

# Health and Environmental Services Department

Environmental Health



Our ref: ST/NG/237300  
Your ref: Z/2012/1387/F

Being dealt with by: Barbara Fletcher  
Ext: 3385  
Date: 15/02/2013

## **Appendix 3**

The Divisional Planning Manager  
Belfast Area Planning Office  
Local Planning Division  
Department of the Environment  
Bedford House  
16-22 Bedford Street  
Belfast  
BT2 7FD

Dear Sir/Madam

### **RE: 7 AIRPORT ROAD, BELFAST, BT3 9DY CONSTRUCTION AND OPERATION OF A COMBINED HEAT AND POWER GENERATING STATION FOR THE TREATMENT OF REFUSE DERIVED FUEL (RDF) BY GASIFICATION**

This consultation response considers the proposed construction and operation of a combined heat and power generating station for the treatment of refuse derived fuel by gasification in terms of noise impact, air pollution, ambient air quality, contaminated land and general amenity.

It is understood that the proposed Combined Heat and Power plant is subject to control under the Pollution Prevention and Control (Industrial Emissions) Regulations (Northern Ireland) 2012. Accordingly, this aspect will be considered by the Northern Ireland Environment Agency Industrial Pollution and Radiochemical Inspectorate.

In relation to the above planning application the Environmental Protection Unit of the Health and Environmental Services Department has received and reviewed the following document submitted by the applicant in support of this application:

- An environmental impact statement report prepared by Grontmij titled 'Bombardier *planning application for the construction and operation of a combined heat and power generating station for the treatment of refuse derived fuel (RDF) by gasification*' dated December 2012.

The Unit's technical responses concerning the submitted environmental reports in support of the above proposed are contained within Appendix 1-3 of this document.

**APPENDIX 1 – Noise Assessment**  
**APPENDIX 2 – Air Quality Impact Assessment**  
**APPENDIX 3 – Contaminated Land Risk Assessment**

**Siobhan Toland** M.Sc., F.C.I.E.H  
Head of Environmental Health

**Belfast City Council, Health and Environmental Services Department**  
The Cecil Ward Building, 4-10 Linenhall Street, Belfast BT2 8BP  
Tel: 028 9027 0428 Textphone: 028 9027 0405 Fax: 028 9027 0422  
Email: [environmentalhealthservice@belfastcity.gov.uk](mailto:environmentalhealthservice@belfastcity.gov.uk)

Consequently, on the basis of the information submitted and in the event that planning permission is to be granted I would request that the following **conditions** are attached:

**NOISE:**

1. **Prior to commencement of each phase of construction the appointed contractors shall prepare and submit to Planning Service a detailed method statement for the project. This shall include a noise and vibration impact assessment of potential noisy operations and outline mitigation measures proposed. The assessment shall be used to help inform the development of the construction methods. This shall have regard to the potential damage, nuisance or interruption to production at adjacent commercial and industrial activities due to piling operations.**

**Reason: Protection of human health**

2. **The noise mitigation strategy and mitigation measures as outlined in section 6.0 – 6.2 of the report must be fully incorporated into the development in order to mitigate the impact from process noise.**

**Reason: Protection of human health**

3. **Prior to operation of the proposed development the applicant must submit to Planning Service a noise verification report which demonstrates the successful implement of the mitigation measures outlined section 6 of the Airshed report. Furthermore the verification report must confirm that the process has no negative impact on the amenity of the nearest residents from noise associated with the process.**

**Reason: Protection of human health**

**CONTAMINATED LAND:**

4. **Prior to any development commencing, the applicant must submit a detailed Remediation Strategy outlining the measures to be undertaken to ensure that on-site land and water contamination does not pose a potential risk to human health and that all identified pollution linkages will be demonstrably broken. This detailed Remediation Strategy must be submitted to Planning Service and agreed in writing by Belfast City Council's Environmental Protection Unit prior to any commencement of development for this site. This Remediation Strategy must include as a minimum:**
  - a. **Detailed design of the gas protection measures to be incorporated into the proposed development, including the presentation of relevant venting calculations.**
  - b. **Confirmation of the final development layout and a proposed design / make up for the clean cover to be placed in landscaped areas.**
  - c. **A proposed Verification Plan, including as a minimum proposals for: the supervision of remediation works; any relevant sampling / testing; and relevant record keeping.**
  - d. **The proposed specification of water supply pipes to be used in the development in line with relevant UKWIR guidance.**

**Reason: Protection of human health**

5. Prior to the occupation of the proposed development, the applicant shall provide to Planning Service, for approval, a Verification Report in relation to the management of land contamination. The Verification Report shall demonstrate the successful completion of remediation works and that the site is now fit for end-use (Commercial). It must demonstrate that the identified potential pollutant linkages are effectively broken. The Verification Report shall be in accordance with current best practice and guidance as outlined by the Environment Agency.

