

Transcript

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□ **Michael Cullinane** started transcription

CB **Charlie Blair** 0:09

So companies are kind of coming up with an idea and trying to commercialize that idea and grow through getting that idea or piece of technology or piece of kit out into the world.

And then there's other companies who are installing things and actually getting plumbing things in and making heating up buildings in nice, clean, green ways. And that is really good and it just sort of stresses that what the main or not the main there's gonna be lots of really useful and important content.

But just as important as the content.

And this comes from 10 years of experience of doing this sort of Accelerator scheme. Is the speaking to each other and the learning from all the other people in the world more on the bus.

So I know we're all almost entirely online.

It makes it a tiny bit harder to do, but just push all the harder to get involved in WhatsApp groups to make sure you're making meetings with individuals and for what it's worth, particularly for my mentor companies, I'm based in Edinburgh and I'm keen to try and do a bit of in person meetings, but I would say just make sure you kind of appreciate the value that can come from the conversations with all the other people here, not just with the mentors, not just with the CLT people but with people who have learned some of the.

Lessons.

Umm, no one will have learned everything and no one will know nothing and everyone will have something useful to give.

In that sense, and the other one is, there was a sort of tiny sense that there might be a bit of competition between some of you, maybe thermal storage was one thing that jumped out, but installers as well, I think my one biggest takeaway from running a energy storage technology company for 10 years was that every time we thought of it as a massive market opportunity and there was room for loads of players we go on really well.

If we started stressing around kind of potential competitors and we were very, very much an IP company, so it would have mattered.

This was gravitricity limited.

It was a nightmare and it we never sort of got anywhere if you just approach everything as potential collaborators.

Obviously, being sensibly aware of confidentiality issues, I think it it really kind of just reinforces the value that you can get from everybody else, including on the face of it, potential competitors.

So jumping in then with this afternoon session and here we go.

Purpose of today is really just to kind of hear from would might have been too.

But one very successful, but still growing, I hope and clean heat technology innovator getting a sense of kind of what that story is, what the how those steps are from an idea in a pub typically to a going concern to a profit making company through all of those steps and the personal side of that as well.

So someone's experience of what growth is and some of those lessons that will come from that and they'll just hand over to Pete and two seconds for that.

But the things for you guys to consider in the process is what does that mean for you?

What does it mean for your business?

What is Growth for you?

How does your board see Growth?

How do you, as individuals see Growth or what is the opportunity for clean heat?

Do you know exactly what it is?

It's your whole business model or is it something?

A sort of new Growth line angle.

That's what we'd like to be discussing after Pete stops talking and we've got a bit more discussion time and for that matter, carrying on and thinking about for Thursday.

So Alison is going to take over from me and well, after Peter stops and I'm gonna give a few thoughts on my experience, because sadly, Emma and Bowen from IMS heat pumps who is a successful installer of heat pumps being around quite a long time and growing has grown and is growing.

Couldn't join us today was going to so I'm gonna sub in to a little bit of a just my thoughts or my experience of starting and growing a technology company in Scotland.

But for now Peter, Peter, are there.

And over to you if you want to share screen, please just tell me and I'll stop sharing mine.

PA **Peter Armstrong** 4:22

OK.

Thanks.

Thanks, Charlie.

Yeah, I will.

I would quite like to share my screen in a minute, but first of all, just say that's great to have the opportunity to join this forum and I really agree.

It's quite cool to have a mixture of technology companies and installers.

We learn a lot from the installer community and having that feedback directly with the end customers at the call phase of the challenges of getting a heat pump to work, getting a boiler to stop short cycling, trying to reconcile the different demands of intelligence assets in the home energy management context, it's really it's really fantastic to get and the installers view so that that's really cool.

And So what I'm gonna do is I'm gonna just give a little bit of an overview of what we do as a snapshot right now before then diving into a bit of a a montage of sort of stuff over the last 10 years.

And I'll just go go on logically and and feel free to interrupt at any point.

And during my ramblings and Charlie, I just wanted to ask about time because and I just wanted to know if I've got any constraint, what constraints I have because normally it's done at half an hour.

Do you is that?

Is that kind of about right?

CB **Charlie Blair** 5:39

About half an hour would be perfect, Pete, but as Emma cannot join us, we only heard about that late this morning at midday.

If you run over if there's interested, particularly if there's interesting discussions, please, please don't just talk and talk and talk for more than half an hour.

PA **Peter Armstrong** 5:51

Yeah, cool.

CB **Charlie Blair** 5:54

But if you can talk for a bit and then have, as long as discussion as is valuable for the go, and you can judge that I'm confident of it.
So don't feel constrained.

PA **Peter Armstrong** 6:03

Right.

Well, feel free to use your prerogative as chair to not Neil for make me more succinct and what I'm gonna do.

So I'll start out by just you know what I'm what is our mission?

At mixture.

So we're all about trying to get the best interaction between the home and the grid and terms of flexibility with hot water storage and with every heat pump that's being installed, you have to install some form of hot water storage.

It might be for the central heating volumizer or buffer.

It might be for the hot water provision and and so when you're doing that, you're installing actually quite a lot of energy storage and distributed across the UK in hot water tanks is something like 10 times the amount of energy storage we have in our largest pumped hydroelectric facility.

So it's a huge amount of opportunity for grid flexibility.

So that was, that's the mission is to unlock that, because at the moment, for the most part, we're installing dumb kettles.

And So what we're about is trying to make a tank a bit more like an intelligent battery that's flexible.

And so if I just share my screen and it would be remiss of me with so many installers in the audience not to show some of our products and a cutaway of 1, which kind of gives an idea of what we're about.

So and you know, our bread and butter are traditional.

I say traditional unvented mains pressurized water cylinders traditional would be your your vented loft header tank type of fire, and effectively what we're doing is we're stratifying heat rather than heating the whole thing from the bottom.

We're able to float hot water on top of cold for certain systems.

Gas boilers, direct electric heating, heating systems and this means that we can rapidly heat just a small amount of hot water, and we also learn how much is being

consumed about by using a sense that we developed, which is it's basically a piece of tape with a bunch of sensors on it.

There's stick on the tank and it resolves this temperature distribution here, and so now we have two things we have knowledge of.

What is the state of charge of a hot water tank?

Because to this point we, you know we we've been installing hot water tanks 100 and 2000 and 5200 ten 300 litre tanks heating the whole thing is no idea how much this actually being consumed or how much is needed or what the state of charge is at any point in time.

So you kind of playing roulette with the shower in a way, because you did.

So what tends to happen is the controls have to be really, really conservative and he everything all the time to make sure it doesn't run out.

And consequently, we've learned through thousands and thousands of systems that we have installed across the UK that people actually use about 4050% of the capacity of the tank on average.

So the greatly oversized relative to what most people need.

And so, so so, so so that was, umm, sorry, this is my mouse.

Here we go.

So we have little dorms, so we we have a solar diverter.

So if there's surplus solar energy, you can pop the time cup with heat.

When we measure that with a current clamp at the consumer unit, we also have a little modular heat pump that you can stick on top.

And we're also getting into different topologies of thermal store.

So this is where you don't need to have all of the equipment associated with a non vented.

Gotta system is easier to install and this is something that installed social housing and across all of the different types of tank that we sell.

We now got the ability to pay the customer.

So we're British Gas.

We've now got a tariff that's launching later this year called makes you extra.

So every customer here is spective of whether they have a heat pump, the gas boiler, whatever they have, whatever type they have, it will have the ability to soak up surplus electricity from the grid.

And so on mass.

We're looking to try and absorb the biggest surfaces of renewables that arise on the

energy market.

And so that's the frontier for us is bringing grid flexibility through the deployment of hot water tank.

So that's enough of the picture.

What I do, what I wanted to do was just give a bit of a a batch story to how we got to this point.

And I thought the best way to I like graphs and so I thought the best way to.

Them get us across.

Was this this graph of the great carbon intensity of the UK electricity grid since 2011?

And so if we so, so it back background 2011, it was about 1/2 kilo of SIO 2 per kWh and that was the average grid carbon intensity.

The the UK grid is 1 giant interconnected machine.

So you might have a.

You might have size well be or included in the South Coast.

You might have poorness on the East Coast of Scotland.

You might have a wind farm on the NW offshore Scotland.

Collectively, they're feeding into one giant power network, and so we we track horses.

The cumulative Carbon intensive that time period and that's what this graph is showing.

And so back into an 11 was 1/2 kilo SEO, two per kWh that was generated.

Since then, it's there's been a really seismic transition as we've effectively got rid of all the coal at in 2012, about 1/3 of our electricity came from coal.

That's now vanished to single digit less than 5% of our energy mix, and it's largely been displaced by the optimal wind working in concert with really fast responsive peaking cocycle gas generator set.

So they're able to ramp up and down really quickly depending upon how windy or not it is.

And then, of course, there's also been some growth in solar in the mix there and another lower carbon sources of energy.

But that's been the big fiction.

And what's interesting is that the, the the current tense is now dropped.

The point where where we're crossing this line, this dashed line, which is the carbon intensity of a system gas boiler for killer of heat that is producing so you know, only a couple of years ago for the first time we got to a point where actually it was

greener to use and just a simple electric panel heater in the home than to use a gas boiler to the home.

Of course, it's considerably more expensive to use direct electric heating and not only is it more expensive, but the amount of electrical demand that you'd would be required mean you'd at least need to double the capacity of our power infrastructure, which is why we have to have heat pumps, right?

So this is so, but nonetheless it's still pretty cool.

The transformation has been sort of quietly happening in the background on the on the electricity supply side.

