LEGISLATIVE COUNCIL ENVIRONMENT AND PLANNING COMMITTEE

Inquiry into Decommissioning Oil and Gas Infrastructure

Melbourne – Wednesday 10 December 2025

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Dr Francis Norman, Chief Executive Officer and Managing Director, Centre of Decommissioning Australia.

The ACTING CHAIR (Sarah Mansfield): Welcome back to the Environment and Planning Committee's hearing into oil and gas decommissioning.

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All evidence is being recorded. You will be provided with a proof version of the transcript following the hearing, and transcripts will ultimately be made public and posted on the committee's website.

My name is Sarah Mansfield. I am a Member for Western Victoria and in the Acting Chair position just for this session. I will get my committee colleagues to introduce themselves, starting with Ms Broad.

Gaelle BROAD: Thank you, Acting Chair. My name is Gaelle Broad, Member for Northern Victoria.

Wendy LOVELL: I am Wendy Lovell, also a Member for Northern Victoria.

Tom McINTOSH: Tom McIntosh, Member for Eastern Victoria.

Sheena WATT: Good morning. Sheena Watt, Member for Northern Metropolitan.

The ACTING CHAIR: Dr Norman, we welcome you to make some opening comments. We ask that you keep them to around 10 minutes. We do have a bit of time for this session, but at the start, for the Hansard record, can you state your name and any organisation you are appearing on behalf of?

Francis NORMAN: Absolutely, yes. My name is Francis Norman. I am the CEO and Managing Director for the Centre of Decommissioning Australia, so CODA.

The ACTING CHAIR: Thank you. And if you would like to commence with any statement you have.

Francis NORMAN: Yes, for sure. I will try and keep this brief. I do have a bit of a tendency to ramble, so please bear with me. I am here representing CODA. We were invented, I guess, in 2019, 2020 off the back of recognition by the industry that we had a significant decommissioning workload ahead of us and not a lot of in-house knowledge, if you like, within the country. We were lacking a lot of the expertise and a lot of the skills, and certainly had not had the experience because we had not been doing very much decommissioning up until that point.

We started our journey in 2019 as an initiative inside of one of the federal growth centres, a group called NERA that was based in Perth. Then four years ago today actually – it is our fourth birthday – we became an independent organisation. Independence for us means that we are funded jointly through – I think we have about 150 different revenue sources that cover our costs. We are based in Western Australia. We have had very good support from the West Australian government through a grant which enabled us to scale up very quickly in the early days. We have around 130 or 140 industry partners who each pay a fee towards covering our operating costs, and then we have about 20 or so what we refer to as strategic partners, which are things like research centres and so forth around the world where we just have a mutual agreement to play nice with each other.

In that role, over those five years that we have been in existence, we have worked very hard, first off, to quantify the workload that we have coming up here. The very first piece of work we did was to release what was referred to as a liability study. That was the first time anyone had tried to quantify and put a shape to the decommissioning workload that we had in Australia. What that showed in 2020, when it was released, was around about A$60 billion – it is all done in US dollars, so it was US$40.5 billion – for the total cost. That cost is spread out through till around about 2060, and about half of that work will be commenced at least by the end

of this decade. Following that we moved on to do other work looking at global best practice; a technology road map to see where the technologies were that we could benefit from here for the work that we had; and a piece of work looking at disposal and recycling pathways, which surfaced some really interesting characteristics of the broader economy here, such as that all this infrastructure is in the north-west of Western Australia, far off northern Australia or in the Bass Strait and Gippsland areas, yet most of the recycling capability and so forth is distant from there. At least from the Victorian perspective you have got a lot more proximity to the recycling capabilities, for instance, than they have in the north-west. That was the third piece.

From there we have done some studies. Again, because of our support from the West Australian government we have done a lot of work looking at ports for Western Australia where we could do this work and what it could look like. We did a similar piece of work with the Northern Territory government, which we released at the beginning of this year, looking at the five ports that they have up there and what could be suitable for them with the workload that we have got. Then around about 15 or so months ago now we revisited the forward look-ahead that we had done. We went back essentially to first principles to develop a new dataset to really show and give a lot of granularity to what the timelines are for all of the infrastructure that is installed offshore so that we can now get a lot more into the detail of where the wells are, how many wells there are, where the pipelines are, where the platforms are and so forth on an individual facility basis. That gives both us as CODA but also all of our partners, who have access to all of this, a lot of that data that we and they can now use to plan for the future opportunities and the future workload that we have ahead of us.

There are a few other things I would just like to comment on as I go through. Decommissioning is very much a global industry. When we started here in 2019, 2020, we looked very much to Europe and the US as the leaders in this space. What I have come to realise in the last few years is that they have been doing it and they have been doing it well, but in terms of activity right now we are probably one of the busiest jurisdictions in the world – us, Brazil. The Asia-Pacific region is starting to ramp up its decommissioning works. The US has such different regulatory and technological approaches to what it does that while we can learn a lot from the straight-out technical application of the work there, the regulatory space is so, so different. They are not signatories to most of the international agreements, for instance, that we are, so they have very, very different approaches to what they do. But it is very, very much a global industry. The challenges that we have had here, absolutely. But for me the interesting thing with this industry, unlike so many other industries that we hear talked about, is it has to happen. It is real work. It is installed so it has to be removed, unlike some of the other industries where it is, 'Oh, well, we'd really like to build this' but then to get to that point is very challenging. So it has a real tangibility and a real opportunity there right across the country and right across the world for where we are going.

