

PETROLEUM AND GEOTHERMAL ENERGY LEGISLATION AMENDMENT BILL 2013

Consideration in Detail

Resumed from an earlier stage of the sitting.

Clause 112: Act amended —

Debate was interrupted after the clause had been partly considered.

Mr M.J. COWPER: Prior to the break we were discussing the issue of pipelines under clause 112. I have a question for the minister; I may have to break it down for him so that he can better grasp what I am trying to arrive at. There is a cost associated with transferring carbon dioxide in liquid form from point A to point B; I think we all agree that that is the case. Obviously, that cost goes to the total cost of capturing, transmitting and pumping it underground. My question to the minister relates to the need to actually have a pipeline at all for CO₂, given that it is omnipresent in the atmosphere. Whilst I acknowledge that there may be concentrates of CO₂ being emitted from a refinery, for instance, the cost of transmission from point A to point B will impact on the overall cost of capturing and sending it underground. My question, minister, is: why can we not just simply set up a carbon capture at the point of injection, as is the case in the North Sea, the north west of Western Australia and the north west of the United States? The companies there that have been harvesting petroleum or gas extract the CO₂; it is then pumped back into the ground and used to pump petroleum and other materials out. In this case, in the South West Hub, it is simply pumping into a saline aquifer. If this science has so much promise, why is there consideration about the pipeline? My understanding is that the cost of the pipeline and the disruption it would bring to many residents of the Murray–Wellington electorate would not provide the value that has been placed upon it for this particular project. Why cannot we simply just put an injection point at any location across the globe and simply sequester carbon into a —

The ACTING SPEAKER (Ms L.L. Baker): Thank you, member. I am not sure that that question is at all related to the Petroleum and Geothermal Energy Legislation Amendment Bill 2013. This is not a general debate; I am happy to let the minister respond if he feels it appropriate, but I urge the member to not pursue that line of questioning in such a general way in further clauses.

Mr M.J. COWPER: Prior to the break I put the question in a manner that the Acting Speaker might well have appreciated; but unfortunately, I do not think the minister could grasp what I was trying to arrive at, so I broke it down a little for him so that he could get it in bite-size bits.

Mr W.R. MARMION: Even if we were actually capturing the carbon in situ and then putting it into the ground, we would have to pipe it, whether it was one, two or three metres. This clause is about covering the eventuality, and the cost is irrelevant. If one is transporting CO₂ in a pipe for geosequestration, this provision picks it up and gives us the opportunity to put regulations around that, and I think that is what everyone in this house thinks is a good idea. The member asked why we do not capture it in situ or close by; to use Barrow Island as an example, it is piped. Wherever it is captured, we put it in a pipe to put it somewhere. Mostly, I imagine, the pipe would at least be some tens of metres; a very small pipe, but this covers all pipes and how we get it there.

Mr M.J. COWPER: We are talking about the amendment to the Petroleum Pipelines Act 1969. In my estimations, a pipeline is used when water, gas or any other material is pumped from point A to point B across some distance for a particular purpose. We are talking about a pipeline and not whether the material goes into a pipe. In the case of Barrow Island, certainly the CO₂ is captured and put into a pipe and then pumped underground. There is no argument there, but a pipe does not necessarily make a pipeline. We are talking about a pipeline that traverses a long distance. There is a cost associated with pumping a material from point A to point B. Although I acknowledge that there may be some CO₂ emissions from these refineries, the cost of piping it across distances to inject into another location would push this project beyond its capacity. Why would we not simply capture the CO₂ from the air and pump it underground?

Mr W.R. MARMION: I think where the member is coming from is irrelevant to what we are doing today. The cost is irrelevant.

Mr M.J. Cowper: There is a cost to my constituents when it goes across their paddocks.

Mr W.R. MARMION: We are talking about the pipeline. The member asked a question about the cost of the pipeline and I am saying that the cost does not matter. We are amending the Petroleum Pipelines Act 1969 to make sure that the state government has some power so that if a proponent wishes to transport CO₂ in a pipeline, the pipe conforms to the range of regulations that we will put in place. Indeed, it would have to go through environmental approval and a lot of other procedures. I think it is important to record that we are amending legislation to regulate pipelines. That is what we are doing.

Clause put and passed.

Clauses 113 to 172 put and passed.

