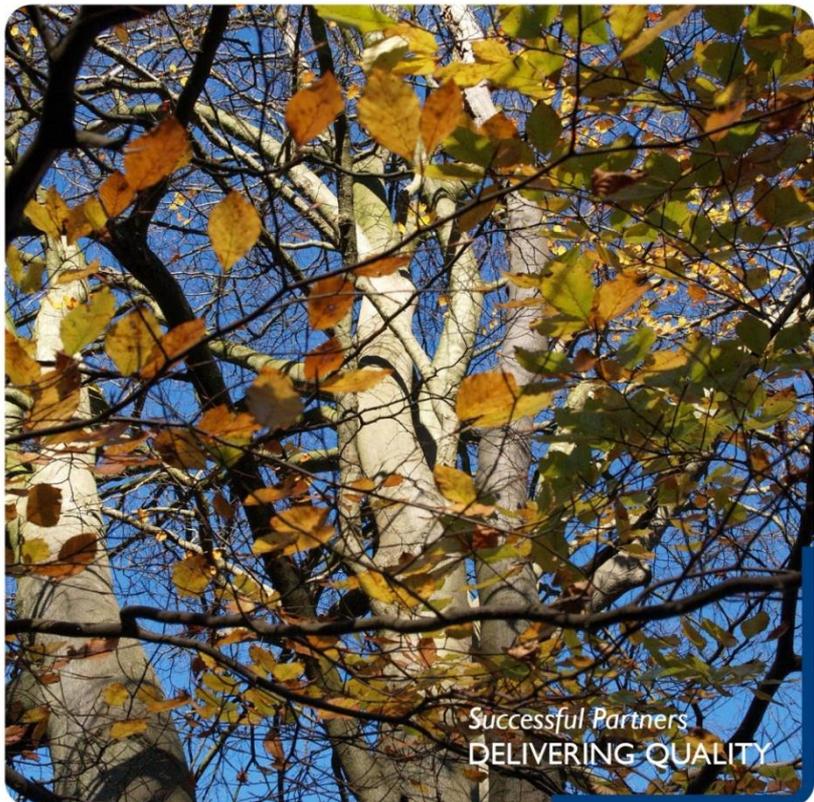




## Hightown Quarry Residual Waste Management Facility

### 2019 Addendum

### Health Impact Assessment



# Contents

---

<b>1</b>	<b>Introduction .....</b>	<b>1</b>
	<b>Background .....</b>	<b>1</b>
	<b>Health Assessment Summary.....</b>	<b>2</b>
<b>2</b>	<b>Review and Gap Analysis.....</b>	<b>4</b>
	<b>Regulatory and Policy Requirement .....</b>	<b>4</b>
	<b>Baseline Conditions.....</b>	<b>4</b>
	<b>Supporting Health Evidence Base.....</b>	<b>5</b>
	<b>Change to Supporting Technical Inputs .....</b>	<b>6</b>
<b>3</b>	<b>Assessment .....</b>	<b>8</b>
<b>4</b>	<b>Conclusion.....</b>	<b>9</b>
	<b>References .....</b>	<b>1</b>

## Non-Technical Summary

---

Given the time frame from the original submission, it was deemed prudent to review, and where appropriate, supplement the original Hightown Quarry Residual Waste Management Facility application through a second addendum.

From a health perspective, the review focuses on:

- any change in the regulatory or policy requirement for the assessment of health;
- any material change in baseline conditions, that might influence community sensitivity or the assessment parameters and outputs;
- any material change to the supporting health evidence base;
- any material change to the supporting technical inputs (i.e. air quality noise, transport) undergoing a similar review and update where appropriate;
- consideration of any additional third party representations that have been received 1) in respect of erionite and health implications, and 2) toxicity of incineration;
- any new health concerns or opportunities to consider; and
- any change in the cumulative impact assessment.

Following a review of current regulatory and policy requirements, in combination with a review of the supporting evidence, technical inputs, baseline data and suitability of the assessment protocols applied, the HIA remains appropriate, complies with current requirements and the findings have been reinforced through ongoing research.

The conclusion and recommendations of the original HIA stand, and no supplementation is required.