Ports and infrastructure, though, still are the key enabler for us to be able to undertake all this activity, exclusively really when you are talking about the offshore space, but we have to also remember that there is a lot of onshore decommissioning activity as well. Each state and territory has got a different footprint and a different condition in that space. In Western Australia, for instance, we have got one project with 888 wells, thousands of kilometres of pipelines and cables on an island, which is just commencing now. Queensland has got over 10,000 onshore in the coal seam gas industry in conventional wells. Each jurisdiction has got its own nuances, but fundamentally it is all the same object and it is all the same thing that we are trying to achieve. I will stop rambling there, and I welcome any questions.

The ACTING CHAIR: Thank you. We will move to questions from the committee, and I might kick off. From a capability perspective, is full removal of Victorian offshore structures entirely achievable within Australia?

Francis NORMAN: When you say 'within Australia', do you mean using exclusively Australian capabilities?

The ACTING CHAIR: Yes.

Francis NORMAN: I would say full removal to shore and then disposal onshore would be possible, yes. Where I am sort of a little bit around that one is there are certain technologies that are required that we do not have in Australia as part of that – the big heavy lift vessels, for instance. Exxon have got the *Pioneering Spirit* coming down here in 2027–28 to execute those lifts. That is a unique vessel. There is only one of its size, shape

and capability anywhere in the world, so it is going to be down here for that period to do that work. In terms of the capability to do that removal work, for sure, yes.

The ACTING CHAIR: A lot of this decommissioning work it seems at the moment is being exported out of Australia. We are seeing different parts of the infrastructure being dismantled elsewhere, the steel is being recycled elsewhere. What is needed? I mean, you have indicated that we do have the capability to do a lot of that work here. What else is needed to realise that capability and capacity?

Francis NORMAN: I think the view that a lot of this is being exported is skewed, based off the fact that the large floating facilities are going elsewhere for recycling. That is happening at the moment as we do not have the right port infrastructure to accommodate those, the work itself is incredibly complex, we do not have very many of them and there are places in the world which have a lot of experience in doing that work. Everything else, though – pipelines, topsides, substructures and so forth – by and large where that is being removed it is coming to Australian shores.

When I first got involved in decommissioning back in 2019, when were starting CODA, I thought that it was all about the big structures and the topsides. It is the things that you see the pictures of. When you go and you look, you look up decommissioning, you will see a platform in a yard somewhere being dismantled. The hundreds and thousands of kilometres of cables, flexibles, umbilicals and pipelines and so forth that sit on the seabed tend not to get talked about, but they constitute a very significant volume. Probably by weight they would be the largest and heaviest component across the industry.

Certainly in Western Australia we have a couple of projects that are removing that material now. It is coming into Western Australian ports. It is being cleaned local to those ports. It is being dismantled reasonably close – it is all distances – but it is being dismantled domestically. The industry now is trying to work out the best ways to manage the recovered materials, and there are some challenges there from a recycling perspective. Stainless steel, for instance, the really high grade stainless steels, we do not have much of an industry here to treat that material. By treat, I mean return it to the raw product that we can use for something else. So that tends to get exported – simply, it goes back to where it was manufactured, so it goes back to Japan or it goes back to Korea.

With plastics and polymers, there is a lot of research going on right now in terms of what the best way is to recover value from those materials. Some of them can be directly returned as an input material for manufacture again. With others, we probably will end up at the point where we put them through something like what they call a pyrolysis system, where they turn it back into a synthetic gas or a liquid and then we use that as a fuel source for something else. It is just because those plastics, after they have had a whole bunch of different additives applied to them, will last and will be robust in the environment. This is the challenge. We are dealing with material that was designed to last decades, and then we are trying to recycle it at the other end. With those plastics, we are still working through the process in terms of just what to do with those.

The ACTING CHAIR: We have heard that there is a tendency for industry to want to – for different reasons they will have different arguments for doing this – leave a lot of this infrastructure behind where they can. What is the opportunity cost of doing that, in terms of developing this decommissioning industry?

Francis NORMAN: There are a lot of different sides to that. We do not tend to have a position one way or the other. Our view is very much that we need to find the right solutions for every one of these instances. In terms of materials that are going to be left, to date mostly what we are seeing being left are things like piles that have been driven deep into the seabed and what they call suction anchors, which are essentially large square piles that are used to provide anchor points for floating facilities. The projects that are underway at the moment, by and large, are removing pretty well everything else. Flexibles are coming out and umbilicals are coming out. All of, what they call, the Christmas trees, the other modules and the equipment that sit within the field to capture all of the gas are all being removed as well. They all come back to shore, and they get cleaned where they can. Then the material gets recycled, and where it cannot it has to go off to landfill.

