PRINCE EDWARD ISLAND LEGISLATIVE ASSEMBLY

Speaker: Hon. Francis (Buck) Watts

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Standing Committee on Agriculture and Fisheries

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SUBJECT: BRIEFING ON DRONE TECHNOLOGY

COMMITTEE:

Hal Perry, MLA Tignish-Palmer Road [Chair]
Dr. Peter Bevan-Baker, Leader of the Third Party
Hon. Paula Biggar, Minister of Transportation, Infrastructure and Energy
Bush Dumville, MLA West Royalty-Springvale
Hon. Sonny Gallant, Minister of Workforce and Advanced Learning
Sidney MacEwen, MLA Morell-Mermaid (replaces Colin LaVie, MLA Souris-Elmira)
Bradley Trivers, MLA Rustico-Emerald

COMMITTEE MEMBERS ABSENT:

Colin LaVie, MLA Souris-Elmira

MEMBERS IN ATTENDANCE:

Hannah Bell, MLA Charlottetown-Parkdale

GUESTS:

Department of Agriculture and Fisheries (Hon. Robert Henderson, Evan MacDonald, Barry Thompson)

STAFF:

Ryan Reddin, Clerk Assistant (Research and Committees)

Edited by Hansard

The Committee met at 10:00 a.m.

Chair (Perry): Welcome, everybody, to the Standing Committee on Agriculture and Fisheries.

A few things I'd like to say before we get going: We have Sidney MacEwen, who will be sitting in replacing Colin LaVie today; and we also have Hannah Bell, who'll be sitting in on the meeting also.

For our presenters, before you speak for the first time, or when you first begin to speak, please state your name for Hansard so we have that on record; and for all Members, please wait to be recognized before speaking. Just indicate to me if you have a question, and I will recognize you and at that time you can speak.

We'll start off on our agenda by calling this meeting to order, and we need to have someone adopt the agenda.

Mr. Gallant: (Indistinct)

Chair: So called by Sonny Gallant, thank you Sonny.

On our agenda we have a briefing on the drone technology used to identify fields at risk of runoff, and today we have the hon. Minister of Agriculture and Fisheries, Robert Henderson; we have Barry Thompson, who's the Manager of Sustainable Agriculture; and Evan MacDonald, Soil and Water Conservation Specialist. Welcome.

Without further ado, we'll begin your presentation.

Mr. Henderson: Thanks, Mr. Chair. I really appreciate the opportunity to be here as a newly minted Minister of Agriculture and Fisheries. My name is Robert Henderson, and the opportunity to give you some insight as a Legislature on what some of the new advancing technologies are on agriculture is a great opportunity.

I have with me Evan MacDonald and Barry Thompson within our department, and I think the thing I've (Indistinct) – I had a chance to go through this briefing, only the minister for three days, so bear with me a little bit. I'm trying to catch up on all of the terms and technologies of what not; but as a former farmer – well, I guess I'm still a farmer, still have a few blueberries – but since I've been out of farming the last 10, 11 years, I'm fascinated by how much the technology has advanced just in that period of time.

I think when we look at some of the challenges that agriculture has faced in past, now we have new modern tools that are able to address some of those issues and I think you're going to see a whole new era in sustainability and environmental protection when it comes to our primary industries, and I'm really looking forward as minister to be part of this and to address any challenges and directions that we go.

The other comment I'd like to make is that the industries have been very endorsing of these technologies, and I think this is part of what we're trying to do here today is to get more explanation, I think. When we went through the capital budget on agriculture and fisheries in the fall sitting, there was a lot of time spent on some of the new purchases that were going to be made in technology, I think the drones specifically, and I think that's what's stimulated this whole idea of coming in front of the legislative committee to give more insight so everybody can understand it.

I think that's a really good idea, just because even from my knowledge as a former farmer to what the initial presentation that I did see is somewhat fascinating. So without further ado, I will turn it over to Evan and Barry and I'll sit back and partake of this as much as all the members of the Legislature will.

Chair: Thank you, minister.

Before we get going again, would you prefer to have questions held until the end of the presentation, or can they do it during?

Barry Thompson: I think it would be best to hold them till the end, in case we're answering stuff –

Chair: Okay.

Barry Thompson: – as we go along.

Chair: We'll do that. Okay, thank you.

Barry Thompson: I guess I'll start off. Barry Thompson, I'm the Manager of Sustainable Agriculture section with agriculture and fisheries. If we could, I think what we'd do is that I'll speak to the first part of a few slides and then Evan will jump in. We'll be back and forth. There'll be some discussion back and forth between Evan and I as we go.

I think it's important here first of all, too, to kind of review sort of what our sustainable ag section does, give the folks here in the room a bit of a background to what we're up to and what we do on a daily basis.

To start off with, of course, first and foremost when it comes to this presentation, we deal with soil conservation in our section. That would be the various activities keeping soil in place, those type of things. It ties into our residue management. That's your land cover, ensuring that we have some kind of organic material cover on that land or working with those soils to keep them in place that way.

Another piece of the section that we don't hear a lot about but we deal with is our storage management. We (Indistinct) producers in fuel storage, pesticide, silage, that type of thing as well.

Riparian zones, that ties nicely to our soil conservation work as well, but with the riparian zones and buffer zones it includes things like stream crossings to ensure that traffic ability and that kind of stuff isn't going through the streams, and we keep cattle out of our streams, those pieces as well there.

Another piece is our improved irrigation efficiency, and when it comes to water and water management that's going to be a big item here in the next few years with water and water use. We're kind of coming into a point where irrigation and irrigation efficiencies are going to be very important to us. That also ties to on-farm water use efficiency. It's all part of the same piece.

Another within the section is nutrient management, soil health and soil quality. Recently there was a report out on our organic matter levels here. That comes from this type of work that we do in our section. We have an integrated pest management piece, and as well we do on-farm sort of efficiencies and energy efficiencies.

So we're a pretty diverse group. We have a lot to cover, but in many ways I kind of look at it as they all kind of tie together when it comes to the soils, the nutrients within those soils, the pests that are involved in the soil and the efficiencies around the farm. From that piece there, that's a bit of an overview of what we're into.

What we're looking at here today, I guess, is we'll go to the drones and the drone technologies. From there I'll pass it over to Evan and he can kind of give you sort of where we have come from to where we're going to.

Evan MacDonald: My name's Evan MacDonald. I work in the sustainable agriculture section as a soil and water conservation specialist. I guess really what we're looking at, the main scope of this presentation is about preventing issues that you see on the left here: soil erosion issues, where water is just kind of concentrated in certain areas and ripping out certain areas of fields and then we'll go in and survey the lands, design a project and work with construction operators to actually make it happen and put what we call soil conservation features on the land.

I'll kind of go back a little bit in history here. How we surveyed before was kind of with a rod. You'd have two or three guys in the field. Lately, the last 15 years or so, we transitioned to GPS mounted to an ATV, where an ATV would kind of drive around the edges of the field, pick up the low areas and what not, and in the end you get a file that looks like what you see on the right there, which is a map of contours and low areas and points and we would base our design off of that. Up until last year, this is kind of what we used for our surveying methods, and then we adopted drone technology in the spring of 2017 I believe.

Where drones really fit in are between the tools that we use on the ground, with rods and stuff like that with GPS, and manned aircraft. So they're not really replacing either of those things. They're more just enhancing some of those other methods.

What we're using drones for, of course, we get beautiful photos from them from the air, a bird's eye view, but they're more than just – it's more than just pretty pictures. We're using them as a surveying tool. So we'll go in and for a field such as this one that you see here, we may capture three or four hundred pictures. Basically, it's an automated survey. The drone goes up, uses GPS to hit different waypoints along the field, so it's surveying the field usually in a lawnmower pattern from one end to the other.

Something like that might take about fifteen minutes in the field. Previous methods with the ATV, you're looking at hours – three, four hours. So really, the time spent in the field doing stuff like that, it's a huge benefit with the drone, and I'll talk a little bit more about some of the benefits and differences later; but really, like I say, this is a surveying tool. It's not a toy. It's not something that we just use to take photos or video. It's what we use to actually survey now.

I'll just give an example of what a survey kind of looks like here. When it's all said and done, this is the end product. We're using a survey – this field here is probably a hundred acre or so field. We went in and surveyed this in April, so we can see anywhere where there's damage done from the melt in the spring. We can go in and we can actually share this file with the farmer online. We can take measurements to measure how wide these are.

This is about a six-foot-wide rip in that field, so lots of (Indistinct) being deposited in different areas of the field. I guess that's kind of why we do the work that we do, is to try and prevent issues such as this; but having this image, this shot in time from the spring, really gives us and the engineers that work with us the ability to make smarter decisions on the field, because before we were going off a file that was contour lines and points.

We didn't have this picture to go by, and like the old cliché a picture says a thousand words and that's exactly what it is here. We can go back at any point in time and review this and say: Okay, maybe we need to have some structures in place here to fix some of the problems.

I guess that'll put me back to the first there. I just have a short video here to show you as well, from a project kind of from start to finish. This will kind of zoom in, show a field that we surveyed with the drone, go through the process, show the elevations and then actually went in and surveyed it again this fall after we built some of our structures.

So you're starting to see this is just a drone image of that field overlaid over satellite photos, so you can see the difference in the resolution, but here – this is kind of an existing grass waterway, obviously, that isn't quite doing its job right now. We can start to see that there's water that's not getting into that waterway. It's kind of ripping through on either side. So that's something that we want to fix up.

Then as well, the same thing down here, and in this case the farmer had some piles of material that we're going to spread around to kind of patch up some of these low spots. When it comes through on its final run in the end, you'll see the actual project that we worked on this spring.

So just an incredible amount of detail from the drone surveys: This is elevation here, so higher areas in red, lower areas in blue. You'll see the contour lines there. If you're familiar with any type of mapping or surveying, that's usually what we would go by in the past to determine elevations and which way things are kind of flowing.

You'll see there, you can see the –

Barry Thompson: The deep ruts.

Evan MacDonald: You can see the deep ruts and the rips in the fields right there; and then coming through here now, I'll stop it for a minute and talk about the structure itself.

This is from October. We have –

Chair: Just going to interrupt you, sorry about that –

Evan MacDonald: Sure.

Chair: – but we're having a technical difficulty with the –

Clerk Assistant: The mics.

Chair: – with the mics, so we'll just have a quick recess until that's repaired.

Barry Thompson: Okay.

Evan MacDonald: Sure.

[Recess]

Chair: (Indistinct) back in order. I want to thank you guys for hanging around. We're back up and running. As we talk about technology, anything can happen at any time. Sorry for the interruption, but we'll just continue on with your presentation, Evan.