And so there we go.

So now I'm gonna go into the montage of just pictures.

So 2011 was when, when I finished my undergraduate Edinburgh and then I came, I went.

I worked for a couple of years.

Sorry, it should say 2009.

So I finished my first degree.

I worked for a couple of years at a company called Kinetic working on hybrid electric transmissions for very large vehicles.

Uh, and and it was there that I got really interested in energy storage and so decided to go and do a PhD.

My PhD was supposed to be in the multi violence, working out how to get them to move away from diesel and use energy storage and concert with renewables, wind, solar, large tanks of pooled water, giant slush puppy machines basically for air conditioning to for flexible cooling, flexible heat and some batteries.

Unfortunately, there was a coup, so it was quite forward thinking idea by the Skype President Nasheed.

Then he used to post by a quite conservative judiciary at time.

And so I had my tickets.

I had the vaccinations.

I was ready to get the plane, and then there's a group so that 5 Bush my PhD.

So at about the same time my girlfriend and I had bought a small flat and reading the economy 7 hot water tank and old fashion hot water tank, I was using power called times and costing a lot to run.

And I mean, it's just a simple controller for it and then I'll sort of my supervisor said well, why do you make this your your new PhD subject?

So that's that was kind of one of the starting catalysts to Mixergy.

That was the picture of the offending hot water tank and recovered and I I also have met Bran, who's the cofounder with Mixergy and long suffering friend of mine, ran and I find of Ying and Yang.

If you're to do cyclometric profiles on us and and neurotic.

I range very calm and so it's been a good, I think, counterbalance and without ran we we wouldn't be where we are and when my work together and set up a A LED, an electric car club at the university and that's when we first got working together and we won this competition and which gave us an appetite for competing in various technology competitions and at that time there was another competition called climate Kick I of which was a European part venture, part public funded, cleantech prize competition.

And so we applied with this idea of intelligent hot water tank.

Graham was studying for his PhD.

The interaction between power networks and distributed energy storage systems, and I was I was looking at all sorts of different energy storage technologies that's looking at different battery chemistry, super capacitors.

I'm super conductors, but then gravitated to hot water tanks because it was so close to home.

Literally.

And so we entered this idea of a smart tank that could perform services to create.

And so we want, initially we won this €95,000 prize.

Equity pre was really it was a really like generous price and we just to cache the check.

We set Mixergy up so giveness Chase literally took it to the bank as though there's going to business accounts.

CB **Charlie Blair** 16:42

If you.

PA **Peter Armstrong** 16:47

So said.

OK.

We'll register a business.

So the first business we set up and we registered Applebaum because we thought

that sounded, you know, water bringing equilibrium to the grid with energy balancing.

And then it turns out that there's a colonic irrigation connection.

I think just outside Gateshead to that was already called out calibrum.

So then we searched around for other names that were available and we.

Yeah, they're Mixergy because and when.

When else studying, heat storage kept coming across the use of his very arcane, but a metric called exergy.

So you've heard of, you may have heard of entropy, which is a measure of disorder in in many different applications of physics.

But then there's another parameter called exergy which is very closely related to entropy, and it basically means for a unit of energy how much useful work can you get out of an engine and which is great if you're valuating the efficiency of a power station.

But there it was, being used in energy storage.

And so we thought, this doesn't really make sense.

It's a metric to measure the performance of heating system.

So we were using this idea of a metric called Mixergy.

So the idea mixture was a way of measuring how efficient heating system has, so that was what we then finally registered.

We had the business we could cash check and we as spun out of the university and moved to the farm and we're still on the same farm.

That's a picture of this barn that that we inherited and and we've been slowly turning the barn into our R&D lab space and we we've got a few other buildings around the place which have become offices.

In 2016, we launched the first Mixergy tagger, say the launch, so we managed to leverage the price Fund with an Innovate UK grant called.

It was.

You called the desire project distributed energy storage, integrating renewable energy.

Great tip is if you wanna win a grant try and get an acronym which every use every, every letter of and that that was our winning grant application which leveraged the prize funding and then we let managed at that point to get our first seed round in 2016.

So it's and and also by that point we were finishing our PhD.

So we've been kind of incubated before we were spun out or euphemistically kicked out of the UNI when Fund this farm and and set up the makes you type at this stage was a trial unit and we we started them stalling them in Cornwall and then we got on the radar of this this guy, Robert Lewellen, who he has a.

But a consumer facing show called fully charged where it was principally about electric cars, but he was also doing stuff around his home, putting solar panels on and experimenting with different technologies.

And we got the chance to meet him and he put us on a show.

And that was really interesting because we learned a lot about the customer journey and why it's important to think about the customer journey.

We remember bracing ourselves for when the the show went out, because from the partials of its seen we can see it typically gets 100,000 views.

And so we were expecting right?

Phones are gonna ring red hot.

We're gonna be selling these like hotcakes.

It's gonna be.

It's gonna be excellent.

And so there's been problems.

The phones?

The phone stickering we set up a a like a 3 way phone system at the time.

You can do things much more easily, but so we have three files and we got a few calls.

We ended up spending hours talking to people about really complicated, disparate projects that they had for their home, often wanting to do sort of humble brags along the way around all the different ways they were gonna say, well, and so it's really, really high customer acquisition cost.

Uh point?

Just simply to take the phone calls.

So the kind of Orly adopter or things from fully charged and then?

When, where we did manage to convert those customers to becoming interested in in getting a mixture tag, of course we completely forgotten about the fact that you need to have an installer and we just assumed ohh well yeah, just ask him.

Ask her heating engineer to to to buy off us and.

And of course, none of the heating engineering community knew anything about us, and so they.

So what often we found happening was that most of the leads.

Uh, the to the we, we we would end up finding some installer of cold calling installers.

They would turn up.

They say, look, I have no idea who these people are and they're, I don't know what they've sold you, but why don't you install them?

A heat race stadium.

Mega flow it's so we lost loads of leaves because we just had no clue about the customer journey, which is a formative lesson for us.

And as we moved on and we, we did have one good thing from the flu chart show, which was that it put us on the radar of British Gas and they took the product and tested it.

So this started flagship product, the Mixergy type, which works with the system gas boiler.

It can use direct electric power every now and then.

If there's surplus energy available to create, and also all of the of these tanks are heat pump ready.

So if you want to add a heat pump, you just add a little modular heat transfer module at any point in this life and the last like 25 years.

It's the idea is way of seeing your home to net zero, but pragmatic first step gets more efficiency out of gas boiler that looked in British Gas, who tested the product, then decided to launch nationally.

And so it was.

It was actually an unexpected consequence of that marketing effort that that we benefited from with British Gas and we were another formative point, of course, was that that was just happening at the currently staged the 2020.

So British Gas decided to launch in February 2020.

We four of us thought that this stage there is seven of us in the business and four of us went across different parts of the UK to various training Centers for British Gas installers.

We spent a few weeks going around and training.

Stars are familiarized numbers that the tank only for locked down to then hit.

So, but.

But then shortly after installation started to creep in.

We managed to get to a point where we had just over a MW of dispatchable

flexibility, and so that it was at that point that we were able to start providing frequency response to National Grid on a commercial basis.

And so it turned out not to be too lucrative frequency response.

However, for us it was symbolically like a major thing because it it so I think what's been the struggle for us in the past has been trying to articulate what what is our mission and why, why, why do we need to articulate and I guess for us it's really about trying to convince people to join this calls of installing flexible hot water tanks and for us to have this.

Oh yeah, we're actually delivering.

I frequency response to national crit.

Uh, that that was a that was a major, major coup for us.

And and then shortly after, we were able to get new build regulatory endorsement through through the building searches establishment.

That was a horribly painful process, which I can I can length talk about later and that's a couple of years of testing.

The way in which we can work with solar PV, so we developed some electronics to modulate surface solar energy into the tank and that turned out to be quite a good option for quite a number of new build projects.

And and recently we've launched our heat pump hot water tank in Portugal.

So through a one of our investors, as is a Portuguese headquarters energy company called EDP, they're actually a global energy business and they're starting to rolls out in Portugal as a prelude to other markets where it's about the interaction between heat pump and solar PV and.

And so that's that.

That was.

That's the the kind of latest addition to our our product line is the integrated heat pump cylinder where what we realized is that this is already an existing product category.

But the challenge is that the life cycle is not so good.

If there any goes wrong, the heat pump, it's all inextricably linked with the tank, the condenser, the hot part of the heat pump is wrapped around the tying, so then it goes wrong.

You have to take the whole thing out of.

Cover it and replace it wholesale.

And so we decided to modularize it.

Heat the water and then put it back into tank.

The bus also have been sensing and we did some stuff to make it work better.

Solar so that was the the journey.

And at this point we've got a number of frontiers opening out in new build for space heating systems.

And with that, a little bit of management.

And so that was really, I think the lessons that the takeaways, I guess for me were you universities are are pretty good incubators.

So if there's a way of, you know, there's loads of.

Underutilized pieces of expensive test equipment and lots of lots of people from varied backgrounds who have a lot of time on their hands.

That's not measured to the extent it might be in a proper corporate setting, let's say.

So you can kind of be a parasite in the host.

Uh, and if you're operating within the university or if you know someone, if your friends or something in the university nearby and grants are an amazing way to leverage seed capital, if you can get some seed capital and slap the ground on it, that's a really advantageous monthly active thing to do cyclometric profiles.

I don't pretend to be have a great deal of insight, if you would mind, but I have observed that whilst there are wrong, they are useful and I think what I've learned is there's so much.