# 1 Introduction

---

## Background

- 1.1 Following submission of the planning application and supporting Environmental Impact Assessment Report (EIAR) in March 2014, and the subsequent addendum in September 2014, the application was recommended for approval but refused on two grounds <sup>(1)</sup>. Following a hearing in front of the Planning Appeals Commission, it was determined that neither reason for refusal were justified, and planning permission for the facility was approved in 2017.
- 1.2 This decision however, was overturned at the High Court, not on any environmental or health grounds, nor on strategic need, but on a procedural matter regarding the ability of the Department to make a decision on any infrastructure project in Northern Ireland in the absence of a minister in post. The national implications of such a ruling have since been addressed and a process to resume decision making in Northern Ireland has been set in place.
- 1.3 Given the time frame from the original submission, it was deemed prudent to review, and where appropriate, supplement the original Hightown Quarry Residual Waste Management Facility application through a second addendum.
- 1.4 From a health perspective, the review focuses on:
- any change in the regulatory or policy requirement for the assessment of health;
  - any material change in baseline conditions, that might influence community sensitivity or the assessment parameters and outputs;
  - any material change to the supporting health evidence base;
  - any material change to the supporting technical inputs (i.e. air quality noise, transport) undergoing a similar review and update where appropriate;
  - consideration of any additional third party representations that have been received 1) in respect of erionite and health implications, and 2) toxicity of incineration;
  - any new health concerns or opportunities to consider; and
  - any change in the cumulative impact assessment.
- 1.5 The remainder of this section provides a brief health themed chronological overview to set how and where health was originally assessed and addressed; the findings, and state of play to date.
- 1.6 The remainder of this document then includes:
- a review and gap analysis of the original HIA;
  - a revised/supplemented health assessment where appropriate; and
  - an HIA addendum conclusion.

## Health Assessment Summary

1.7 The HIA was voluntarily commissioned, in line with best practice, and, as shown below, supportive of the Public Health Agency (PHA) 2010 scoping request to investigate and address community concerns and perceptions:

*“The Public Health Agency (PHA) recommends that the applicant should be asked to include a health impact assessment as part of the environmental statement. This will need to specifically address the health concerns which this type of project raises in the public mind”.* (The full scoping opinion is provided in Appendix 5.1 of the EIAR).

1.8 Given the request, a supplementary HIA scoping exercise was performed with the PHA to further discuss and agree the scope, focus and necessary outputs of the voluntary HIA, and progressed on this basis. The HIA team attended every public exhibition and participated in health themed discussions with interested parties to further test the scope and focus of assessment, tailoring it to local community concerns, circumstance and priorities.

1.9 The HIA provided input to the design process, and iteratively drew from and built upon the supporting technical outputs from air quality, noise, transport, socio-economic, hydrology and hydrogeological teams, as well as interfaced with the environmental permitting process, and despite being a non-regulatory planning requirement, was submitted alongside the EIAR in March 2014.

1.10 Following submission:

- the proposed project demonstrated that it met all nationally defined regulatory requirements set to protect the environment and health;
- the NIEA (the regulatory authority) confirmed it was satisfied that emissions from facilities of this nature can be adequately controlled, and further managed to ensure activity would not be a reasonable cause for annoyance;
- the NIEA issued a draft permit in June 2015, indicating that it was satisfied that this specific project could be adequately controlled and will remain well within standards set to protect the environment and health;
- the HIA further tested and confirmed the EfW position of PHE <sup>(2)</sup> <sup>(3)</sup>, DEFRA <sup>(4)</sup>, the Environment Agency, and the Chartered Institute of Water and Environmental Management <sup>(5)</sup>;
- the PHA commended the applicant for a clear and comprehensive assessment of potential and perceived health risks; and
- in November 2015, the HIA team was invited to be a temporary advisor to the WHO on the health effects of waste management alongside a select group of international experts to share and discuss the latest evidence, and to share health in EIA best practice.

- Despite being recommended for approval by DfI Strategic Planning Division, a Notice Opinion to refuse citing two reasons for refusal was issued by the then Minister, one being that:

*“the proposal is contrary to Policy WM1 of the Department’s Planning Policy Statement 11: Planning and Waste Management, in that it has not been clearly demonstrated, to the satisfaction of the Department, that the proposed method of treatment will not result in harm to human health”.*<sup>(6)</sup>

- 1.11 However, no information was ever provided to substantiate the refusal or contest either the HIA, or the authoritative position of the NIEA and PHA. Furthermore, a contradictory decision was made granting consent for another EfW facility in the heart of Belfast (despite the absence of a HIA, and no health section within the EIAR).
- 1.12 A hearing before the Planning Appeals Commission was requested, and the HIA team provided input to the statement of case and a health expert witness at Oral Hearing. During this process:
- no unresolved or new health concerns were raised by the DfI in its Statement of Case;
  - no health concern regarding the proposed project was raised by any statutory consultee or by any of the regulatory authorities at the Oral Hearing;
  - no health expert witness was put forward by the DfI, the NIEA or PHA;
  - no unresolved health concerns were raised by any third party;
  - in the absence of any unresolved health concern, no health-related planning conditions were needed; and
  - in the absence of any unresolved health concern, no health themed post hearing information requests were ever required.
- 1.13 On the above basis, it was made clear that the statutory and regulatory authorities were again content that potential health issues were inherently addressed through the regulatory process, and there were no outstanding health items that require further clarification, or would justify refusal.
- 1.14 The requested post hearing information was provided, and planning permission for the facility was approved in 2017. This decision however, was overturned at the High Court on a procedural matter regarding the ability of the department to make a decision on any project in Northern Ireland in the absence of a minister in post.
- 1.15 On the above basis, the Health Addendum is not required to respond to any unresolved health concerns, but is more to test the shelf life of the assessment, explore how current practice and regulatory requirements may have changed, consider any additional third party representations that have been received and test the suitability of the supporting evidence base, baseline and technical inputs to the HIA.