Evan MacDonald: Okay.

I'll pick up where we left off, and I'll pause the video here anyway. I was talking before about these are kind of the three main structures that we would use in a field to try and prevent soil erosion or to try and help it in any way, are a farmable berm, a terrace and a grassed waterway. I'll just kind of explain what each one does.

In this case, there's water coming down the slope from the bottom of the screen here heading towards the top, and this farmable berm acts as a little bit of a ditch to – in this case, it's going to divert the water into this terrace here. So the farmable berm is probably – it might have a little swale on the end of it about 10 to 12 inches high. It's shallow enough that the farmer's gear can just drive right over it.

It's putting the water into this diversion terrace here, and this terrace now has a berm on the right-hand side of about two-and-a-half, three feet high, so the water's going to – there's also a lot of water coming from the left side of the screen down, funneling in, it's going to hit this terrace and run down this way into the waterway, and eventually it'll be funneled down wherever it hits the stream down here.

The idea of having all these structures and having them in grass is that grass acts as a natural filter and it's going to filter out a lot of the soil and sediment from the water, and the water should be cleaner by the time it gets to the stream.

In this case, this terrace had to work with the farmer's auto-steer GPS technology, so when the farmer's going through the field everything that we make kind of has to line up with what they're using. This terrace in particular is about 18 feet wide, which is the width of a planter. We're making sure that we're not getting into multiple planter passes or anything like that, so we try and make it work with sprayers and planters because farmers are adopting GPS technology at a pretty fast rate, and it's great technology in the field. It helps them a lot and it makes things much more efficient. We work with them on that side to place our structures.

This is just the final fly-through of the field here, just to give you an idea of what one project would look like. That'd be probably an average or a smaller size project in terms of what we do. Some fields have multiple structures.

I'll go back to the presentation here. Just to kind of summarize the drone versus ATV surveying, it really minimizes the time spent in the field; so in a day now, we're able to cover probably 500 acres no problem with one drone, whereas before you're like 100 to 200.

It's limiting our costs on the service side. Before we had a GPS, a 30, $40,000 GPS unit attached to an ATV that was kind of shaking around all day and we're getting some pretty hefty service bills at the end of the year, 10 to $12,000 usually per year wasn't out of the question, and this year there won't be any service bill at all for our gear. We still use our GPS, but we don't use it mounted to the ATV as much.

It also limits the bio-security concerns. Before when we were surveying our fields with ATV, before we go to the next job or the next field we usually wash off with water and a disinfectant sometimes, and now, since we're in the air, it's not an issue as much anymore.

We can survey now in the spring, earlier in the spring when the fields are very wet. We don't have to worry about getting stuck. Since we're in the air we're not on the land anyway. In the end, the main value of course is the high-resolution ortho photo that we get that we can use to show the farmer. We

can use it in justifying some of our decisions, and it's a record that we have in time from that specific field.

Going forward, we're looking at making an additional drone purchase this spring with a little more capability, some more plant health capabilities that we can work with some of our work in the nutrient management side of things and the integrated pest management, so using multi-spectral and thermal cameras on these drones to create maps to look at things like crop stress and comparing with yield monitors and soil quality and things like that, so you can really start to get some pretty good metrics there on what's going on in our fields.

This isn't something that we've used yet. As I mentioned, this is a purchase we're looking to make in the spring that will just enhance our capabilities outside of elevation surveys.

I'll talk a little bit now about the Concentrated Flow Analysis Program. This is something that kind of came through in a release from the last month or so I guess, Barry?

Barry Thompson: Be October, I believe.

Evan MacDonald: Okay, so a few months now.

Basically, what this is about – so this is on the department of agriculture website now. It's a program that's looking at identifying these areas at risk of concentrated flow, and the end goal is to keep some of these maybe higher risk areas in grass.

So either farmers leave them in grass – in some cases it may require construction, where we'll work with the farmer to make these waterways. In some cases it may be berms or terraces as well, but I'll just kind of go through the technology on how we are identifying these at-risk areas across the whole province.

This is a little bit separate from the drone survey. The drones are great at a scale of probably one to 500 acres at a time. You're not going to survey all of PEI with the drones. The Island's too large. The drone, we're not allowed to fly high enough, and it would take literally years to survey the province with one of these drones that we're using anyway.

I'll talk a little bit about this. This is just a 3D image of a watershed just north of Kensington, so what you see here is the 2010 ortho photos that the province collected draped over a 3D digital elevation model that we get from what's called LiDAR. The province spent about a million dollars in 2008 on a LiDAR data set.

What happened there was a plane flew over the province with basically a laser attached to it that would send signals down to the ground. The amount of time it takes for the signals to return are measured and we have an accurate elevation model of the whole province. For every 1.5 square meters on the ground, we have an elevation. We're the only province in Canada to be fully covered, so we're pretty lucky there that we're a small area. We have tons of information that we can use and it's huge for things like this, and I'll show why.

This is just a digital elevation model for the watershed in particular that I'm looking at here. It's probably three or 4,000 acres. With this digital elevation model, we can input it into some of our GIS software. GIS stands for geographic information systems. We can use that software to analyze the elevations that the digital elevation model has.

We're looking at some of the lower areas. We can – like I said, it's an automated tool. It will automatically look at and identify those lower channels, those areas at risk, and then it can spit out something like this. So we can have that, and you'll see it over top there. It's not just identifying where streams might be, but it's going on the ag land as well and looking at the low areas.

So those are the areas, generally, that you might be concerned that there may be some erosion, and that's just showing for that one watershed in particular, but we ran this over the whole province and you know after a weekend or a couple of nights of processing which is automated we have that for the whole province.

I'll go back to the sheet here. On the lower right hand corner, that's the form that a farmer would send in, and just list their property ID numbers that they can send us

and we'll create maps for them and get them in touch with a soil conservation specialist and we can start to look at maybe some of the at-risk areas. That's what that looks like.

Now I'll get into some of the other uses. I'll skip ahead to this slide that I believe Barry's going to introduce some of the other uses here.

Barry Thompson: May not even have it there, right?

Evan MacDonald: It's not there.

Barry Thompson: Yeah, so what we're looking at now – as much as we deal with agriculture and agricultural activities, with the drone and the drone technology we saw a lot of other opportunities and opportunities with other departments, so why not share with other departments? You scratch their back, they scratch yours, that type of thing, so let's work with them a little bit.

Highways was our first logical one to go to. We looked at highways from the perspective of there's photography. Highways will look at their jobs, take photos of their jobs prior to, during and after, so we said there may be some opportunity there for us, so why not go down that road? Evan can touch on some of those projects.

We're also working with education. Education, sometimes there's school areas, they may be looking at heat loss in some of their buildings, those type of things, so you have some opportunity around that as well. I know we have the concentrated flow piece that we're doing.

I guess the whole idea of what we wanted to do was as much as we may have that drone, that drone is applicable across this whole government wherever we can do it and we can use it. The nice piece about using the drone is that we may be on a job site up in the Souris area, and while we're up in that area highways also has maybe us drop in for a half hour job, do a little work for them, do a little survey for them, bring that back and work with them on that side.

All together, as much as it may be an agricultural tool, it's a tool we can all use. If I could get Evan just to touch on a few of the examples of what we're doing, it'll give you a little insight to where we're going and maybe generate some questions at the end here as well.

Evan MacDonald: Yeah, I'll touch on some of the projects that we've already worked on kind of with some of the other departments across government. This is the new transportation highways depot near the airport there in Charlottetown off the Brackley Point Road, so this is a 3D model of the site. We surveyed the site and gave transportation some contour lines and stuff like that. We can go in and survey this 45-acre site or so in probably 20 minutes in the air. If you're surveying that with traditional methods, with GPS and rod, you're looking at days to do all that.

Another one of the side kind of things is – of course, this is a 3D model, so I can move around. You can look at some of these piles and things like that. Previous methods of estimating what's in those stockpiles involve either someone going up with a rod and a GPS or in some cases just a guy standing on the ground kind of taking some measurements and kind of estimating what those are; but with the drone now, we can actually measure specific volumes within seconds and they're one to two percent accuracy on these piles. As far as government stockpiles, they could be useful there in certain cases. It's really a matter of minutes surveying those rather than hours, so that's one of the projects there.

Another one: We were contacted by transportation also to monitor some of the construction projects, so this is the Rollo Bay school here, also in 3D. We have the Public Schools Branch, a representative called us there, interested in a topographic survey of some of the roofs, so taking in some of the building corners just to have an inventory of where things are, ventilation units and all those kind of structures.

I figured one alternative to a topographic survey is to have this 3D model where they can look at this at this point in time. You can go in and survey that again every year, two years, whatever, and you have that record in time of what that roof looked like and you can see exactly where everything is. In this case, things were under construction so everything obviously isn't here now, but you

can do that for schools, public buildings, whatever, and again, this is all 3D.

Go back here. We use it for monitoring some of the under construction as I said, so these are just aerial photos. This is of the Tyne Valley, the new seniors complex there. Souris beach, we went in and surveyed this stretch of coastline. They're looking at potentially new breakwaters going in in this area. We actually mapped the whole coastline, so we have this in 3D as well. We can start to compare the amount of sediment and sand that's on the beach. Is the beach growing, is it losing sand? We can determine all that. We'll survey before, during construction and after, and kind of get a better picture on how things are looking there.

Again, Barry touched on the thermal capabilities. We're looking at another drone purchase with some more advanced camera capabilities. This is a thermal image of a roof. You could survey a roof like this, say you heat the building up during the day, at night time you survey, and get an idea of where maybe heat loss is occurring in certain areas. Using this for public buildings, hospitals, schools, it's another application for the drone.

We're going to have a thermal imaging sensor for using in agriculture. There's lots of uses, soil moisture and things like that.

Barry Thompson: And disease.

Evan MacDonald: Why not – and disease.

Barry Thompson: Disease (Indistinct) –

Evan MacDonald: Why not use it for a use such as this as well?

That's kind of a run-through of some of those other applications that we had. We're welcome to open the floor for questions now if (Indistinct) –

Chair: Great. Thank you, Evan, Barry, minister.

The floor is now open for questions, and on my list I have Minister Biggar.

Ms. Biggar: Thank you.

First of all, thank you very much. It's very interesting for my department to have that as a resource as well, especially for our construction sites and things that are going on.

You had mentioned – and you might want to, I have just a couple of questions and I'll put them out there and you can maybe expand on them or comment on them.

Unidentified Voice: Yep.

Ms. Biggar: One of the things you mentioned is the use of GPS for farmers. One of them I know that has new technology, the sensors for spraying, if you might want to expand a little bit on that, and in regard to when they need to water on potato crops.