I mean, examine engineer by background and I always thought of psychometric profiles and it's a little bit of it as sort of studio science, which is in many respects, but actually there are consistent traits that, you know, you can you can get the right balance as a team, you can get so much more than the sum of the parts of the team by the sorts of things I organizational culture has been really tough as we've got bigger.

You know whether when we first started and there were just a few of us in one room, you didn't need a culture.

I remember our investors going to.

So what can you explain your culture, your values?

And I just sort of that's just fancy talk just being potential just three of us were in one room.

And as I thought about it more more, it's a little bit like if you if you have a big organization, it's quite it's simpler to understand why you need the culture because you have people in different parts of the country or different parts of the world and

it's good to have a common set of principles through which you can immediately identify each other around.

And whereas when you're small, if you try and foister the kind of corporate idea of culture too early, it rings false.

And it can.

And I think it can be very off putting if you don't get it right.

So, but then as you get as you grow, you do need to formalize things and you do need to start to bring that stuff in.

And so getting that balance right is it's a sort of a dark Clark, which we continue to learn and make mistakes around.

And I often fantasize about the being a wholly owned private business.

Not having to answer to board, if I'm really honest with myself at a weird have completely fallen flat on our face without without the board.

I mean it is quite a quite a a humbling experience to to be ripped to shreds in my part quite regularly and it's it.

It it does, it's a lot of.

It's an overhead you have to put for us.

You know, we have to prepare quite a lot materials for an investor community, but often it's in the process of trying to explain what you do.

You just hang on there.

Don't really understand this.

And then you go back and you you iterate more than I think you might if if at least that might if I was just left to moments, devices and final point is just you know, try and enjoy it.

I I think because I I think you know the most important thing you need to have a I guess is resilience and it it can be pretty brutal as I'm sure you all know.

And so we're trying to remember to smell the roses along the way.

So that's where a montage of photos can be helpful.

So that top left one is a rent.

I forced them to celebrate our 10 year anniversary together by having a good shots of absinthe in a shipping container, which we use to to as a as a a plane control chamber for heat pumps.

And then yeah, just various various moments that punctuated the years would like to try and try and keep track of and not and.

Yeah.

So that was that was basically a small fish board of of random stuff of thrown out if and I'm sure you guys all have your own experiences.

So they're probably similar, similar, probably wildly different.

But yeah, we're happy to open open the floor to any I my thoughts.

CB **Charlie Blair** 30:23

Many thanks, Pete.

Certainly lots of parallel experiences with my experience as an entrepreneur and going through those steps and hating aboard, loving aboard and hating investors, loving investors, all of all of those sorts of things.

I've got a couple of questions I'll definitely want to ask, but it's really all about meant sorry, the cohort, the companies out there learning stuff.

So anyone with questions please try and work it out to raise a raise a flag, raise a hand on teams, or just wave or but maybe do both at the same time so that I've got most chance of actually seeing.

And remember to unmute yourself as you go.

Andrew, go for it.

AF **Andrew Falconer** 31:12

Yeah.

Thank you for that feature.

That was really interesting.

I guess the question I was interested in is working with a large corporate as a startup and the experience especially we we've got similar process for going through at the moment and starting to get legals together, understand bit about the the the desire to protect versus the desire to do business.

So just your thoughts on that side?

PA **Peter Armstrong** 31:40

Yeah, it's, it's, it's a really good one that we wrestle with when they're particularly with, for example, they take a live issue, which is negotiations with merchant distribution partners, big corporate with their own incumbent boilerplate, legal legalese and contract.

And I think what I've found is that.

I I I personally feel that you have to be careful not to, to to, to balance the objective

of getting the perfect contract with the imperative at an early stage to sell stuff and get some traction, and you can easily find a corporate lawyer who's scare you senseless in into having really expensive iterations and negotiations with a big corporate to get the right deal or the right deal in in, in, in, you know in their eyes and they've got a vested interest in in, in spinning that process I and I think you have to have the.

Confidence.

The courage to go, you know what pocket?

I don't care.

I know this is a risk, but actually given that I'm only selling, you know, a few 100 units over six months, I can parameterize that risk and there's a bigger risk, which is this deal not happening and and so so that's I'm a little bit cavalier and that's why you know Ren mentioned earlier, he's the sort of psychometric opposite to me.

So he probably be counterbalancing.

That's a little bit more and but that if so, so that's contract and then the other side of Cooke just working with big corporates briefly touched on is trying to mobilize some as a channel.

So if it's a corporate who's your channel partner, like in our case British Gas, the big challenge I find is that you often are operating it where in an environment where you've got lots of diffused objectives and different business units.

And in our case, we had to get a quite a few of them to work together.

So there's a heating installation side of business, but then there's also the energy trading side of business and they have different objectives or something like Kinect devices like there's more volume in the table than just selling a regular tank from city plumbing.

But the problem is, if you've got segregated business units that have different PNLs and all those incentives that are connected in silence is very hard.

And then added you have this sort of charm of people.

And so in our case, it's really about, you just have to have like relentless key account management.

Never underestimate the need to over communicate and that that so.

PA **Peter Armstrong** 34:14

So for me, looking back, I feel like we could have always done more and we would have cause.

It is like pushing.

It is pushing us spring, so it's sometimes said well, you know, if I push harder, I'm actually gonna get any further.

But for us, I think we could have pushed against more springs laterally and tried to join that better.

The different incentives in the in the organization, I don't know if that really answers the question, but in that that's our example.

CB **Charlie Blair** 34:42

A Pete.

I was gonna actually ask a related question.

Do you mind?

Just quickly running through, I think you mentioned maybe I heard wrong that you had investment as well as kind of corporate collaboration with both both British Gas and EDF.

PA **Peter Armstrong** 34:56

82 EDP yeah, yeah, yes.

CB **Charlie Blair** 34:57

Was it EDP?

Do you mind?

Just very quickly running through what that relationship.

Well, what?

What came first?

If you like and and how it turned into an investment, obviously anything that's public.

PA **Peter Armstrong** 35:09

Yeah.

Yeah, sure.

So.

So in the case of British Gas, so someone had come across from British Gas and product manager come across us on the Philly charge show and reached out and then that we then got introduced to their venture team that they had at the time. They no longer have a venture team at Centrica.

Yeah, has turned it on emanate division, but at that time they had a ventures with quite a wide portfolio brief and we got on the radar, they got the product tested and then they decided to go ahead with rolling out.

That was quite different from EDP, so EDP that was through an it was called.

I think you may have been as chat.

It's eco summit.

Berlin it's like adventure.

European venture funds.

So we met them at this Clean tech venture.

I wouldn't recommend highly economic, by the way, to anyone who's looking beyond the UK or even for venture for UK expansion, but they they seem to go to economic and EP's case the IT was it was all it was similar though because they have a really there they were real discrete separation between the venture side, the the corporate and then you've got the commercial side.

So you you sort of think, oh, this is my my golden ticket to deployment, I've got them invested.

So they've got a vested interest, surely.

And then you're like, oh, no, no, no, no.

Because you know, they they, they do they do firewall the vestment side from the commercial delivery site in both instances and so it does absolutely help it it.

It 100% helps having that vested interest, but you you still have a protracted series of of groups and gates to charge through.

In some ways, there's often a bit of a a sense in which they want to make it be seen that are being even more diligent because of their perceived public of interest.

So, so we, we, but I would say it was a net, it was a net benefit.

It is unsustainable.

You can't just be having every one of your customer investing.

You end up making diluted to nothing, so as a catalyst it's it's good.

It has trade offs, so we have had issues around perceived conflicts with perhaps other energy companies, so maybe we and we don't know.

It's hard to prevent.

You never really know what's going through the minds of counterparty, but sometimes you know if you have a big player that invests in you, other players who you may collaborate with, say, for one reason or another, I might feel that you're you're somehow a Trojan horse or you're somehow.

Yeah.

And so it can.

So.

So we've been at pains to be clear that there is 0 exclusivity with any of any of our investor channel partners, but there's often a perception and you have to kind of breakthrough, which is one of the trade offs.

CB **Charlie Blair** 38:01

And I think that idea of trade offs about corporate venture engagement or not, but many, many, many other things as part of the growth journey is it's just it's kind of it's a given there's no right and wrong answer.

But discussing it is hopefully what we'll be doing today, Thursday and over the next three or four months, it will definitely gonna be part of this program.

Thanks, Pete.

Sorry, Colum, go for it.

You been patient?

CC **Callum Cruden** 38:25

No worries.

Thanks.

My question, Pete, was around the sort of culture and the the communication part when you were growing from three people, all in the same room to to trying to get your culture on paper and and and bring it forward.

And we've been quite similar sort of started as a family business with four people who were all family members and then growing it from there and and product predominantly installers.

So you got a lot of engineers who maybe don't don't care too much about what your culture is really in trying to find a happy medium of communicating that this as the business grows.

Just wondering if you had any advice on that.

Anything that's worked well and then also what?

What sort of size your business is at now to?

PA **Peter Armstrong** 39:09

He should. Sure.

So, umm, yes, we're we're 60.

We're just short 60 people and I I would say that the the one thing that we we, we we made well mistakes along the way and looking back it was it wasn't until we had someone come in externally and and join us and I think for me the the pivotal thing was and involving the whole business in the formulation of some cultural principles because I think it's very easy to top down go right this is our culture and So what it's quite simply we just workshops it with everyone in the business took a couple of days.

It was a bit of a pain to get on his calendars aligned but and in that process we literally had some saying what is culture?

Why do we care about culture?

I think a lot of people who are, you know, quite pragmatic, practical individuals.

