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This briefing does not deal with the UK Government's proposed new reactor programme. For an update on developments to do with new reactors see here:

<http://www.no2nuclearpower.org.uk/nuclearnews/NuClearNewsNo61.pdf>

If you would like to receive Daily Nuclear News updates by e-mail you can sign up here:

<http://www.no2nuclearpower.org.uk/mailling-lists/>

1 Scotland and New Nuclear Reactors

European Commission Investigation

In December The European Competition Commissioner launched a full investigation into whether the UK Government is providing up to £17bn of potentially illegal public guarantees to the proposed Hinkley Point C nuclear power station in Somerset. The Commission is examining the contract between the UK government and EDF to see whether the proposal to guarantee the Company £92.50 for every megawatt hour of electricity generated by the reactors constitutes illegal state aid. (1)

The Commission's initial view is that the measures proposed by the UK Government do constitute State aid, and since they don't involve a genuine Service of General Economic Interest (SGEI) they favour an undertaking selectively and therefore threaten to distort competition and affect trade between Member States. (2) It was "*a withering initial assessment*" according to *The Times*. (3)

The commission disagrees with the UK's claim that the new nuclear plant is needed to help the EU hit its emissions reduction target, because the UK could reduce emissions to the same extent, and at the same rate, in other ways and alternative energy technologies which could help the UK reduce emissions - such as wind and solar - could be unfairly crowded out. The commission says the Hinkley Point deal could be giving an unfair commercial advantage to the nuclear industry. The commission currently permits renewable energy subsidies because these are new technologies which need support to reduce costs, but the same argument can't be applied to nuclear energy because it is a mature technology. (4)

The Commission launched a month-long public consultation on its investigation which closed on 7th April. A joint submission from the Nuclear Free Local Authorities, Cities for a Nuclear Free Europe



and Stop Hinkley is available here:

http://www.nuclearpolicy.info/docs/nuclearmonitor/NFLA_New_Nuclear_Monitor_No34.pdf

Why Scotland has been dragged into this row?

Investment analysts Peter Atherton of Liberum Capital has called Hinkley C “*the world’s most expensive power station*” (5) And Scottish and Southern Energy has complained that the Hinkley deal will result in an increase in energy bills for UK consumers for decades to come. (6) This echoes warnings in a December report led by Dr David Toke from the University of Aberdeen – which also pointed to increased costs for Scottish consumers due to the support being given to new nuclear reactors being built in England. (7)

Given that the Scotland’s Future White Paper committed the Scottish Government to “*...ensure that new investment in Scottish generation is not compromised by the Westminster Government’s proposals to ... enter into expensive, long-term contracts for new nuclear generation*”, it would not be surprising if the Scottish Government wanted to make representations to the European Competition Commission.

But UK Energy Minister, Michael Fallon tried to stop the Scottish Government from making a submission to the Commission. He phoned Scottish Energy Minister Fergus Ewing in February to warn him that any representation to Brussels would be viewed as a “hostile act”. Alex Salmond has now written to David Cameron accusing Mr Fallon to trying to silence Mr Ewing. In the letter Salmond said: “*I would invite you to explain exactly what the UK Government would do if we choose to express our views to the Commission. At best, this could be interpreted as an inept attempt to stifle legitimate views from the Scottish Government. At worst, it is a direct threat with implied retribution*”. (8)

Deputy convenor of the Economy, Energy and Tourism Committee, Dennis Robertson, said “*People will be wondering what it is Westminster has to hide on the issue – the attempts to silence Scotland show there must be concern that the EC will find against them. A majority of people in Scotland support investment in renewable energy over nuclear power.*” A recent YouGov poll found almost twice as many Scots favoured large scale wind farms over nuclear projects in their local authority area. (9)

Cost of renewables row continues

This nuclear costs row is really just the latest twist in the argument about whether an independent Scotland would be able to continue to take part in a Great Britain-wide energy market and continue with a system of shared support for renewables, which has been rumbling on for months. (10)

Scottish Labour finance spokesman, Iain Gray explains: “*Scotland receives around a third of the available UK subsidies for renewables despite having less than 10 per cent of the population. If independence were to become a reality we cannot assume the costs of developing renewable energy in Scotland would continue to be borne by consumers across the UK.*” (11) But Fergus Ewing is convinced that England would need Scotland to maintain a secure energy supply in the event of independence. (12)



Scottish Ministers argue that the remaining UK's power grid would be unable to cope with the peak in electricity demand unless London agreed to maintain a shared energy market. The view that it would be in the remaining UK's interests to accept a continued shared electricity market – including the cost of funding renewables such as wind power – is at the core of Scottish government plans for a post-independence energy policy.

On the other hand energy officials in London argue that if Scotland departed, the remaining UK could choose between Scotland and rival suppliers such as France, the Republic of Ireland and Iceland for electricity imports.

A third approach is taken by Dave Toke of Aberdeen University and a team of researchers which is that following the UK government's decision to offer long and high-premium price contracts for new nuclear capacity a separately run electricity system for Scotland could be better than the status quo. (13)

Now Ed Davey, UK Secretary of State for Energy and Climate Change has launched a 100-page analysis of the potential impact of independence on Scotland's energy. Speaking to a conference of energy industry stakeholders in Edinburgh, Davey argued that because the single UK energy market is ten times the size of Scotland's energy market, Scottish energy bills are lower. He listed a range of reasons, including the way investment in transmission and distribution networks are currently shared across the whole of the UK, to the way the subsidies for energy distribution in remote rural areas like the Scottish Highlands and Islands are currently paid for by all British consumers not just Scottish bill payers.