The other thing I'd be interested to know is about the fall planting initiatives in regard to soil erosion or reducing soil erosion and what kind of windrow protection are things being looked at.

Evan MacDonald: I'll touch on kind of the GPS in the spring. I don't know how many farmers have a kind of – we call it variable rate spraying on their tractors now.

I don't think the number's very high, but it's potentially a great technology where basically the sprayer is integrated with the GPS, and you may have some type of map that you derived from a drone survey to say: Okay, well, this part of the field here maybe doesn't need as much pesticide or herbicide sprayed on this section and the sprayer's talking with the GPS and it turns certain nozzles off at different times, so the different rates, the hope is that you're reducing the amount of inputs that you're putting into the ground.

I'm not sure on how many are using that now. I know it's a newer technology, and as far as GPS and farmers go, it seems like more and more of the majority are probably using them now, and it's a great technology for sure.

Ms. Biggar: Great.

Barry Thompson: Most of our fields would be designed around the use of GPS, and the individuals that Evan or the rest of the crew

would work with, would determine the GPS, the size of the equipment and all that type of stuff that they're using, so then they'd adapt to their field and their field conditions to make those adjustments.

When it's related to – I believe you touched on residue or cover and that type of thing, we would encourage as a department of course either a late fall plowing; if there is an early fall plowing, we encourage individuals to get into a cover crop whether that be a cereal that they plant in the fall to ensure that at least the crop is there until it freezes out or dies, or you get into winter cereal which would last through the winter and of course that's going to retain a lot more nutrients and that type of stuff for you. You're not going to lose it in any kind of erosion or leeching process.

That's done through our stewardship-based program. We have a stewardship program and that (Indistinct) currently is the Growing Forward 2 program, is a federal program we get federal dollars through. Coming up, it's not going to be dropped by any means because there's a new agreement coming in place, the Canadian Agricultural Partnership that they're referring to –

Ms. Biggar: Yeah.

Barry Thompson: – as CAP, and that as well is part of that there. That's part of that residue piece where we're trying to keep some kind of cover on the land.

We're not going to sit here and say that people are all doing that, because obviously we see a lot of red land in the fall and if you're going to get into red land in the fall, one of our things is that we would encourage producers to plow as late as possible in the fall, because it's always a nutrient loss issue when it comes to fall plowing and those types of things, and the later you plow in the fall, the colder the soil is, the less activity there is, the less potential for losses through leeching and that kind of stuff, so we're trying to cover our bases that way when it comes to those type of things.

Ms. Biggar: Right.

Barry Thompson: I think you touched on irrigation and irrigation scheduling a little bit. What we deal with here, that's more about (Indistinct) and a lot of monitoring on the irrigation side, and although we're not directly involved with that –

Ms. Biggar: No.

Barry Thompson: – we do set up irrigation systems and we try to be efficient with irrigation specialists. Growers would have their own people to deal with in those areas to ensure that they're irrigating at the proper time, and the proper time isn't just when it's dry outside.

There could be other times when we're actually doing that, but in doing so we're trying to ensure that we use the proper amount at the right time at the right moisture levels there for those crops, and that type of thing.

I think that's – you had another point.

Ms. Biggar: I just mentioned about the (Indistinct) you know, planting –

Unidentified Voice: Hedgerow?

Ms. Biggar: Hedgerow and –

Barry Thompson: Hedgerows, that type of thing?

Ms. Biggar: – protection, yeah.

Barry Thompson: It's not something we would encourage that individuals get rid of (Indistinct) –

Ms. Biggar: No, no.

Barry Thompson: – and we don't have a program currently in place within our department to put that in place. At one point, it was through the forestry people that we dealt with that.

Ms. Biggar: Okay.

Barry Thompson: And of course, we're going to encourage those types of things, but a lot of times we get into agriculture, you see contradictory activity going on because we have narrow fields and we get soil losses and things of that nature –

Ms. Biggar: Yeah.

Barry Thompson: – so we have to do some combination of fields, but in doing that we're reorienting the field and we have to remove a hedgerow on our own. That's a possibility; but I can say that anytime we get into that discussion, especially if it involves different landowners, those discussions are had with different landowners to ensure we come back with that.

The ultimate goal is that we try and keep soil in place, not lose it, and of course, wherever we can have those windrows it's going to catch that snow, it's going to get that cover in the winter, although today you wouldn't think it, but that type of activity is going on out there all the time.

Ms. Biggar: Great, thank you.

Barry Thompson: Yeah.

Chair: Sidney MacEwen.

Mr. MacEwen: Thank you, Chair.

Thanks, Barry, Evan and Minister, for the presentation.

I'm curious a little bit more about your application process. You threw up the form and how that works, and no doubt you guys target certain areas anyway, and with your updated maps and the technology you're able to really find your problem areas.

A few questions: How do you balance what you want to prioritize versus farmers that are just applying on their own? How do you prioritize that? And is that as simple as is, if I'm a farmer and I'd like my land looked at? Is there a wait list, how many – can you speak maybe more to that?

Barry Thompson: We've probably been pretty fortunate in a sense. First of all, from the concentrated flow program that's there that we set up, we got cooperation with the potato board, with the federation of agriculture and all of the various grower associations and we put word out through them to try and encourage this.

It's a slow process, I'll say, coming back in. I think when the individuals are coming back in and farmers; the nature of farmers as they are – forgive me, minister – but the nature of farmers is that this time of year they're not really thinking a whole lot about soil and soil activity; but what's going to happen is that probably come late February, March, all of a sudden it's going to queue up and get going.

We're prepared for that. We have staff ready to go. We've never been in a situation in agriculture where we've had more applications than we can handle. That's always been very good on our end. We've been able to cover off all those types of things. You mentioned priorities and yes, there are priority areas within the province. We have not got into a situation where we're targeting individual watersheds to that point.

I guess from that perspective, it's because we've always been fortunate enough to have enough funds to be able to cover everything we've got so we haven't, sort of, targeted one way or the other.

The growers themselves, through our extension and current work that we do with them, it's surprising the number of individuals that come forward from those areas that you would call sensitive areas anyway. That's either through past media issues that have been in those areas and potential problem areas, whether they be fish mortalities or (Indistinct) like that, it tends to drive those individuals to us anyway.

I guess to answer your point, we haven't really gotten to that prioritization yet, but we have been able to cover off all those types of applications. Like I say, it's sort of a bit of a lull time for us to prepare and how we do our applications, it's a first-come-first-serve when you walk in the door. It's not one where we would hold applications now or take applications now and get ready to go. We just want to keep it – we think this is as fair way to do it as any, when it comes down to it, and I think we're touching all the bases when we go forward.

Chair: Sidney MacEwen.

Mr. MacEwen: Thank you.

That's fantastic to hear and I have no doubt that it's a good thing now as word spreads and as people push it. Your workload will no doubt increase with the farming organizations.

I guess, minister – you've been there for three days, but to me this is the time to be a little bit more proactive in our problem areas, to get out there and do it before the onslaught of farmers that want to take advantage of this down the road.

You're keeping up now, but is there any thought process to being proactive now before the queue gets too full?

Mr. Henderson: From my perspective, like I said, it's only been three days but I have had the opportunity to meet with various organizations and I'm going to be meeting with some more of them this week, so we'll be getting the message out to make sure that everybody is proactively thinking. I think just the whole publicity about now a new minister, it creates people an opportunity to start thinking about what are opportunities that might exist and what not.

We'll do our very best. We have our extension workers out in our different (Indistinct) across the province. They're in constant contact, so I think they're all – I'm pretty sure we're getting the message out; but we'll continue to keep doing that and try to make sure – and even today's, I'm sure there's media here and whatnot and that will get even more people excited and interested, but I think the point is that we're seeing technology and expertise here now that has changed significantly in recent years and it's an opportunity to start and maybe address particular issues that were – farmers weren't quite sure how to deal with it. Now there maybe is a solution to some of their issues.

I'm sure they are a creative and resourceful bunch. They'll be coming forward to us and seeing what ways we can come up with some solutions for them.

Chair: Sidney MacEwen.

Mr. MacEwen: Thanks, Chair.

That's good, and you're 100% right. Now that we can react quick and we know where our kills are going to be, or fish kills or runoffs are going to be kind of thing – I know not exactly, but it's an excellent way to start getting into that.

As far as the costs, is there any cost to farmers who apply to this? And a follow-up question, if you don't mind after that, Barry: Is it just for farmers? Are we looking at other private landowners for something like this?

Barry Thompson: There's no cost to a producer when it comes to us doing the evaluation, setting up a plan and sort of developing the whole project for the individual. Through our stewardship programming, we fund up to 66% of that ourselves. So, it's only that one-third cost going back to the individual.

The nice piece to that, as much as it all fits together, is that it works in conjunction with our Alternate Land Use Services program, what we refer to as ALUS, and with ALUS the individuals taking productive land out of – they take it out of production – they're paid annually for that acreage of land that's no longer used.

So, I think we've roughly figured out that if I was to do a conservation project within a particular field, there's land that comes out of production there. It's funded at 66% by the province, or actually federal – federal (Indistinct) to it, within the next 10 years based on those payments of ALUS. That project is entirely paid for itself. There's nothing really there.

To speak to the fact whether it's just producers – no. It's landowners, so if landowners wish to have something done we'll work with anyone at all. When it comes down to it, the funding may be different because our funding through the federal sources would be towards the producer, but we'll work with any individuals in those areas.

Mr. MacEwen: Sorry, Chair.

Just to clarify, you say there's something in addition to the ALUS program?

Barry Thompson: No, I'm sorry. It's the stewardship plus the ALUS over a period of time –

Mr. MacEwen: Okay.

Barry Thompson: – would end up covering the cost.

Mr. MacEwen: All right, thank you. I appreciate it.

Chair: Thank you, Sidney.

Peter Bevan-Baker.

Dr. Bevan-Baker: Thank you, Chair.

Thanks, gentlemen, for being here and I'd like to start by saying that there are many societies who have managed to preserve and protect, and enhance their soil over generations, hundreds – sometimes thousands of years – clearly without technology.

While I'm very grateful that we have these devices available to us today and I think they can provide us with new information and better information, we shouldn't forget that the technology itself is not going to lead, necessarily, to better soil conservation or farming practices. It's the practices themselves.

My first question is, and you've sort of answered this a little bit: How will the information that we gather from this improve the programs and the policies that we make, and basically the actions in the field?

Barry Thompson: I would look at the information that we're gathering – sometimes you have to know what you're doing wrong before you figure out what to do right and by looking at this and looking at our problems that we've had, we look at our past history of practices, management, those types of pieces.