Title —

Mr M.J. COWPER: One of my earlier questions was why GHG was not included in the title. Given that this bill introduces 26 pages of new sections and 176 clauses will amend the Petroleum and Geothermal Energy Resources Act, why would we not include GHG in the title?

Mr W.R. MARMION: In this discussion we are agreeing to the long title, which reads —

An Act to amend the *Petroleum and Geothermal Energy Resources Act 1967* and the *Petroleum Pipelines Act 1969* to facilitate the geological storage of greenhouse gas substances, to make consequential amendments to other Acts —

It includes other acts —

and for other purposes.

We are passing the long title, not the short title, of the bill.

Title put and passed.

Leave granted to proceed forthwith to third reading.

Third Reading

MR W.R. MARMION (Nedlands — Minister for Mines and Petroleum) [3.05 pm]: I move —

That the bill be now read a third time.

MR W.J. JOHNSTON (Cannington) [3.05 pm]: I will make a few remarks about the Petroleum and Geothermal Energy Legislation Amendment Bill 2013. As the Labor Party has made clear from the start, we are not opposing this bill. We will not divide on it or vote against it, but we do say that a range of issues need to be amended in this legislation. If we came to government, that is exactly what we would do. We would do that in discussion with industry and players involved in geosequestration. We would not spring things on anybody. It would not be our first priority, but we think that there are ways to improve the arrangements in this legislation.

Firstly, I go to the question of permanent storage of greenhouse gas. It has clearly been difficult for the parliamentary draftsmen to come up with words that make it clear that the greenhouse gas substance is for all time sequestered geologically. The problem with that, of course, is that we do not know whether we can do that. It is well known that we can put carbon dioxide back into an empty oil or gas reservoir, and that has been commonly done for a long time, but is that permanent storage? By definition, we do not know what will happen in the future. How long does it have to be to be permanent storage? The department provided us with a very good briefing and a nice little chart setting out the site closure and long-term liability details arising under this bill. The department explained that 61 years after it stopped injecting, a proponent could then make an application for a site closure, and the so-called closure assurance period is a minimum of 15 years. Therefore, 76 years after a proponent stops injecting, the liability for that procedure would pass from the company to the state. We understand why that occurs; there are very few companies that were operating 76 years ago that are still operating today. Looking forward, we cannot have an unlimited liability on a company because, quite frankly, it would not exist to bear that liability, so we may as well admit that the liability has moved to the state.

In terms of the geology of the earth, 76 years is a fraction of a fraction of a split second. That is what troubles all of us, because if it is genuinely permanently stored, we will not find that out for 76 years. The use of “permanent storage” in the bill is somewhat problematic. I raised that during consideration in detail because I can imagine some lawyer coming into court someday arguing that just because it has been stored for 76 years does not mean it was permanently stored. If it is not permanently stored, the provisions of the amended act will not apply because the provisions of this act apply to GHG only when it is permanently stored. That will be an interesting issue for a court to look at when I am gone. The good thing is that in 76 years I will not be troubled by the outcome of that court case, which is a pleasant idea. None of us wants to live forever. This issue goes to the question of what is permanent.

During consideration in detail we also explored the question of costs a little. There are three aspects to this: first, the cost of the person proposing to do a GHG project; second, the cost of administering the process in terms of the regulatory functions of government; and, third, the insurance costs of any future liability. We had a discussion with the minister when my colleague the member for Gosnells asked about the capacity of the minister to make requirements about insurance matters; that is an existing provision that obliges people in the oil and gas sector and in the new sector of geothermal energy. Those matters are established but it is about the process of the conduct of the operation. I am not certain about the minister’s assurance that there is a capacity to require insurance for an ongoing arrangement up to 76 years. We had a discussion about \$2 companies and all

that. I am not certain that that provision is exactly as the minister explained it. I do not know whether the department is ideally suited to make a judgement about whether the insurance matters are adequate. I accept that the department has good knowledge about the insurance required while a drilling project is being carried out and while hydrocarbons are being extracted, but it is just a matter of fact that it does not have experience in long-term geosequestration. It will be interesting to see how that develops. That is something the department needs to look at.