Our our skeptical about it and and and understandably, because I think in quite in some large companies, you can't have the situation where it helps show is insincere. It's a.

It's a sort of tick box and and and you know if an example is mission statement.

So like I for I like a really timetable mission statement.

But you know, we are gonna be the biggest installer of flexible things that northern hemisphere or something or something very concrete.

Some companies is very nebulous.

It's like we would like generally there to be a nicer world of flowers and even to be nice to each other, and it's Nike focus that love to do it like anybody want.

Everybody wants that.

That's not a mission statement, and so if it's in and people can smell insincerity, and I think it, I think so.

I've seen maybe probably the best degree that you can.

It's always practical trend includes everyone as much as possible in the formulation, and you can read it like you can reinvent your culture.

There's no reason you can't rework shop it to freshen it up a bit.

You know every if you're changing strategy, you know every couple of years, there's

probably a good thing to refresh every now and then just so that you can resocialize it resocialize the process of, OK, are these really our values?

Are they change?

Because I think it's a lot about just getting people's buy in and when people feel they've come tributed to it, then they're more likely to to have a sense of identifying with it.

Fire point I make is so we we have a share option scheme.

We make sure just we just make sure everyone has share options.

Everybody in the business and then we just say part of our values is ownership.

You own your objectives, but you also own a bit of past you.

You own a bit of the company and I find that quite good because it's like you.

Otherwise what we find is if you if you not sure very well the relationship could be a bit transactional, but if you've got the ability to, you know, even even in a modest way cut everyone in with some share options.

And then, but then explain what that means and explain how that then is reflected in your culture.

I think that for us that was another dynamic which resonates with some people, not not ever.

Some people are not as interested.

Some, but some people.

Really, it's a big deal for them.

CB **Charlie Blair** 42:35

Yeah, Pete, that for what it's worth, that experience of share options, exactly what we had it as founders when we did it was it was a lot more hassle than we expected to put it in place.

It was pretty challenging and some people absolutely pass them by other people.

It was utterly core and central to what they were doing.

But Pete, dare I ask?

And if you if you got all your employees as shareholders, effectively when might this see an exit because there's this classic thing is same as soon as you get any investors on you suddenly have to be thinking very seriously around how those investors make their return and that's really that you sell the company or you sell shares in the company publicly otherwise it never happens.

So have you.

Is that kind of articulated quite clearly to your team?

PA **Peter Armstrong** 43:18

So, so not so.

So visit the other board we have, we have this conversation a lot, right in terms of the wider business, we don't we don't get into exit conversations because I mean well, first of all because we in our particular case, we've got quite a few paths ahead of us. So actually we're we are at a point where we're not far away from just being a self sustaining entity.

You know, because of the amount that we invest in R&D, we control down on that and and wash its face we potentially could.

There are a number of different categories of buyer.

In our case, that may be on the table and and and.

The problem is, if we were to open, in my opinion, and this might be wrong and happy for anyone to challenge it in this room, my opinion is that if we're to try, and if we're to talk too much about exit, it just gets people thinking about, well, we'll just might what is my role if I'm working at operations and business in that Mixergy that becomes an exit to technology business that just wants the software and they don't need anything since it's so.

But what we do talk about though is you, you know, the fact that when we get people options that cause options can be a bit of a confusing thing to people. So most people, I think, and sadly I think getting that explanation communication right is quite critical and for me a lot of it is available.

Look, here's he.

She's the share options they give you this tax advantageous thing around getting around this slope of value in the business.

But what we do is we try to which is like value Mixergy from 2014 zero and then we showed like the different investment rounds and it's like OK, you just been given this massive slug of theoretical values and then we show like graphs of where it could go, where it could also go to 0.

So we're very transfer.

So we show that this give you nothing or it could be worth loss.

And like any business, that's true.

And so we try and we try and balance, OK, the the excitement of the potential, but

with the honesty of the risk and the amount that has been built to get to this value point to date and like communicate those three things, I think we found this is it is it is a good way of trying to get off of getting people actually value them because otherwise it just give someone share options they go what's the and worst if you say ohh that's that's .3% of the Business School it's not very much So what do.

CB **Charlie Blair** 45:24

Yeah.

PA **Peter Armstrong** 45:48

You.

What do you?

What's your expectation?

That's like thousands of, like, .3% people.

Cytology is really weird, right?

Like if you say if you say ohh here's the theoretical thing that could be worse something and it's a small percentage of the business that's a very underwhelming message.

So it's important, I think, to get that get that right because it could be a large amount of money for people, so yeah.

CB **Charlie Blair** 46:10

Yeah.

Again, some something that is probably worth discussing it amongst the cohort, because I'm sure they'll be some people with experience of having done it good and bad and how to how to get the most out of it.

But it's certainly not by any means the only way Karen of making sure you get that culture and that by end of your team.

And like many things have got classes and minus system.

My experience, it sounds like pizza as well, Alison.

AC **Alison Cavey** 46:33

Yes, speak.

We had to read it conversation last week at the the kick off meeting where we were discussing challenges across peace and one of the big bits that came up was around

product approval, certification etcetera, etcetera.

And you touched on it briefly when you mentioned a painful experience would be REE.

I wonder whether you could, I mean we we will have whole sessions on this over the over the program because your reflections because we started teasing out across the cohort, some people had some work arounds or some ideas of how you could get early product out there quickly with that voiding the costs associated with that, do you have any hacks for the cohort or any advice in in in that regard?

PA Peter Armstrong 47:18

So like half #1, if you can work within an existing product category and not then, then and then just bolt into that, I would recognize that the standards then and she sometimes you might have a quick fresh creative to as maybe stretch credulity a little bit, but if you can get it, if you can do that then that can shorten the time to market from a regulatory perspective quite considerably it it so.

So like for example, you know if you've got an unvented hot water cylinder with a standing heat was figure and a couple of other things and you could just put straight into an existing regulator screen for things with very it will not hand.

You have to recognize an entirely new change the product, which kind of takes its completely outside the category.

That's when you start to have to go through quite a torturous process.

So in our case it was about the integration of only eating what you need with thermal stratification in a tank, plus solar using surface solar and so basically it broke the regulatory model of SAP.

So they then had to run a process and called appendix queue, which may be familiar with some of you.

And you know that that was really the lessons that we learned from that were a number one is it is that BRE have no incentive in going quickly the opposite the incentive structure around building race is brought with perverse incentives and problems.

And you gotta be really alive.

To to, to whether or not you can write that out within your funding cycle.

I mean, it killed us and you see.

So, so BRE, you know they have this system called.

Please try to cut me off if you're if, if.

If I've gone too long, it's it's kind of a therapy thing for me.

CB **Charlie Blair** 49:18

Go, go.

PA **Peter Armstrong** 49:22

So so you, you know, the standard assessment protocol.

Sadly, it's basically a giant spreadsheet that determined what regulatory points you get for certain technologies that you install a new build or social housing retrofit, and by extension broader retrofits or thing called Rd SAP which is a reduced SAP.

So there's all.

There's all administered by the building research establishment and and and and and there there's guys to call the shots and basically there there are a bunch of different you have to fit into this spreadsheet model.

Uh.

And so they have to validate that the thing works and the the the issues that BRE also is, is is actually a private business.

So it has a.

It has an imperative to make profit.

It's got huge incumbent customers like gas boiler manufacturers who already sell into new build and who already have routinely hundreds of products going through their labs being tested all the time.

So there's this.

They they play, you need someone to.

To to to that to the regulator here because you can.

It could be otherwise a Wild West of lots of disparate ideas that some are not working, but it's it's a really difficult model and for us it took about a couple of years now.

I think things are starting to prove that.

I think there's a lot of lot way more lobbying now than there was when we started to try and streamline things like appendix queue and recognition within the REE.

But I would say I would say that that for me was the most painful piece of the regulatory puzzle.

Everything else is much simpler by comparison, so whether it was CE marking of our

electronics, EMC compliance, compliance with potable water regulations, ready to go deep, dive into all the different materials you're using, all of those things were so peanuts compared to building regulatory specification approval.

I don't know what it's like in other markets outside the UK, but it is.

It's a really tricky one in the UK.

Just my last point on this.

If any of you guys happen to have the ear of someone who's got any influence on Brian where it's, I'll say that it would be great if they just said, you know, why don't we just freeze the that regulatory framework as a set of minimum virus but actually provided incentive for people to go further.

So we never smart meters, we can now measure it energy consumption rather than using a really bloated.

Error written predictive model on a spreadsheet.

Why don't actually just measure it and say OK, barrass, Persimmon, Taylor Wimpey Rentrer your corporate tax will change depending upon the actual measures, energy consumption of the you suddenly won't flip incentives.

You mobilize a bunch of value engineers who are just trying to achieve lowest cost of compliance with a completely game of viable hope nodes and Veres here.

And they didn't.

The you know, you change them from.

There's lots of smart people and you build and they actually want to do the right thing, but the imperative for them commercially is to go for lowest cost of compliance and builders.

Builders in the UK, they're not builders, they're they're land monetizing machines and they cut, subcontract and subcontract and subcontract.

And then the final person installing the kit, some of them will substitute it for something cheaper.

We don't have the bandwidth of police it, so it's a complete loss and in sense they'll.

So I think I'll be very careful about going BRE S or ticket to, but success if you can find if you can operate in a market that's less sensitive to to that regulatory process.

You know like retrofit, if you can work within retrofit and without having to have such a or within an existing product category which is just slots in, that's your least painful. But at least in our sector.

CB **Charlie Blair** 53:28

Many thanks, Pete.

I think this is this is a topic I'm confident will be coming up in other maybe on Thursday and other other weeks.