As a result of those, programs like our stewardship one that we have, we're adopting different pieces of that program to enhance and encourage growers to do various things like our residue, like our fall cover – those pieces there – our rotation practices, to ensure that we would improve the quality of those soils. That's one direction that we're doing.

The other piece, we're probably changing farming in the direction in which we farm, the size of the fields with which we farm, those things. Although the fields seem to be quite large, what we're doing is trying to conserve those soils in place because what we're losing right away with the soil erosion is that surface material that's containing probably the most valuable pieces; the biological pieces are leaving right away.

Now, we have to get that back in some fashion. By containing it there, by putting these organic implements into it, if we could only have more manure sources – those types of things would be nice, but I think just overall that stewardship programming that we have in place is encouraging growers to go that way.

It's a long process to bring that soil back to where we would like it to be, but it's a step. We're going in the right direction.

Chair: Peter Bevan-Baker.

Dr. Bevan-Baker: Thank you, Chair.

I really appreciate your answer, Barry, and the pictures that you showed there of the fields were taken in spring and you could see how the grassland buffer zones, or the grassland runoff, was clearly failing. There were ruts on either side, and you see that all over the Island as you drive around.

A concern I had was in the picture you showed of the plan that you brought forward with the headland and then the ditch and the culvert. It all leads to another grassland runoff and would you – whether or not it was certainly wider than the ones that were in the field before and I appreciate that – but the problem, the underlying problem there is that there was no fall cover crop placed on that field and that if there was one we would not have seen, at least to the extent that we did on those pictures, the problems.

I'm wondering where the department sits now in terms of enforcing fall cover crops. We see with the changing climate the possibility of getting crops in the ground that will be useful. You can plant right up until October now and have a real good chance that you're going to get good fall cover. So, where is the department in terms of enforcement of a larger percentage of the fields that we grow crops in having fall cover on them?

Barry Thompson: I guess I look at our department as not one of enforcement but one of encouragement. There's various ways

we can encourage and that will be through a funding-based program which is incentive, if you would. Any of our project work would incentivize or work towards that end, where we would work with producers.

The other piece to this that's sort of – it's always very complex because there's always a lot of other things happening behind the scenes – is that we're working with individuals and producers on their management plans. So, with management plans we're looking at things to put in that rotation and look at things like a cover, like additional organic or some sort of a base to put in there to try and hold it.

What you looked at with the fields in the picture that you saw, and yes there was some very good rips and great examples there of what's happening, by putting those buffers and putting those grass waterways that we have in there now, we have to encourage growers to maintain them. Because it's not just putting it there and saying: Walk away, it's all going to be good. Because you can imagine if you were growing potatoes over time, you're dragging the soil up there and you're actually creating a ridge on either side of that grass waterway. So it's having the growers understand that has to be maintained and cut down to get that water in there.

The grass waterways we're putting in in strategic areas, as Evan has pointed out to us, and the width that we're putting in, we actually should be slowing that water as well. All of our designs should slow water from movement so there shouldn't be near the rips that you're seeing in those anyway. It's sort of a very complex combined situation, but I guess from our side it's always the encouragement to put the fall cover and work with them there.

Like I say, I always say that our department is a great department because we don't have enforcement. We don't work that way on that end with the growers, but we have a lot more positive relationship with the growers, and probably accomplish just as much if not more by just that encouragement piece as opposed to an enforcement piece. We all like to get our backs up when somebody tells us what to do.

That's sort of the approach we take with most of those things. I believe we were very successful with all of the growers that we're working with.

Chair: Peter Bevan-Baker.

Dr. Bevan-Baker: I appreciate the language and I, actually, absolutely agree with you and I should have used the word 'encourage' rather than 'enforce' in my question.

I know, Barry, you were a lead author on a report on soil organic matter and how that's decreased over the last couple of decades in the province here; very complex situation, but one of the other factors that would – if we had higher organic content in our soils here, we wouldn't end up with the sort of erosion problems that we have.

As we sit here today with 30 plus millimeters of rain or whatever coming our way on bare fields, I think there's danger that we're going to see – it's ironic that we'd be having this meeting here today and having spoken to many people in the department – people are aware where the danger areas are, where the high-risk areas are –

Barry Thompson: Yeah.

Dr. Bevan-Baker: – and we've talked in the House many times about buffer zones and the fact that having whether it's 15 metres or 30 metres or whatever – a consistent buffer zone around the province makes no sense at all. Really, there are places where you need – 15 meters is tons, some you need more and then there are the high-risk areas where some major things need to be done including, perhaps, even wider buffer zones.

I'm wondering with this technology, presumably we now have confirmation of those high-risk areas that everybody knew existed anyway or perhaps we now know of some new high-risk area we were not aware of before. Has the province got a list of priorities? Do you have – okay, well in this field, in this field, and this field these are the places where we can see the next time we have a heavy rainfall, we're going to have a particular problem? Have you A) identified those areas and B) do you have a particular work plan with those farmers in order to rectify that?

Barry Thompson: Honestly, we have not identified those areas at this point. We have analyzed the entire province. It is in place, and the offer is out with – Evan and I have spoken with a few watershed groups and the watershed alliance and have offered that information to them to say: In your particular watershed, you wish to have this analysis and look at it, we'll work with you to identify those areas. In hopes, there, that that relationship, that local relationship between watershed and producer, would then say: We have a problem here. How can we solve that problem? Then, that problem can be brought back to us that way. That's one mechanism that we're looking at.

To your point of whether we've identified across the province our areas to work with the growers, no we haven't. We're looking at the watershed approach. One of the things that, if I could speak for the department in this area, is that our limited numbers can't touch every producer, but if we could work with watershed groups – to me, it's the watershed way to go − if we can work with the watershed group, that watershed group then works with the producers and the general public within that watershed to show the issues that they have. To me, that'll drive it back to us to where we can go with that.

That's the approach we have taken so far.

Mr. Henderson: I'd like to add a little bit to that, too. I think the key point is that our watershed groups are representatives of the community. There's people who are farmers, fishers, people in the recreational fishing and just general people of the community and they are always looking and working with each other to try to see if there's a way that they can, once again, prevent and reduce those risks.

I think the other thing I would want to add on is that part of our issues of the ALUS program is a tool that can be used for some of those watershed groups to encourage agricultural producers to look at ways that they can be compensated for reducing those risks and if you use the example – although it was stimulated from a negative outcome – was the Barclay Brook up in my district. In that particular case, the watershed – members of the watershed, all the farmers in that area, all got together and they also combined with some of our agricultural companies. Cavendish Farms is an example, and in government we all work together to identify a problem and to correct it, come up with a correct solution.

There's a lot of science that went into that, too, and so I think that would be an example. I think it's really key that our watershed groups are working with our agricultural producers to mitigate those potential risks down the road, and use the tools that our department would have to help encourage those producers to reduce those risks as well.

Chair: Peter Bevan-Baker.

Dr. Bevan-Baker: Thank you, Chair.

One of the things, and I should have said this earlier, is I'm really happy to see that this technology is being shared across departmental boundaries and I wish we could see more of that cooperation between departments. Sometimes it's too siloed, so I was really glad to hear all of that.

Similarly, minister, in your answer there you talked about how communities come together to resolve problems and I, of course, am fully supportive of all the work that the watershed groups do across Prince Edward Island, but I'm surprised to hear that we have not identified these high-risk danger spots. Because it could just be the corner of a field adjacent to a river, and in my own district the last two fish kills happened in a very close proximity.

So, the danger areas are, as far as I was aware, pretty well known and from this information we should be able to identify exactly where they are. Is it in your plan going forward? Because I'd love to think of the problems we have with soil erosion and river kills, fish kills, as manageable problems. I think we need to look and tick them off in bite-sized chunks and for me, the way we do that, resolve it, is to look for these high-risk areas and put our energy and our (Indistinct) and our time into working together with the producer and the watershed group, and whoever is there, to resolve that problem.

Is there a plan within the department having identified where these high-risk areas are to

do that? I hear you haven't done it yet, but is there a plan to do that?

Barry Thompson: There would – well, the areas are identified. They have been prioritized, but yes. There is a direction in that way, and that would be working with our potato board, with our community, our folks in the community, our folks in environment and those types of pieces and it's also working with watershed (Indistinct) those types of things.

You speak about those cross-borders with the different departments, yes, with the forestry energy group – we have committee around that so now we're into that, which is the highest priority area? How do we get to that point? What is it within it? We would supply the data. We would supply the information to them.

The group around the table, the policy maker around the table would say: These are the priorities of how we determine which is number one, which is number two. There is a process in place for that. It's going through. We haven't got to that point yet, but it is in the works. That's for sure.

Dr. Bevan-Baker: (Indistinct) thank you, Chair.

Chair: Thank you.

Next on the list we have Minister Gallant.

Mr. Gallant: Thank you very much, Chair, and thank you very much, gentlemen, for the presentation.

This technology is a tremendous opportunity, right, as you showed us today here and I guess I have a couple of questions, but some of them were already asked, but when you go in to do a field is there – maybe it's not the right word, but is there a – do you have to let the general public know, the adjacent property owners know? Is there confidentiality or are there restrictions in this mode of technology?

Evan MacDonald: Generally, we'll always of course notify the farmer before we go. They're the ones that volunteered for the survey anyway. When we're flying, we're only flying over that specific property. If there's anyone else that – in certain cases there would be people around, if they're outside, usually – generally we'll let them know what we're doing because when people hear a drone – usually you'll hear it before you see it. It's 300 feet in the air. They just get curious, and we'll always notify them that we're doing a survey just of the farmer's property itself.

Mr. Gallant: The reason why I ask that is because what you showed is mostly open fields –

Evan MacDonald: Right.

Mr. Gallant: – but sometimes you might get a request in a (Indistinct) –

Evan MacDonald: Yeah.

Mr. Gallant: – subdivision or just outside of a community.

Evan MacDonald: Yeah, and for the most part for agriculture, we'd much rather be operating in areas where there's no houses or residential around.

Mr. Gallant: Okay.

Evan MacDonald: Just less chance of anything like that happening, but yeah. For the most part, we'll notify any of the public that we see around; but no, there's no signs or anything that we put up.

Mr. Gallant: Okay.

Evan MacDonald: We deal usually just with the farmer.

Mr. Henderson: Probably a little careful in hunting season.

Evan MacDonald: Yeah.

Chair: Minister Gallant.

Mr. Gallant: Thank you.

Also, there's a source where it starts and there's an end. You showed that field and the wonderful work that was done, but the water came from somewhere to go across that field and it's (Indistinct) so do you eventually go to those two other property owners?

