Almuth Ernsting
Co-Director, Biofuelwatch

Dear Sir/Madam,

Re: Consent Application for Renewable Energy Plant at the Port of Rosyth by Forth Energy

On behalf of Biofuelwatch, I write to object to Forth Energy's planning application for a biomass power station at Rosyth Port.

Our grounds for objection are:

1. The wider impacts which the development will have on climate change, biodiversity and communities affected by plantations from which Forth Energy will source the wood which we understand to be material planning issues;
2. Air quality impacts on local residents and local ecosystems in and around Rosyth and Inverkeithing;
3. Impacts on marine ecology in the Firth of Forth SSSI, SPA and Ramsar Site, related to cooling water intake and discharge.
4. Impacts on nearby protected nature sites through nutrient nitrogen deposition, ammonia deposition and NOx emissions.
5. Other local impacts, including ash disposal, noise and odour.

As well as objecting to the application, we wish to point out that the Air Quality Assessment omits vital information, in particular information about predicted environmental concentrations of air pollutants if the power station was to start operating. It is impossible to ascertain from the figures cited what the predicted environmental concentrations of any pollutants that can affect human health are and thus whether legal limits will be reached or exceeded if the power station was built. Cumulative impacts from Forth Energy's proposed power stations at Rosyth, Leith and Grangemouth have been considered for protected nature sites only, not for human health. We believe that this is such a serious omission that the Air Quality Assessment must be rejected and that the public consultation must be reopened once a new assessment has been submitted by forth Energy.

<u>Wider impacts on climate change, biodiversity and communities:</u>

The Scottish Planning Policy on Renewable Energy (SPP6), states the following about biomass:

"*Planning authorities should consider the extent to which there are opportunities through development plan policies to identify sites appropriate for new biomass plants in those areas where there are either existing long-term secure resources or new opportunities available to harness local resources. However, such policies should recognise that the identification of sites should not exclude development outwith these areas so long as they satisfactorily address specified broad criteria. This criteria is likely to include impacts on the natural heritage, landscape, built and cultural heritage, amenity (including public health and safety), environmental and transportation issues.*"

SPP6 thus makes it clear that wider environmental impacts of biomass proposals must be considered. In the case of Forth Energy, 70-90% of the biomass will be imported wood and, as we discuss below, the environmental as well as climate and social impacts of those wood imports are likely to be strongly negative.

"Choosing our Future: Scotland's sustainable development strategy" strongly emphasises the need to take the wider impacts of all developments into account. Here are two of the relevant statements:

"*2.6 These priorities for Scotland and across the UK are our response to these challenges:*

- *Sustainable consumption and production: achieving more with less. This includes reducing the inefficient use of resources, looking at the impact of products and materials across their whole lifecycle and encouraging people to think about the social and environmental consequences of their purchasing choices.*
- *Climate change and energy: securing a profound change in the way we generate and use energy, and reducing greenhouse gas emissions.*
- *Natural resource protection and environmental enhancement: protecting our natural resources, building a better understanding of environmental limits, and improving the quality of the environment..."*

"*8.1 This strategy is based upon the principles of environmental justice. The ultimate goal is to secure a fairer world and a fairer future, enabling all people throughout the world to satisfy their basic needs and enjoy a better quality of life without compromising the quality of life of future generations.*"

We believe, as discussed below, that Forth Energy's plans will have serious adverse impacts on climate change, the environment and the communities in countries which will be affected by the tree plantation expansion and possibly increased logging that would result from the development.

Finally, the second National Planning Framework for Scotland explicitly states: "*Biomass plants should be sited where they can make best use of locally available resources and will not encourage inappropriate planting.*"
(http://www.scotland.gov.uk/Publications/2009/01/12110011/7)

Up to 90% of Forth Energy's biomass intake would be imported and environmentally and socially damaging eucalyptus and other tree plantations are a very likely result.

In summary, Scottish planning policy makes it clear that wider impacts of developments should be considered and does not in any way preclude biomass sourcing from this requirement.