We asked the minister about what the fees for this are expected to be. The minister was very strenuously working here because this is complex legislation. As an engineer, he has an ideal background for it. Nonetheless, these matters are very different and unusual for all of us. He said that they are working that out and they do not know that yet. That is a fair enough answer. I probably would have given the same answer if I were sitting in his chair, which I am not. That is a real question about what the cost will be to government that it then recovers from the industry. We will have to look at that. If the costs are too high, people will not want to be involved and if the costs are too low, the government will not recover expenses.

Another issue is this question of long-term liability. It is amazing who reads *Hansard*. During the recess, a number of people at social gatherings raised with me the fact that I mentioned the *Hitchhiker's Guide to the Galaxy* when we were talking about this issue. I make the point that we could have a relatively low cost system whereby the companies that are sequestering put aside money for that long-term liability. The companies say that the liability might be billions of dollars in 100 years, but if we look at the discounted cash flow rather than the cost in the future, it is probably worth only \$10 million or \$15 million for a particular project in today's dollars. Even though under our system after 76 years the liability transfers to the state, we could still acknowledge that and say, "Yes, that is what happens", but in the meantime, the companies have to give \$10 million, \$20 million or \$30 million, which in the great scheme of things is not that much, to set aside in a trust for those potential future liabilities. That might be a way of doing it because at the moment the legislation provides that after the liabilities move to the state, it will be a charge against—I forget the proper wording—the ordinary funds of the state. That may be a better way of doing it. We could have the company set aside the money—in my view, it would be a very small part of the total cost of the project—and then we would insure the taxpayers against that potential liability. In the future, if the liability comes to pass, the money would be there and it would be available, and if it never comes to pass, it would not be a big impost on the company anyway.

There was also some discussion about the fact that the chance of one of these projects proceeding is pretty low. We had this discussion about \$70 for transport and injection, and about \$70 is the estimate in the literature for the capture. That is \$140 a tonne for geosequestration of GHG. When a carbon credit at the moment costs about €5 or \$8, we can see \$140 is way above that. There is no economic incentive at this time to go down the geosequestration path. That gives both the current government and any future government of whatever persuasion some time to revisit this legislation. I have already said that needs to happen.

I also take on board some of the commentary from the members for Murray–Wellington and Bunbury. We can only use a GHG formation that is entirely in the lease that one has. If the formation extends beyond the land that one has been allocated by the Crown, one cannot use that GHG formation. The minister said, "Oh, well, we would try to align the leases with what we think are the formations." I do not understand every single square millimetre of Western Australia's maps geologically, but there is a lot of information. These companies do not just go in blind and drill a \$150 million hole because they think that might work. They have a look at things and use the publicly available databases et cetera and choose only the places that they think will work. I understand that. The reality is that the lines on the map for the lease that are drawn by the department will simply not match the geological formations beneath the earth because we do not know where they go. We know we do not know because that is why we are doing all the research. If we knew, we would not have a problem. The reason that we need companies to do research and find what is there is that we do not know all the details. Inevitably, when a company tries to find its GHG formation, it will inevitably lead to it being beyond the lease that has been allocated to it by the department. That is just the way it will happen, in the same way as currently people look for gas reservoirs and find that gas reservoirs stretch across the boundary of their lease. That is not a problem for gas reservoirs because there is a very established practice of how the resources are allocated between one lease and another.

I was very obliged by the minister to have a general briefing from his department when I became the shadow Minister for Mines and Petroleum. The director general talked to me about the section in the department that has highly skilled technicians who are able to do that very thing and map where reservoirs are across leases. Here there necessarily has to be a different solution. We cannot do that because that is about sharing a gas reservoir. Here we have to be solely responsible for the injected material because if it goes beyond one's lease, one cannot be held responsible for it. Naturally, the GHG formation has to be entirely within one's lease before the government gives approval to stick the GHG down. We talked about this a lot in consideration in detail. The government said that if the applicant gets to their boundary and finds the GHG storage formation continues

within the larger geological formation outside the boundary of their lease, the government will give them an adjustment to the lease to include the part of the GHG formation that extends past the edge of their lease. That is an obvious solution but there are problems with that. The first problem is: what happens if the boundary of one person's GHG exploration lease is the boundary of someone else's GHG exploration lease? I am not sure the minister properly answered that question in consideration in detail. He might or might not want to comment on that issue because I am not sure how it will be resolved.