Evan MacDonald: Ideally, you would work – you would survey a whole watershed and do work within a whole watershed, but like I say, these programs are voluntary so it's the farmer that comes to us. He's paying the money. We can't force his neighbour to pay the money and do the work as well. We try to do our best on that single property.

In some cases, we'll have to work with the neighbouring property to say: Okay, we may need to run part of a ditch in there or something like that. That would be a lot of work between us and the farmer and the neighbouring property owner.

Barry Thompson: If I could, we have quite a number of circumstances where obviously the erosion isn't just occurring within the one property. That's a fact. In developing a plan, engineers will talk to different producers on both sides so they know what's going on.

I know I can cite an example where we had potato farms all around a dairy operation. The dairy operation wasn't causing any grief, but all the potato land was coming across the dairy operation. In order to solve it properly, we had to work with the dairy producer as well and he was on side with it, but it's a matter of identifying the problem to him because he didn't have a problem until we pointed a problem out to him.

There is that communication. That would be – we'd be working against the grain if we didn't try to solve –

Mr. Gallant: Sure, sure.

Barry Thompson: – the bigger area while we were there.

Mr. Gallant: Okay.

Chair: Minister Gallant.

Mr. Gallant: When you had indicated these swales or (Indistinct) was it called?

Evan MacDonald: Yeah.

Mr. Gallant: They slow the water down so that's tremendous for the property on the receiving end –

Unidentified Voice: Yes, on the other side.

Mr. Gallant: − so that was nice to hear.

One more question or comment: as Jay's been saying the last couple of days, make sure your sump pump is checked because the ground's going to have a little bit of thaw on the top, maybe, but it's still froze. For prevention, I look at the transportation department sometimes. They'll go – and I know in my subdivision, they'll go and they'll clean a ditch at the end of the subdivision. Get the snow out of it because the ground is frozen and the water will be able to flow. If they don't, the water gets backed up, backed up.

Could you see in the future this being used as prevention? Like, you go over the fields on a day like today when you get this forecast and we're going to have a big melt, you could see where the water is going when the ground is still frozen, to see where it could potentially do damage?

Barry Thompson: That could be a recommendation to the producer to try and ensure that some of those areas are free of snow buildup. One of the things that we caution against there, though, is sometimes you create more problems by getting there to clean it out than by leaving it as it is because as much as we want to cross over a piece of land to get to it, we may create areas in that land that's sensitive areas by wheel tracks or whatever is, that just become the flowing river then so we're not really achieving what we wanted to achieve in the beginning.

It would be a – it would have to be an analysis on our part to try and say it may be worthwhile or it may not be worthwhile (Indistinct).

Mr. Gallant: Okay.

Barry Thompson: Our biggest concern when it comes to soil at this time of year, and it's not necessarily with the soil conservation piece, it's the whole soil dynamic is that on a day like today where we don't have any snow cover and there's some thaw going on in the soil and we have a lot of water and a lot of moisture coming down, yes you're going to get those areas that (Indistinct) but one of our biggest concerns is the amount of leeching that moves down through that because your soils have now unleashed there. They've

unlocked all that nutrient or (Indistinct) that you have in there.

You have an incredible amount of rain coming down, the amount of moisture now moving down through the (Indistinct) takes a lot of that nutrient with it. So, that's another area – I know the (Indistinct) are concerned with soil loss, but we have to think about nutrient loss in the middle of the winter. You wouldn't think that, but that's one of your biggest times of loss.

Mr. Gallant: Can I have one more, Chair?

Chair: (Indistinct)

Mr. Gallant: I know there was a sand pile put in an area around my district and there was some concern about some of the salt in the sand going into the ground. So, this drone could tell exactly that, could it not? Could it say if any of the sand was seeping around that sand pile into the ground?

Barry Thompson: Volume wise.

Evan MacDonald: Volume – you could definitely measure volume and check differences to see, okay: Well, if anything wasn't taken out of that with either a tractor or manually or whatever, it's being lost somewhere. We could tell the difference in volume, definitely, yeah.

Mr. Gallant: Thank you very much.

Chair: Thank you, minister.

Bradley Trivers.

Mr. Trivers: Thank you, Chair.

I, first of all, want to thank you for coming in, of course. Great presentation. It's very exciting. As an information systems professional myself, I love to see this data getting collected. I did want to highlight that, once again, we're pointing to the watershed groups and saying: The data is there if you want to do something about it. So, put in another plug for funding for the watershed groups.

I was curious in the data collection process, you've outlined basically two methods. One is with planes flying over and then the LiDAR process, if I got that correct, and that produces a digital elevation model. Then, the other one is with drones, that you're targeting, on request, individual producers.

With the LiDAR, how many – are you doing that twice a year or once a year, or once every five years, or how often?

Evan MacDonald: The LiDAR, the last collection was 2008. Things obviously change in that period of time. Now, the LiDAR, I believe there are plans to run it again over the province in the next few years, perhaps in the 2020 inventory. I don't know that for sure, but that's something that you probably wouldn't need to do, LiDAR, every year. That did cost about $1 million, so that's getting a picture in time of the elevations on the ground.

For the most part they're not going to change a whole lot, but as pits get dug or hedgerows come down and certain things like that, things do change but yeah, the LiDAR is not something that would be run every year.

Chair: Brad Trivers.

Mr. Trivers: A question about the LiDAR process; obviously a big part of it would be the planes actually flying and hiring the pilots to do that, but then you mentioned there was a whole automated process where you provide the data and the software to say: Click go.

I was curious: Do you send the data over the Internet somewhere and then they work on it and send it back to you? Or is it software you purchased (Indistinct)

Evan MacDonald: Software we use in-house, actually. It's software that we have that we can use the tools to work with the digital elevation model data to do in-house, so we can run those processes ourselves.

Chair: Brad Trivers.

Mr. Trivers: If you did have, for example, private pilots that wanted to take photos and maybe they're willing to donate those and provide them to you, would you be able to use that with your in-house tools, and is there a large cost associated with that? I'm thinking: Is the LiDAR cost mostly to have

to do with the planes and the pilots taking the photos? Or is it with the software?

Evan MacDonald: The technology itself, too, and the processing of the data. The technology itself for a LiDAR unit on a plane is pretty expensive, I believe. I'm just kind of guessing it's about a quarter of a million dollars.

Mr. Trivers: Okay.

Evan MacDonald: Then you have to process all of that data, so by the time we get the data back it's probably a few years down the road by the time it's all cleaned up and processed and everything.

Chair: Brad Trivers.

Mr. Trivers: Okay, so that makes sense, yes.

On the drone side of things, you mentioned that you just don't have enough manpower, enough drones, to cover the whole province or all the land in the province, you potentially would like to.

Evan MacDonald: Yeah.

Mr. Trivers: Ideally, would you like to look at all the land and do that analysis you can do with the drones?

Evan MacDonald: I think for the scope of the whole province, the LiDAR is good for a general look at the whole province. It's accurate – the LiDAR, vertically, it's about seven to 10 cm accuracy. So vertically, that's pretty good. We have that for the whole province.

The drone, now you can get down to two, three cm, but I think for a general look at where the high-risk areas in this watershed or in this field, the LiDAR does a good enough job of that. With the drone side, like I said, if we go out and survey a 100-acre field, in the field it's probably 30 minutes or so and we come back to the office. We let that process overnight in our software, and it's probably taking 10 hours to process that survey overnight, and then we'll have the data ready to work with the next morning that we can get ready to make a design on.

But, to do 1.4 million acres, the size of the province, you look at the processing time and the computing time, the flying time – Transport Canada only allows you to fly 300 feet. So, when you're flying that low your field of view is just so small with the drone. It's just not really realistic right now, I don't think, with a drone. At some point in time, if Transport Canada changes the regulations, we could send the drone up to maybe 10,000 feet or something like that, it may be realistic.

Chair: Brad Trivers.

Mr. Trivers: That's making sense, and drones are becoming almost a household item in some cases.

Evan MacDonald: Yeah.

Mr. Trivers: Lots of people are buying them and using them for recreation, but they're fairly high-powered pieces of equipment, but it sounds like the costs are on the processing side as well.

Evan MacDonald: Exactly.

Mr. Trivers: Not just the drones themselves, so even if you had private individuals providing their (Indistinct) still be –

Evan MacDonald: Exactly, the cost and the time is on the processing side. The drone that we use is one that you could buy at Best Buy or Great Hobbies. It's a $1,500 to $2,000 drone. They have a great camera, but where we spent the money is on the software. So, the software that we use to process the data is $10,000 to $12,000.

Barry Thompson: If I could, though, I think maybe to clarify: LiDAR is there as the base level. Any fields that we go to, the drone itself basically upgrades and does all our contours and all that type of stuff for us too. The LiDAR is the starting point. The drone helps us with our accuracy down to a cm, so that's where we're going with that.

Chair: Brad Trivers.

Mr. Trivers: I was particularly glad to hear that you're taking this data and you're sharing it with other departments so they can use it for, as yet, maybe even unknown

purposes, right? Mr. Gallant there, the member from up in Miscouche was talking about snow melting in the wintertime and using it to predict water flow and flooding and this sort of thing. It's definitely a problem my district would like to see.

I was wondering: How is that data provided? Is this something that you could just sort of open up the data and say: Here, we've got this data. And then, let industry use it in different ways, new ways that you might not have even thought of? Or, is it more in a proprietary format?

Evan MacDonald: Well, usually it's – for the times that we've used the drones, I'm thinking, in agriculture in particular, it's for that farmer that's requested the survey and usually what we have is just in map form so we would submit them a map, or in some cases an online link if they're interested in seeing it.

As far as the transportation data goes, I haven't – they're kind of the owners of the data right now and we haven't talked about whether it's open or not.

Chair: Brad Trivers.

Mr. Trivers: Is this the sort of data that you think would be good to provide in open data? Is it, I guess, technologically, are there any hurdles that you could think of off the top of your head that would stop – not allow you to provide that in sort of an open data format?

Barry Thompson: It would only − in my mind, it's fine to have for open data as long as it wasn't identifying individuals, personal individual information that's (Indistinct) and I think it's available there. We'd be providing it in a map format, of course, similar to what the province has a land online application now that you can access publicly.

Evan MacDonald: I'm just kind of thinking now; when the province does an inventory every 10 years they do an aerial fly over of the province. They did it in 2000-2010, they're going to do it again in 2020, and they did it before that; but with the 2010 aerial photos, you can turn those on in a certain government application online to look at them on the online viewer, but I think to get the raw files I believe there is a charge for that. I don't know whether this type of data would fall under the same –

Barry Thompson: Just for manipulation purposes and that.