Other sessions, the relationship with regulated as well as corporate institutions and investors is very is it just a core part of anything around here in buildings.

So it's it's in in there.

PA **Peter Armstrong** 53:46

Yeah.

CB **Charlie Blair** 53:48

And I've heard Pete and others to having similar sorts of conversations about relationship with regulators across the board, not just BRE related ones.

Richard is sitting in his caravan in France with one question.

I suggest we make this one the last one for Pete.

I'm very aware that his calendar we've already gone way over his what was in his calendar.

RY **Richard Yemm** 54:04

Yep.

CB **Charlie Blair** 54:07

So Richard, if you can jump in and ask Pete and then, so I, Peter, thank you.

RY **Richard Yemm** 54:11

Well.

CB **Charlie Blair** 54:12

Do stay on, but we'll open it up to discussion, led by Alison after that.

RY **Richard Yemm** 54:16

OK.

Yeah, I'm actually cooking in my little room in the caravan at the moment, so basting

myself.

So yeah, it was actually exactly the same question as Alison just raised.

So that's great.

You've really answered it, but more thing it a little bit.

You said it nearly killed the company.

I can imagine it's a huge overhead was that did British Gas help you go through that or was that, did they help help fund it or was it was that helpful to have them there to lean on BRE ID that was the the the point.

PA **Peter Armstrong** 54:36

Yeah, I'm absolutely sitting.

RY **Richard Yemm** 54:45

And then just before I go back on mute, just if anybody does have questions about share options, then I've been through that as well as Charlie and know the pitfalls and the very different reactions you get.

So as a cohort, if you want to have a job about that, happy to do so.

PA **Peter Armstrong** 54:58

You know, so Richard, ask your question absolutely.

So we were very fortunate that we were operating across multiple market segments. We weren't.

We were heavily explored to new build and we had sales forecasts and the basis of getting a specification which just got later and later and later.

But we were to some degree able to fill in with, with, with retrofit British Gas, but also social housing retrofit, which is a bit easier for other reasons, although they are regulatory, a lot of regulatory overheads around social housing, they can also they will also take a view based on the life cycle of the product.

So if you got product that delivers 10 benefits, if it's, if it's longer, life easier to maintain, they will value that was new build as much more about does it take the box for the right price and that's just it's almost singularly dependent upon getting that regulation passport.

So yeah, I think if you are, if you are as a good point, if you if you are going into sets that is heavily regulated, if there's a way of hedging in in less regulated.

Sectors, at least you can get some validation of the product and the concept and

potentially some additional insulation from the almost the narrative delays then yeah, I think it's a good show process.

Just kind of did by accident.

Charlie, I'm curious.

May I asked you cause with your with your business.

So right gravitricity, you, you you're looking at the minds and weights and there's energy storage.

And was that regulate?

Was there a regulatory much regulatory kind of stuff that you had to overcome in that sector or was it like an open field because it's just so it was just so tangential to anything that had been conceived of being regulated?

CB **Charlie Blair** 56:47

Yeah.

No, there's always regulation of some form and and the more tangential it is sometimes more difficult.

So yeah, the underground engineering, if you're a mine, you're regulated in a very particular way.

If you're putting a human down there, if you're not on mine, you're civil engineering, different regulation, much easier.

So we had those same sorts of questions around how can we sort of sneak in?

How can we design the system ultimately so that you don't ever have to put a human being down there?

If anyone doesn't know gravitricity very simplistic and large scale grid electricity storage by charge, the battery by lifting a very heavy weight up a mine shaft and underground space discharge electricity back to the grid by lowering that very heavyweight through a electrically driven winches.

So parallel sort of regulatory issues the, the, the issues around getting it onto the grid, big scale things tend to be easier.

You're doing that kind of you can afford to go through all of that.

Is your first large scale project.

It's part of it.

You're not having to sort of the regulation of lots of small things.

Connecting up is more challenging, I think from a kind of relationship should be REE point of view.

PA **Peter Armstrong** 57:55

Ah.

CB **Charlie Blair** 57:58

We were able we would be able to persuade the regulator in a particular country, the grid connection bit wasn't the hard bit, it was the underground engineering, but very parallel sorts of challenges and bluntly and and very interesting take away from me of your your 11 plus year story now was that you you weren't focusing on the technology, there was loads and loads of the technology stuff sitting behind there. I'm comforted of it, but the things you chose to highlight were lots of fairly universal challenges that weren't specific to clever, clever hot water, hot waters tours.

PA **Peter Armstrong** 58:34

Yeah.

So it's an interesting question.

Yeah, yeah.

CB **Charlie Blair** 58:38

And that's partly because we asked you to do that, but it's interesting.

I think that that's that's what you were taking away and giving to the goal.

PA **Peter Armstrong** 58:45

Yeah, I think I think it's a, it's a really interesting observation.

I I think what I I think when I came out of engineering school, I kind of had this view of though.

Yeah, engineering is this.

You know it's the highest art form and it's the everything else kind of common sense.

And that view is inverted 100%.

So and then maybe that's was reflected in that.

Yeah, came out.

CB **Charlie Blair** 59:10

That's great.

There's there's not that many engineers out there who do go that full circle, Richard.

I've I've known in the past and is is one of them actually.

And his caravan.

So super, that was very, very interesting and I'm sure very, very useful, Pete.

Many thanks for staying with us.

If you do want to stay on, I'm very sure you'd be have interesting points to make, but don't worry about it.

I'm sure you've got 60 people to keep happy, among other things.

PA **Peter Armstrong** 59:35

I'll probably come at this sign off of the French, but it was great to meet everyone and all party guys in your in your various respective journeys.

And yeah, of of look forward to seeing how you guys get on. Cheers.

CB **Charlie Blair** 59:49

Super.

Many thanks Pete.

So Alice and I am, I hope now sharing if everyone can just give me a thumbs up.

If you can see a screen with a nice pic of little plants, no one ever used that one for a great story before.

And Alison overview over to you to talk to, I'm aware I'm the one pressing the button, so just either get the thumbs up for the next slide or say next slide please.

AC **Alison Cavey** 1:00:14

We'll do.

That's a thanks a lot, Charlie.

OK.

So obviously today is our first session and what we're trying to do is get the juices flowing in terms of where you're thinking with with you yourself and your business in terms of what growth looks like for you.

And obviously it's going to be the vein stripping you do over the next 3-4 months or so, both in the training courses that we're we're giving you and and these sessions and the work that you're going to do with your windows at the end of this.

And so at the Outback end of the project, what we want you to leave with is a growth plan that you've defined that you're confident in and you're with that you're going to drive forward.

And I'll touch on that in a minute.

But so this I'm just going to spend 1015 minutes or so now just teeing that up, starting to manage expectations times the way we're headed on this program and and and means for you.

So Charlie, he hit the next one.

CB **Charlie Blair** 1:01:10

Uh, yeah.

AC **Alison Cavey** 1:01:13

My glamorous assistant you tonight.

CB **Charlie Blair** 1:01:13

There you go.

AC **Alison Cavey** 1:01:16

OK, so last week at the kick off session, we had a couple of interesting speakers that started talking to us about market drivers and where the market is heading and where the opportunities will be.

And I think this is really important piece in terms of initial context for you in terms of what that means for your businesses.

So we look at what will the green heat market look like in five years time?

Well, the reality is numbers are really knows, right.

OK.

Can everybody else hear me?

Someone seems to be having a Catalinas having a problem hearing me.

CB **Charlie Blair** 1:01:48

It it's a little bit stuttery.

ES **Emma Sutherland** 1:01:51

Yeah, I I can hear that too.

CB **Charlie Blair** 1:01:53

Yeah.

AC **Alison Cavey** 1:01:54

Apologies.

And not sure it's better.

CB **Charlie Blair** 1:02:01

It's still, we can, we can make it out, Alison.

So I think just keep going, but maybe maybe talk slowly.

AC **Alison Cavey** 1:02:05

What's wrong with it? Politics.

OK, I'll slow down.

So yeah, So what I'm saying is we don't really know.

No one knows in the crystal ball what the green heat market will look like in five years time, but we do know there's some big ticket policy drivers that that are moving this this Forward.

We know there's big investment with new government coming in.

There might be changing investment when when?

Quite sure what's coming, but important thing is for us to keep our ears to the ground and for you, as businesses understand what's coming and and be doing that for typing and using that continual renewal to be refreshing your plans as you go.

Next one, Charlie.

And the key thing is it's understanding what or anticipating what those key drivers will mean for different parts of market.

So what will be the size of the market?

Which markets?

Which segments will grow more than others?

What does that mean for the product technology mix?

Some policy drivers will push and push it one way or the other.

What does it mean for different types of commercial arrangements that will evolve as the market evolves?

What types of businesses are required across the supply chain and when did would you want to play across the supply chain and who are the key stakeholders and influencers?

Yeah, we spoke already.

You know Pete, talking about can anybody influence the Ori and product regulation? You know those kinds of things are going to change and then couple of years and it's important to be trying to anticipate what's coming and what that means for your business as it grows.

And inevitably, there's gonna be winners.

And there's gonna be losers.

You know, we'll see a lot of some, some players will fall out the market.

They'll be some mergers and acquisitions, there'll be new entrants.

So it's gonna be a very dynamic few years going forward as this market evolves.

Next slide, Charlie.

So that's the key thing that we want to get you to start thinking about is what is the vision for your business in, in two or three years time?

Using your electronic hands, which of you have a have a three year vision for your business?

Is anybody have have that already?

Not or.

Shake your head and like some some shaking heads.

OK, that's fine.

That's good.