The analysis shows that energy bills in an independent Scotland would be at least £38 a year and perhaps as much as £189 higher, once the full cost of supporting renewables is included. These figures do not include the costs an independent Scotland would face for its share of decommissioning and legacy costs for old coal and nuclear industries and oil and gas infrastructure. Nor do they include the likely increased costs for consumers of reduced competition. (14)

Although Ewing argues that Scotland exports a quarter of its electricity, Davey said that that meant Scotland supplied less than 5% of the rest of the UK's energy needs. France and Belgium already supplied more electricity to the UK than Scotland. Both were closer to south-east England and cheaper to supply at the current market price. "*Why should we pay over and above the market price for Scottish power?*" he said. (15)

Scottish Government pre-emptive attack

The Scottish Government launched a pre-emptive attack two days earlier, by launching its own document which accused the UK Government of mismanagement and creating a looming capacity crunch. Fergus Ewing criticised the UK government's "*mixed messages on renewables*" and "*delayed energy market reforms*" for halting investment in new capacity.

"Having only two per cent reserve energy in the system is extraordinarily risky and could result in big bill price hikes," he said. *"Scotland can help the UK keep the lights on and the bills down. Scotland exports electricity to England and Wales every year – in 2012 a quarter of the electricity generated here helped keep lights on across the rest of the UK. Scotland's huge natural resources mean that we*



can supply electricity – reliably and affordably. This is the case now, and will be the case in the event of independence.”

The report also complained the UK government’s support offered to Hinkley Point C new nuclear power station jeopardised renewable investment without addressing the imminent capacity shortage. (16)

Responding to Ed Davey’s report the Scottish Government says the £189 figure is scaremongering and based on a skewed look at the industry. Fergus Ewing said: *“Instead of accessing Scotland’s reliable energy resources, he is talking of importing energy over interconnectors that don’t yet exist from the European mainland where many countries face a similar energy supply concerns as the UK.”*

Richard Dixon, director of environmental group Friends of the Earth Scotland, said: *“The UK Government’s obsession with getting new nuclear at any cost is a direct threat to investment in renewables and efficiency. The bottom line is that Scotland is rich in clean, green energy sources, and green electricity will be in demand more and more as the rest of the UK and countries in Europe try to cut climate emissions. On the other hand, new nuclear power creates dangerous wastes and needs a fortune in public subsidies to get built at all. If Europe eventually clears the way, UK electricity consumers will be paying around £1 billion a year for 35 years to subsidise only two reactors in England. Just a fraction of this money would see the widespread roll-out of renewables and improvements in energy efficiency.”* (17)

The Politics of Wind Power

One of the flaws in Ed Davey’s argument is that onshore wind is the cheapest form of renewable energy, and over half of onshore turbines currently operational in the UK are located in Scotland with 2,303 located here out of a total of 4,338. A further 424 are under construction in Scotland but only 322 in the rest of the UK. Furthermore 1,144 have been approved in Scotland, but only 1,115 in the rest of the UK. (18)

Given that the UK is committed under European legislation to produce 15% of its energy (not just electricity) from renewables by 2020, which means about 30% of our electricity will have to come from renewables, it will be particularly worrying for consumers south of the border that the Tories look as though they might go into the 2015 General Election with a manifesto commitment to oppose further onshore wind farms. David Cameron is reported to be planning to include measures to effectively block onshore wind farm development from 2020. Among the proposals being considered is some form of “cap” on onshore wind farm output that would allow the current pipeline of projects to proceed but would effectively block new developments post-2020.

Meanwhile, a new commitment to support offshore wind and solar power would seek to head off accusations that the Tories were abandoning the green agenda. (19)

However, there doesn’t seem to have been any consideration given to the cost implications of increased reliance on more expensive offshore wind, nor an acknowledgement that polls have shown around two-thirds of people consistently support onshore wind development. The wind energy industry has slammed the proposed ban on new developments, arguing that it will deal yet another blow to already fragile energy investor confidence.



Former energy minister Chris Huhne, writing in *The Guardian* said you can't have cheaper bills by axing energy saving and pushing for the more expensive renewables instead of the cheaper one. (20)

Dave Toke, reader in energy politics at Aberdeen University believes that Cameron's plan to curb onshore wind will be a boost for the 'yes' camp in the referendum. The UK Government is predicting three twin reactor projects by 2030 with similar incentive support as Hinkley C, which will put up electricity prices by around 10% for 35 years. On the other hand, relatively cheap onshore wind deployment in Scotland is going ahead at a rapid pace.

The UK Government has failed to come up with a plan for renewable energy funding after 2020, and has cancelled increases in the Carbon Floor Price, so it is quite possible that Scotland could actually reach its 100 per cent renewable energy target more cheaply under independence. (21)

The issues raised by various claims about energy markets post-independence are discussed here by Euan Phimister, professor of economics at Aberdeen University:

<http://www.bbc.co.uk/news/uk-scotland-scotland-politics-26054455>

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2 Scotland's Nuclear Liabilities

DECC estimates that the cost of decommissioning Chapelcross, Hunterston A and Dounreay will be £3.5bn. (1) DECC says the Scottish liabilities being managed within the Great British regulatory regime enables the pooling of the wide range of resources, facilities and expertise. Were Scotland to become a separate state, Scotland would need to establish its own safety and security regulator equivalent to the Office of Nuclear Regulation. Although, some functions of the Office for Nuclear Regulation may not need to be replicated in an independent Scottish state, duplication of regulators roles would naturally lose benefits gained from economies of scale. And:

"It would be important to consider whether the necessary expertise could be retained in a country where no new nuclear build is currently planned."