Evan MacDonald: Yeah, (Indistinct) like to put it into a GIS system to work with it yourself. I believe, now, that may have changed in the last little while, but I believe there was a charge.

Ms. Biggar: Chair?

Chair: Thank you, Brad.

Minister Biggar.

Ms. Biggar: I just might make a little intervention because within the transportation department we have the technology where we map out all of the roads and trails and we actually have a very extensive unit ourselves that we can show a lot of different technology, and that's where we've been developing the online active, we call it active transportation system, but we can overlay a lot in that process as well.

We are continuing to evolve that map as well, and it's something that is another tool that we have within the departments or within government to identify different areas, that we use as an extension, I think of what your technology has as well.

Chair: Thank you for the intervention, Minister Biggar.

Bush Dumville.

Mr. Dumville: Thank you, Chair.

I guess I'm getting off easy being late in the agenda. Minister Gallant asked most of my questions and also a reply to Brad Trivers – also answered some of my questions; but with all the concerns like with this technology – I think it's fantastic technology – I just think it's absolutely wonderful, but there was a lot of concerns in regards to safety and privacy and control of these drones by the federal government, the department of transportation.

Is there anything that you need in regards to the use of the drones, legislative changes

from the feds? Or, I don't know if there'd be anything that we'd need provincially, any legislation we'd need provincially to help you get the maximum use out of this technology?

Evan MacDonald: Yeah, so Transport Canada regulates the industry so it's not just like anyone can go and pick these things up and start flying them, although people do. For the uses that we're using, we have what's called a special flight operator certificate. So, we submit a document in to Transport Canada explaining my background, my qualifications, the history, what we're using the drone for, what uses we have for it and then we have what's called a blanket SFOC, special flight operating certificate, where we can operate around Prince Edward Island.

If we are operating within a certain distance around the Charlottetown Airport or the Summerside airport, we have to submit notice to NAV Canada and give them 24 hours notice where we're going to be, how high we're flying, what the radius is; but generally in the rural areas we're good to go based on that documentation that we have.

The regulations are changing all the time. They change every year it seems like now, because there's so many of these things popping up all over the place now. We're actually going for a certification course on Monday, myself and another colleague, just to be better prepared for the newer legislation that's coming in. So, we'll have a radio operators' certificate and things like that, just to be kind of proactive. If legislation does change next year and they require certificates, then we'll have those in place too.

We have liability insurance. I think it's $2 million or something like that, so any government drones that we have here, they're all – we have insurance in place.

Mr. Dumville: Chair?

Chair: Bush Dumville.

Mr. Dumville: Is there any requirement, like when the drones are flying, are the cameras always on or are there some situations where you have to shut the cameras down?

Evan MacDonald: As far as I know, there's no requirement right now. Like I say, what we use them for is usually strictly for going over a farmer's field, so we're always within the boundaries of that field. As far as I know from Transport Canada, there are no rules in that regard.

Mr. Dumville: Okay, so if you were – I think I heard you say that if you're going on certain farmers' fields you check both sides to see if the other farmer is okay with that and –

Evan MacDonald: In certain cases. We don't normally talk to each farmer on each side, no.

Mr. Dumville: So if you did find –

Chair: Bush Dumville.

Mr. Dumville: Thank you, Chair.

If you did find something where one farmer was contaminating his adjacent neighbour, how would you go about notifying the neighbour next door? Or would you follow across the boundary and map where it's going?

Evan MacDonald: Well, in the case of soil and sediment moving, if there's an issue as far as erosion goes, we're going to be talking with the neighbouring property anyway. No differently than if I was surveying on the ATV and I was driving along on the property line and I looked and seen that soil was moving from one property to the next.

When we go and build our projects, if we think that something maybe needs to be done on a neighbouring property we're going to be talking with the adjacent farmer anyway.

Mr. Dumville: Chair?

Chair: Bush Dumville.

Mr. Dumville: Most farmers are accepting of this? There's never been an issue where a farmer has objected to this?

Evan MacDonald: No, not at all. No. I believe they quite like the technology and to have the image in the end is valuable for

them as well, so any time we've – like this was the first year for doing this type of technology for our surveys so I always mentioned at the start: We're changed from using ATVs to drones now. No one has ever objected to that.

Mr. Dumville: Chair?

Chair: Bush Dumville.

Mr. Dumville: It's fantastic that your department is going to other departments, like the minister of transportation helping them in a very cost-effective way. Has there been any request for, say, of our local police departments that probably are not using drone technology? The RCMP probably has any request for (Indistinct)

Evan MacDonald: Haven't heard from local police departments. I believe – I know the RCMP were one of the early adopters on PEI, I think, in terms of using drones. They do it for accident reconstruction and I think search and rescue and things like that. There's all kinds of great uses, but we haven't had any outside requests (Indistinct)

Mr. Dumville: Chair, just one more?

Chair: Bush Dumville.

Mr. Dumville: Thank you, Chair.

Has there been other uses like, you know, lately now mostly the minister and her department, they do a great job and they clear our highways and we have new salting techniques and all that, plus we have people at each end monitoring roads. You know what I mean? We monitor the Trans Canada Highway quite effectively.

But sometimes now the weather patterns are changing and ice and stuff is sticking to the roads longer than it should. Is there any way we could use drone technology to get out there and look at the safety of our road surface instead of sending somebody out there? Would it be a safety issue that the drone could help in that capacity? Can the drones fly in bad weather?

Chair: If I may interject here, I'm going to have an intervention by Minister Biggar.

Evan MacDonald: Sure.

Ms. Biggar: Thank you.

Just for some clarification on the process we use to monitor roads, we do have technology where we have sensors built right into the highways. We can go in – we have sensors attached, then we can go in and look at the temperature. We know how much salt was spread in that particular area, when it was spread, how often we need to spread it. We use those sensors and that technology in regard to the condition of the road in regard to sanding – sorry, salt on main highways is where the sensors are.

I just wanted to make sure everybody knows that we do have technology that we use directly that comes back to – and we can monitor it by the hour. When we know that there's going to be a change in temperature, because we use a temperature and weather technology by the minute, we know when the temperature is going to fluctuate and when there's a need to send salt trucks out, and the amount of temperature and salt and sand that's needed. I just wanted to clarify that.

Chair: Thank you, Minister Biggar, for that intervention.

I just want to remind members that our presentation today is from the Department of Agriculture and Fisheries on drone technology to identify fields at risk of runoff, so if we could keep it on topic I would appreciate it.

Evan, I can give you the floor now to respond to the weather conditions for flying the drones.

Evan MacDonald: Yeah, that is one of the limitations of drone technology right now, is that you're not going to be flying if it's blowing over probably 35-40 km an hour or if there's snow or rain.

That specific use is kind of outside the scope of a drone. The sensors and stuff that transportation uses now are definitely probably the way to go for now, and who knows in the future. Perhaps satellite imagery or something like that may be a use, but kind of outside the scope of drones. Yeah, we are limited by the weather (Indistinct)

Chair: Bush Dumville.

Mr. Dumville: Just one quick thing and we'll get back on topic.

I understand. I had a constituent concerned about highways and Minister Biggar's department did explain what she just explained to me, but –

Ms. Biggar: And her.

Mr. Dumville: And her, and I thank you for that.

But anyway, I'm just wondering if it could be used quickly in more rural areas.

Evan MacDonald: In certain cases perhaps it could on a day where the weather was decent enough. I haven't heard of that application specifically.

Mr. Dumville: But the drone would be in Charlottetown, so it wouldn't really be –

Evan MacDonald: Yeah, you'd have to have someone physically go to the site. Your drone always has to be operated within a line of sight, so there has to be a (Indistinct) an operator (Indistinct)

Mr. Dumville: Okay, that takes that out of the equation.

Chair: Bush Dumville.

Mr. Dumville: Thank you very much, Chair.

I'm done.

Chair: Okay, thank you.

Hannah Bell.

Ms. Bell: Thank you, Chair.

We had quite a few discussions about priorities and in the context of (Indistinct) the discussion. It sounds like you're going to get busier as more and more people both within the department and other departments are recognizing the potential value of these. Could you just speak to your plan on how you're sort of going to prepare for the increased demand on your priorities, given that prioritization itself seems to be a challenge within the department?

Barry Thompson: That would be part of the reason why we like to work with other departments.

Ms. Bell: Right.

Barry Thompson: Right there.

Ms. Bell: Okay.

Barry Thompson: We may have the foundation right now, but it's a growing industry so as much as we may be working with other departments and helping them out now, we're also probably training them and bringing them online as well. I dare say that you folks will see a lot of requests for drones over the next little while type of thing, so as long as we meet the proper requirements I think we're in good shape.

When it comes to the agriculture piece, where we are right now with the engineering staff we have and the technology and the efficiencies we have within it, I can see us being able to expand. Some of the engineers that we have in place – well, current engineers that we have in place, we all carry many hats. I can see maybe their hat being a little bit more defined and we'll be moving some of the (Indistinct) stuff they have onto others within the department.

I can't foresee a problem at this point, and when I say a problem I'm looking out five years type of thing, so I think that's as far as we could ever expect to look out ahead of us. I think we're in good shape that way.

We continually get more efficient and we continually look for better ways to do things, and I've been very fortunate in my section that I have, that is no slight towards people of my age, I have a group of staff that's all younger than 35 and they teach me things every day. I think that's a great group to have.

Therefore, when I look to the guy next to me here, he's constantly looking for a new and an efficient way to do things and they work in a different way than the rest of us anyway. They're continually working, so I see no issues.

Ms. Bell: Chair?

Chair: Hannah Bell.

Ms. Bell: Yeah, the five years is a really long time with tech as well, so who knows what – but you mentioned about sort of the prioritization and that continual juggling act and also that there's funding in place from these different stitched-together programs to split the cost.

What happens for those costs when you're taking those services out of the department somewhere else? What's that cost recovery process? How do you manage that? Because that could be also – there's a fiscal impact in terms of staffing and (Indistinct)

Barry Thompson: I may need clarification. You're saying (Indistinct) –

Ms. Bell: I was wondering about if this is a line item, an expenditure of staffing and resources within the department, and then you're using that potential priorities outside of the department, how are you recovering those costs?

Barry Thompson: It's kind of interesting because I've been accused – well, I haven't been accused of – apparently I can get things, or I'm able to trade things quite a bit. So, a lot of the resource that we may be using to other departments, other departments are able to supply that back to us as well. It's a bit of a tradeoff. I don't look at our department as having lines.

Ms. Bell: Okay.