This report must demonstrate that the remediation measures outlined in the agreed Remediation Strategy have been implemented.

Reason: Protection of human health

6. In the event that contamination not previously considered is encountered during the approved development of this site, the development shall cease and a written report detailing the nature of this contamination and its management must be submitted to Planning Service for approval. This investigation and risk assessment must be undertaken in accordance with current best practice.

Reason: Protection of human health

In relation to contaminated land this Unit requests that the following **informative** is attached to any planning permission granted:

- **CLEAN NEIGHBOURHOODS AND ENVIRONMENT ACT (NI) 2011**

The applicant is advised that the proposed commencement of Part III of the Waste and Contaminated Land (NI) Order 1997 may introduce retrospective environmental liabilities to the applicant following the development of this site. The comments provided by Belfast City Council are without prejudice to any future statutory control which may be required under Part III or any other future environmental legislation. It remains the responsibility of the developer to undertake and demonstrate that the works have been effective in managing all risks. Failure to provide a satisfactory Verification Report may lead to the assumption that the site still poses a risk to human health and it may be subject to further action under forthcoming legislation.

## **APPENDIX 1 NOISE ASSESSMENT - TECHNICAL RESPONSE FROM BELFAST CITY COUNCIL**

Chapter 12 of the above mentioned noise impact assessment report for the proposed CHP generating station considered the effects of the noise from construction, sleep disturbance to local residents, loss of amenity and nuisance from increased noise levels and noise from traffic.

It is noted that the nearest residential areas are located more than 1,000 metres from the proposed development. The main process building will be up to 27 metres in height and will house the waste reception area, gasifiers, flue gas treatment and steam turbines. The Airshed noise report advises the main noise source is potentially from the cooling plant, which will be located outside the process building. This process is to operate 24 hours therefore night time noise is the main cause of concern. It is also noted that noise levels have been predicted using ISO 9613-2 as implemented by Sound Plan 7.1.

The Airshed noise assessment report advises that results from assessment predicted that the worst case noise process levels will be 36dB LA<sub>r 5 minutes</sub>. The report also advises therefore that the predicated process noise is well below the background noise level 40dB LA<sub>90</sub> and the WHO night time criteria of 45 dB LA<sub>eq 8 hours</sub> at all sensitive receptors.

The Airshed noise report advises that with appropriate mitigation and by containment and specification of quiet external cooling plant, the proposed scheme is predicated to be  $\leq 37$ dB LA<sub>eq 1 hours</sub> at all sensitive receptors.

The report concluded that the 'process noise' contribution from the proposed installation is likely to be insignificant at all sensitive receptors subject to the successful implementation of the mitigation measures set out in Section 6.

Further more the Airshed noise report also makes a number of recommendations to minimise the impact of noise and vibration during the construction phase.

## **APPENDIX 2 – AIR QUALITY IMPACT ASSESSEMENT – TECHNICAL RESPONSE FROM BELFAST CITY COUNCIL**

Chapter 10 of the Environmental Impact Assessment and its Appendices describe the Air Quality Impact Assessment for the development. The Assessment addresses air quality impacts connected with the site's permitting as a process under the Pollution Prevention and Control (Industrial Emissions) Regulations (Northern Ireland) 2012 as well as ambient pollution prescribed via the Air Quality Strategy for England, Scotland, Wales and Northern Ireland and Part III of the Environment (Northern Ireland) Order 2002. Permitting of the proposed Combined Heat and Power Plant under the Pollution Prevention and Control (Industrial Emissions) Regulations (Northern Ireland) 2012 will be dealt with by the Northern Ireland Environment Agency Industrial Pollution and Radiochemical Inspectorate.

Part III of the Environment (Northern Ireland) Order 2002 establishes a statutory duty upon Northern Ireland district councils to periodically review, assess and manage air quality for a range of common ambient pollutants. A series of health-based standards for these pollutants, that are designed to protect the public and the environment, are detailed within the Air Quality Strategy for England, Scotland, Wales and Northern Ireland. Accordingly, this Unit's response will focus primarily upon the assessment of ambient pollutants prescribed within the Air Quality Strategy for England, Scotland, Wales and Northern Ireland and the Air Quality Standards Regulations (Northern Ireland) 2010.

The consultant has utilised a combination of Cambridge Environmental Research Consultant's Atmospheric Dispersion Modelling Software Version 4.2 to assess the impact of the Generating Station's industrial emissions and Version 3.1 to assess transport impacts associated the Generating Station's operation. Modelling has been undertaken for 18 relevant receptor locations for both long and short term exposure in accordance with government's Local Air Quality Management Technical Guidance LAQM.TG(09).