DECC also says the Scottish Government may need to create a new organisation with a similar remit to the Nuclear Decommissioning Authority (NDA).

DECC also points out that spent fuel from Hunterston B and Torness is currently transported to Sellafield for reprocessing. It is possible that these reprocessing contracts could continue, but as Scotland will become a foreign country it also has to be remembered that it is current UK policy to return the high level waste and plutonium which results from reprocessing to the country of origin. So the Scottish Government would probably have to identify a site or sites for the long term management of high level waste, which currently doesn't exist in Scotland.

What the DECC document doesn't mention is that the THORP reprocessing plant is now expected to close in 2018. The NDA estimates that around 4,000 tonnes of spent fuel will arise over the remaining life of the UK's AGR reactors which will not now be reprocessed. Taking into account the current expected closure dates for all the UK AGRs (Hunterston B and Torness are both currently scheduled to remain open until 2023) this means there could be around 1,400 tonnes of AGR spent fuel produced at Hunterston and Torness which will not be reprocessed, and would probably have to remain in Scotland in the event of a yes vote in the referendum rather than being transported to Sellafield. This figure will increase if the life of Torness is extended as expected.

Independent Nuclear Engineer John Large has warned that if Scotland does not have any facilities to take back high level waste from Sellafield the Scottish government could find itself with little choice other than to pay huge storage charges set by UK ministers, which would likely run into tens of millions of pounds. (2)

Other issues which will need to be negotiated in the event of a yes vote, some of which are mentioned in the DECC document, some of which are not, include:

1. Rail shipments of breeder material from Dounreay to Sellafield are expected to continue until around 2017/8.
2. Shipments of "exotic" materials from Dounreay to Sellafield are currently expected to continue until around 2020.
3. Scottish nuclear facilities are currently able to dispose of Low Level Radioactive Waste at the Low Level Waste Repository near Sellafield.
4. Funds for decommissioning the AGRs are currently held centrally in the Nuclear Liabilities Fund. In the event of Scottish independence it is unclear how the assets held by the Nuclear Liabilities Fund would be divided.

It is also quite possible that Scotland might be expected to pay more than the £3.5bn bill for decommissioning the three Scottish sites – as a contribution towards Scotland's share of Sellafield's costs for instance. According to *The Sunday Times* Scotland may also be asked to make a contribution towards the NDA's £100bn costs on a per capita basis which would mean a total bill as much as £10bn. A spokeswoman for the Scottish Government acknowledged there would be "detailed negotiations" with the UK government over the division of nuclear assets and liabilities if the country votes for independence. (3)



Decommissioning contractor at Chapelcross and Hunterston A to switch

A joint venture between Babcock and Fluor of the United States has won a 14-year contract to “decommission” Britain’s first generation of nuclear sites, including Chapelcross and Hunterston A. But rival bidders are considering legal challenges. (4) The contract will confer ownership of Magnox Ltd which is responsible for decommissioning 22 Magnox reactors including Scotland’s six old Magnox reactors at the two sites. (5)

The bidding process for the contract, which is expected to be worth up to £7 billion, attracted four candidates. Most industry insiders believed that the consortium of Bechtel and EnergySolutions was the front-runner because EnergySolutions was the incumbent in running and winding down the stations. EnergySolutions relies on the Magnox work for most of its income, which observers believe increases the likelihood of a legal challenge. But the inclusion of Bechtel in the bid may have had an impact because of the US company’s poor performance at the Hanford nuclear site in Washington state, where campaigners staged a break-in.

Two other groups of companies were involved in the two-year-long bidding process: Serco, Areva and CH2M Hill, and Amec, Atkins and Rolls-Royce. Amec and Areva may have been hindered by their role in the much-criticised Sellafield clean-up operation. The formal award of the contract is scheduled for September 1st. (6)

What the press has neglected to pick up on amidst all this talk of a £7bn 14-year-contract for Babcock and Fluor is that this will only take the Magnox reactors into a Care and Maintenance phase. Final Site Clearance won’t begin at Chapelcross and Hunterston A until about 2070-80 and that will take about ten years. So taxpayers will still be funding this work until virtually the end of this century. So we will still be paying to decommission these reactors on top of this £7bn. (7)

This slow process allows radiation to decay, making demolition easier, but it is also a way of putting off the bill. Stephen Thomas of the University of Greenwich would prefer a speedier clean-up, which might reduce the likelihood of future leaks and also ensure the skills needed to safely dispose of the stations will not decay. He regrets that each year NDA has only enough money to do “*the minimum needed to keep them out of court*”. (8)

- Meanwhile the cost of clearing four decades of nuclear waste at Dounreay has soared by £200m, after major changes were made only two years into a 10-year contract. The engineering firm managing Dounreay, Babcock International, is understood to have warned the Nuclear Decommissioning Authority that it cannot get away with significantly altering the clean-up programme without additional costs. Babcock is believed to have asked for the additional money in what is known as a “change order”, with negotiations set to last through the summer. A Dounreay site spokesman said the “*information was as good as it could have been*” when the contract was awarded, but “*more enhancements to security*” are needed. There are also extra transportation costs in the earlier years of the project, as the fuel on the site is now being transferred to Sellafield. (9)



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3 Nuclear Submarines

Submarine Dismantling

The Nuclear Free Local Authorities has responded to the Office for Nuclear Regulation's consultation on the request for consent to dismantling of seven nuclear submarines at Rosyth Royal Dockyard.