Barry Thompson: I look at it as working with the other departments, and as much as I may be working with the engineers in highways, the engineers in highways may have some technologies that we may require other survey gear or some survey opportunity from some of them when they're in an area.

It's more of a communication and a connection with them to ensure that we're getting one off the other type of thing. I think I referred to scratching backs one way or the other and everybody keeps their own sort of budget lines, but I think we're working very well with one another and it's starting to expand even more. We didn't expect education to be coming and talking to us, but I see opportunities with education that we can gain off as well.

With the environment group and the fish and wildlife group, those types of things like that, they have a lot to offer to us when it comes to inventories and data that they may have that we can supply them a little bit of information to complement their data with the survey stuff that we would do too. That's the tradeoff that we're getting to.

Chair: Hannah Bell.

Ms. Bell: Thank you, Chair.

This is my last one. It's so exciting to hear you talk about something in that base in terms of sharing of information rather than concerned about the bottom line. My only other thought was connecting to something that Brad Trivers said earlier around the burden that may be placed on watershed groups, would be connecting to open data, which is also something I'm keen on. Is that a potential to perhaps open up that information and access to those watershed groups? Because they may be the ones who can come back with that creative solution –

Barry Thompson: Yeah actually, you speak of that and it's actually working right now.

Ms. Bell: Perfect.

Barry Thompson: If I could cite the Kensington North Watershed group, they have a very strong coordinator in that area who is very well respected by the agriculture producers. That in itself, that relationship in itself creates a great opportunity because then not only the producer is working then with the public and that connect is there, they are quite willing to share the data back and forth.

Any of the data that we've probably collected and it's in that watershed area, that particular coordinator, free rein. He has free rein to that information and we're able to help him. We have specialists as well within this section that work pretty much on a daily to weekly basis with that watershed group, so they're continually working and using this data.

So open data, yes, it is open when it comes to working within those watershed groups, and I have to commend that particular watershed group because they have identified hot spots, we'll call them, in that area and it's funny because the producers then in those particular hot spots are coming to us to look for stuff, so I assume there's a lot of background information going on and exchange that's drawing them to us anyway.

We're getting there, that's how it is.

Chair: Thank you, Hannah.

Brad Trivers.

Mr. Trivers: Thank you, Chair.

You spoke earlier about a collaborative approach with producers, which is so very important, and encouragement as opposed to enforcement. I think that is a great approach, and you just talked about how the watershed groups are working with producers and they're coming forward and they're correcting problems themselves.

But we do, of course, have an *Agricultural Crop Rotation Act* and its purposes are to maintain, improve surface water quality, groundwater quality, soil quality and preserve soil productivity which is exactly the sort of thing that you've been talking about throughout your whole presentation; but it also includes inspectors who have powers laid out by the act so they can go out and they can enter land and they can inspect and make sure that the legislation is being followed.

I just wanted to clarify: Will the drones be used by inspectors or will inspectors have access to the drones to help in doing their job?

Barry Thompson: The agriculture environmental officers, I guess is who you're referring to. They are able to go out and check the management of the fields to look at the rotations – they have not come to us to look for our assistance in that area. I can't speak for the department of environment as to whether they're going to be looking at purchasing the drones and that type of thing.

But I think what it is when it comes to a lot of the AEO type of role, it's more neighbours reporting on neighbours which draws it, and they're actually probably more efficient and more accurate than a drone would be in that case when it comes right down to it. That's what I think draws a lot of their activity.

Speaking to the drone, I can't really answer you as to whether that's going to go that route. It hasn't been our intention, and we've never been approached by them yet to (Indistinct)

Evan MacDonald: Another thing I'll point out on that end is the federal government uses satellite technology and they have, basically most of the agriculture across Canada is mapped year to year, so they can tell with 70% accuracy which crop is in which field. On the satellite end, that's much more effective than a drone because it takes the satellite minutes to fly over Canada as opposed to a drone taking years to fly over Prince Edward Island.

If all you're trying to find out is what crops are in the field, satellite imagery has the capability to do that now. That information is public.

Chair: Brad Trivers.

Mr. Trivers: Thank you.

Maybe you can clarify: so right now on Prince Edward Island, is that satellite technology being used to look at the spring and the fall, and to see basically what crops are being grown?

Evan MacDonald: As far as I know, I don't know right off hand.

Barry Thompson: It is available through that department. I know I can access that information in that department, so yeah.

Chair: Thank you, Brad.

Seeing nobody else on my list, it's exhausted, I'm going to take an opportunity – there were 32 questions that were asked today so members were very engaged. Our farmers are doing a great job being stewards of the land and this is just another tool that they can use moving forward.

I want to thank each of you for coming in today, for presenting a very informative, a very exciting and very educational presentation. With that, on behalf of the committee, I want to thank you to the minister, to Evan MacDonald and also to Barry Thompson.

We'll take a short recess and come back to work with new business.

Evan MacDonald: Thank you.

Barry Thompson: Thank you.

[Recess]

Chair: I'll call the meeting back to order.

We're going to move on to number four in our agenda which is new business.

Sidney MacEwen.

Mr. MacEwen: Thank you, Chair.

I understand that the – we talked in the Legislature a lot about the pulp plant in Nova Scotia and the effluent, and it's my understanding that they have approached the Eastern Chamber of Commerce to come over and talk to them in the first couple of weeks of February.

I'm wondering if the committee would be agreeable to go down east and perhaps have a standing committee meeting there, invite the Northern Pulp Nova Scotia Corporation in, invite the Eastern Chamber of Commerce and perhaps the PEI Fishermen Association, anyway, kind of like what we did with the ferries down there. We had a meeting down there and just had the interested groups come in.

I'm wondering if the committee would be agreeable to do that in early February when this group is already coming over.

Chair: The floor is open for discussion. Anyone want to speak on that?

Ms. Biggar: Do we have any idea what –

Chair: Paula Biggar.

Ms. Biggar: Sorry.

Chair: No, it's fine.

Ms. Biggar: Specific dates, Sidney? Because I'm away a couple of times there at minister meetings. Do you have a specific date when they are actually coming to meet with the chamber?

Mr. MacEwen: They haven't organized it just yet. Just let me look for a date here. It's the first week of February would be ideal, I believe.

Chair: (Indistinct)

Ms. Biggar: Maybe we (Indistinct) find some more information out before we – just put it on the agenda and find out specifics and then working with the Chair you can –

Mr. MacEwen: If the committee members are agreeable to go ahead and do it, I could send the information to the Chair and –

Ms. Biggar: (Indistinct) then go from there.

Mr. MacEwen: Could we agree to the meeting now and then –

Chair: Any other discussion on it? I have a question on it. This meeting, is it open to the public?

Mr. MacEwen: With the Eastern Chamber of Commerce?

Chair: Yes.

Mr. MacEwen: I don't know.

Chair: Okay.

Mr. Dumville: The one we had on the ferry was (Indistinct)

Chair: Yeah, because I think if we had –

Some Hon. Members: (Indistinct)

Chair: No, but I'm saying if that meeting is open that they're having with the commerce, could we not go? Those who are interested in going, to go in and ask the questions at that time? If there's anything that comes out of it, then yes, we'll move forward with trying to get them back over again to present to us.

Sidney.

Mr. MacEwen: Yes, but assuming we're allowed to ask questions at their meeting. I'm not sure how that would work. That's why I wanted the standing committee to go down, so we could actually get the presentation and ask that company questions as well.

If they've reached out to the Eastern Chamber of Commerce to have a meeting, I'm not sure how we would get in there and ask – I guess we'd have to work with the chamber to say: Could we ask questions too?

Chair: Was it the chamber that asked them to come over?

Mr. MacEwen: No. I believe it's the – and I don't want to speak out of turn. I just know that they're coming over to meet with the chamber and I believe it was them that asked to speak to representatives in that area.

I thought as this standing committee, as it was brought up in the Legislature, (Indistinct)

Chair: I'm curious as to why they would just ask that particular area to make a presentation to.

Mr. MacEwen: It could be other people too, Hal. I just know that they're coming and I thought we should take advantage of their coming to do that.

Chair: I would suggest to get that information that was requested. Get some more information on that meeting, and if it is open to the public or not, and then I can send something around. I'll have Ryan send something around and we'll communicate it that way. We need to be a little bit more informed before we can make a decision on whether we're going to take the standing committee down there to meet.

Mr. MacEwen: Yeah. I would propose that we just do it and ask the questions −

Chair: I would like to be more informed first before making that decision.

Mr. MacEwen: Okay.

Chair: Okay.

Mr. MacEwen: I'm telling you they are going to be here, so why don't we just meet and invite them in when they're going to be here?

Chair: But, what I'm saying is we need to know (Indistinct) –

Mr. MacEwen: Yes, the first two weeks of February they're available.

Chair: For the whole first two weeks of February?

Mr. MacEwen: Yes.

Chair: So why would we go down there? Why wouldn't they come in here?

Mr. MacEwen: That's where it's going to be, the affected group.

Chair: Okay, Sidney, excuse me, but I'm just wondering – so it's only the eastern end of the Island that potentially has a concern or has a concern on a potential (Indistinct) –

Mr. MacEwen: Oh, okay, so (Indistinct) with location?

Chair: Yeah.

Mr. MacEwen: Okay.

Ms. Biggar: (Indistinct)

Mr. MacEwen: That's fine. If you don't want to go down –

Chair: Yeah, so what you're saying now is we could invite them in here if we chose?

Mr. MacEwen: Yeah, I'm just saying we have a standing committee and we invite them in, and the PEIFA – anybody – affected groups, I guess. Anybody can put forward a group that might be affected.

Chair: Okay. I think – I'm going to open it up for discussion, but my thoughts on this is once we get a little bit more information on it, then we will circulate that information and then we can make a decision at that time. That's my recommendation.

Now, just not having that clarity and – I do think it's a good idea to have them in. I really do.

Mr. MacEwen: Okay, well, why don't we just make a – why don't we just get the clerk to invite them here and schedule a meeting for that first week of February?

Chair: I'll have the floor open for discussion on that. Does anybody have any thoughts on that?

Ms. Biggar: Again, we'll have to look at dates.

Chair: Peter Bevan-Baker.

Dr. Bevan-Baker: Yeah, no, I support that. It's clearly a problem. A lot of people have been talking about it. I would love to know more about it, so I would definitely support asking them to come before committee.

Chair: Okay, we will have Ryan send out a letter to that company, I guess, asking them if they're available and what dates they may be available.