The ACTING CHAIR: In terms of jobs, skills development and those sorts of opportunities, if that infrastructure is left, what impact does that then have on building this decommissioning?

Francis NORMAN: Absolutely, if the material straight out is left – after it has been cleaned to a point where it can satisfy the regulators that it can be left – then the opportunities, if you like, or the jobs to go out and recover that would not be there. Where material is being reefed, in some instances, with that material, there is

actually a lot of work involved in preparing that. They would go out and they would cut it and reposition it. The only reefing project that I am aware of that has gone full term here was one that was done in the Exmouth Gulf, and that was using materials from an old BHP asset. For that one they removed the material, they brought it to shore, they cleaned it, they took it back out and they placed it on the seabed, and around it they also placed about 100 purpose-built fish habitats. That was probably more expensive than just picking it up and removing it, and it would have certainly created more employment and more opportunities. I am not a fisherman and I am not a diver, but what I am told by the people who were involved in that is that it has created an incredibly vibrant dive site for people to go out and commune with these fish. I think every one of these we have to look at case by case. The regulators are very stringent in the way that they review and treat all of these, particularly the environmental regulators, DCCEEW – the sea dumping team are incredibly stringent in terms of the way they look at materials.

The ACTING CHAIR: Okay. Just with my last question, in your submission you mentioned orphan wells and them being the highest source of emissions and states or the Commonwealth not adequately funded to undertake their closure. What can be done do you think about the financial risks of these orphan wells?

Francis NORMAN: Yes, orphan wells are a challenge everywhere in the world. Where a developer has drilled potentially an exploration well and they have found something that has just not got the value and then suddenly that company disappears – they typically are onshore; they are a small group of people that come together to drill a couple of wells. Different states and territories are managing those differently. I think the regime that has probably got the best approach to that in terms of managing it from a governmental and societal level would be South Australia. They have a levy that they apply to every well that is operated in South Australia. That generates sufficient money so that if they then need to pay to close a couple of these orphan wells, they have the revenue there to do it. And the structure of the levy, as I understand it, works in such a way that it encourages people – once they have finished producing from a well, after a couple of years they will pay more in a levy to have that well standing idle than they would pay to close it themselves, so it is quite an elegant approach that they have developed there. Each of the states and territories that we talk to is still grappling with the best way to approach that, possibly from, let us call it, an altruistic view, where an onshore operator, if they were doing all the P and A work local to it, may even be willing to take on some of the plug and abandonment of those orphan wells as they go.

The ACTING CHAIR: Thank you. Ms Bath.

Melina BATH: Thank you. Thanks very much, Chair, and apologies for being late. Melina Bath, Eastern Victoria Region; my electorate covers Barry Beach as well. Thank you, Dr Norman. Following on from that, are there measures, legislation or inputs that the Victorian government can do to make sure that oil and gas companies have sufficient financial measures to cover decommissioning and/or orphan wells? That is my first question.

Francis NORMAN: I sat through the previous session and I did not catch which one it was, but one of you made a comment about the joys of federation. The complexity of state and Commonwealth waters makes that quite an awkward one. I think first and foremost, having a really solid, robust relationship between your regulators and the Commonwealth regulators to make sure that there is full alignment across all of this so that there are neither duplication nor gaps between making sure that the companies that operate these facilities have the right assurance in place. The decommissioning directorate within DISR are working around putting together a financial assurance framework at the moment to make sure the funds are in place. It is actually also quite a complex challenge in itself to work out just how much money it is going to cost to do this work. What we see around the world is a certain degree of optimism bias, I guess, from the people that are executing the work. It is very complex, it is very challenging, and almost every single thing that companies come across is going to add cost rather than reduce cost. So making sure that there is an appropriate allowance in there is actually a really challenging state to get to.

But at the state level, I think it is looking to see what other jurisdictions are doing. As I say, I would definitely look towards South Australia to see how they have developed their onshore regulations – because South Australia is an entirely onshore jurisdiction; they do not have any offshore – to look at that and see how they managed theirs I think would be a really good starting point. It is making sure also that your state regulator here – who I speak with occasionally, and they are really good people – are appropriately resourced and equipped

just to manage the vigilance that they need to do, particularly over those challenging potential orphan wells that may be appearing.

Melina BATH: The 22 fixed platforms out to sea off Gippsland, for example – you are not considering those as orphaned wells?

Francis NORMAN: No.

Melina BATH: That is just for clarity. That is right. It is the developer, the speculator and the investigator who are doing that.

Francis NORMAN: Yes.

Melina BATH: Yes. I just wanted to –

Francis NORMAN: Oh no, the platforms are a totally different thing. Yes.

Melina BATH: Correct. I just wanted to make that clear for Hansard and the like.

Can we go back to recycling pathways? A little while ago we did another inquiry in here, and I remember that there is only somewhere around 11 per cent recycling of the renewable energy infrastructure in Australia. How is it possible? Is it possible? I am going to put my parochial hat on and talk about Barry Beach. Have you been down there? Do you have an understanding that it could be there, or does it really need to be further away from where it is disassembled? Have you got a view on this sort of recycling?