The response can be found here:

http://www.nuclearpolicy.info/docs/radwaste/Rad_Waste_Brfg_48_ONR_SDP_Rosyth.pdf

The MOD has decided, subject to successful demonstration and regulatory approvals, to implement the option of removing the Reactor Pressure Vessels (RPVs) from the submarines at both Rosyth and Devonport Nuclear Licensed Dockyards. The entire RPV will then be stored for an interim period at an existing nuclear site owned by the MOD, the Nuclear Decommissioning Authority (NDA) or private industry. The selection of the interim storage site will be subject to consultation. When the Geological Disposal Facility (GDF) becomes available, the RPV will be size reduced and the packaged waste sent for final disposal. The disposal of a whole RPV to the GDF is being explored as an opportunity.

No Intermediate Level Waste (ILW) will be removed from any submarine until an ILW storage solution is agreed. Five nuclear facilities across the UK have been identified as potential sites to store ILW from disused nuclear-powered submarines: Aldermaston and Burghfield in Berkshire, Sellafield in Cumbria, Capenhurst in Cumbria and Chapelcross in Dumfries and Galloway. A public consultation on these sites will be held in late 2014. (1)

Given that:

(a) It is the intention to remove the RPV, rather than leaving the RC intact and,



(b) It is the intention to maximise the recycling of material where possible,

The NFLA submission calls for every effort to be made to limit the mobilisation of radioactivity into the atmosphere and discharge into the environment.

The Environmental Statement is supposed to covers all seven submarines at Rosyth, but very limited information is provided on expected radioactive discharges to the environment or their impact on workers. The programme is expected to start in January 2016 with Stage 1 Initial Dismantling being carried out on LUSM (Laid Up Submarine) Swiftsure. Once LLW has been removed the submarine will be returned to afloat storage. A period of reflection on lessons learned will then follow before Stage 1 LLW removal commences for other submarines.

Similarly there will be a period of reflection after Stage 2 initial dismantling of Swiftsure – removal and transport probably to the Active Waste Accumulation Facility (AWAF) at Rosyth of the RPV and Primary Shield Tank (PST).

NFLA believes that a more complete Environmental Statement should be completed after stage 2 initial dismantling for Swiftsure has been completed before any further Stage 2 initial dismantling is carried out.

The consultation has upset local MP Thomas Docherty who says *“I’m quite clear that a blow torch shouldn’t be taken to a submarine until a decision has been taken about what is done with the waste and we’re no closer to that. Before Babcock put in applications they should be speaking to people in the community, to the Press, the community council and the local politicians about what their plans are.”* (2)

Naturally, beginning a consultation now about starting to dismantle submarines at Rosyth has led to further fears that the radioactive waste will end up being left at Rosyth. Each reactor compartment of each submarine will produce 520 tonnes of radioactive waste, making a total of 3640 tonnes for all seven boats. More than 500 tonnes of this total is likely to be defined as “intermediate level” waste, which at the moment has nowhere to go. The rest will be disposed of as low-level waste to a dump at Drigg in Cumbria, or recycled because its contamination is deemed to fall below the regulatory threshold. This has led independent nuclear consultant John Large to warn that the intermediate waste may never leave Rosyth. *“In my opinion the radioactive waste arisings are likely to stay at the site of generation ... that is Rosyth,”* he told the Sunday Herald. (3)

Mid-Scotland and Fife MSP Willie Rennie demanded the Ministry of Defence (MoD) give a guarantee not to turn Rosyth Dockyard into a “nuclear submarine dump”.(4)

Chapelcross for ILW store?

The prospect of the former power plant site at Chapelcross being used to store waste from all 27 nuclear submarines - not just the 7 at Rosyth - was discussed at a meeting of the Chapelcross Site Stakeholder Group (CSSG). Ronnie Ogilvie, who chairs the CSSG, said there was not a great deal of detail to discuss at the moment, but it is clear that the site does have storage capacity. Mr Ogilvie said it was hoped more could be learned from forthcoming talks with military officials. (5)



However, Scotland's Environment Minister, Richard Lochhead, has written to the UK's Under Secretary for Defence, Philip Dunne, saying that waste from dismantling submarines "*should not be stored in Scotland*". The proposed store is described as "interim" by the MoD - though designed to last more than 100 years and have the capacity for the waste of nine more vessels still in service. A Scottish Government spokeswoman said: "*The Scottish Government has made clear to the MoD this waste should not be stored in Scotland and we will continue to make this case.*" (6)

Astute will be asked to leave

Meanwhile the Scottish Government says it sees no role for any nuclear-powered submarines in an independent Scotland. "*We do not see the continued basing of the Astute or Trafalgar fleets at Faslane, beyond the necessary transition period, to be in Scotland's interests*" so the UK's entire nuclear-powered submarine fleet will be told to leave the Clyde and go back to England if Scotland votes for independence in September. This would deal a fatal blow to Ministry of Defence (MoD) plans to make the Faslane naval base the UK home port for all its 14 reactor-driven submarines over the next few decades. In 2011, the Scottish Government welcomed the decision to station Astute submarines at Faslane because of the jobs they would bring. But this was publicly opposed by prominent party activists, and has led to a change of heart. (7)

Faslane

Faslane has failed to complete vital fire and explosion risk assessments, according to information released by the Ministry of Defence (MoD). More than 500 of the MoD's potentially hazardous sites across the UK have to carry out safety assessments under the 2002 Dangerous Substances and Explosive Atmospheres Regulations. But according to a spreadsheet made available in the House of Commons, the assessments have not yet been done at Faslane and other Scottish military sites. The information was released to the SNP's Westminster leader and defence spokesman, Angus Robertson MP, in response to a parliamentary question. "*This latest revelation that facilities at Faslane have not been properly assessed for risk of explosions and fires is nothing short of shocking,*" he said.