Forth Energy state that up to 90% of the biomass will be imported woodchips and pellets. Their sourcing information appears contradictory: Under 'Frequently Asked Questions' on their website, they refer to wood from 'the Americas', which implies North America as well as Latin America. The 'Sustainability Statement' for the RosythConsent application claims that all imports will come from Scandinavia, Eastern Europe, North America and Canada. The scenarios in Table 1 are based on Table 1 in the Sustainability Statement are based on all wood imports coming from Florida, SE US (75%), Scandinavia and the Baltic States, i.e. not from Canada. The Sustainability Statement also says that much of the wood will be eucalyptus, which is not commercially grown in any of the regions they list. There are large-scale eucalyptus plantations in South America, as well as other regions, however.

Meantime, Forth Energy's Dundee application refers only to Florida/SE US, Scandinavia and the Baltic States as countries from which wood would be imported, not Canada and it appears unlikely to us that they would use different sources for different biomass power stations in Scotland.

We would point out that so far biomass and biofuel power stations approved in the UK have been approved without any sourcing restrictions in the planning conditions. Companies are not bound by claims they make about 'planning intentions'. Last year, DECC approved MGT Power's application

to build a 295 MW biomass power station at Teesside Port. MGT claimed that all or most of the wood would come from North America where there was no 'net deforestation' (even though significant recent losses of forest cover in North America have been well documented) (tinyurl.com/37upmz5 and tinyurl.com/36t3s36). Shortly after winning planning consent they signed a Memorandum of Understanding with Suzano Papel e Celulose for most of the wood to come from Brazilian eucalyptus plantations (tinyurl.com/3yukqn7).

Even if the wood was to be imported only from the regions listed by Forth Energy, we believe that the direct as well as indirect impacts on forests, climate and people would be very serious. In the Southern US, including Florida, large-sale pine plantations continue to displace large areas of biodiverse native forests and they deplete groundwater and aggravate droughts which are already becoming more frequent and severe due to climate change. More demand for wood from Florida and elsewhere in the SE US will thus lead to more deforestation and biodiversity losses in the region. At the same time, the growing demand for biomass from that region, much of it for export, is leading to large-scale market displacement, since the southern US supplies much of North America's demand for paper at present. Diverting wood to power stations, such as those proposed by Forth Energy, means that more US paper will have to come from monoculture tree plantations in the global South, causing more tropical forest and grassland destruction and thus more climate change, human rights abuses and land-grabbing.

In many parts of Scandinavia, old growth forest logging and other highly destructive logging have been documented and appear to be accelerating, due to attempts to 'harvest' ever more wood, not least for bioenergy. A letter signed by over 200 scientists worldwide as well as by thousands of individuals and many groups warns against the destruction of the last of Sweden's old growth forests and states: "*The Swedish Government and the Swedish Forest Industries Federation advocate further forestry intensification, with methods such as stump extraction, increased use of non-native tree species, restoration of ditches, and fertilization, which threaten the biodiversity even more.*" (http://protecttheforest.se/upprop/en). In 2007, and Open Letter against the destruction of old-growth forests in Northern Finland was signed by 257 researchers who said: *" ...it can be reasonably stated that logging of natural forests causes irreversible change of habitat, and destroys an important part of our national heritage as well as genetic and species diversity. As a result, present and intended loggings in forested Lapland...are unsustainable and in obvious conflict with the biological diversity conservation agreements to which Finland is committed.*" The letter also warned that logging practices are seriously affecting the livelihood of the indigenous Sami people in Lapland (tinyurl.com/2veoj9b).

Certification, as proposed by Forth Energy, cannot prevent serious negative direct impacts, let alone indirect ones. None of the schemes include any greenhouse gas criteria. All of them certify industrial tree plantations as 'sustainable', despite their well-documented serious impacts on biodiversity, ecosystem destruction, land-grabbing and poverty, disruption of the freshwater cycle, and the high use of polluting, fossil-fuel based agro-chemicals on tree plantations.

Forth Energy's four proposed Scottish biomass power stations will require at least 5.3 million tonnes of biomass a year, which is nearly two-thirds of the UK's entire annual wood production. Forth Energy claim that 10-30% of the biomass will come from the UK (mainly Scotland) and that miscanthus will play an important role. However, with current yields of around 8 odt/ha, nearly 80% of Scotland's entire arable land would need to be converted to miscanthus monocultures, solely to feed those four proposed power stations. This illustrates the inherent unsustainability of the scale of Forth Energy's biomass plans.