Francis NORMAN: For sure. I have not had the opportunity to visit Barry Beach, but I have had the opportunity to visit probably 10 other facilities around the world that are used to do similar works. Some of these are purpose-built facilities. Around the North Sea there are several of these facilities that were either purpose built for decommissioning or have been adapted for the exclusive use of decommissioning. There are certain ways that they manage these facilities. They have systems in place where they put an impermeable membrane – there is a tongue twister for a Wednesday morning – underneath the work area. That then is connected to water treatment systems, so any contaminants that may come off during that dismantling period get captured, get treated and so forth.

The structures, when they first come out of the water in one big piece, are big and heavy. My understanding is that the current campaign that Exxon have got planned will be around 60,000 tonnes of material over about 40 lifts. If you just take a straight law of averages, if you like, across that, each piece is going to be 1500 tonnes. You do not want to move them more often than you need. So you want to bring them ashore and then do that work as close as possible to the quayside as you can. So that quayside then needs to be set up to manage the work.

The substructures are essentially bare steel with a little bit of marine anti-foul coatings and paints and so forth on them, so relatively speaking very low risk.

Melina BATH: For the timeline – I am putting our recommendations to government hat on – in relation to this, and I also note that Barry Beach's Port Anthony is next to a Ramsar wetland, but it has been functioning in this space for a long time. Keeping our environmental hat on – and I do not like using these words but putting the social licence hat on – so that the community down there can be assured that the work will be done safely and not have adverse environmental effects, what could we recommend to government in relation to not only the disassembling but recycling pathways? What are some of the things that we need to recommend to government to do that preparatory work because it is coming?

Francis NORMAN: Yes, I think for government to work closely with the site owners, the developers, the companies who are going to be putting in all of the facilities to receive, treat, dismantle all of this material, that for one would be a starting point. The recycling phase for that, by the time the material leaves the gate of that yard, it will be of a size where it can fit in a container on a truck, so it is going to be transported in an inert, safe way. What I see around the world is typically – dependent on where the site itself is – the recovered steel then travels away by truck, or it goes into a coastal vessel to get transported to a steel recycling facility. The rest of the materials are similar. There will be intractable wastes that will come out of this as well. There will be materials that just need to go to appropriate landfill, to appropriate disposal sites. The age of some of these

facilities, they were made in a day when we still used things like asbestos. For things like that, that should – I should not say 'should' – that will be treated the same as it would be if you found asbestos in a property. So you would tent it, go through, clean it out completely. That would then get packaged up and disposed of in an appropriate manner.

The actual capacity for recycling is a challenge right across the country for the entire economy. We generate way, way, way more plastics and polymers than we have capacity to recycle. My understanding, and certainly from the work that we did four years ago in recycling pathways, is that Australia generates something like 2 million or 2.5 million tonnes a year of scrap steel but only has capacity for about two-thirds of that. You are fortunate here in Victoria that you do have domestic capacity within the state that could take that steel, and it could go into its inventory for processing. If it is 60,000 tonnes coming out in 2027–28, probably about 50,000 tonnes of that would be recyclable carbon steel. For stainless steels, the best value for those is to send them back to the countries where they were manufactured, so back to Japan, back to Korea and places like that.

Melina BATH: Thank you. My time is up.

The ACTING CHAIR: Mr McIntosh.

Tom McINTOSH: Thank you. Just to make sure we are talking about what is in Victoria as opposed to nationally here in Australia, – this is an old figure I have got in the back of my head, that we have got about 10 per cent of the platforms, wells –

Francis NORMAN: Twenty-two platforms. I think remaining now there are maybe 200-ish wells, and whatever the volume is, I honestly forget. I did put a screenshot from our dashboard in there, but yes.

Tom McINTOSH: No, that is okay. I posed it in a difficult way, that question. Thank you. When you say 200 wells, as far as what has been plugged and abandoned, roughly speaking – I am just trying to understand how far we are along, because we talk about work being for, say, the next decade. I am just trying to understand broadly how far along we are on the path.

Francis NORMAN: My understanding is that certainly this decade – well, over the last five years or so – around about 200-ish wells have been plugged. Remaining there are about 250 wells by our calculations. Some of those are still producing. Some of them may be producing for quite a significant period. For others there is a campaign underway to plug those wells and close them off now.

Tom McINTOSH: In previous presentations we have heard there is an expectation that platforms and material are removed. However, as you said, you take a view of treating each case on his own merits, but as an expectation, what broad percentage of material, wells or platforms would you expect to be removed in their entirety? Also you may have heard we were talking a bit before about environmental risks with leaving them. You were talking about below the seabed and talked about piles driven into the seabed, which are probably a bit different to, say, pipelines. I am just interested to also hear within that question about pipelines under the seabed or minimally under and stuff above and if you see a difference in those and the different environmental risks posed by them.