Other military sites disclosed as not having completed fire and explosion risk assessments are the RAF bases at Leuchars and Lossiemouth, and the munitions depots at Beith in Ayrshire and Crombie in Fife. A spokesman for the MoD said: "*Work is ongoing across a number of MoD sites to complete these assessments.*" (8)

Increased discharges into the Clyde

The Ministry of Defence (MoD) has submitted plans for the Faslane naval dockyard to discharge more liquid waste into the Gareloch as the number of UK nuclear subs based there rises from five to 14 by 2019. The waste comes from the subs' reactors and includes radioactive cobalt-60 and tritium. The MoD also wants to keep emitting tritium gas into the atmosphere from the nuclear weapons stored at Coulport on Loch Long. Annual emissions of tritium have doubled between 2008 and 2012, and are expected to rise with the introduction of upgraded warhead designs. (9)

During topical questions in the Scottish Parliament chamber on 18th March 2014, SNP MSP Stuart McMillan asked Richard Lochhead, the Cabinet Secretary for Rural Affairs and the Environment,



what the Scottish Government's position is on the proposed waste discharge increase. Mr Lochhead responded saying all discharges will be within safety limits. (10)

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4 Dalgety Bay

Defence Minister Andrew Murrison told Gordon Brown MP on 6th February 2014 (1) that a timetable had been agreed between SEPA and the MOD and should result in identification of the preferred management option for the site by summer 2014. The Minister then gave a more substantive response on 28th February. (2)

The MOD finalised the preliminary Outline Management Options Appraisal report and this was published by SEPA and the MOD on 22 January. (3) The Outline Management Options Appraisal



report aims to provide an indication of the potential nature and range of available measures and activities which could be implemented to enable the effective long-term management of the contamination and concludes that the preferred option is likely to comprise a combination of each of the measures and activities presented.

Murrison said “...further work is required before the best possible course of action can be determined. This work includes developing a more detailed quantitative risk assessment and health protection and remediation criteria.”

“The sequence of events and timeframe needed to deliver this further work and provide an effective long-term management solution to the issue at Dalgety Bay are as follows:

1. The MOD will develop a more detailed risk assessment (DQRA) to define the most appropriate management option, taking account of the views provided by SEPA and PHE at a recent meeting on 6 February.
2. The MOD will define and develop a proposal for an appropriate long-term management solution informed by the PHE and DQRA contribution by the end of June 2014.
3. SEPA will assess the wider implications of implementation on stakeholders and the local community, starting from June 2014.
4. At the same time the MOD will establish the extent to which the Department may fund the management solution and agree with SEPA and other parties an appropriate management model for overseeing any remediation and subsequent transition to the “normalised” management arrangements.

The definition of a normalised management regime that we are using is the point at which the risk to human health can be maintained at the level deemed to be acceptable by Public Health England without the need for monthly monitoring and recovery of radioactive sources (radium-226) and current access restrictions, such that the 'land' is deemed suitable for its current use within the context of Part 2A of the Environment Protection Act 1990, at which point MOD would expect SEPA to resume responsibility for routine monitoring and the Local Authority, Moray Estates and Sailing Club to assume their respective responsibilities for maintaining sea defences etc.”

He goes on to say that he has asked for a report from Public Health England (PHE) by the end of March about the level of reduction in current radioactive levels necessary to achieve long-term public safety within a “normalised” management regime.

Until the work outlined above is completed the MOD will continue the monthly monitoring and recovery programme to ensure the risk to the public remains very low.

It is worth noting that a draft submission from NFLA to a UK consultation on a strategy for the management of naturally occurring radioactive material (NORM) waste states that radium is one of **the most radio-toxic substances existing**, causing bone and lung cancer at relatively low concentrations.



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<http://www.publications.parliament.uk/pa/cm201314/cmhansrd/cm140228/text/140228w0001.htm#14022874000059>
3. BBC 22nd Jan 2014 <http://www.bbc.co.uk/news/uk-scotland-edinburgh-east-fife-25834837>

5 The Vulcan Saga

On 6th March Defence Secretary Philip Hammond announced that low levels of radioactivity had been discovered in the cooling waters of the nuclear submarine test reactor – Vulcan – located next to Dounreay in Caithness. Mr Hammond told MPs that no leak had occurred and said there were no safety implications for staff working on the site, or risks to the environment. But, as a result, the Trident submarine HMS Vanguard would be refuelled with a new nuclear core at a cost of £120m. The problem was discovered in 2012. (1)

However, despite Hammond's statement to Parliament that there was no leak, the mishap caused a tenfold increase in emissions to the atmosphere. According to the Scottish Environment Protection Agency (SEPA) discharges of radioactive 'noble' gases like argon, krypton and xenon had been boosted by the incident. Official figures show that emissions of the gases to the atmosphere rocketed from 0.19 gigabecquerels of radioactivity in 2011 to 2.16 Gbq in 2012. (2)

Although SEPA was told about the incident in October 2012 the Agency was asked by the MoD to keep the matter secret "on a strict need-to-know basis for security reasons," so the first Scottish Ministers knew about it was when Hammond made his statement to Parliament. The Sunday Herald also reported that the Office for Nuclear Regulation (ONR) wasn't informed of the problem at Vulcan until the summer of 2012, months after it happened.

