Sutherland and SaxaVord. Their geography is what makes them attractive. That geography has not changed in the last two years. Are we on track in terms of being ahead of other countries across Europe and the world? Are we behind and for what reasons? Where is Scotland in the space race?

Nik Smith: This becomes a bit of personal speculation. We gather lots of data that can give you different metrics on it. I will just offer this observation. If you had asked me three or four years ago, I would have said that Scotland is out front, but possibly that position has been slightly eroded for a range of reasons, just because of the pace of what is going on elsewhere in the world. You can probably include the broader UK space sector in that as well.

The reality is that, quite frankly, other countries are outspending the UK in trying to bolster their space sectors. That is just the way it is going. They are doing that for a couple of reasons. It used to be very much about the economic benefits that come from the space sector, including the productivity element and the skills, so there is a lot of investment taking place in other countries to try to deliver that economic benefit, but it has also shifted slightly to a security aspect too. Everyone recognises that, for most nations, space is non-discretionary. If you want to maintain the way we live our lives today, you need to have space. We are absolutely reliant, in our data-led lives, on space. If you as a nation can't secure your access to space and your ability to operate from space, you are probably not



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serving your public as well as you should be. A lot of nations are recognising that and are trying to generate and support their space sector. Quite frankly, a lot of other countries are outspending us.

From a UK perspective, Scotland is still in a very strong position. We see a level of entrepreneurship in Scotland that we don't see elsewhere across the UK, and that has put us in a very strong position. What we are seeing in the spaceports is a really good example of that, but the trick is to make sure it maintains that advantage.

Q278 Douglas Ross: So for Scotland to get back up that league table, it would require greater investment by both Governments, presumably. You are speaking about a cash injection to prioritise that sector over other areas. Is that correct?

Nik Smith: I am always reluctant to talk about just throwing more money at things. It is not just about the money; there are other opportunities, and we have heard other suggestions about how you can do that. You could have better ties with academia, and there are interesting concepts around how you bring in the necessary skillsets. Is there something around the ease of influx of expertise into that area? Is there something around regulation? There are myriad things, but it is about prioritising that from a Government perspective. Is the space sector important enough that you are going to prioritise all those streams in probably the next few years to make sure you get the competitive advantage?

There has been talk about the need for a space Minister. Again, my view is that we are in a global space race, and if we want to maintain an advantage, we need a real focus on the space sector in the next five to 10 years. Once we have that, it normalises and we have the infrastructure in place, you can expect space to normalise itself as another sector. But if we feel that space is important—for the reasons I set out before, I don't believe space is discretionary for any nation, so I do believe it is important—we should make it a priority over the next few years and get it into a very strong position. You can then move on to whatever is the next priority, and you will have the infrastructure in place to sustain it.

Q279 Douglas Ross: That reprioritisation means that other services and Departments will potentially have less investment. Are the public on side with this in Scotland and across the UK? Do they understand the need for investment? How does that compare with other countries around Europe and elsewhere in the world?

Nik Smith: One of the biggest challenges we face is helping the public understand how important space is to our day-to-day lives and how we operate. Quite often, as a sector we are quite insular. We talk about how important we are, we have that echo chamber, we pat ourselves on the back and talk about how great we are, but I am not sure we have done a good job of relaying that to the public. Of course, if the public understand it, they will understand whether it is worth the prioritisation. Quite frankly, at some point the public need to decide whether it is important to them, but I don't think they have all the facts to understand it.



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In comparison with other nations, where there is an existing strong established industrial sector, as there is in some established European nations, it is less about a security conversation and more about an economic conversation. We already have strong existing industries, and we are going to support those. That is very easy. In the US, the public recognise the security element far more and are happy to support it. They see security in space to be equivalent to security in other domains, and they feel that a threat there is a threat to their national interests. That is why, in the US, they can have that debate publicly far more easily. I don't think we have won either the economic benefit case or the security case for why space is important with the UK public.