## 2 Review and Gap Analysis

---

- 2.1 Given the timeline from the original submission, it was thought prudent to perform a review and gap analysis for:
- any change in regulatory or policy requirement;
  - any material change in baseline conditions, that might influence community sensitivity or materially influence the assessment parameters and outputs;
  - any material change to the supporting health evidence base;
  - any material change to the supporting technical inputs (e.g. air quality noise, transport) undergoing a similar review and update where appropriate; and
  - any change in the cumulative impact assessment from consented developments.

### Regulatory and Policy Requirement

- 2.2 As detailed in Section 1.4 of the original HIA appended to the EIAR, the regulatory and policy requirement for HIA at the time were non-existent, where health protection was considered implicit through the individual technical disciplines of the EIA and permitting process, and sufficient to satisfy the requirements of Policy WM 1 of PPS 11 <sup>(7)</sup>.
- 2.3 Since the original submission, the core change to the regulatory planning process has been the transposition of the EU EIA Directive that called to reinforce the consideration of health within EIA.
- 2.4 The best practice applied within the original application was therefore five years ahead of current practice and any EU, UK regulatory and NI policy requirement. The 2013 HIA meets the current EIA regulatory requirement in that it remains a proportionate, appropriately scoped and robust health assessment that was fully integrated within the regulatory assessment and decision making process from the outset.
- 2.5 On the above basis, the 2013 HIA stands current regulatory and policy requirements, and no supplementation is required.

### Baseline Conditions

- 2.6 The HIA applied a series of nationally collected demographic health and health care statistics to provide a platform to the assessment, and to further explore individual circumstance that might establish heightened sensitivity to any particular hazard; result in a disproportionate outcome; or form a barrier to any benefit uptake.
- 2.7 The 2011 census data formed the core to the assessment, and remains appropriate as the latest available census available. The supporting data used to drill down into specific health determinants and triangulate a judgement on community sensitivity, has however, been updated.

- 2.8 A review of the more recent data indicates that the original community profile remains appropriate, where site setting has not materially changed and the health trend continues to improve.
- 2.9 This reinforces the original baseline, where local communities are still not considered particularly sensitive to environmental health pathways. Furthermore, at the time of the original assessment, there was some concern that new communities from residential development had not been fully captured by national statistics and might be omitted from the assessment.
- 2.10 The approach taken to address this issue at the time was to apply the highest burden of poor health and to grossly overestimate local population number. This precautionary approach remains appropriate, and remains more than sufficient to account for any population growth since the 2014 HIA.
- 2.11 On the above basis, the baseline data remains appropriate, and no supplementation is required.

## Supporting Health Evidence Base

- 2.12 Since the original HIA, the scientific health evidence base on air, noise, transport and socio-economic impacts has continued to develop. However, it remains the case that the underlying evidence base applied remains appropriate, and has if anything, been reinforced.
- 2.13 On this basis, neither the air quality, noise or transport health evidence base and assessment protocols applied require updating or supplementation.
- 2.14 The main change to the supporting evidence base has been the completion of the PHE commissioned research on any potential risk to infant health in proximity to modern energy from waste facilities. As shown below, this research has since concluded, and again reinforces PHE's position, that modern EfW's constitute a negligible impact to air quality and no measurable impact to health:

*"There was no excess risk in relation to any of the outcomes investigated during pregnancy or early life of either mean modelled MWI PM<sub>10</sub> or proximity to an MWI.*

*Conclusions: We found no evidence that exposure to PM<sub>10</sub> from, or living near to, an MWI operating to current EU standards was associated with harm for any of the outcomes investigated."*<sup>(8)</sup>

- 2.15 This new evidence reinforces the findings of the HIA. On the above basis, the supporting evidence base and individual assessment protocols remain appropriate, and no supplementation is required.
- 2.16 However, we would encourage interested parties to review the latest PHE research, as this will aid in addressing residual community health concerns, and prevent unfounded and unsupported opinions from creating needless stress or anxiety.