The other issue is where it extends into lands that are not subject to someone else's lease. That is obvious; the lease can be extended into that new piece of land and they can continue to explore. What interested the member for Bunbury was what would happen if that had to be extended again because the geological formation continues and the GHG formation that is part of that bigger geological formation extends even further past the end of the area that has been added. The minister said, "We could just add on some more." Again, that is fair enough, but what is the limit? Where do we say that this GHG formation does not exist at all because the GHG formation is only a GHG formation under the act if it is effectively sealed around the edges, to use layman's terms?

Mr M.J. Cowper: That is why it is called the Swan coastal plain.

Mr W.J. JOHNSTON: That is right. What will happen if it extends 300 kilometres beyond the edge of the ocean? The one thing we know about geological formations is that we do not know where they go, because we cannot see them. That means the GHG formation will not be there because it will not be described in the words in the act. When do we say, "Enough is enough", and give up, and when do we say, "Here is some more land, go and have a look"? That will be another issue no matter who is the minister, whether it is this minister or the minister who is rotated in by the Premier. Maybe the member for Murray-Wellington will be rotated back into cabinet as Minister for Mines and Petroleum because he was so unlucky to be excluded after the election, as the Premier explained. That is another issue we will have to look at.

I need to place on record my great thanks to my daughter, Rebekah Johnston, who is an undergraduate student at the University of Western Australia, who, believe it or not, is studying geology and climate science.

Mr W.R. Marmion: I'm glad you're putting that on the record.

Mr W.J. JOHNSTON: I am putting it on the record, minister. I would not claim to have all this knowledge.

Mr M.J. Cowper: Takes after her mother, clearly.

Mr W.J. JOHNSTON: Obviously, she takes after her mother!

A member interjected.

Mr W.J. JOHNSTON: Yes. It was funny; she lives in my electorate and she was walking past the front of my office one day, saw my car and dropped in to have a chat. She saw the bill lying on my desk and said, "Are you dealing with that?" I said, "Yes, I'm dealing with that." She said, "Could I write up a brief for you?" I said, "That would be great."

Mr W.R. Marmion: We may have finished the bill three weeks ago if she hadn't done that!

Mr W.J. JOHNSTON: I do not know whether that is true, minister, because I probably would have had to seek out people in industry to give me even more advice and therefore would have been slower to react. The fact that I was able to get everything ready in a week is a credit to her because she spent a weekend writing me a brief. I have been able to go through all the detailed questions she annotated throughout a copy of the bill. I am very pleased I was able to get all that assistance, and I place on record my thanks for her know-how and ability to look through it. When we think about it, a 21-year-old university student might have good technical knowledge but had never looked at legislation before. She was able to not only apply technical knowledge, but also read the bill and understand what it provided—a rare and great achievement. It certainly helped me enormously. She was also able to provide me with a reading list of technical papers from a series of organisations that I was able to read in my own special way, although not in the detail she read it. For example, I read in one of those papers that the cost of capture was \$70 a tonne. I forget which university it was from, but an American university wrote a paper specifically on the question of how much it costs to capture carbon. She provided not only the direct information in the annotated bill, but also a reading list of things I had to do my homework on.

On that score, I note that the government declared the legislation to be urgent at the time we came to debating it in the last sitting of Parliament before the winter recess. Clearly, the fact that we are standing here today shows that it was not urgent. The Leader of the House is not in the chamber, so he will not get cranky with me when I say this. We know that the government did not have a proper legislative program. It had not thought to introduce any bills for to us to debate, so we had to go through the farce of the bill being declared urgent. I thank the Minister for Mines and Petroleum and the Leader of the House for agreeing to not bring it on for debate in the first week it was introduced but to leave it for the following week. However, it would have been debated this

week had that not happened, and that probably would have been better for everyone because it would have given us a proper amount of time to look at all the issues.

I want to thank the staff of the Department of Mines and Petroleum who gave me a personal briefing on the bill a couple of days, I think, after it was introduced and then came back and provided the opportunity for the caucus to be briefed. The truth is that only a few of us came to the second briefing, but it was still important to give the Labor Party that opportunity, and we thank them for that. I think they could tell that between the first briefing and the second briefing I had learnt a bit about the issues and was able to ask some more detailed questions. They were very kind with the information they provided. I make the point that they were the ones who told me in the second briefing that the estimate was \$70 a tonne for transporting injections, as the minister confirmed in his remarks in the chamber. I appreciate their professionalism. I note that they brought along a little kit to give us a presentation on the issues of the South West Hub, which we were not so keen on, not because we are not interested but it was not really the time for us to have that briefing. I will say that I am sure that at some time we will be very interested in receiving a more detailed briefing on the South West Hub.