Nitrogen dioxide (NO<sub>2</sub>) and particulate matter (PM<sub>10</sub>) background data for the modelling studies has been derived from data published by the Department of Environment, Food and Rural Affairs (Defra). It is assumed that the background data relates to the recently published 2010 dataset.

However, the consultant has stated that there is little information available for ambient heavy metal concentrations in Northern Ireland. It should be noted that Belfast City Council has undertaken ambient heavy metal monitoring at the Belfast Centre AURN site, as part of the UK's Urban Heavy Metals network, since 2008. Monthly data for this site is available for copper, lead, zinc, iron, arsenic, cadmium, chromium, cobalt, nickel, manganese, platinum, selenium and vanadium as well as mercury in PM<sub>10</sub> and gaseous mercury. Accordingly, it appears that concentrations of ambient heavy metal pollutants may not have been fully assessed in the Air Quality Impact Assessment in terms of respective target values for total metal content in the PM<sub>10</sub> fraction, averaged over a calendar year.

Similarly, concentrations of dioxins, including all 17 toxic 2,3,7,8 polychlorinated dioxin and furan congeners, were assessed at the Belfast Clara Street site as part of the UK's Toxic Organic Micro Pollutants (TOMPS) network from 2001 to 2007. This data could have been interpreted in order to provide a more complete assessment of the impact of the proposed development upon ambient dioxin concentrations.

Notwithstanding these issues, the Unit is satisfied that having regard to the modelling outputs for heavy metals and dioxins, the location of relevant human receptors and local ambient monitoring data, there is little likelihood of the proposed development resulting in exceedences of relevant air quality objectives or European Commission target values.

The consultant has assessed the predicted impact of the proposed Generating Station development on human health in terms of nitrogen dioxide, sulphur dioxide and particulate matter. Modelling was undertaken both for short and longer objectives and the outputs of the modelling have been summarised in the Appendices to the Air Quality Impact Assessment. A modelling sensitivity analysis has also been completed.

Modelling data indicates that the proposed development will result in a modest increase ( $1\text{mgm}^{-3}$ ) in annual mean nitrogen dioxide concentrations as a worst-case scenario. Given that the maximum reported nitrogen dioxide background concentration in the vicinity of the development is around  $25\text{mgm}^{-3}$ , there is little likelihood of exceedences of the  $40\text{mgm}^{-3}$  annual mean objective at relevant receptors. A similar situation is reported in respect exceedences of the nitrogen dioxide  $200\text{mgm}^{-3}$  1-hour mean objective. Transport impacts of the development have been assessed for the nearby Sydenham By-Pass. The consultant has reported that the increase in the nitrogen dioxide annual mean concentrations associated with the development along the Sydenham By-Pass will be less than 1%.

Sulphur dioxide concentrations have been assessed in terms of the 15-minute mean objective however, it appears that the 1-hour and 24-hour mean objectives have not been considered. The proposed development is projected to add a maximum of  $21\text{mgm}^{-3}$  to the 99.9<sup>th</sup>ile of 15-minute mean concentrations at relevant receptors. Therefore, given the low concentrations of ambient sulphur dioxide monitored at the Belfast Centre site, this Department is content that the proposed development will be unlikely to give rise to exceedences of the sulphur dioxide 15-minute mean objective at relevant receptors.

Modelling data indicates that the proposed development will result in an increase of around  $0.07\text{mgm}^{-3}$  in the annual mean particulate matter ( $\text{PM}_{10}$ ) concentrations. Given that the reported maximum particulate matter background concentration in the vicinity of the development is around  $16\text{mgm}^{-3}$ , there is little likelihood of exceedences of the  $40\text{mgm}^{-3}$  annual mean objective at relevant receptors. Similarly, maximum 24-hour means are predicted to increase by around  $0.03\text{mgm}^{-3}$  at relevant receptors, providing little likelihood of exceedences of the  $50\text{mgm}^{-3}$  90.41<sup>th</sup>ile of daily means objective.

A similar situation exists for  $\text{PM}_{2.5}$  where maximum annual mean concentrations are predicted to increase by around  $0.1\text{mgm}^{-3}$  to around  $9.9\text{mgm}^{-3}$  with the proposed development in place. These levels are significantly below the  $25\mu\text{gm}^{-3}$  annual mean gravimetric target to be achieved by 2020.

Accordingly, based upon the outcome of the modelling studies, this Department is content that ambient emissions from the proposed Combined Heat and Power Generating Station are unlikely to lead to exceedences of air quality objectives at relevant receptors. As a result, this Department has no concerns regarding the air quality impacts of the development proposal.