Francis NORMAN: The things that will definitely be removed will be all of the topside, so all of the process equipment, all the process modules, all the accommodation and everything else – all of that equipment that has been used to contain, process and transport the hydrocarbons. All of that will come out. There is nowhere in the world I am aware of where any of that gets left in situ. As a minimum, the structures would be removed to 55 metres below low tide, which is the navigation requirement from the International Maritime Organization. Below that is then the area for discussion of whether it would be removed or whether it would be left in situ. That material, similar to the rest of the substructure, is carbon steel. It is high-quality carbon steel. But typically they have not had any hydrocarbons or anything through them. All of the subsea equipment – so the wellhead equipment, Christmas trees and so forth – will all get removed. That will all come to shore. My expectation will be that the vast majority of the in-field pipework – so flexibles, umbilicals and so forth, the things that stitch all of these together to then bring them to the platforms – will also come out. That is certainly what we are seeing everywhere else. That then just leaves the pipelines to shore and the network of pipelines in there. It is hard to speculate in terms of actually where the regulators would land on this, but my feeling would be that the majority of that will probably have to come out.

The buried pipelines are an area that I think there will be a lot of discussion about. What they have been used for, whether they have had raw hydrocarbons through them, what the contaminants are, what the materials are that are inside of them, how deep they are buried, how they were fixed to the seabed, what areas of seabed they may cross and some of the challenges simply around just getting them out there will all have to be worked through over the next 10, 15, 20 years as each one of these gets addressed. It is a really hard one, so it is speculation on my part.

Tom McINTOSH: But it does sound like there are definitely environmental concerns with some of that buried pipeline depending on what has been used.

Francis NORMAN: As the previous speaker said, the Australian regulatory regime is very much a precautionary principle. The base case is for removal, but the industry then will look at each of these – and by industry I mean the regulators and the industry – and say, 'Well, what's the best solution for each one of these?'

Tom McINTOSH: You talked about having visited sites around the world dealing with decommissioning. Insofar as Victoria is looking to deal with this holistically, what are the barriers to us scaling up to do that?

Francis NORMAN: Victoria has got an interesting challenge because really what you are dealing with is the Victorian state waters and Commonwealth waters.

Tom McINTOSH: That is sort of what I was asking at the start: what percentage of the national are we?

Francis NORMAN: I would say you are somewhere in the 15, 20 per cent against the national volumes. I think the Barry Beach facility, as I understand it, is the ideal place to take it. The cost to develop a bespoke port to take this in and to go through all of the approvals that you would need – the approvals themselves would take, let us say, 10 years to get, which is 10 more years for this material to need to be maintained in a safe state so that it can be removed. The Barry Beach facility has been used for the last 50, 60 years. A lot of that equipment was assembled there. It has been taken out from there – the channel works. It has got the right size quay site, and it has got the right land ready to take it. I think as a facility it is really, really well positioned to support this work. The challenge, as the earlier presenter said, will come for some of the other operators. I think if the Barry Beach facility is set up and ready to go to accommodate this work, then other operators may be able to leverage that facility as well, if they can come to a friendly agreement with Esso to share space for them.

Tom McINTOSH: Because otherwise what are the other options?

Francis NORMAN: Otherwise the other options would be they would need to find somewhere where they could do this work. What we see in Western Australia is we have a similar challenge. We do not have a bespoke facility to accommodate this.

Tom McINTOSH: Does that mean towing it up and heading north?

Francis NORMAN: From here I do not see a logical case to send it north. I think you have to find a way to use the ports that you have. What we are doing in Western Australia right now – the structures that have been removed – is we are using common infrastructure at the Henderson facility just south of Perth. Each time they go in there to do a project they have to make temporary facilities available in there. They lay a membrane down on the concrete, they put aggregate down on top of that and then they do the work on top of that. That is a cumbersome, awkward way to approach it. If you have got a facility that is equipped for it from the get-go, I think that is the best way to go.

Tom McINTOSH: If we can get agreement on shared use of the facility, we can get economies of scale, get the workforce set up, do a clear pipeline of work over time and then get that economic value to the state from the jobs and the recycling. I have got 5 seconds left. I might leave it there, Chair.

The ACTING CHAIR: Thank you. Ms Lovell.

Wendy LOVELL: Thanks very much. We heard from the Wilderness Society before about the need for public reporting on the profits that can be made from the oilfields and the decommissioning so that it is available for people to look at. It is obviously too late for the oilfields. It should have started 60 years ago. But I was just wondering what your views are on having public reporting for the renewables industry going forward.

Francis NORMAN: I think the regulations for the renewables industry, as they have been coming in and learning from the experiences of the oil and gas industry, and what I am seeing – and I do not follow the renewables industry. What I do as a day job keeps me busy enough. But I think the requirements that we are starting to see now come in there are highly appropriate. I was talking with a colleague in Europe, in the UK, at the beginning of this week. They are starting to see now their first wave of offshore wind projects reaching end of life. Some of those developers there are having real financial problems because when they did their first developments there they did not have a model in place that made them provision to cover their removal costs. I think putting that in now, way ahead, actually from a societal perspective, is a really good way to go.

Wendy LOVELL: All right. Thank you. So you just cover the oil and gas industry with the decommissioning? You are not looking at any other decommissioning?

Francis NORMAN: At the moment we only look – 'only' – look at the 70, 80, 90 billion Australian dollar oil and gas decommissioning industry, yes. Some of our member companies, though, do work in regular demolition, and they will undertake any kind of industrial demolition works required.