For a more detailed discussion of the environmental and social impacts of large-scale wood-based bioenergy, please see

http://www.globalforestcoalition.org/img/userpics/File/briefing%20paper%20bioenergy_final_1.pdf

Serious climate impacts result from direct and indirect land-conversion as well as increased logging for biomass. Furthermore, two recent studies look in detail at the 'carbon debt' incurred by increased logging in temperate forests in the US and Europe. One is the Biomass Sustainability and Carbon Policy Study by the Manomet Center for Conservation Sciences, commissioned by the Massachusetts Department of Energy Resources (tinyurl.com/2whmldj). The two main conclusion from the Manomet study were:

- If biomass is used in electricity-only power stations, the overall carbon emissions/climate impacts will still be worse than those of generating the same electricity of coal after a period of 40 years – the period is 90 years if biomass is compared to gas.
- The carbon impact of burning biomass for heat generation or CHP may be better, however even for CHP, when biomass is compared to natural gas, the climate impacts are still significantly worse after 40 years. (see: tinyurl.com/35lb35e).

It is important to note that many of the assumptions made in the Manomet study are highly optimistic ones (as acknowledged by the authors), some of them contradicted by scientific evidence and by the realities of bioenergy markets and the forestry industry. For example, the authors assume that no additional forests would be logged as a result of bioenergy (something which would make the carbon footprint even worse), yet in the UK, EU and elsewhere, opening up more natural forests to logging for this purpose is being actively encouraged. The authors further assume that there will be no carbon emissions from removing residues from forest flaws, yet it has been shown that large-scale 'residue removal' significantly reduced forest carbon stocks and also diminish future tree growth and thus carbon sequestration. A detailed review of the Manomet study can be found at www.catf.us/resources/whitepapers/files/201007-Review_of_the_Manomet_Biomass_Sustainability_and_Carbon_Policy_Study.pdf .

Another scientific study which looks at the carbon debt from wood-bioenergy has been published by Joanneum Research in Austria (www.birdlife.org/eu/pdfs/Bioenergy_Joanneum_Research.pdf).

The main findings are:

- When trees are felled for bioenergy, there will be no 'climate benefits' compared to fossil fuels for a period of 200-300 years, i.e. bioenergy from whole trees will worsen climate change for two or three centuries.
- The removal of logging residues from forest soils will worsen the carbon balance of bioenergy by 10-40%;
- Where bioenergy results, whether directly or indirectly, in land conversion for tree plantations, the full greenhouse gas impact must be taken into account and if forests are converted to plantations, bioenergy will be worse for the climate than the fossil fuels replaced for at lest 150 years.

The 'carbon savings' claimed by Forth Energy are thus very much contrary to scientific findings.

Furthermore, total conversion efficiency will be extremely low – less than 30% according to the CHP Feasibility Study (Table 5.6) until at least 2021, rising to less than 34% by 2023 but only if other companies develop sites at Rosyth Port and purchase around 30 MW of heat, some of it for tri-generation, providing cooling via heat conversion. Those assumptions are highly uncertain. The CHP feasibility study makes it clear that the potential for heat supply is low (a maximum of 30 MW by 2023), and it gives no guarantee of the power station ever supplying any heat.

Greater efficiency and heat distribution, however, would not alleviate our other serious concerns about the impacts of the power station.

Air quality impacts on local residents and local ecosystems in Rosyth, Inverkeithing and nearby localities:

We have serious concerns about Forth Energy's Air Quality Assessment and about the impacts which the power station would have on air quality, including legal limits, and on people's health. We are deeply concerned that the Air Quality Assessment gives no figures for predicted environmental concentrations of air pollutants, including NO2, PM10, dioxins and furans and heavy metals. Only background concentrations are cited, not concentrations after additional emissions from the proposed power station, nor after cumulative emissions. Graphs C1, C2 and C3 show what is claimed to be maximum NO2 and PM10 process concentrations at different stack heights, though it is not clear what locality was chosen. On page 15, it is stated that "A comparison of the data in Graphs C.1 to C.3 with the air quality objectives indicate that the process contributions are predicted to be well within the objective value at all of the modelled stack heights". No data is given for any pollutants other than NO2 and PM10, and there is no information and PEC is not cited, even though the Air Quality Assessment shows that at Admiralty Road in Rosyth, the legal NO2 and PM10 limits are already close to being reached, if not exceeded. Admiralty Road is in the prevailing wind direction from the site. Increased NO2 and PM10 levels at Admiralty Road could well lead to an breaches in legal limits and to an Air Quality Management Area having to be declared, a strong reason against the application being permitted.