That's why you're on the program.

So that's good.

Let's move on, Charlie, the next one.

Because there is no right or wrong here.

But what we want again is point about setting the seed and you thinking it can be anything from an aspiration to be small and specialist high value.

Do you want to be playing locally?

Do you want to be playing nationally?

You have international aspirations.

Do you wanna come a large diversified business or do you want to be part of a larger business that would be an any skill like when Charlie and of course just like Charlie and Richard who's in his caravan in France actually.

Do you wanna be selling out and be sitting on a beach somewhere in three years time you've made your money?

That's it.

You wanna exit?

So these are all legitimate strategies you can be looking to build an ongoing sustainable business or you can be looking to do something more commercially creative.

But what will hopefully gonna be doing over the next two or three months of you guys working through that and getting you to a point where you've got a clear both strategy and you know where you're headed, where you want to be next?

Slide, Charlie?

So what does this mean specifically in terms of growth plans?

And there's a number of pockets that we're going to specifically tie and get you thinking through and and and populating few months and and beyond.

So that's everything.

From what your revenue targets might look like, who your target clients are, are you gonna access those markets and what partnerships might you need to get there?

We touched on culture as this whole piece of an organizational development.

How do you grow your business to allow you to achieve success in addressing your targets?

How do you recruit?

We touched big time, didn't we?

Last week at the event around recruitment, how do you find the right people in the current market, give you the skills that you need to be driving your business forward?

Which ones you need in house versus outhouse?

These these are all really critical decisions that you're gonna have to be making in in, in the future.

How you can come back again.

Repeat it.

We've heard a lot about raising equity for a lot of you on this cohort.

That's not where you're headed.

Or maybe doesn't look like it.

Perhaps at this point you're looking to grow revenue rather than necessarily taking equity for working capital.

So there's different financial models where we can look at with you in terms of how you're going to Fund your businesses going forward.

And then obviously all of this comes with risk.

So how do you identify your key risks?

How do you manage those key risks and what are you gonna do to mitigate those?

So these are some of the key aspects we want you to start thinking about.
There's also other things that you you might is anybody think what's missing from here?

He got any ideas what else is gonna be important for your growth plans?

You're All difference and will be different aspects.

Perhaps are more relevant to you than others.

Ethnic silence.

Jason.

JC **Jason Clarke** 1:07:52

A regulation, given that we're all working in this sort of cleaner technology space because of the the net zero journey, but the vision of of politicians and the regulation that they flip flopping.

AC **Alison Cavey** 1:08:05

Absolutely. Absolutely.

And it's a there's another point that strikes me, Jason, too.

Given your role in particularly marketing and Poms, you know we stuck in this.

We flip that theater again.

He gave a very good example of that.

He got a massive PR boost right through that TV program and ultimately gave him the intro to British.

I mean that was quite exceptional.

I'm not saying that that we're all gonna manage to pull off something like that pending on your, on your business and sector, you're in.

And what you're looking to achieve marketing, PR and comms can be really important for what you're doing.

JC **Jason Clarke** 1:08:41

Yeah.

I would certainly say that.

AC **Alison Cavey** 1:08:48

I see management, some of you that are in the new technology development space, IP management is going to be critical for you depending which route you're going

giving up your know how and all trade secrets.

So what's your IP strategy?

Umm, that's not just for technology developers.

You're installers.

You've got to know how right you've got really strong.

Know how, but if you wanna keep competitive position in the marketplace, how do you as installers protect your your know how and keep your competitive differentiator.

So all these things we we need, we're going to be needing to be thinking about over over the next few months.

Next slide, Charlie.

OK, so I'm just going to quickly share with you now if you stop sharing for a minute.

Charlie, I'm gonna show you what we've got.

CB **Charlie Blair** 1:09:40

Yep.

AC **Alison Cavey** 1:09:41

It we had a template that we haven't yet shared with you because Natalie doing a few tweaks based on the feedback we had last night.

But just to show you what is, we're hoping to get you to, if we're are we here.

And this and umm.

What you're going to be doing?

Can you all see that on your screen?

CB **Charlie Blair** 1:10:10

They.

MC **Michael Cullinane** 1:10:12

Yeah.

AC **Alison Cavey** 1:10:13

Yes.

OK, so this is a.

This is a Word document, and so at the end, at the end of this program with your

mentors, you will agree jointly agree what is a two year two to three year growth plan for you and what we're gonna ask you to do is be thinking about what your objectives are for the next 12 months.

You'll see this was from last year because it's saying marched 2024, but we're going to work with you to identify key objectives and then and each area of the business, we're going to ask you to break that down.

So for example, there's a bucket around customers market around how you're going to be looking at market research.

You need to do how do you what customer requirements are you going to be validating lead generation activities, these kinds of these are the kinds of things we're gonna get you thinking about business development and sales.

You need to find a trial or a demo site.

Do you need to be developing distribution partners or sales pipeline?

And again, this is gonna be different.

Different for each of you, cause your businesses are so different.

Something around thoughts and plans around your business and and your business model is around that technology and product development.

You need some performance testing.

Are you going to move the prototype?

You need to Mark Ademic partnerships.

Let your property we just so you see where we're going with him.

And you factoring and supply chain operations, recruitment, key key hires etcetera and finance and planning.

So not all of these will be relevant to all of you.

Some will be much more heavily populated on some points than others, but this is by the end of the project.

This is where we all want you to be so that you finish the program and you head off.

I'm with a clear some clear objectives and targets as the where you're heading for you and the program and and so you're mentors will be receiving that template in the next couple of weeks and you'll start iterating that as you go with the conversations that you're having last time with.

The reason we're doing it slightly different last time we left it right to the end and everybody was like ohh, hang on a minute and started backfilling.

So we we want to make this much more vanish to process this time and you really thinking about it from the outset.

So we have an action for you.

We have another session on Thursday and what we'd like you to do ahead of that session and again it comes back nicely.

What Pete said, what we'd like you to do is come back with A1, slide with your mission statement on it.

Two year mission statement or vision statement, you call it whatever you would like tangible remember Pete said tangible mission statement that really articulates where you want your business to be in two years time.

He's also made a very good point, you know?

Don't speak your teams about it, right?

This is you beginning to start the culture of your business and bringing your teams along with you.

So a quick chat with your teams.

This isn't gonna be set in stone.

This is about you beginning to put a line in the sand and say rational.

This is where we want to be going again.

This will iterate and refine over the course of the program and beyond the program as you as you grow your businesses.

But if you can do that and come on Thursday, what we'd like to do is share those between the cohort to put them up and share them, and let's challenge those mission statements in a in a very healthy open minded way because what we want you guys all your businesses to be as ambitious as you can.

So maybe some of you are gonna put stuff up.

That's like, amazingly ambitious, and the rest of us say, well, there's no way in hell you'll get there into your style.

Or maybe it's like, oh, you cannot be a little bit more ambitious.

And what about?

Have you thought about this?

Have you thought about that?

So don't be this isn't happening.

Commercially sensitive or or you know that putting anything commercially sensitive out there is just beginning to get those those juices flowing in terms of actually where we want to be and how ambitious do we want to be and how broad or narrow and we make our vision statement.

And again, there's no right or wrong.

It's about getting you guys thinking.

Is that OK?

Does anyone have any questions?

It, yeah, but.

Brilliant.

OK to me than Charlie over to you.

We finished earlier but.

CB **Charlie Blair** 1:14:53

Grant so, so, so we we weren't able to be joined by Emma who and was a runs a heat pump business.

So I thought Alison and I spoke just just before when she dropped out.

I can sort of run through some of my personal experience, as in many ways, not an amazing am I an unsurprising lots of parallels with Pete's experience and thinking, particularly about kind of how thinking about growth is an important thing that you just you have to constantly do.

I've been kind of thinking this and discussions with Alison, with Natalie Growth plan, this is a growth plan that we are asking you to do part of the Scottish Enterprise Clean Heat accelerator, you'll all have business plans and whatever format they are. They might be a Word document.

They might be something that you own an envelope with your founder.

If you're just starting out, there might be something that gets revisited formally every six months and run past the board.

It's all put a part of that same process, but you guys have joined this cohort because you've thinking about Growth.

You don't want to be in the same place in six months time as you are now, and you don't wanna be in the same place in five years time as you are now, and you're all identifying the clean heat.

That sort of wider transition towards Clean ways of heating buildings rather than fossil fuel ways of heating business is is the way forward.

Whether it's because you're hippies who have, who always who, who vote green, or whether just cause they're really clear cut market opportunity, the happy thing and I kind of hope I'm a bit of both of those two things and both of capitalist going for it over my life and the sort of green hippie is that there are aligning more and more and more.

And Jason, you mentioned regulation, I've been running running a clean technology business for seven or eight years now through all of those kind of flipping and flopping from the UK Government about what direction we're going in. But there is a wider sort of whether it comes from other national governments or just a wider movement in the world, that this is the direction I can say that with total confidence, heat has been something that governments have slightly. Lightly not focused on perhaps in the last decades, but they're beginning to realize they're really have to. So the regulatory environment will be moving towards Clean. There'll be different arguments about how to do it. What's the best way of doing it? But that is the kind of and the director travel no doubt about it. I'm so I'll quickly just just in five or 10 minutes. I'm very keen to have discussion on all of this. Richard, that that's fine. No problem and hopefully we'll see you on Thursday if you're able to.

RY **Richard Yemm** 1:17:44

Yeah.

See you on Thursday is.

I'm only getting bits and pieces, so I'll I'll buy out if that's OK.

But yeah, I'll speak to you tomorrow, Alison.