Wendy LOVELL: Thank you. We also heard from the Wilderness Society that there would be a lot of benefit from the amount of steel that can be recycled from pipelines et cetera. How realistic do you think that is, and what percentage of the steel that has been used in the offshore gas and oil industry can be recycled and can be adequately reused? For instance, they said that it could be used for the Big Build here in Victoria. We could use that steel. Is it really realistic that this could happen?

Francis NORMAN: The vast majority of steel from decommissioning all over the world gets recycled or it gets reused. There is actually some work going on in Europe now where instead of recycling some of this material they are trying to reuse it in the shape that it gets recovered in. Pipelines, in some cases, if they can be appropriately cleaned, they are using to turn them into piles. So you do not even have to go through the process to melt them back down and bring them back. The material itself is incredibly recyclable. Whether you would be able to actually trace a piece of steel coming out of an oil facility into then turning into a piece of structural steel that was going to get used on a particular project, I think would be a challenge. Capacity is definitely a challenge across Australia in terms of just the volume that we produce relative to the volume that we have got. Finding a sensible break point that encourages people to recycle rather than landfill in terms of a cost model is also a challenge. We hear stories where there are some instances – and not specifically in the oil and gas industry – where it is just cheaper to send, let us call it demolition material, to landfill than it is to send it for recycling simply because it is actually just cheaper for it to go into that destination. I think the potential is there, absolutely the potential is there, for the great majority of all of this material to get recycled – the steel, the copper, the stainless steel and so forth.

Wendy LOVELL: What about for the infrastructure that has been subsurface, under the sea?

Francis NORMAN: Yes. The cables and flexibles, umbilicals, that I have seen removed, that I have seen stockpiled in yards, the materials in there are built to last a long, long time. Consequently, the metal components in there when you see them after they have been used, in some instances they look brand new. So that material is very valuable. It is very recyclable. And the companies that originally manufactured that material really would like to get it back. That, though, is where the challenge point comes, I guess, if you are looking at domestic jobs versus export for value, because this material would get thousands of dollars per tonne going back to its original manufacturer. Here we do not have an industry that would take that material. It would still get exported. It just depends on who makes the money along the way. It is the stainless steels that are recoverable. They are recyclable, but not so much here.

Wendy LOVELL: Thank you. That is all.

The ACTING CHAIR: Thank you. Ms Watt.

Sheena WATT: Thank you so much. Dr Norman, I want to ask a question particular to the equipment that is out there. Do you have any sense of how much of the equipment for decommissioning is in Victorian waters compared to Commonwealth waters here around our state? I am just interested to understand where the ultimate –

Francis NORMAN: The majority of the equipment is in Commonwealth waters.

Sheena WATT: The majority.

Francis NORMAN: Yes.

Sheena WATT: Can you give us any sense of that?

Francis NORMAN: So state waters – 3 nautical miles from low tide is state waters.

Sheena WATT: That is right, yes.

Francis NORMAN: Everything else technically sits in Commonwealth waters, so all the wells – my understanding at least is all the wells; I do not think there are any wells within that 3 nautical mile patch. So what you have got that is in the state's state waters are the pipelines and cables as they come from 3 nautical miles offshore all the rest of the way in – so that last 3 miles, shore crossing, and then pipelines to any infrastructure that you have got.

Sheena WATT: Just as we shape up recommendations from this inquiry, we are looking to some that are particularly for action by the state government and others that are more directed towards Canberra, so I am just thinking to that.

Francis NORMAN: I do think, though, that the opportunity is still for all of that material to be managed through the state but to put it outside of your control, I guess, inasmuch as it sits in Commonwealth waters.

Sheena WATT: Yes, that is good for me to understand that it is the majority in the Commonwealth waters. Thank you. The existing financial assurance mechanisms – are they really robust enough, given that there are such small numbers that are really in Victorian waters? I am just trying to understand the level of effort comparable to the actual amount of equipment that we are talking about. How much of a regulatory system do we need around that? I am not suggesting that we not do it. I am just –

Francis NORMAN: It is an interesting question. To your colleague's question earlier as well, I think there is a benefit in looking at the financial assurance piece holistically rather than at a state versus Commonwealth –

Sheena WATT: When you are saying holistically, you are talking about a national piece?

Francis NORMAN: By holistically, I mean to look at it for a facility to say, 'Is there money there to cover the full removal of that facility from offshore all the way through to the beach?', rather than to say, 'Well, is there enough money to do the Commonwealth waters piece and then is there enough money to do the other piece?' I am not sure what posture the decommissioning directorate and the companies that are doing those discussions take. I would hope that when they do those discussions, when they have those conversations, they are thinking of them as an entire 'from the beach out over' to make sure that the companies that are doing that work are appropriately prepared.

One thing I would say here is that we are quite fortunate in Australia that we have not had – sorry, I will try this a little bit differently. In other jurisdictions what we have seen is big companies, who have the financial wherewithal to cover their costs, over time sell to smaller companies as their assets become subeconomic for them to run, and then they will often sell to smaller companies again. And as that goes down, the risk gets hard. The risk associated with those smaller and smaller companies to have the financial ability to cover their costs increases.