According to Hammond, the incident resulted in the Vulcan reactor being shut down for a period in 2012. But it was of "no safety significance", he said, and Vulcan "is, and remains, a very safe and low risk site." But former senior MoD safety official, Fred Dawson, pointed out that the MoD had not yet figured out the cause of the cooling water contamination. "This being the case I have difficulty in believing their words of reassurance. If the leak is so insignificant and of no safety concern, why is the MoD planning early replacement of submarine reactor cores at great cost to the taxpayer?" he asked.

Lieutenant commander Rory Stewart, deputy commander of the Vulcan naval reactor near Dounreay in Caithness, told the Dounreay Stakeholder Group in March 2012 that "There was little new to report." We now know that Vulcan was shut down for investigations between January and November 2012. (3) Members of the Stakeholder Group were said to be outraged. (4) The Scottish Environment Secretary Richard Lochhead said "Not only did the Ministry of Defence not inform the people of Scotland, the Scottish Parliament or the Scottish Government of this nuclear-related issue, they actually told the local community there was 'little to report' when clearly there was plenty to report." (5)



As a result of this deception Richard Lochhead has announced that the Scottish Government is to end the Ministry of Defence's historic protection from regulation and prosecution for radioactive pollution. Under current law SEPA can only regulate plants like Vulcan under a "flawed gentlemen's agreement" with the MoD. This means that SEPA has no legal authority within the Vulcan site, and no power to force the MoD to take action if there are concerns. Lochhead argued that the exemption for the MoD under the 1993 Radioactive Substances Act was an anomaly. *"There is no good reason that radioactive substances should be treated any differently from other risks to the environment,"* he said. (6) The Scottish Parliament recently passed the Regulatory Reform (Scotland) Act, introducing a new environmental regulation regime. *"We want to get rid of anomalies like Crown exemption and treat all those subject to regulation even-handedly,"* said Lochhead. *"We therefore propose to use the forthcoming regulations under the Regulatory Reform Act to leave behind the Crown exemption for MoD sites."*

Crown exemption used to be widespread in areas like environmental protection and health and safety, but has been reduced over the years. In Scotland, it applies to other MoD sites as well as Vulcan, including the Faslane nuclear submarine base and the Coulport nuclear weapons store on the Clyde and the Dundrennan military firing range near Kirkcudbright where depleted uranium shells have been fired. (6)

Defence Secretary Philip Hammond issued a correction in parliament to an answer concerning an incident at the Vulcan submarine reactor test site. The correction changes the line *"there has been no measurable change in the radiation discharge"* to *"no measureable change in the alpha-emitting particulate discharge"*. (7)

At the end of March a group of NGOs wrote to ONR about this incident. In the letter they said:

"The Secretary of State's recent announcement suggests that the security grounds for concealing the incident were flimsy and, as a champion of openness and transparency within the nuclear sector, we would have liked to have seen ONR robustly challenge the MoD claim that discussion of the incident should be on a 'need to know' basis."

The groups say this matter strengthens the case for the appointment of an independent representative with a mandate from NGOs to the ONR Board with a remit to scrutinise the quality of corporate decision-making and act as a champion for openness, transparency, and accountability at all levels in the organisation.

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 5. Herald 11th March 2014 <http://www.heraldscotland.com/news/home-news/snp-ramp-up-pressure-over-cover-up-at-dounreay-plant.23663408>



6. Rob Edwards 11th March 2014 <http://www.robedwards.com/2014/03/mod-immunity-on-radioactive-pollution-to-end.html>
7. BBC 12th March 2014 <http://www.bbc.co.uk/news/uk-scotland-highlands-islands-26552046>

6 Scotland's Draft Heat Generation Policy Statement

The Scottish Government has called for responses by 9th June 2014 to its Draft Heat Generation Policy Statement. (1) New initiatives in the Draft Plan include: new work on exploiting Scotland's geothermal energy. The Government says it will support the development of a geothermal industry initially through developing a call for a geothermal heat or heat and power demonstration projects. There is also a plan to produce a national heat map, and a target for 40,000 more homes to benefit from district heating as part of a target of 1.5TWh of heat delivered by district heating by 2020 to both domestic and non-domestic properties. Funding for the District Heating Loans Fund will be increased by over £4 million, making a total of £8 million available over the two years 2014 to 2016.

In August last year the Scottish Government published a study which showed that as much as a third of the heat needed to keep Scotland warm could be provided by tapping geothermal energy from old coal mines across the central belt. (2) Warm water piped up from abandoned mine shafts between Glasgow and Edinburgh and in Ayrshire and Fife could help heat many thousands of homes and other buildings for decades. The report urged Scottish ministers to embark on an ambitious attempt to make geothermal energy a major new source of clean, renewable power within a few years starting with the development of a national geothermal energy strategy, and two major new "demonstrator" projects, at the Clyde Gateway in eastern Glasgow and at Shawfair just outside Edinburgh, by 2016. It points out that two small geothermal schemes in Scotland that tap the warmth of mine water have been running since 2000. One is at Shettleston in Glasgow and the other at Lumphinnans in Fife, each serving fewer than 20 homes. (3)

Now a new study from engineers at Glasgow University has calculated that there is roughly twice the amount of untapped thermal energy in hot rocks deep underground as there is in abandoned mine workings nearer the surface, which means Scotland has enough geothermal energy to provide green heat for almost the entire country. (4)

Commenting on the extra £4m for district heating announced at the launch of the Draft Heat Generation plan, Tim Rotheray, Director of the Combined Heat and Power Association said:

"District heating is one of the most cost effective methods for tackling fuel poverty, making it an important tool to help the nearly one-third of Scottish households classed as 'fuel-poor'. These ambitious targets will be vital for attracting the additional investment needed to benefit the thousands of families across Scotland that struggle to pay their heating bills." (5)

