ABERDEEN CITY COUNCIL

COMMITTEE Housing and Environment

DATE 1 November 2011

DIRECTOR Pete Leonard

TITLE OF REPORT Biomass Installations Policy

REPORT NUMBER: H&E /11/217

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1. PURPOSE OF REPORT

The purpose of this report is to:-
a) advise Committee of current issues relating to the use of biomass as a means of assisting in the achievement of carbon emission reduction targets, and the potential impacts this could have on local air quality and public health in Aberdeen; and
b) recommend a policy that will support biomass in areas of Aberdeen where air quality is good and restrict uptake in or in close proximity to Air Quality Management Areas (AQMAs).

2. RECOMMENDATION(S)

It is recommended that the Committee:

i) considers the current issues concerning the use of biomass on air quality in Aberdeen;

ii) approves the adoption of the policy detailed in section 5.5 of this report, subject to approval by Policy and Performance Committee;

iii) refers the report to the Enterprise, Planning and Infrastructure Committee for information

3. FINANCIAL IMPLICATIONS

None

4. OTHER IMPLICATIONS

Aberdeen City Council is committed to the promotion and development of renewable energy through the implementation of the Council's Carbon Management Plan. The proposed policy aims to support the

Carbon Management Plan without compromising public health or the Council's statutory duties relating to air quality management.

5. BACKGROUND/MAIN ISSUES

5.1 Background to Biomass and Air Quality

5.1.1 Biomass combustion is a means of deriving energy from the burning of biological materials. These materials are most commonly chipped and pelletised wood fuels such as trees, forestry and sawmill residues. Biomass also includes fuel crops such as grains and food industry residues. The energy provided may be heat, electricity or mechanical power.

5.1.2 Biomass fuels are currently being encouraged to help Scotland meet ambitious targets under the Climate Change (Scotland) Act and the related Renewables Action Plan. At the same time the UK is failing to meet legally binding EU air quality standards in many areas, including parts of Scotland, and public health is suffering as a result. Management of biomass boilers should therefore seek to encourage biomass use, whilst limiting any negative effect on, or indeed improving air quality.

5.1.3 There are a wide range of environmental benefits associated with the utilisation of woody biomass for bioenergy and other bio-based products. These include a likely reduction in the consumption of oil, gas and coal and enhance biodiversity of the woodlands resulting from more sustainable long term management.

5.1.4 Aberdeen City Council is committed to the promotion and development of renewable energy. In 2007 the Council, along with other local authorities, signed the Scottish Climate Change Declaration demonstrating ongoing commitment to combating the effects of climate change. A Carbon Management Plan was adopted by the Council in 2010 with the aim of reducing CO_2 emissions from Council buildings, vehicles, street lighting, business travel and landfill by 23% by 2015 and 42% by 2020. The Alternative Energy Strategy for Council Owned Public Buildings published in May 2011 sets out further actions that can be implemented to reduce the Council's greenhouse gas emissions and save fuel costs.

5.2 Local Air Quality Management

5.2.1 Biomass is recognised as having an important part to play in helping the Scottish Government achieve its carbon reduction targets. However, concerns have emerged regarding the effects of certain emissions associated with biomass combustion on human health. The emissions of key concern are fine particles (PM_{10} and $PM_{2.5}$). These pollutants are associated with respiratory and cardiovascular illness

and mortality, as well as other ill effects, and can result in an increase in hospital admissions for those with pre-existing heart or lung disease.

5.2.2 The Environment Act 1995 places a statutory requirement on all local authorities to review and assess air quality within their areas. Seven pollutants require to be assessed against objectives set out in the Air Quality (Scotland) Regulations 2002. If the assessment indicates the objectives for any pollutant is likely to be exceeded, the authority must declare the affected area an Air Quality Management Area (AQMA). It must then develop and implement an Action Plan detailing measures that will improve air quality in the designated area.