Clerk Assistant: (Indistinct)

Ms. Biggar: I (Indistinct) add, it is an Island concern, not just a regional concern so I think it would be good for the committee to meet with them and what that format is going to be, then we can determine. Put the invitation out, see when they're available, what they can come and then we can determine the format from there.

Chair: Thank you.

An Hon. Member: I agree with that.

Chair: We're all in agreement with that and Ryan has been asked if he would do so. Thank you, Sidney.

Bush Dumville.

Mr. Dumville: Chair, thank you.

Chair: You're welcome.

Mr. Dumville: Mr. Thompson, this morning, he brought up the fact that there's a new Canadian agriculture partnership. Now, we have the Growing Forward 2 program and I guess there's some changes to that. Could we bring the department in to brief us on the differences between Growing Forward 2 and the new Canadian partnership agreement?

Chair: Floor is open for discussion. Everyone to agree on that on having – okay. Ryan, you have (Indistinct). So, I guess what we're doing is we're working on our work plan because we've exhausted everything that was on our pre-existing work plan. So for right now we're developing a work plan moving forward.

At this time, if anybody else has any other topics they want to bring up – I do have other people on my list here. Yeah, I'll put Peter in there and Paula.

Bush, are you finished?

Mr. Dumville: Thank you, Chair.

Chair: Thank you.

Minister Gallant.

Mr. Gallant: Thank you, Chair.

There was one topic I'd like to bring forward, is the soil quality project that was done by the department about the health of our soil.

Chair: Okay.

Mr. Gallant: Could we have a presentation done on that? Recently, they had done a survey on that and a study, so if we could have them back in and give us a presentation on that and where it went.

Chair: Okay, I'll have the floor open for discussion on that.

Mr. Gallant: The state of our soil.

Chair: Peter Bevan-Baker.

Dr. Bevan-Baker: That was one of the ones that I was going to bring forward, minister. I appreciate that, and the specific study is changes in soil organic matter. I can pass this onto you, Ryan. Barry was actually one of the chief authors on that so –

Chair: Great. So, we all agree? Great, thank you, guys.

Minister Biggar.

Ms. Biggar: Thank you, Mr. Chair.

Being the newest member on the committee, it's great to be on the committee coming from an agricultural community and district. I know within – I have some suggestions in regard to – they talked about a lot of innovative technology and just from some of the farmers in my area, I know the dairy farmers – they're doing a lot of innovation. I know Port Hill farms, with their poultry production, they've done some innovative technology that they got in from Germany to make it more humane growing type of thing.

I'm interested in having the department come in and talk about what kind of innovation is going on and technologies that farming – not just the GPS piece, but what other technologies are out there that are in use? I know farm boys are doing some great innovation on their farm, so I'd like to – what are the farms doing and to have some more information on what technology is out there that either the farming community is using or what could be available for them.

Chair: Thank you, Minister Biggar.

The floor is open for discussion. Everyone is in favour of – okay, great. Thank you.

Another one to our list. We'll prioritize a little later because now we're down to – we have four. Is there anything else?

Bush Dumville.

Mr. Dumville: I was reading the paper a little bit last night and I just remembered about bee pollination and there was an article, something about pesticides affecting bees and bee pollination.

Ms. Biggar: You've got a lot of bee farmers.

Chair: That was one I was going to bring up.

Mr. Dumville: Was it? Sorry, Chair.

Chair: No, that's fine because – I'm glad you did because – sorry, continue.

Mr. Dumville: It's been in the paper lately and I just thought of it, so sorry to steal your thunder, Chair.

Chair: No, that's fine. I have a lot of – I have bee keepers that are after me regarding the new program that's out and there's some new interest in it, but farmers are very interested. It's something that I would love to have them come in here so the floor is open for discussion on that.

Ms. Biggar: (Indistinct) good idea.

Clerk Assistant: I'm sorry, just who are we proposing to (Indistinct) –

Chair: It's the department of agriculture and the bee keeping program.

Clerk Assistant: Okay. (Indistinct)

Ms. Biggar: We might be able to combine some of these with one meeting, even, right?

Chair: Actually, yeah.

I have Peter Bevan-Baker.

Dr. Bevan-Baker: Thank you, Chair.

I have a couple of things. One is to look at the health of the marine ecosystem around here and particularly where the latest studies are on herring stocks and I asked some questions about that in Question Period and there are concerns that the stocks are dwindling, and that has an impact on all kinds of things, both biological and economic on the Island here.

I'd like to have somebody come in and give us an update on the health of the marine ecosystem around the Island and specifically about herring stocks. I'm not sure who that might be; somebody in DFO or perhaps in the department, but I have a couple of names I'll pass onto Ryan as possible people who if they do not know, they'd be able to pass (Indistinct)

Chair: The floor is open for discussion on that.

Ms. Biggar: (Indistinct) that's great. I have another suggestion kind of.

Chair: Okay, I'll get you –

Ms. Biggar: When you get to me.

Chair: Great, thank you, Peter.

Do you have another one?

Dr. Bevan-Baker: The second one, this is also following up on a Question Period I had with the minister, previous minister of course, of agriculture and fisheries and it was around agricultural inspections; health and safety inspections that were being carried out and some of the producers and concerns that I had had from workers, farm workers, in those places where those inspections were not – people were getting prior knowledge of those inspections being done and therefore the value of them was reduced.

I'd like somebody to come in and tell us who carries out those inspections, whether they are random, is this something the department contracts out or is it something the department does in-house?

Chair: Great, the floor is open for discussion on this topic. I'm assuming it would be the department that would come in for that also. That's also added to the list. Peter, is that everything?

Dr. Bevan-Baker: I'm exhausted.

Chair: Brad Trivers.

Mr. Trivers: Thank you, Chair.

A couple of topics that I hear a lot about – the first one I'll bring up is really buying local and people want to buy local, and they want to know how they can buy local food. I'm just curious what the department, for example, might be doing to encourage people to buy local, to help producers produce value-added products that can replace imported food and also just have a discussion around the cost of production related to producing the food, and how that impacts the prices and the ability for people to buy local.

So, that whole general discussion and perhaps starting with the department would be a good way.

Chair: Thank you. Do you have another one, Brad?

Mr. Trivers: Yeah, the second one – so on Prince Edward Island one of our huge crops on the agriculture side is potatoes, of course, and in many ways we sort of have all of our eggs in one basket, all of our potatoes in one hill I guess, but a lot of farmers I talk to would really love to diversify and they are looking at diversifying and I think there are activities going on out there to help farmers diversify their crops.

I'd like to learn more about what those activities are and where we're at with those, because I think they say that the only free lunch is diversification, so that's something that I just want to see what we're doing and if there are some great initiatives out there.

Chair: Thank you.

I'll open the floor again for any discussion on both of the topics Brad brought up. Fine, okay, seeing I have no one else on my list – oh, I do –

Ms. Biggar: (Indistinct)

Chair: Sorry, I have Minister Biggar.

Ms. Biggar: Yeah, actually down in Bideford we have a new Bideford shellfish hatchery that the First Nations are operating and I think it might be a great opportunity to bring them in. Steven Palmer from Bideford is the manager there and there's several First Nations people working there, and it is growing in leaps and bounds as much as the oyster spat is growing in leaps and bounds, so I think it would be a great update on what they're doing and if we could look at having them in.

Chair: Great, I'll open the floor for discussion on that.

Everyone is in favour of adding that to the list also?

Sidney MacEwen.

Mr. MacEwen: Would it be more advantageous to go up and see them?

Ms. Biggar: We could go for a tour at some point, if you want; whichever. I think it would be good to get –

Chair: That's a good suggestion.

Mr. MacEwen: (Indistinct)

Ms. Biggar: To have a presentation – I guess so people also know what's happening, but we could combine it with something, I guess.

Mr. MacEwen: I'll let you be the judge, like if it's easier for them –

Ms. Biggar: (Indistinct)

Mr. MacEwen: - to – they would say: No, we can come in and give a presentation or no, it would be easier just for you guys to see it and explain it.

Ms. Biggar: Maybe the committee could do a tour.

Mr. Dumville: Or they could do a presentation (Indistinct)

Ms. Biggar: Well, they have the facility there. They could do a presentation and then take us on a tour.

Chair: Okay, that's a good suggestion.

Mr. MacEwen: (Indistinct) minister and you and Ryan could kind of work out with them whatever they might prefer. If they say: Well, we can come down –

Chair: Okay, great.

Ms. Biggar: (Indistinct) if you're interested. I was just thinking of committee, but I'm sure they'd love to have us there.

Chair: Great, thanks.

So right now I have 10, at least 10, on my list.

Ms. Biggar: (Indistinct)

Chair: Yeah, this is continuous. So what we have to do is we're going to have to start prioritizing of who we would like to get in first to do some presentations.

Ms. Biggar: (Indistinct)

Chair: Sonny Gallant, do you have a question?

Mr. Gallant: Well, I was just like – whenever we get to prioritizing, I'd like to speak.

Chair: You can speak now.

Mr. Gallant: I'd like to see that soil study soon. It would be nice to see that.

Chair: Soil organics? Okay. Anybody else?

Peter.

Dr. Bevan-Baker: I absolutely second that priority. We had one of the chief authors here and it's a 20-year study with big implications for farming in PEI.

Chair: Sidney MacEwen.

Mr. MacEwen: Thank you.

Just because of the timing of when the company might be here, it would be good to probably get that one when they're going to be here. I think you've got a lot of things there for the department to chew off, so the soil one I would say is priority and then after that if everybody is agreeable, let the department say: We can fit these ones in this day and we can fit these ones in this day.

Chair: That's a good point. We can do that. We can ask the department, and it depends on, again, of within the department who is going to be doing the presentations and their availability. Also, today's presentation, just on one topic, was over an hour and a half so we have to be very aware of that.

When we get into a conversation with our witnesses and we're very engaged, we'd like to ask those questions so today was 31 questions. We want to leave some room there too, but I could see on certain topics that we could foresee putting at least two together. That's a good point.

Bush Dumville.

Mr. Dumville: Chair, I think that's an excellent suggestion by Sidney in regards to letting the departments do the –

Chair: Okay, is there anything else people would want right now? I mean, on the top right now we see the soil organic report that came out, and also regarding the presentation by the pulp mill.

What we'll do is we'll have Ryan send out, again, and then we'll come back maybe at one of these meetings on the agenda and we'll discuss at that time.

Brad Trivers, is that what you wanted to speak on?

Mr. Trivers: That's what I was going to suggest, is (Indistinct) the list and we take a look at it and discuss it at a future meeting.

Chair: Okay.

Is there any other new business? Seeing none, I'll call for adjournment.

Ms. Biggar: Adjourn.

Chair: Thank you.

The Committee adjourned.