The Scottish Greens reiterated their call for more national and local investment in district heating schemes – a mature technology used far more widely to heat communities in other European



countries. Speaking in a debate at Holyrood, Lothian MSP Alison Johnstone highlighted the success of the Combined Heat and Power schemes at the University of Edinburgh, and the potential of large development sites such as at Fountainbridge for new, future-proof schemes. Alison Johnstone, Green MSP for Lothian said: *“In decades to come, we’ll think it was incredible that a housing development of 70 flats had seventy boilers. Efficient district heating technologies are ready to be rolled out in Scotland, but we need to see more ambition from councils to make this happen.”* (6)

WWF Scotland, Energy Action Scotland and others welcomed the draft heat generation policy statement (HGPS). Heating Scotland's buildings and hot water currently accounts for more than half our total energy demand and nearly half our CO₂ emissions. However, today only around 3% of our heating comes from renewables. With rising energy prices and 27% of households in Scotland estimated to be in fuel poverty, the need for cost-effective and cleaner means of heating our homes is an even greater priority. The draft HGPS is an opportunity to kick-start a surge in renewable heat in order to reduce dependence on volatile international oil and gas markets, insulate homes from fuel poverty and stimulate a new industry.

The groups called for the final document is to flesh out the framework with a robust package of regulation and support that builds investor and consumer confidence in already proven technologies. It is clear from the Scottish Government's own analysis that strong policy signals and political leadership are required to support households and businesses to make the transition to low carbon heating. (7)

- Funding of almost £3 million has been awarded in the last year to 25 green energy projects aimed at tackling fuel poverty as part of the Scottish Government's £50m Warm Homes Fund. Among the organisations to benefit was the West Whitlawburn Housing Co-operative in Cambuslang. The Co-op received a loan of £1.5m towards a £7.5m district heating scheme for 543 homes using a biomass boiler. (8) See Energy Saving Trust Video 16th January 2014 <http://www.youtube.com/watch?v=tEiKQVW9-9s>

Other schemes funded by the Warm Homes Fund include:

- Feasibility Study for a Paisley Hydro Scheme <http://www.youtube.com/watch?v=4ojFnPrvAbU>
- West Highland Housing Association Woodfuel District Heating Scheme http://www.youtube.com/watch?v=LvsgTQRI_oc
- Castlehill Housing Association, Grampian Region, PV and biomass district heating in sheltered housing. <http://www.youtube.com/watch?v=18gpBAm1uEw>

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1. Towards Decarbonising Heat: Maximising the Opportunities for Scotland: Draft Heat Generation Policy Statement for Consultation, March 2014 <http://www.scotland.gov.uk/Resource/0044/00445639.pdf>
 2. Study into the potential for deep geothermal energy in Scotland, Scottish Government, August 2013 <http://www.scotland.gov.uk/Resource/0043/00437977.pdf>



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5. CHPA 6th March 2014 http://www.chpa.co.uk/scottish-government---105-million-to-support-heat-generation_2077.html
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7. Scotsman 7th March 2014 <http://www.scotsman.com/news/opinion/letters/turn-up-the-heat-1-3331653>
8. Herald 4th Feb 2014 <http://www.heraldscotland.com/news/home-news/funding-boost-for-energy-projects.23332738>

7 Renewables & Energy Efficiency

Community Action

Scotland's first community developed and wholly owned hydro scheme on Forestry Commission land has secured funding of £1.9 million. The people of Callander say the money will enable the construction of their pioneering low carbon project in the heart of the Loch Lomond and Trossachs National Park. The scheme aims to provide electricity for 300 average homes. Once it is up and running it is expected to deliver up to £2.85 million over 20 years to support community projects. The project is being backed by finance from Triodos Bank, Scottish Enterprise's investment arm, the Scottish Investment Bank and Social Investment Scotland. Energy Minister Fergus Ewing announced the funding package, saying: "Our ambition is for all communities across Scotland to share in the rewards of our country's renewable resources. (1)

Local Authority Action

Glasgow City Council has become the first local authority to switch to low energy street lights through a new loan scheme from the Green Investment Bank (GIB). The city plans to convert its 70,000 streetlights to LEDs in a bid to reduce costs, energy consumption, and light pollution, as part of a scheme that the GIB hopes will be adopted by other councils across the UK. (2)

Government Action

The Deputy First Minister has highlighted the potential for low carbon technologies in NHS Scotland. A pilot energy audit at a large acute hospital within the NHS estate identified economies and a carbon saving of £1.5m and 9,000 tonnes of CO₂ for a capital cost of £10m, she said. The findings of this study will now be used to develop a wider programme across the entire NHS Scotland estate. (3)



Offshore Wind

Finally, Scotland's offshore wind industry has the news it's been waiting for. Scotland's first commercial offshore wind projects have been granted planning consent by the Scottish Government. (4) Never before has 1.8GW of capacity been consented on the same day. Between them, the Beatrice and Moray Offshore Renewable Ltd (MORL) projects - with up to 326 wind turbines - could power the equivalent of almost 1.2 million homes. The two adjacent wind farms will together make up the world's third largest offshore wind farm. At the peak of their construction, Beatrice and MORL could support over 4,500 jobs, almost 600 of which will remain when operational. (5)

Unfortunately SSE has announced that it is pulling back from its offshore wind plans, and "significantly narrowing" its focus. The decision is part of the company's plan to streamline its operations to offset the cost of freezing its domestic gas and electricity prices for two years, which it also announced today. As part of its streamlining programme, SSE will scale back plans for four offshore wind developments and cut 500 jobs. At present, the projects represent potentially up to 4,970MW of offshore wind farm capacity for SSE. (6)

The company will go ahead with the 750MW Beatrice project, in which it holds a 75% stake because the project is still in the running for early financial support through the UK government's Final Investment Decision (FID) mechanism. However other projects in SSE's portfolio have not proven so lucky. This means that wind farms in the Firth of Forth and off the coast of Islay could be under threat. (7)

RenewableUK Chief Executive, Maria McCaffery, said:

"This announcement demonstrates very clearly the need for the Government to provide greater confidence for investors in its long-term support for Britain's offshore wind industry. If we could rely on more certainty and less risk, firm commitment to the huge financial investments involved would secure all the economic benefits of energy independence in a shorter timescale."