I want to turn to the South West Hub for a couple of minutes before concluding my remarks. I make the point that, on a number of occasions, the member for Murray–Wellington has discussed how the South West Hub project will go ahead. The fact there is no legislation to authorise a geosequestration project does not mean we cannot look at what is involved. We are not unauthorised to do research. This is a worthy area of research. It has to be weighed up against all the other options for geosequestration, and, clearly, the number one option has to be growing trees. That is a really good way of sequestering carbon. It is interesting that countries such as Indonesia are now understanding that and getting involved in geosequestration projects. There is plenty of opportunity here in Australia for geosequestration in forests, which would be a great part of our future. That is probably the Labor Party's preference. In saying that there is nothing wrong with investment in the South West Hub, it has to be balanced against the alternatives. It is very important, when using taxpayers' money, not to look at each project as a silo but at projects overall. We have to make sure we not only get value for money but also spread it around so that we get the knowledge we need. That does not mean putting all our eggs in one basket or in one blue-sky basket. Governments are good at basic research, which is a good thing. We should also applaud the involvement of CSIRO and other organisations involved in basic research. The chance of the South West Hub project becoming an operational project is pretty remote.

Finally, it is interesting that the member for Southern River gave a long speech in the second reading debate about how anthropogenic climate change is a theory with no merit, if I can put it in those terms. If that is true, why are we doing this? What is the purpose of intervening in anthropogenic carbon through geosequestration, which is what we are talking about? The member developed a very elaborate argument about why he opposes the theory of anthropogenic climate change but still supports doing science on geosequestration. That is intellectual gymnastics to the nth degree! Why would the government spend millions of dollars of taxpayers' money to intervene in the human production of carbon, which is what we are doing when we capture carbon in the process of industry? That is the only reason for geosequestration! If it works, it is fabulous, because it is like the magic pudding! It means there would be no limit on the amount of carbon we could create because 100 per cent of it could be sequestered. That would be a liberating technology—if it worked. However, the only reason we invest in it is because we think that humans are impacting on carbon emissions and that carbon emissions are impacting on the climate. Indeed, as we discussed in the consideration in detail stage, greenhouse gases are those gases that were being talked about under the Kyoto Protocol. It does not make any sense. If the member for Southern River believes in what he says, he will vote against this legislation. He will only vote in favour of this legislation if he does not believe what he said. He cannot have it both ways! We are told all the time that the member for Southern River is entitled to vote against government legislation. The only reason the member will vote in favour of this legislation is if the case he put in the second reading debate is wrong. If the case he put in the second reading debate is correct, he will vote against the legislation. However, we know he will not vote against the legislation.

We have had a quite long and detailed discussion of this legislation, and appropriately so because it is very complex legislation and deserves to be carefully examined because the risks are great. I have put the Labor Party's position that we will not divide the house or vote against the bill. In acknowledging those caveats, I think we will probably need to review the act before it is implemented.

MR C.J. TALLENTIRE (Gosnells) [3.34 pm]: I rise to contribute to this debate and begin by saying that I really want the Petroleum and Geothermal Energy Legislation Amendment Bill 2013 to work. It is very important that it works, because we need every possible string to our bow to tackle this problem and to reduce our greenhouse gas emissions or, in this case, to dispose of those greenhouse gas emissions. I want this piece of legislation to work, but I am also concerned that the technology must work. We have to make sure it does. It has been a very useful debate in looking at the legislative arrangements, how the liability is transferred and how the

technology can work with the legislation. That has been a very interesting and at times complex part of the debate, but it has been very useful.