CB **Charlie Blair** 1:17:54

Step thanks for joining Richard.

RY **Richard Yemm** 1:17:56

OK.

RY **Richard Yemm** 1:17:56

Goodbye.

CB **Charlie Blair** 1:17:58

So I'm gonna.

I'm gonna talk through some.

Just some thoughts I've thrown down of my personal story with Gravitricity.

As I said before that I've been before I joined as a founder shareholder of that as a technology clean technology startup.

I was a energy.

I'm a geographer for start, so not an engineer.

Pete's statement about engineers thinking that all of the rest of the stuff that needs to happen to make businesses grow was easy.

Is it something I've come across all through my life and that actually a clever engineers realized that all that other stuff, commercial, legal, HR, all of the other stuff that needs to happen to succeed in the world is just as, if not way more difficult than the engineering side, but making it all happen together is what I find exciting.

So I'm sort of geographer with a technical masters having done strategy consulting and specifically energy policy and energy technology innovation work both as a consultant and as a sort of, as I said with UK government doling out innovation funding.

I know I took a very conscious decision about 10 years ago that I could have a kind of reasonably comfortable life being a consultant doing advising people at that top level with a very nice privileged view of the whole of an industry I worked in wave energy, title energy.

I've worked in across various technologies and had that very privileged view of it all, and I decided actually I wanna jump over and get in and get my feet dirty and take the risk and join one company and go for it.

And I kind of everyone thinks it's all about the technology.

It's only about the technology.

It is.

You have to have a good idea.

Gravitricity was a sort of idea, specifically idea based company, but you also have to do all of the collaborating and making the human side of making it happen.

So Gravitricity is a mentioned it we mentioned it earlier on.

I've known Pete a little bit because circles are surprisingly small in Clean text.

Still, as among founders, a grid scale energy technology company developing a novel way of storing energy.

So the basic idea of lowering a weight to discharge electricity, lifting a weight to charge the system again, the basic physics of that in the grandfather clock, you wind it up every day and you let it drop and the weight drop in it's doing work over 24

hours.

But putting that into sort of modern grids in modern ways is very, very interesting. Multidisciplinary engineering.

You go basic mechanical engineering, civil engineering, mining, engineering, electrical engineering.

You're kind of ticking the boxes of the whole engineering system.

We go across the board, all sorts of interesting engineering challenges to actually make it happen in the world, and it's very, very big and heavy as well.

So we're talking 10s of thousands of tons of weight to store a few MW hours.

Do interesting stories and interestingly challenging.

So the company was founded back in 2011.

12 and this may be something that other people have experienced.

I got on board only in 2015.

16 After my cofounders Peter and Martin had had the idea and they were experienced enough to take the idea and turn it into a patent and set up the company, that's out on a shelf and I joined in that it was.

It was very simple.

I was sort of sniffing around for what I would do and it was after many conversations, many handshakes, many sort of discussions and lunches.

It was a handshake that said, OK, we've got to know you a bit now, Charlie, if you if you get something happening, if you make things happen, then 5% of the companies yours, I think it was at the beginning, there was a sort of very informal agreement.

I need to go out and get something to happen and in that case getting something to happen was winning an innovation grant Pete, interestingly talked about.

I think he talked about winning a prize which was leveraged into winning an innovation grant, which was leveraged into into investment.

In my experience, those well, certainly two things.

Prizes are a little bit arbitrary whether you get them, they're worth going for.

But innovation grant and investment funding can kind of go hand in hand, but ultimately you want to extend your dilutive investment as far as you possibly can with non dilutive grant.

So we did that, we got that grant back in 2016 and gravitricity the company has been sort of growing through that, certainly not expanding constantly and certainly not and.

Always successful and we've certainly had those moments where we nearly died for a

bunch of different reasons.

One or two of them?

Regulatory definitely to do with relationships with corporates where as I like Pete honesty saying if you're having these discussions with corporate corporate bodies, whether they're customers, whether they're strategic route to market partners and or whether they're investors through these corporate venturing arms, you're usually doing it because you need to and there's a massive power imbalance there.

And we were looking for investment very, very early days, 750K investment from the biggest construction in company in the world by value a French company and All going hunky Dory completely, completely over the top legals for A750K investment. But this big corporate just goes over the top on everything and they were early days of their venturing on and 99% of the way through that process.

They had a change of CEO had never come across Gravitricity had never come across their venturing army either, and he decided we're not gonna do venturing anymore. So the money was pulled, the rug was pulled completely.

Those sorts of things.

Nothing to do with the technology, nothing to do with anything else will come along and that need to just have the endurance.

Have the never say die.

You're gonna keep going.

It's utterly caught.

Anything remotely early stage, and I know we've got some companies who are very early stage one or two person bands, we've got others here who have got teams in there in the 10's and maybe hundreds that have been around for a while.

You're all gonna have that same experiences certain times of thinking.

Golf.

It's this a goer.

Is this got legs?

Is it genuinely real?

Any anyone who says do a feasibility study that whole kind of fail, fast fail, fail hard idea that you'll hear all over the place?

It's naive cause you never have the right information.

If if you knew for an absolute hold fact that your company is going to be the the next big thing, then you're wrong.

Probably you've you've missed something of information and you'll flip on a daily

basis in a weekly basis in a monthly basis.

Between thinking, this is brilliant.

It's gonna change everything.

And what are you doing?

And you've gotta just have that total determination to keep at it and and sort of not give up for any reason is the wrong reason.

I was gonna say not give up for the wrong reasons, but not give up at all.

I suppose so.

Sorry I'm I'm rambling a bit.

Companies now are 20 employees.

I moved on conscious decision to separate conversation that maybe we can have in person but moved on end of last year, but they are going strong.

They're kind of having to.

We had already started pivoting from underground electricity storage to also underground fuel gas, hydrogen jumping on that bandwagon to a certain extent storage and actually underground heat storage and extraction has always been sort of part of that plate maximizing the value of underground assets.

But we raised in total about 3,000,000 of equity at least three million of grant.

Alongside that equity, we had to have 20 or so employees.

Large corporate partnerships were absolutely key to our growth.

So we spend a lot of time thinking about discussing who the right partners were.

So if you think about what our system is, that are sort of simplistic engineering and viewpoint, it's winches, it's the power electronics to drive those winches.

It's civil engineering.

It's big, heavy weights.

So we looked at it didn't kind of OK, we need a corporate partner in winches.

We are not gonna become a winch manufacturer.

We are the kind of integrator system integrator and the IP and the other corporate partner partner in construction in civil engineering and across the board.

So those kind of corporate partners were absolutely key to our growth.

Umm little bit on the kind of relationship with founders and the board and I am very lucky.

I had two experienced cofounders who were kind of already semi retired or doing other things at the time but didn't have the time and the energy to do things, but did have some experience.

So that was a really nice balance for me.

I had someone on I could say right at the beginning was the chair of the company and someone who's the technical director.

Neither of them were very engaged.

It was mostly just me right at the beginning and then the the team that we employed.

But that relationship with your cofounders?

Your board is something that's really worth valuing, and yes, it will.

You'll get.

You'll have moments where it is conflict and it's difficult, and they'll be disagreement, but one of the things I say to any kind of one man person 1A spinout company, just one individual, I'm always saying find ways to get other people involved that at the minimum you can throw ideas around with and you're bored is hopefully gonna have that.

You're bored.

Will transition and our board transitioned from being the three of us to getting other people on board as advisors who are really there to carry on that throwing ideas around and then having investors on having seats, it all becomes a bit more serious in terms of reporting.

But if you can always have that sense that you're taking big decisions, you have to take big decisions as a friend or as a senior team member that you're not doing it on your own.

You're doing it with others.

That was a totally cool part of my growth story and and it you wouldn't necessarily seen it because I was always the person that was out there.

The one person that was the figurehead, if you like, but they were they were there in the background.

Our first employees were late 2017.

As I said there, there was an interesting another part of my growth story, which was a transition from doing absolutely everything myself to slowly having to delegate absolutely everything.

Otherwise nothing would get done and it's just just something that you need to experience as you grow team.

You need to let go of certain things, and for me I find it very easy to let go of things.

I can't really do myself, so running in energy technology company, A-Team of

Engineers I'm not qualified engineer so I'll get involved in that.

I will actually bring a completely different picture to their discussions and strategy discussions, but I can't try and pretend I'm gonna do the lead engineers job, so I don't.

I find it much more difficult to recruit commercial people because I could have done their job and I feel like I could have maybe done it better than they did.

That's just something everyone needs to be aware of that that kind of challenge of moving towards a delegating but keeping enough of that vision of what's going on and just as importantly, not letting HR and personnel issues rule your life.

We got an HR advisor, sort of senior board level.

She didn't sit on the board, but was a board advisor.

Umm, maybe five years into the growth story and I kind of wish we'd done that earlier.

Easier, easier said than done because she's not.

She wasn't ever cheap, but having taking seriously the challenges of HR and when do you need a office manager?

When do you need?

How many managers do you need per person?

And all of these sorts of questions became really, really, really big.

Part of my job, and it's one of the things that takeaways I had is somehow managing to keep that strategic focus at the same time as the day to day kind of firefighting that is managing human beings.

And finally, a tiny little bit on my fundraising experience.

I said we raised in total about 3,000,000 of equity and about 3,000,000 of grant into the company.

Actually a bit more quite a lot more than that in grant as we're getting on to building full scale projects now.

Umm.

For us, it was quite easy the the question do we need to get investment in?

We were a technology company building very big, heavy stuff, so it was clear cut that growing organically from early sales wasn't an opportunity.