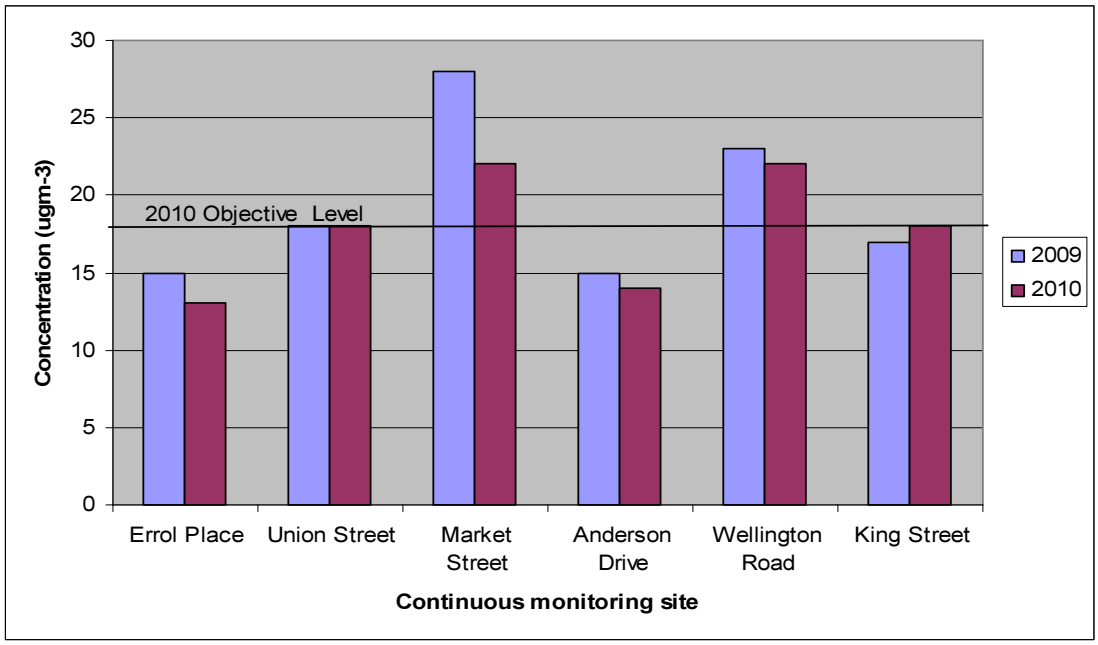
In Aberdeen the following 3 AQMA have been declared due to exceedances of the nitrogen dioxide (NO_2) and particulate PM_{10} objectives:

- City Centre (Union Street, Market St, Commerce St, Bridge St and parts of Holburn St, King St and Guild St)
- Wellington Road (Queen Elizabeth II Bridge-Balnagask Road)
- Anderson Drive/Haudagain roundabout

An Air Quality Action Plan covering the 3 areas was approved in March 2011.

5.2.3 In Scotland, a target of $18ugm^{-3}$, to be achieved by 2010, has been set for PM_{10}. This is a more stringent target than the rest of the UK. Figures 1 below shows PM_{10} concentrations measured at the Aberdeen automatic monitoring sites in 2009 and 2010.

Figure 1 Results of PM_{10} Automatic Monitoring in 2009 and 2010



The PM_{10} objective was exceeded at the Market Street and Wellington Road sites in 2009 and 2010 and reached at both Union Street and King Street in 2010. The authority must therefore implement measures to reduce PM_{10} levels, particularly in the City Centre and Wellington Road.

5.3 The Regulation of Biomass Installations

5.3.1 Biomass installations larger than 20MW are regulated by the Scottish Environmental Protection Agency (SEPA) under the Pollution Prevention Control Act 1999. Small biomass units are regulated by the City Council. Environmental Protection UK Biomass and Air Quality Guidance for Scottish Local Authorities which was published in June 2010, aims to help local authorities understand and manage emissions from biomass combustion. In general, the larger the combustion unit the easier it is to control the combustion and therefore reduce emissions.