Some very important issues have been raised, but one issue that I keep coming back to in debates in this place is making sure we have the community onside. It worries me that it seems many people in the electorate of the member for Murray–Wellington have not been adequately informed or kept up to speed with what is going on. That is unfortunate. I put to those people and indeed the member for Murray–Wellington that if they are concerned about the pollution of their paddocks from some eventual, possible leakage of CO₂, they should be equally concerned about the nitrate contamination in their paddocks from various livestock activities. I know that nitrate levels in aquifers in the member's electorate have seriously increased. Other forms of pollution are perhaps far more immediately pressing on the livelihoods and wellbeing of people in those communities than this potential threat would ever be, given the depth at which we would store this CO₂. It is understandable that people have concerns; they have to be brought onside. As well, my friends and former colleagues in the community conservation sector could have been engaged as a part of that information dissemination process. I know this government has a certain view on providing support for community organisations to be advocates. I know the government likes to shift services out to the community NGO sector, but I do not think the benefits of advocacy are properly understood by members opposite. In this case, the government could have got some benefit from that sector and it is curious the government has not pursued that.

This legislation follows a range of documents that originated with the previous Labor governments of Alan Carpenter and Geoff Gallop. When the Western Australian Greenhouse Strategy was put together, it foreshadowed the development of a system to manage CO₂ liability and ownership issues for the medium to long term. This legislation is the fruition of that strategy. I note that more recently, the then Minister for Environment, the minister who is now the Minister for Mines and Petroleum, in October 2012 released the Western Australian government document titled “Adapting to our changing climate”. It is a brief document, but it contains some useful things. The foreword that the minister wrote is very good. He puts on the record —

Climate change is happening now and will continue to occur and affect Western Australia's communities, industries and ecosystems as well as present challenges to managing our State's resources.

That is well done, minister. That is a good comment, but the curious thing is that the foreword finishes very abruptly. In fact, I cannot help but think a paragraph is missing. The minister talks about mitigation measures and carbon pricing and points out that the Australian government instituted a carbon price on 1 July 2012 with a fixed starting price of \$23 a tonne. The minister states —

The Western Australian Government's view is that decisions on the design, implementation and timing of the regulation of greenhouse gas emissions, and support for new low emission technology, are primarily matters for the Australian Government and the Federal Parliament.

That is the last paragraph in that foreword. It is an interesting and valid point. I wholeheartedly agree with the member for Murray–Wellington and others about this. The technology before us—the idea of geosequestration—will eventually be all about pricing carbon. If there are other cheaper means of reducing Australia's overall greenhouse gas emissions than this technology, those other means will be chosen.

In preparation for this debate, I went to “The Garnaut Climate Change Review”, which came out in 2008, if I remember correctly. I will use from the Garnaut review one example of an alternative means of reducing our emissions. The Garnaut review refers to the rangelands, the 36 per cent of the state that is covered by pastoral leases and unallocated crown land. Taking an Australia-wide perspective, the Garnaut review states that up to 250 million tonnes of CO₂ equivalent a year could be sequestered for several decades just by allowing the regeneration of the rangeland areas—the low rainfall areas that are currently used for grazing activities. Many of those areas are in desperate need of regeneration. What an exciting opportunity that is. In my contribution to the second reading debate, I talked about the potential for plantation sequestration in the wheatbelt. Now I am coming around to this idea of the rangelands. The cost would be so much lower. There is some real competition out there for the idea of geosequestration. As worthy an initiative as it is and as much as I want to see it work, we must be realistic about the other alternatives. The cost may well be lower than the amount that has been talked about in this debate. If we are looking at an amount of about \$140 a tonne, I think it will just be cost prohibitive.

I am very pleased to hear that work is going on at the South West Hub. It is primarily a research exercise. As is so often the case, such activities are really the gold-plated Rolls Royce–type version of things. I put it to the member for Murray–Wellington that in many ways what is going on there will be a well conducted approach. One would hope that the risks will be zero. I note that the work at the South West Hub is being done in conjunction with work at the Otway Basin. It will be very interesting to see how that is progressing to get a sense of what these projects involve. Perhaps the farmers and landholders in the Shires of Waroona, Harvey and

Murray will be given the opportunity to see the Otway project for themselves so they can decide whether it is putting them at risk. That is all part of communicating the message and giving people the opportunity to see it for themselves, make their own decisions and ask questions of the leading scientists involved in these things.

The member for Cannington rightly touched on an issue that came up during the debate about the climate change scepticism expressed by the member for Southern River. The member for Southern River has every right to express his concerns. In fact, I am heartened that, on the face of it, it seems that only one of the 59 members in this chamber emerged as an overt climate sceptic. That is encouraging. It is probably a positive trend. In my contribution to the second reading debate, I tried to put forward a few more ideas for members to consider why they should accept the science in this area. It is not about belief. I am always irritated when people ask, “Do you believe in climate change?” It is not about belief; it is about accepting the scientific evidence.