Wave and Tidal

New investment in the marine energy sector totalling £4.8 million will help fund the establishment of a global engineering hub in Edinburgh.

Tidal power developer Atlantis Resources Corporation will receive £2 million from the Renewable Energy Investment Fund (REIF) to set up the centre of excellence, which is expected to create around 20 new jobs.

A further five marine energy projects will also benefit from a £2.8 million share of the Marine Renewables Commercialisation Fund (MRCF). MRCF is an £18 million Scottish Government fund administered by the Carbon Trust to support the marine energy sector in Scotland.

Energy Minister Fergus Ewing announced details of the two initiatives at the RenewableUK Wave and Tidal Conference and Exhibition in Belfast. Mr Ewing said: "*Scotland is at the forefront of developing offshore and low carbon energy generation technology with some of the world's greatest wind, wave and tidal resources heavily concentrated in the waters around our country.*" (8)



Another £6m was granted by Scottish Enterprise in April to promote research and development activities and reduce the cost of developing wave and tidal technologies. (9)

Investigations are taking place into a scheme that would combine a bridge between Yell and Unst in Shetland, with a tidal generator. Aquatera is entering a “detailed design” stage of the multi-million pound project, which would pay for itself by generating some 30-40MW of electricity. It would be one of an increasing number of energy schemes dependent on the installation of an inter-connector cable between Shetland and the Scottish mainland which would feed into the National Grid. (10)

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 3. Herald 27th Feb 2014 <http://www.heraldscotland.com/business/knowledge-for-growth/scottish-low-carbon-investment-will-be-boosted-pledges-sturgeon.1393405621>
 4. Scottish Government 19th March 2014 <http://news.scotland.gov.uk/News/Scottish-offshore-wind-farms-to-be-world-s-third-largest-a89.aspx>
 5. Scotsman 25th March 2014 <http://www.scotsman.com/news/time-to-back-renewables-policy-with-finance-1-3352218>
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8 Fossil Fuels

Coal bed methane

Closing submissions will be given on 15th and 16th April at the public inquiry into the controversial scheme to extract coalbed methane gas from near Airth, Falkirk. Dart Energy wants to drill 22 new bore holes across Letham Moss to let them extract natural gas from underground. Residents across the district have voiced concerns about the plans – which could operate for a minimum of 25 years –



and raised fears about its impact on the environment. But Dart Energy claims the scheme could power hundreds of homes and lead to a cash windfall for nearby communities. (1)

The Scottish Environment Protection Agency (SEPA) told planning appeal inspectors that it does not know whether it could assess any emissions leaking from gas wells at Dart Energy's proposed scheme, under existing pollution regulations. SEPA blamed its uncertainty on the novel nature of the scheme which, if approved, would be the first of its kind to exploit methane commercially in the UK. Methane is about 27 times more effective at causing global warming than carbon dioxide. (2)

Professor David Smythe, emeritus professor of geophysics at Glasgow University, who has been a significant opponent of plans to dump nuclear waste in Cumbria told the inquiry that coal bed methane extraction is likely to contaminate groundwater sources across the entire site, posing a threat to human health. (3)

Radioactive Emissions

There is evidence from Queensland of high levels of radioactive radon gas, up to three times above normal from coal bed methane gas fields. (4) There has also been increased interest in the possible human exposure to radon as a component of natural gas in household settings after a report by Marvin Resnikoff in 2012. (5)

Radon gas is highly mobile in the environment. Radon and its decay products are highly radiotoxic. For example, polonium-210 was the radionuclide used in the death of the Russian dissident Alexander Litvinenko in London in 2006. Radon travels in gas pipes and decays to stable lead and the longer-lived radioactive lead isotope Pb-210 which has a half-life of 22 years. This builds up in thin layers in gas extraction equipment. Radon gas is also readily soluble in the water extracted from gas wells. (6)

If the exploitation of unconventional oil and gas onshore is to go-ahead in the UK, more work will need to be done to understand the scale of the radioactive gas problem. Firstly baseline radon gas levels will need to be established before any drilling begins. Then subsequently there will need to be continuous monitoring. The potential health effects of radon gas emissions from the exploitation of unconventional oil and gas will need to be examined on a case-by-case basis.

The Government's advisory body Public Health England has recommends that "*Baseline environmental monitoring is needed to facilitate the assessment of the impact of shale gas extraction on the environment and public health. There should also be consideration of the development of emission inventories as part of the regulatory regime.*" (7)

Dart Energy is proposing to discharge a total of 1.68 GBq (billion becquerels) per year via produced water in outflow streams and pipelines into the river Forth from its proposed Coal Bed Methane extraction at Airth. This would be about three times the level of radioactivity discharged into the Forth by Rosyth Dockyard in 2012. So it is a very large amount of radioactivity. Such levels of radioactive contamination would be a high price to pay for the methane gas produced. We should be asking ourselves whether it really necessary to do this? Are there alternative ways of satisfying our energy needs?



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