It wasn't an A valid opportunity.

We did have some money in from consultancy work but not from selling kit.

The selling kit is the the £100 million sale, not the five or £6 million sale.

So it was very clear we needed to work with the with corporates and it was very clear

we needed investment in and during those sort of early days I've lost count of how many frogs I've kissed.

Anyone who is who's who's dealt with investors will know that phrase it and kissing a lot of frogs, and one of them will turn into the the Prince you need or the Princess you need.

And they're all kind of interesting conversations, I suppose, is what I'd say.

My experience of the Angel world, the sort of early stage investors in Scotland.

I wasn't.

Wasn't great in the sense that they didn't invest.

None of those Angel corporates bought us.

We were a kind of we're always were and are kind of a long shot in a sense of a totally novel idea.

But if you kind of treat every single frog you kiss, there's something you can learn a little bit from and you're kind of perfecting your pitch.

You're getting on with getting better at the next one.

It can be valuable and strategic investors in the wider sense are definitely where we were successful.

We were still only early stage investment, not big money, but strategic for us.

There were two sides of that impact investors.

So investors who either as individuals or as funds wanted to save the world so clean tech in a in a wide sense, they exist.

They're out there.

It's a no brainer if clean heat is really what you're all about that transition to be speaking them to them.

If you want investment, or even if you're just thinking about investment, umm, the more strategic a financial investor is, the better.

So there are financial investors out there who are fundamentally just out for a return, but they want to do it strategically to save the world really valuable way impact VC's.

And then the corporate VC's.

We discussed a bit with Pete is the question I asked with him the relationship between companies and strategics is intriguing and how they're how they're corporates get on board or don't get on board and take you for a ride and everything.

They're out there.

Will have painful experiences with corporates, but many of them will like Pete and

like me, say, sort of in all honesty, be very often don't have the choice as a founder. But the thing to remember is that the big corporates are really, really bad at doing innovation and really, really bad at moving nimbly and going fast.

So they're speaking to you because they want to, because you're doing something that they can't do and you just need to always remember that in your relationships with them.

One other thing we did do.

Crowd crowd fundraise.

Not necessarily cause it was top of our priority list, but it was, uh, something that we needed to do.

We needed to raise some money, so I'm I'm mentor or on this scheme and I'll be joining a few other of the panel sessions.

So if people will have questions about that process of raising money via a crowd and feel free to sort of jump in and ask me, and actually, I'll also be leaving the session on Thursday.

So feel free to come to that with question sort of specific questions more one to one type questions around wire experience what there was and for better or worse, I'm very confident for better we avoided debt all the way through.

We didn't feel like we were ready.

We probably could have got some versions of that and but we avoided sort of ordinary debt largely because we we didn't have the sort of asset base to get it, but it was always equity that we were looking for as part of that process.

And the other thing we always were aware of, and again my question to Pete is probably been instructive, but was was what the exit might have looked like.

And I think that is something Pete said.

He may not have that discussion with his option holders with his team all the time, but he clearly had it with his board all the time.

So if you're thinking about getting investment in or if you're already have, I'm Alison mentioned, some of you will and some of you won't.

Some of you it'll never come up if you're a profit making company is quite happy just generating profit and perhaps releasing dividend to existing shareholders.

But if you're kind of, if you're Growth expectation plan is getting money in therefore diluting the company, the people investing need to have some sense of what that return looks like.

So having a sense of what that exit is is always got to be floating around in the

background of your thinking, so I'll stop just throwing thoughts out there.
And Jason, if you wanna fire away just we've got 5 minutes only only of this session.
Alison jump in if you've could have got anything to add, but with very keen to have a discussion now, but I think we don't wanna get into the habit of running past these sessions.
We wanna use the time we've got.
So just before we jump into some questions, Alison mentioned for Thursday, if each of you could just literally make one slide stick your logo on it.

JC **Jason Clarke** 1:37:02
Thank you.

CB **Charlie Blair** 1:37:06
So we all get a sense of what your company is, who it is that we're hearing from and put your vision stroke mission statement on it.
I think of it as your kind of Growth statement.
So what is it that got you interested in joining this Accelerator in the 1st place?
What does growth look like for you?
And and it it doesn't need to be a big complicated exercise.
Have some conversations with your your team to again, it's a thing we can discuss on Thursday is how to go through that process.
If you're choosing to, but for now it's just what you think Growth looks like, and we'll be discussing that on Thursday.
Sorry, Alison, jump in if you've got.

AC **Alison Cavey** 1:37:44
Just wanna.
Yeah.
Yeah, just just wanna quick point to raise.
Sorry Jason for your question and housekeeping sense.
If anybody, you should all have had fun time from your mentors and neither had your first session or got it in the diary.
There's any if you haven't.
For whatever reason, there's any issues.
Just just reach out to me or Michael and we'll make sure that that connection

happens.

So he doesn't have to you.

JC **Jason Clarke** 1:38:10

Yeah.

Just a quick question, Charlie, about your experience with the fundraising.

You'll see raised reasonable amount of money.

What was the experience of the journey from your expectations in terms of how much equity you are looking to to give away and how much funds you're looking to raise compared to the deal you you ended up doing at the end?

CB **Charlie Blair** 1:38:29

So very simplistically, the answer is we gave away far too much right at the beginning until though towards the end bluntly, I was surprised how much people were looking to invest for how much, how little equity.

So trying to sell an idea which is really what we were doing right at the beginning, you have to have a kind of ducks lined up to persuade people to take that punt right at the beginning and for attacking a technology company like Gravitricity absolutely was a punt.

It was kind of give us 50 Grand, 100 grand, and you're either going to come back with a few million from that 100 grand or you're gonna lose it all.

There's no middle ground.

We were very clear about that and as time proceeded, the risk had been reduced, but they're sort of potential scale of that return would be reduced as well because latterly for 100 grand you were only getting a small percentage of a percent of the of the company, whereas before you're getting one or two.

So they're kind of other people's perceptions of it surprised me.

We struggle to get investors right at the beginning and with hindsight, I think they weren't that interested in the valuation we could have.

We could have valued the company much higher at the seed rays.

Then we did and then latterly and.

This is a very useful function of crowd.

Actually, everything was very public.

Once you've raised on crowded keep, you kind of can't get off it.

You know, it's all public.

What you're doing?

We raised relatively we we did four or five raises and each time we raise the valuation and did we have a kind of really hard and fast justification for raising that valuation.

I'm not sure we did.

Part of it was just enough.

People were interested in invested last time, but it's also worth noting each time when we raise money on the crowd, you have to have also got sort of professional or serious big investors already in.

You're not just persuading a bunch of punters by clever use of social media.

You have to also persuaded others others to come along.

So and yeah, in short, we gave away too much at the beginning.

With hindsight, Hindsight's an easy thing we had to didn't have much too much choice.

And then luckily it sort of got in some ways, surprisingly easy, but I've kind of I've lost track of how many people say, oh, it's it's easy once you get to whatever it is you're raising, the next step is always apparently easy.

It isn't.

It's in my experience, it's never easy to get it.

So and and the the there's there.

There aren't really sort of right or wrong answer to that, but for my personal experience and the other half of my personal experience was it was clear that we had to give away, we had to dilute.

That was part of the strategy discussion with my 2 cofounders right at the beginning. Before we go any investment in before anything, we were always going to get investment in dilution was always part of it.

So any Pi that was out there, we were always going to get end up with a smallish bit of a big pie rather than a bigish bit of a small pie.

And that is a that's almost a a personal individual choice where it's going to be and that's got to influence your your mission statements.

You're gonna give us on Thursdays, but your overall strategy and plan, it's which sort of person are you?

And and people will tell you which to be.

But you gotta turn it slightly slightly.

Go on.

What sort of individual you are?

And you're cofounders and your team are as well.
I'm any other questions, not just questions for me.
But questions are sort of across the cohort.
I know where it where online, so it's it's harder to sort of throw ideas in and throw questions in, but certainly on Thursday.
Please just if you're in a quiet place.
Just stay on muted and just ask questions.
Don't worry about flagging too much unless we're kind of in the middle of actual presentation.
But has anyone got any thoughts?
Questions for about that kind of growth, individual growth journey and Company growth journey or just about the accelerator?
No. Fine.
Fine.
Then we're my clocks.
Just gone to 4:00 o'clock.
So for once, finishing exactly the right time, if you do think of any kind of administrative he type questions.
Umm Michael's here.
You've all met him, I think last week as well.
And if you could think about that sort of vision stroke mission statement for Thursday, perhaps if you're and hopefully everyone will be joining, if you're not joining, maybe send it to Michael so that we can have a kind of think about it, but do the thinking anyway please umm and otherwise we'll see you on Thursday.
Sorry, there's one question there, Michael.
If you can sort of jump in and answer it, that might be very useful.

MC **Michael Cullinane** 1:43:22

Yeah.
So and the recording to the sessions will go up in the portal.
For those that aren't aware, I haven't seen the email and you can register on the parcel if you click the link.
I've just sent in the chat and the top right of your button for register and once you've registered those buttons for the portal, I'll be proving registrations as I see them and I think some of those confirmation emails end up in junk inboxes.

So and please do keep checking and yeah, so the recording and the transcripts today, sessions will go up stuff also.

AC **Alison Cavey** 1:43:56

Thank you everybody.

CB **Charlie Blair** 1:43:57

Super thanks everyone for joining.

Thanks for giving us the time out of your busy, busy lives, but hopefully this sort of strategic thinking is valuable as a sort of step back from day to day stuff.

And my mental Reese Emera.

□ **Michael Cullinane** stopped transcription