Cumulative impacts of Forth Energy's proposed power stations at Rosyth, Leith and Grangemouth have been considered in respect of protected nature sites, but not in respect of air pollutants that affect human health.

This means that ***the most crucial information for an Air Quality Assessment – figures to allow readers to see whether, according to Forth Energy's model, legal limits of any pollutants that can affect human health will be reached or exceeded - is missing from the assessment.*** We do not know why Forth Energy chose to include such data in the Grangemouth and Dundee applications, but to omit it from the Rosyth one. We believe that this is such a serious omission that the Air Quality Assessment must be rejected and a new public consultation be opened once a new, complete assessment has been submitted.

Furthermore, there are ***serious flaws in the Exhaust Gas Parameters*** cited (Table C1). Forth Energy's air quality modelling is based on two scenarios: One includes 100% virgin wood, the other 30% 'waste wood'. This is contrary to the information which Forth Energy give about sourcing intentions and which includes agricultural residues and miscanthus from the UK, too. Importantly, no information is given about the types of 'waste wood' considered for the model and it is therefore impossible to see whether the Assessment looks at 'worst case scenarios' as it should. Some waste wood includes wood treated with creosote, lead paints and chemical preservatives, for example.

Furthermore, mercury, heavy metal and other pollution from burning virgin wood have been ignored and it has been ***wrongly assumed that woodchips and pellets from virgin wood have not been chemically treated and contain no toxic chemical residues and that burning them would emit no dioxin and furans and no heavy metals***.

According to a Standardised Toolkit for Identification and Quantification of Dioxins and Furans, developed by the UN Environment Programme, dioxin and furan emissions from burning virgin wood will be lower than those from burning chemically treated wood, but they are still very

relevant. Dioxins and furans are also emitted from burning straw, which falls within the scope of Forth Energy's Consent Application. (http://chm.pops.int/Portals/0/Repository/toolkit1/UNEP-POPS-TOOLKIT.1-3.English.PDF). Similarly, Forth Energy's Air Quality model is based on the assumption that no heavy metals will be emitted from the combustion of virgin wood and agricultural residues. This is contrary to clear evidence that heavy metals from 'background air pollution' and from soils become concentrated in wood. See for example the following studies and articles: www.springerlink.com/content/jjulpq2ktlel3912/ , www.jstor.org/pss/4312359 , www.jstor.org/pss/4312359 . The European Commission has called for the use of 'wood ash' as a fertiliser to be regulated because of levels of heavy metals found in ash from virgin wood from Norway, which were found to be so high that the ash qualified as 'toxic waste'.

The information about background concentrations of air pollutants includes ***no information about local concentrations for dioxins and furans, PAHs, ammonia, metals, hydrogen chloride and hydrogen fluoride***. As stated above, no information about process contributions and predicted environmental concentrations for those pollutants is given either.

Forth Energy's ***decision to ignore all heavy metal and dioxin and furan emissions from virgin wood combustion just cannot be justified and renders the exhaust gas parameters unreliable***.

The Air Quality and Terrestrial Ecology and Aquatic Ecology Assessments submitted by forth Energy show that ***legal emission limits at several protected nature sites are already being breached and that the proposed power station will exacerbate the situation***:

- Legal limits for annual NOx concentrations are already being breached at Ferry Hills SSSI and it is predicted that the process contribution from the proposed power station will be 9.3% of the critical load, i.e. well above the 1% limit normally used for determining whether impacts will be significant. At the Forth of Firth SPA/SSSI, additional NOx contributions will account for 6.4% of the critical load, which will be very close to being breached according to Forth Energy's assessment. The cumulative impacts from the proposed Rosyth, Grangemouth and Leith will be slightly higher than those of the Rosyth power station only.
- At the following Camilla Loch SSSI, the critical ammonia load is already being exceeded and the power station will cause additional ammonia emissions equivalent to 1% of the critical load. At Cullaloe Reservoir and Otterstone Loch, the ammonia load is also being exceeded and the emissions from the power station would be equivalent to 1.7% and 2.9% of the critical load respectively.
- Acid deposition would increase at Bo'Ness SSSI and Cramond SSSI to 150% and 135% of the critical load respectively. Cumulative impacts from the Rosyth, Leith and Grangemouth power stations would be 2.9% and 1.6% of the critical load respectively.