5.3.2 In an urban area like Aberdeen, it is likely the majority of installations will be smaller units, however there is a lack of adequate mechanisms available for proper regulation of particulate emissions. The Clean Air Act 1993 was originally installed to control smoke and sulphur dioxide (SO_2) from coal burning and is not really suitable for addressing fine particles. Furthermore, new biomass installations which replace existing systems may not require planning permission and therefore may be introduced without the knowledge or involvement of the local planning authority. This could potentially have a detrimental effect on air quality in the city.

5.3.3 Particulate emissions associated with biomass combustion can be addressed by using abatement technologies which include additional levels of filtering, or scrubbing, however the development of such technologies is still evolving. Current equipment is expensive and may be impractical on cost grounds for smaller biomass systems. Additionally, abatement equipment needs regular maintenance to ensure efficiency is kept to a maximum and emissions to a minimum. As the operation of small installations is not specifically regulated, there is potential for air quality deterioration through poor maintenance and reduced performance with plant age.

5.4 Biomass Installations and Air Quality

5.4.1 The impact of biomass installations on air quality is likely to be especially important where:

- The proposed development is inside or adjacent to an Air Quality Management Area;
- The development could result in the designation of a new Air Quality Management Area; and
- The granting of planning permission would conflict with, or render unworkable, elements of a local authority's Air Quality Action Plan

Hence the widespread introduction of biomass boilers needs to be carefully considered. The declared view of the Scottish Government is that the air quality impacts of major expansion of biomass heat can be controlled through the use of high quality, low emission plant and targeting rural areas off the gas grid where coal and oil fired plant are currently used. In urban areas, or where an AQMA has been declared, they would expect biomass to be less common and larger (and therefore cleaner) biomass units to be more prevalent.

5.4.2 Renewable heat technologies can benefit air quality in some situations, for example where they replace oil and coal heating. However, if the boiler being replaced is fired by gas, there is likely to be an increase in air pollutants.

5.4.3. A number of biomass installations are already operational in Aberdeen, for example at the Scottish Environmental Protection Agency premises on Greyhope Road and Aberdeen Royal Infirmary, Foresterhill. Both plants are located in areas where air quality is not a specific concern, however, the location, design and operation of futher installations requires to be managed to ensure that emissions do not impact on human health, conflict with the authority's ability to meet national air quality objectives or measures with the 2011 Air Quality Action Plan. Supplementary Guidance on Air Quality was produced alongside the proposed new Local Plan submitted to Scottish Ministers for consideration earlier this year. This guidance sets out criteria for the assessment of air quality impacts from new developments and the

significance in the local environment, but does not consider the specific issues associated with biomass installations or the potential cumulative impact of widespread development. Maps of the AQMAs and associated buffer zones as described in the Supplementary Guidance are shown in Appendix 1.

5.5 Conclusions

5.5.1 Biomass is recognised as having an important role in helping the UK achieve its carbon emission reduction targets. Aberdeen City Council is committed to promoting and developing renewable energy. However, concerns have arisen regarding the potential impacts on human health from particulate emissions associated with the widespread uptake of biomass.

5.5.2 This report sets out the Council's position in relation to encouraging biomass use as a renewable energy source whilst managing and controlling air quality in the City. In summary, the report looks to encourage high quality installations for biomass use minimising air pollution emissions, with particular attention to areas where pollution levels are highest.

5.5.2 In line with all available guidance it is therefore proposed that Aberdeen City Council adopts the following policy:

- All new biomass installations shall include appropriate and effective abatement systems, where necessary to control emissions;

- The pollution levels emitted from biomass installations shall not conflict with the requirements of the UK National Air Quality Strategy, the Council's Air Quality Action Plan 2011 or statutory duties under the Environmental Act 1995;

- Biomass installations for sites in AQMAs or an AQMA buffer zone as detailed in the Draft Local Plan Supplementary Guidance Topic Air Quality (reference number: 2010/7.1) shall not be supported unless an air quality assessment can demonstrate the change in annual mean nitrogen dioxide (NO_2) and particulate (PM_{10}) concentrations will be negligible as defined in the Air Quality Supplementary Guidance.