### **APPENDIX 3 CONTAMINATED LAND - TECHNICAL RESPONSE FROM BELFAST CITY COUNCIL**

- Chapter 14 (Geology, Ground Conditions and Hydrogeology) of a Grontmij Environmental Statement titled *Planning Application for the Construction and Operation of a Combined Heat & Power Generating Station for the Treatment of Refuse Derived Fuel (RDF) by Gasification – Supporting & Environmental Statements, December 2012*
- Appendix I to Chapter 14 of the above report, titled *Geotechnical and Geoenvironmental Interpretative Site Investigation Report*
- A letter of clarification from Grontmij dated 8<sup>th</sup> February 2013.

With respect to the risks posed to human health / public health, this Unit makes the following comments:

#### **Preliminary Risk Assessment (PRA)**

The PRA identified a number of potential contamination sources relating to the site and the surrounding area, including: engineering works and other industrial facilities; reclaimed land and a refuse site; an electricity substation; and natural alluvial deposits (a possible source of ground gas). The site itself was also found to have been subject to previous unidentified usage. Upon consideration of this, the site's environmental setting and the detail of the proposed development in line with current contaminated land risk assessment guidance (CLR11), Grontmij identified potential pollutant linkages and therefore determined that an intrusive site investigation followed by a Quantitative Risk Assessment would need to be undertaken.

#### **Site Investigation**

Subsequently, a generally thorough site investigation was undertaken, comprising: the drilling of 6 boreholes; installation of 10 monitoring standpipes; laboratory analysis of a total of 48 soil samples for a suite of relevant contaminants of concern; laboratory analysis of a total of 32 groundwater samples for a suite of relevant contaminants of concern; and the monitoring of ground gases on a total of 8 occasions.

The site investigation works confirmed the anticipated geological succession beneath the site as comprising made ground overlying natural alluvial and glacial deposits. Groundwater flow was determined to be from the northeast to the southwest.

It is noted that the identified electricity substation, which is present in the southwest corner of the site and which was deemed a potential contamination source in the PRA, was not targeted during the site investigation works. However, justification for this and clarifications on the risks posed by, and to, the substation was subsequently provided.

#### **Quantitative Risk Assessment**

Quantitative assessment of the soil data collected during the site investigation, and additional soil data collected during a previous site investigation, using relevant and defensible Generic Assessment Criteria (GAC) for Commercial end uses revealed that relevant GAC were only exceeded in one sample (BH3 at 3.0mbgl).

Exceedences were noted for lead (1130mg/kg vs. a GAC of 750mg/kg), mercury (16.3mg/kg vs. a GAC of 11mg/kg) and asbestos (fibres detected). However, Grontmij concluded that these occurrences were at 'sufficient depth below proposed formation levels to not be of significance to human health'.

Chemical analysis results revealed that shallow groundwater beneath the site is of slightly reduced quality and that deeper groundwater within the natural strata beneath the site, although generally not of reduced quality, was found to contain minor occurrences of PAHs and a small number of VOCs. However, concentrations of all potentially volatile contaminants fell below relevant GAC with respect to the assessment of the risks posed to future site users through vapour release. Grontmij therefore concluded that 'no risk is posed to future site users by the identified VOCs in groundwater'.

Quantitative assessment of ground gas data collected during the site investigation, and additional ground gas data collected during a previous site investigation, using a relevant and defensible assessment methodology (as presented in CIRIA C665) indicated that the gassing regime at the site would be considered to fall under the classification 'Characteristic Situation 4' and, therefore, that 'appropriate ground gas protection measures [should be] included within the development'.

Although no quantitative assessment was undertaken, the report highlighted that construction workers could be exposed to subsurface contaminants during redevelopment works.

### **Remediation Recommendations**

Within Grontmij's *Geotechnical and Geoenvironmental Interpretative Site Investigation Report* outline remediation recommendations are presented. Relevant remediation recommendations with respect to the protection of human health include:

- The incorporation of sufficient gas protection measures into the proposed buildings to protect against a 'Characteristic Situation 4' gassing regime;
- The inclusion of appropriate mitigation measures within construction management health and safety plans to reduce the risk of exposure to site staff to subsurface contaminants; and
- Further reduction of the risk posed to future site users through the emplacement of hard standings and the placement of clean cover to areas of landscaping.

In addition, in relation to the identified risks to the wider environment, this Unit recommends that Planning Service seek the views of the Land & Resource Management, Northern Ireland Environment Agency, Klondyke Building, Cromac Avenue, Gasworks Business Park, Ormeau Road, Belfast BT7 2JA.

Yours sincerely,

Barbara Fletcher  
Environmental Health Officer  
Environmental Protection Unit