Emissions from the proposed power station(s) would thus significantly exacerbate breaches of legal limits for NOx, ammonia and acid deposition at protected nature sites.

Agro-chemicals used on tree plantations as well as chemical treatment of 'virgin' woodchips and wood pellets appear to have been ignored by Forth Energy. The 'Sustainability Statement' makes it clear that much of the wood will come from monoculture tree plantations. Such plantations generally require large-scale applications of pesticides and other toxic agrochemicals. Furthermore, chemical treatment of woodchips and pellets before shipping is common and this is particularly the case for woodchips and pellets from eucalyptus, which are routinely treated with methyl bromide and/or other pesticides for shipping. Methyl bromide is highly toxic: It is linked to cancer and also an ozone destroying substance and is therefore banned in the UK. In the US, pre-shipment use of methyl bromide is still permitted and eucalyptus wood is routinely treated that way before shipment (www.aphis.usda.gov/plant_health/ea/downloads/eucalpf.pdf). Eucalyptus woodchips and pellets

from other regions, such as South America, are also fumigated with pesticides and in particular with methyl bromide. Compatibility of eucalyptus imports with the UK ban on methyl bromide may need to be investigated. The Air Quality impacts of burning large quantities of wood with such residues should be fully assessed rather than being ignored, as Forth Energy has done.

Finally, the ***air quality impacts of wood dust and dust from fly ash on and near the site do not appear to have been assessed*** even though both are serious problems reported by residents near existing biomass power stations.

Impacts on marine ecology in the Firth of Forth related to cooling water intake and discharge

We have serious concerns about the impacts of cooling water intake and discharge, including thermal pollution and biocide pollution, particularly in view of the Firth of Forth being a highly protected area (SPA , SSSI, Ramsar site).

Cooling water is to be discharged at a temperature up to 10 degrees C warmer than surrounding waters. Forth Energy claims that only a 'small area' will be warmed above 3 degrees C and furthermore claims that temperature levels will be below those lethal to fish species found in the Forth of Firth, except possibly during warm summer temperatures. However, a sudden temperature rise of 3 degrees C can be immediately lethal to fish, regardless of what the final temperature is. Furthermore, there is clear evidence of very harmful effects of warm water discharges reducing oxygen levels, encouraging local algal growth (which can further reduce oxygen levels), disrupting the breeding cycle of fish and making fish more susceptible to disease (see: tinyurl.com/37hbu73, tinyurl.com/36coeor, tinyurl.com/3yx2u55).

The potential for accidental chemical and oil spills/runoffs is acknowledged and while Forth Energy believe it can be minimised, it seems particularly relevant given the proximity of the power station to marine sites designated as SPA, Ramsar and SSSI.

Forth Energy also state that biocides will be discharged into the Firth of Forth, which seems of particular concern in an SPA/SSSI/Ramsar site.

Forth Energy state that a mesh size of 3mm will prevent juvenile and adult fish from being killed through cooling water intake. Fish larvae and eggs as well as zooplankton will pass through the mesh, however, and effects this will have on local marine life appear not to have been considered. The effects of cooling water intake on marine species has for example been assessed in detail in a report published by the New York State Department of Environmental Conservation, which shows that 'entrapment' can kill very large numbers of small marine animals (tinyurl.com/36w4wwy).

<u>Other local impacts:</u>

We have serious concerns over ash disposal. Forth Energy do not acknowledge the toxic nature of wood ash. Wood ash from virgin wood, as shown above, can already contain such high levels of heavy metals and other toxins that it should be treated as toxic waste and in this case, it is likely to be mixed with wood ash from chemically treated wood, which will contain yet more toxins. Forth Energy's suggestion that it could be used as a fertiliser or by the construction industry therefore seems highly alarming. No measures are proposed to safely dispose of toxic ash and to prevent it from getting into the environment and thus causing serious health risks to people as well as to wildlife.

Finally, we are aware that both odour and noise problems have been reported by local residents living close to much smaller biomass power stations both in the UK and US. We are very

concerned to see that Forth Energy claim that there will be no significant impacts on local residents of this type when experience elsewhere suggests otherwise.

Please acknowledge receipt of this planning objection – thanks.

Best regards,

Almuth Ernsting
Biofuelwatch