Sheena WATT: And that assurance piece.

Francis NORMAN: What we have in Australia – we have not seen that happen.

Sheena WATT: We have not seen that happen. Okay.

Francis NORMAN: Correct. By and large, mostly what you have got is a small number of very large companies with the financial wherewithal to cover the costs that they have, and certainly from the conversations I have with most of those companies, a deep commitment to actually make sure they do the work as well, which is nice.

Sheena WATT: Excellent. That is actually really handy. I do have a particular question about the potentially leaked greenhouse gas emissions that are coming from – okay, I might start from the start. Victoria has very ambitious emissions reductions that are cast in legislation here. I am trying to understand then, is there some work to be done around reducing the potential for leakage of those emissions out of these sites that are in Victorian waters?

Francis NORMAN: From the wells?

Sheena WATT: And the wells. Are there any solutions or anything that we should be looking at to ensure that we are doing everything we can to hit our emissions reduction targets, including having these assets there that we might not necessarily see but are still contributing towards our emissions?

Francis NORMAN: The legacy, the long-term leak point, the one exposure point that you would have is always going to be the wells.

Sheena WATT: Yes.

Francis NORMAN: You have drilled a hole through into a reservoir to access the hydrocarbons. You want to make sure when those wells are closed that they are closed, and they are closed so that they will never, ever flow again.

Sheena WATT: That is right.

Francis NORMAN: The technologies and tools and understandings that we have had to do that work have increased and improved enormously over the last 40 or 50 years. The folks in the regulator that we deal with, the NOPSEMA people, their wells people are incredibly experienced and very precautionary in their approach as well. It is a global industry, again, in the well plug and abandonment space. There is a lot of knowledge out there and a lot of expertise out there in terms of how well we do it.

Sheena WATT: Where would you direct our efforts to look to see what industry best practice is globally?

Francis NORMAN: On well plug and abandonment? Can I get back to you on that one?

Sheena WATT: I am happy to wait and hear from you on that one, but I am keen to know, if we are looking for global best practice on this, it is something we are concerned with.

Francis NORMAN: Yes, I am very, very happy to try. The regulations that overlay this work typically point to two different standards. One is a Norwegian standard. It is NORSOK D-010, which is a well-established – sorry, I should not use the words 'well-established' when talking about wells. It is a highly established regulation and piece of standard work around this that sets out how you should approach this work. Offshore Energies UK also have some guidelines for well plug and abandonment techniques. Each well comes with unique characteristics.

Sheena WATT: Yes.

Francis NORMAN: They are all drilled through slightly different geography. They have all got slightly different challenges in terms of the way that they approach them. The folks that live and breathe wells – you could spend days in here talking with them about the different approaches and technologies. But they are very, very, very cautious in terms of what they do.

It is not my background, but what I would say is that when they do plug the wells, they follow these processes which have to be vetted and approved before they start. They follow them very closely and then they have the opportunity once they have done that work to monitor it, to make sure that if it is going to leak – if it is going to leak, it is going to leak right at the start, and then if they need to, they can go back in and they can redo bits and pieces as well.

Sheena WATT: There we go, but perhaps with the benefit of time, if you have a chance to look if you have any information that you can send through, I would certainly appreciate that.

Francis NORMAN: Yes, I would be happy to send you some links to some materials. Sure.

Sheena WATT: And thank you for your time.

The ACTING CHAIR: Thank you. And finally, Ms Broad.

Gaelle BROAD: Thank you, Dr Norman. Look, there have been some insights shared today about the bonds or lack of bonds with these sites. You said it is hard to work out the cost, but who pays for decommissioning? When it comes down to it, when things are in state waters or Commonwealth waters or industry, who is actually paying?

Francis NORMAN: The industry pays.

Gaelle BROAD: All of it?

Francis NORMAN: All of it.

Gaelle BROAD:Okay. You mentioned Victorian and Commonwealth. How many sites are actually in the Victorian jurisdiction that need to be decommissioned, do you know? I have got to separate out.

Francis NORMAN: I do not know. As I was talking with your colleague there, in the offshore space, all of the wells and all of the platforms are in Commonwealth waters, but there is a section of pipeline then that crosses into direct state control. The other part that you would have that would be yours would be any onshore wells and any onshore infrastructure that exists within state boundaries. I do not have the numbers around that, I am afraid.

Gaelle BROAD: No, that is fine. And what are the due dates? Is it clear with projects?

Francis NORMAN: One of the changes that came in off the back of the *Northern Endeavour* – there was a parliamentary inquiry and a bunch of reports and recommendations that came out. One of the recommendations that came out from that, which NOPSEMA themselves have put in place, is a recommendation that within one year of cessation of production, if there are floating facilities, floating assets associated with that field, they should be decommissioned and taken away. Within three years of cessation of production any wells should be plugged and abandoned, and then within five years the whole project should be complete and finished to the satisfaction of the regulators. That is a recommended practice which industry is very much endeavouring to meet where it is able. What that has done for Australia – that is one of the reasons why we are seeing so much activity right now. Partially it was the general directions, the instruction to clean up, but also now as we are reaching that break point with a lot of our facilities the titleholders now have that one-three-five framework that they can work towards. Having that in place, now when I talk to colleagues around the world a lot of them actually look at us quite enviously, because while it is not enshrined in legislation we actually have a time-bounding around our work, which means it is a lot easier to attract technology companies and a lot easier to attract people to come along and engage with the work.