Q280 Alan Brown: You have mentioned streamlining regulations a couple of times. Obviously, as has been outlined, Lockheed Martin operate on an international basis. At the moment, as it stands, how competitive is the UK and Scottish regulatory environment?

Nik Smith: I will start by saying that I am not the expert in this; thankfully, we have lots of people who get involved in this.

I will just offer the following observation. If you had asked me this question three years ago, I would probably have had a very different response. What I would say now is that we get a sense from the regulator that they are maturing rapidly and I think they have the right approach to how they will do these regulations. They understand that what they put in place cannot be too burdensome, either financially or from schedule, but there is a certain amount of expertise that they need to build up themselves to get there.

Therefore, I would say that they are definitely moving in the right direction. I think there are still some concerns over the time it takes. There are some concerns—I think Scott made a couple of really good observations earlier. One of the things that we have seen as well is this need for directors of companies constantly to give their financial data. There are small things that they are just trying to get used to, but I think that will get streamlined. So, they are moving in the right direction.

Again, like everything else, the trick now is not to get too complacent and to continue to have a focus on making sure that the regulations and licensing process is as streamlined as possible and constantly just making sure that what we are doing is staying competitive.

Just coming back to industry, and again constantly asking those questions, I think we are seeing a regulator now who is far more open to those conversations than we probably saw two or three years ago.

Q281 Alan Brown: From that wider international comparison, are there any countries that you think are a model in terms of the regulations?

Nik Smith: Not that jump out. Clearly, we are very familiar with the US system through the FAA. That has a lot of heritage, but equally with that comes a lot of baggage, which built up processes that probably were



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relevant 50 years ago but are probably not quite as relevant now, so they have to go through some transformation.

I think there is some best practice you can take. Some of the emerging nations probably have some interesting things to take. But I could not, hand on heart, point to one particular country. I think we are taking the right approach. We just need to make sure we don't become too burdensome or too bloated.

Q282 Alan Brown: Somebody suggested that the CAA is a special regulator and things are moving forward, with better working relationships. Is there anything else that they can do that can actually assist you?

Nik Smith: Nothing that I could offer right now, but I know we have given thoughts back in through the team. On the part we are licensing, the second part of our project is to license what we are calling an orbital manoeuvring vehicle, which will be essentially a spacecraft that will deliver smaller satellites, and that will operate as a spacecraft itself. We have had to licence that, so we have been through the process. As we have gone through that, we have found the process has improved and we have constantly provided feedback through it, so we have been providing feedback to the CAA and they have been responding.

Q283 Alan Brown: You said that no other country stands out as a model of regulation and that it is more competitive. Does that mean, by default, that if we are able to streamline the regulations adequately and continue to speed up the process, the UK and Scotland would have that competitive advantage?

Nik Smith: It will do. Again, I have to be careful, because I don't claim to be an expert on this and there are other people across the UK who I would definitely point you to. I would say that there is an element of making sure that it is not financially burdensome and that we don't put too many hurdles in what you have to do through the process and the time it takes.

There will be other nations where you will be able to license a spacecraft far more easily, I am sure; the question is whether you would want to license a spacecraft out of that country. So, there are other elements that the UK brings with it and we should not forget that; we should not get to the point where we race to the bottom on them, but we have to make sure that we don't become too burdensome. At the moment, I think it's in a good position.

Q284 Alan Brown: I take the point that safety is paramount—we can look at what is happening with some of the Boeings at the moment.

Nik Smith: I think the focus on sustainability is resonating well within the market. We are hearing some positive response from some of the investment markets around this push on sustainability. No company wants to find itself operating in a way that would be seen by the public to be somehow not operating in the best interests of the sustainability of space. I think we are seeing the market respond well to sustainability as a key component of some of those licensing objectives. We have to be careful



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that it doesn't become too burdensome. My sense at the moment is that we are definitely moving in the right direction, but we can't be complacent.

Chair: Thank you, Mr Smith; although you were on your own, I think we managed to get quite a lot of our questions answered and we have a bigger understanding of your sector. Unless there is anything else for this afternoon, as with our other witnesses, thank you very much for attending.