I want to contribute a couple more things to that. One is an overview of the peer-reviewed articles on this issue. It is a piece of research that the Climate Commission released a couple of months ago, so it is readily available on its website. The Climate Commission reported that the University of Queensland, through its researcher Mr John Cook, reviewed 12 000 peer-reviewed climate change papers published between 1991 and 2011. Of the 4 000 papers in which authors expressed an opinion on the cause of climate change, over 97 per cent agreed that it is primarily caused by human activity. That is an overview of what those 4 000 peer-reviewed papers cumulatively stated without members having to go into the details or the substance of any one of those papers. I think that is overwhelming.

Mr M.J. Cowper: Do they go on to say whether it is the CO₂ component of the GHG? There is some debate that the CO₂ may not be the sole culprit. In fact, as I mentioned before, the most prominent greenhouse gas is actually water vapour.

Mr C.J. TALLENTIRE: Yes, I noted the member’s comments about water vapour. He is right; water vapour does act as a greenhouse gas, but the difference is that water vapour is mostly part of a natural cycle. There are some additions to it that come through things such as the contrails from aircraft. On the scale of it, it is very marginal, whereas the change in atmospheric CO₂ content has been dramatic. I turn again to Garnaut to provide a summary of that. He tackled the issue of water vapour and made that comparison. I want to reference a comment from the Garnaut review —

The anthropogenically driven rise in carbon dioxide since the beginning of the industrial revolution (around 100 ppm) is about double the normal ‘operating range’ of carbon dioxide during glacial–interglacial cycling (180–280 ppm) ...

He points out —

... it is not just the magnitude of the post-industrial increase in greenhouse gas concentrations that is unusual, but also the rate at which it has occurred.

Members must bear in mind that we are talking about monitoring that extends over 800 000 years. We can get reasonably accurate data on atmospheric CO₂ levels over an 800 000-year period. I read an article in *New Scientist* that suggested that we have been around for only 200 000 years, human civilisation has been around for perhaps 10 000 years, depending on how it is defined, and industrialisation has been around for a far shorter period. There are different ways that this can be looked at to try to put it into perspective, because obviously we are dealing with numbers that make it incredibly tricky to grasp.

I was at Karijini over the winter recess. At the visitor centre at Karijini National Park, there is a nice display that indicates that the first life forms on earth occurred on this planet 3.6 billion years ago. It then puts it in context with the first human life. If it were to be converted to a 24-hour clock, our existence would be the last half-second. What I am trying to say is that our time on earth, and certainly our industrialisation phase, has been a tiny point in geological time terms, yet we have wrought such change on the planet. People do not deny that if we ask about the deforestation of land. We need only look on Google Earth to see how hugely we have changed the landscape in the 18 million hectares in the south west of the state. No-one can deny that. But because greenhouse gas is not readily visible, people are inclined to say, “I’m not sure about that. I don’t know that there is such a thing as anthropogenic climate change.” It seems that people have a desire to see something. It is almost a biblical thing. It is like wanting to see the wounds of the Saviour. People have those sorts of feelings. The devastation of land can be seen on a Google Earth image. When talking about the atmospheric CO₂ content, some people are inclined to deny it. Nevertheless, the facts are there.

I welcome the member for Southern River to the chamber and hope that he was able to catch on the monitor some of my previous comments; otherwise he will be able to read them in *Hansard*. I again direct him to the survey that reviewed 12 000 peer-reviewed climate change papers and to the 4 000 papers in which authors

expressed an opinion on the cause of climate change. Over 97 per cent agreed that climate change was primarily caused by human activity.

I want to refer to some details of the legislation that we got into. It is clear that the issue of liability will be a real test of whether we have this legislation right. The mechanisms have been outlined in the legislation. I can see the sign-off approach in which a minister is presented with the information by this GHG sequester. This company that we hope will be solid and around for many years will present a document to the minister to say that it has done its job, it has sequestered 100 000 tonnes of CO₂, perhaps many millions of tonnes of CO₂, and it believes it has sealed things off and it is all in a state where there is no risk of leakage. The minister has a period to consider whether he or she wants to accept that liability on behalf of the state of Western Australia. That is a real issue. Should that liability be in the form of a leak, I can see there is an easy way to quantify the magnitude of the problem. We will simply have to look at the global carbon price at that time and multiply it over the number of tonnes leaked. That is how we would determine the liability. But there are other issues here. We are putting enormous pressure on large areas of underground geology. Other things could happen, such as subsidence or any triggers to earth-type movements. It sounds a little far-fetched but it has happened.