Gaelle BROAD: Okay. So is that binding? Are there consequences?

Francis NORMAN: There are not direct consequences with that, no. It is a recommended practice, so it is a recommendation from the regulator. But my suspicion would be that they would look less favourably on somebody if they were not endeavouring to meet that timeframe.

Gaelle BROAD: Yes. Okay. It is kind of like if you rent a premises and you leave the place in a mess, you are not necessarily going to get another rental.

Francis NORMAN: Yes.

Gaelle BROAD: What are the incentives then for companies to decommission effectively?

Francis NORMAN: Well, first off would be obviously that they are obliged to do it. It is in the title when they first sign on for the title for this; they have a legal obligation to do it. There is very much the public perception and the societal expectation that they do the work. I think for the enlightened companies as well there is a realisation that the longer you defer it, the more expensive it is going to get. So they really are looking much more seriously at their decommissioning portfolios now as more and more companies globally reach this point with their decommissioning works. I think most companies – most people, never mind companies, have

an optimistic view about what remediation costs are going to be, and then suddenly you get the price, whether it is a house renovation or a demolition or anything else. I think companies are realising much, much more now that doing the work early, while you still have knowledge and while the structures themselves are still robust and you can still get into them and do it in a safe way, is way, way, way more cost effective than deferring it out into the future.

Gaelle BROAD: That makes sense. We have heard some conflicting views today, but does Victoria have the power to recall a provider once that title has been returned to the state?

Francis NORMAN: I do not know. I do not know at the state level.

Gaelle BROAD: Are you able to have a look at that and get back to us?

Francis NORMAN: Yes. I think your administrators will remind me of my obligations on that one. I can certainly look into that one and get back to you, yes.

Gaelle BROAD: Thank you. We have also heard witnesses talk about the need for best practice standards, and then others have said that currently the national approach or the Commonwealth approach is to point to international best practice. What are your thoughts? For Victoria is that reinventing the wheel, or is it best to point to the Commonwealth?

Francis NORMAN: I think there is a lot of value in looking at international best practice, but we also have to look at local context as well. One of the areas that we are seeing now where there is not really an established international best practice is the bulk handling and recycling of flexibles and umbilicals, these big cables. Australia and Brazil, interestingly enough, are the two jurisdictions who are probably seeing this first at the scale that we are seeing it. Europe have not had the volumes in terms of this material coming out that we are having now. So I think we may well be one of the first movers in that space. Similarly, our environment is different, our climate is different, our workforce requirements are different, and so forth. There are best practices in some areas which we can look at internationally. Well closure, for instance, is a global industry. But then there are other things where we should look at them and say, 'What is international best practice, and does it work right for us?' When we did the study that I referred to at the start, looking at international best practice, we essentially put four corners on that framework. One was: what does it do elsewhere that we should do? What do they do elsewhere we should not do? What don't they do elsewhere that we should? And what does nobody do? And I think we still need to look at any of this through that same lens.

Gaelle BROAD: Looking at our committee and the recommendations we will make and that focus on the Victorian state government, are there any priorities or key things that you think that we should be driving home as recommendations?

Francis NORMAN: I think it would be around making sure that your regulators here are appropriately equipped and staffed to do the work, and to do it in an efficient and timely manner; having really good, robust, open working relationships with state and territory regulators so that you can share and understand who is doing what and what is happening where; absolutely taking a fit-for-purpose perspective around facilities and so forth; and broadly speaking, I think making sure that the regulations themselves are also fit for purpose for the work that is being done. One of the things that we find with some of the regulations that have to be applied to decommissioning is they were written for a completely different purpose. Then when you are trying to retrospectively fit them to a different piece of work, it actually makes it really complex for the regulators and for the companies doing the work to make sure that everything is being done properly but also that it is being done appropriately.

I imagine it is like every other piece of legislation: you write it with a particular space in mind, but then a few years down the track something else comes along and you have to go back and look at it and say, 'How does this fit into that?' I think there is a real need for that – and that is not just Victoria; that is not just Australia either. That is everywhere where we are encountering new challenges against a regulatory regime that was written for other purposes. It is just making sure that what we have got makes sense, that we are not doubling up, we are not leaving gaps, and that we can get approvals in a timely manner. And if the decision around approvals is no, take a different approach, then that also comes through quickly as well.

Gaelle BROAD: Thank you very much.

Francis NORMAN: A pleasure.

The ACTING CHAIR: Thank you so much for being here today, Dr Norman. As I said at the start, you will receive a copy of the transcript for review in about a week before it is published on the website.

The committee is now going to take a break for lunch, and we will be resuming at 1:30.

Witness withdrew.