6. IMPACT

Corporate - This report is linked to the protection of the health of the people of Aberdeen. In terms of 'Vibrant, Dynamic and Forward Looking' the report relates to policy commitments in Environment and Health.

Public – Although this report is linked to public health, it relates to policy issues and is unlikely to have a direct interest to the public.

7. BACKGROUND PAPERS

Aberdeen City Council Air Quality Action Plan, March 2011
Environmental Protection UK: Biomass and Air Quality Guidance for Scottish Local.

8. REPORT AUTHOR DETAILS

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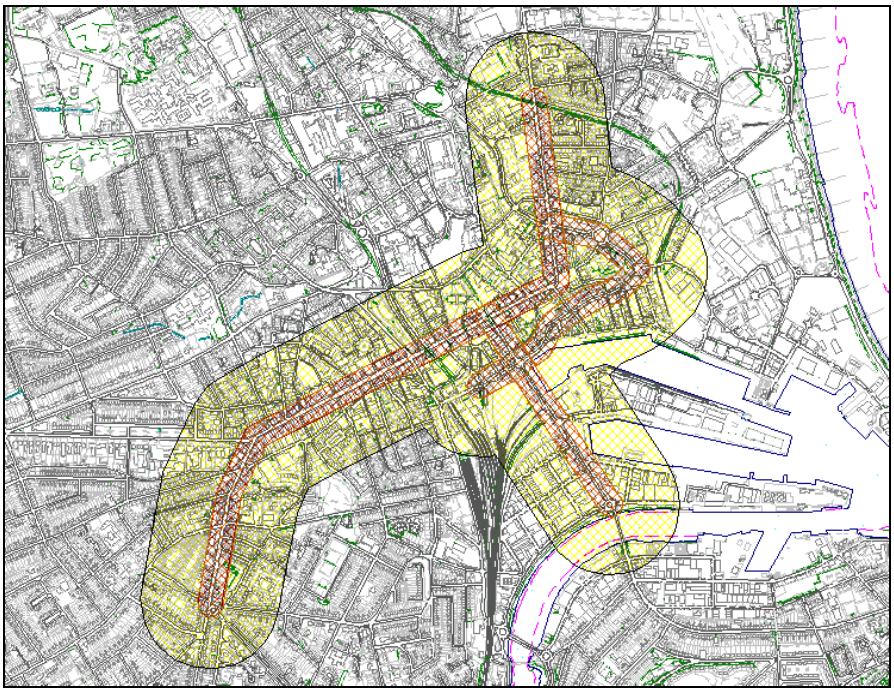
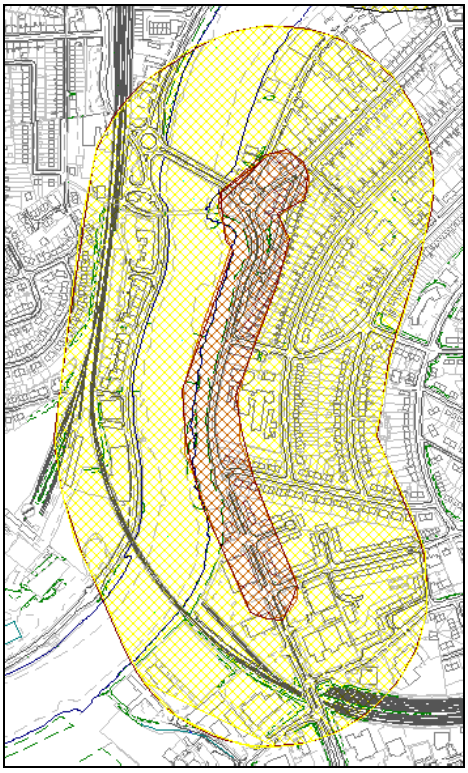
Appendix 1 Air Quality Management Areas and buffer zones

City Centre AQMA



Anderson Drive AQMA

Wellington Road AQMA



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