As the member for Cannington mentioned, in various fracking exercises in the UK there has been a linkage between earth tremors and pressurisation. Bear in mind that we are talking about many millions of tonnes of gas. That sort of pressure can perhaps change the geology. It is a worrying thing. It is something I would like to know much more about. What is the extent of the liability should a chain of events lead to the subsidence of a suburb in Bunbury, which is not too far away from the South West Hub? If that occurred, how would we quantify the liability? Who would accept that liability if we had gone through that completion process? It would be a very difficult exercise. My suspicion is that the state of Western Australia would inevitably accept liability.

This initiative and the work that has been done on this legislation show a very positive sign. Although government members are members of a party that expresses all sorts of doubts about carbon pricing, they are realising that this sort of approach through geosequestration is something we should look at. Any rational being would say that we have to look at carbon reduction at the least cost. That is what this enables us to examine. That is a very worthwhile exercise.

I will conclude my remarks by saying that I support the legislation. It is a positive initiative to have this legislation before Parliament. It means we want to tackle this problem and gain extra life out of our fossil fuel-burning reserves such as coal and perhaps gas. This will give us the opportunity to pursue things while achieving no extra greenhouse gas emissions. It is a positive step that we are taking this issue seriously. As the shadow minister for climate change, I welcome that initiative. The debate has been fruitful. As the member for Cannington foreshadowed, no doubt when the Labor Party is in government, amendments will be necessary. Industry needs to be aware of that. Improvements will be necessary as things go along. That is the exciting thing here. We are on the cusp of something. Having a legislative framework that works for a new technology is a fascinating exercise to be a part of.

MR M.J. COWPER (Murray–Wellington) [3:56 pm]: I rise to speak in this third reading of the Petroleum and Geothermal Energy Legislation Amendment Bill 2013. I will summarise what I have learnt through the journey of this bill through the house. Geosequestration was foreign to me probably three years ago. I then received some correspondence. I cannot remember whether it was in the mail or where it was that I saw it. It spoke of a project called the Collie hub project. It seemed interesting. As a result, I tried to follow up its potential. Unfortunately, I was unable to glean a lot of information about it until a brochure was produced detailing the scientific process and the like. I thought it had some promise that needed to be explored. I wanted to see how that may sit in our society. I tried to establish the location of the Collie hub. I was told that it would be within the Murray–Wellington electorate to the north of the Kemerton industrial estate. I thought that was interesting. As the local member, I thought that various government departments, whether federal or state, would have given me the courtesy of at least advising me that they were looking at this area. I tried to follow up on it and get information about the actual boundaries of the proposal. I found out it was not just north of Kemerton at all; it was smack right in the middle of the Harvey–Myalup area bordered by Forestry Road, Eckersley Road, Riverdale Road and Old Coast Road. That made me somewhat suspicious given that there seemed to be some obfuscation about where this project would be. The initial name, Collie hub project, indicated it would be in Collie. One could probably have assumed that. Being told it would be north of Kemerton was a bit of a misnomer. I discovered it would be in this area that I just described.

As it has progressed, the actual area has now been expanded beyond those boundaries; in fact, it is significantly bigger and is virtually the width of the Swan coastal plain from the Darling scarp to the ocean, from about Coronation Road in the north to the Myalup drain in the south. I thought it would be worthwhile advising my constituents about what I had established. I took the liberty to put together a small package of information. It was clearly stuff that I had gained along the way. I went about doing my dutiable thing as a local member in driving

Extract from *Hansard*

[ASSEMBLY — Wednesday, 7 August 2013]

p2925b-2932a

Acting Speaker; Mr Bill Marmion; Mr Bill Johnston; Mr Chris Tallentire; Mr Murray Cowper

around to talk to a bunch of people about the prospects of geosequestration. Notwithstanding the fact that I do not believe we were actually given the benefit of information in the first instance, the point that the member for Gosnells made was that there was perhaps a communication issue here.

Debate adjourned, pursuant to standing orders.