Fetal growth, stillbirth, infant mortality and other birth outcomes near UK municipal waste incinerators; retrospective population based cohort and case-control study. Available at <https://www.sciencedirect.com/science/article/pii/S0160412018316398>

## Change to Supporting Technical Inputs

- 2.17 As detailed in the original HIA, the assessment drew from and built upon a number of overlapping technical disciplines, most notably air quality, noise and transport. Any material change to these assessments would therefore warrant a review, and where appropriate a health addendum.
- 2.18 The following sections provide commentary on any notable changes to the supporting technical disciplines, and sets the justification and scope for any health addendum, and just as importantly, sets the rationale for where no further assessment is required.

### Air Quality

- 2.19 As detailed in Chapter 10 of the 2019 Addendum, the design parameters, process contribution, legislation, emissions standards and meteorological conditions have not changed. The only material parameter that has changed is the availability of more recent background data. Such data has been applied, and does not materially change the findings of the original air quality assessment, where the facility will remain well within all assessment criterion set to protect the environment and health.
- 2.20 The air quality dispersion modelling technical inputs applied within the 2014 HIA therefore remain appropriate, and only any change in population exposure and existing health burden would warrant any further assessment. However, as detailed in the 2014 HIA, even when assuming a hypothetical, worst-case assessment, where the facility is operating at the maximum permitted concentration under the Industrial Emissions Directive, that all PM<sub>10</sub> is assumed to be PM<sub>2.5</sub> (applying the higher risk ratio) and grossly overestimating potential exposure, where the entire population of Antrim, Belfast and Newtownabbey reside in the same household subject to the highest process contribution for a year, the relative change in air quality is still not sufficient to quantify any measurable change in health outcome.
- 2.21 On the above basis, the supporting air quality technical inputs to the HIA have not materially changed, and the precautionary approach taken more than accounts for any population growth that may have occurred since the 2014 HIA. No further assessment is required.

### Noise

- 2.22 As detailed in Chapter 9 of the 2019 EIAR Addendum, the noise baseline conditions, standards and guidance have not materially changed, and neither the construction nor operational assessment findings have changed from the previous assessment.
- 2.23 On the above basis, the supporting noise technical inputs to the HIA have not materially changed, and, the findings of the original 2014 HIA stand. No further assessment is required.

### Transport

- 2.24 As detailed in Chapter 8 of the 2019 EIAR Addendum, the transport baseline has been revisited and the findings of the original Transport Assessment (TA) remain robust.

2.25 On the above basis, the supporting transport inputs to the HIA have not materially changed, and, the findings of the original 2014 HIA stand. No further assessment is required.

## Consideration of any additional third party representations

### Erionite

2.26 Following a public health concern raised by NoArc21 regarding the potential presence of a hazardous mineral (erionite) at the Hightown quarry, a geological site survey and laboratory analysis was conducted to explore if the hazard was present, and to investigate any potential risk to occupational or public health.

2.27 Following a review of the study, key observations include:

- the sampling strategy undertaken was logical, appropriate and robust, applying categorical geological markers to focus sample collection where the minerals presence would be most plausible;
- the use of geochemical analysis provided a means to explore for the specific mineral in question, offering a high degree of certainty within the samples taken; and
- the microscopic analysis provided a means to investigate the sample morphology for hazardous characteristic indicative of the mineral in question, but also provided a means to further search for other minerals with asbestiform properties (i.e. the physical characteristic that make this mineral, and other minerals such as asbestos hazardous).

2.28 The study concludes that the mineral in question was not found in areas where it would be most plausible, and in the absence of the hazard, there is no credible risk to occupational or public health. Despite the absence of the mineral in question, a further precautionary approach has been taken to further safeguard the health and wellbeing of staff and neighbouring communities alike through an enhanced Construction Environmental Management Plan (CEMP).

2.29 When considering how the consented development will effectively sterilise the use of the site as an active quarry (removing the primary activity with the potential to excavate such hazards, if present), and given the enhanced mitigation and monitoring offered in the absence of any proven hazard, it can be concluded that the construction and operation of the facility does not present any material risk to public health.

2.30 On the above basis, no further health assessment is necessary.

### Professor V Howard

2.31 A third party representation was received on the 6th of January 2019 from Professor V Howard regarding a 2018 paper on comparative risk between energy from waste and biomass energy facilities in China. As noted in the representation, the paper is offered as new evidence to form part of the consideration of this application. However, following a review, the paper does not

present any new evidence or information pertinent to this application, and has no bearing on UK planning or permitting.

- 2.32 To clarify, the paper is comparing and contrasting PM<sub>2.5</sub> emissions and laboratory cellular toxicity for different facilities, with different fuel characteristics and abatement technology on a different continent; designed and operating to different planning and operating requirements to a different regulatory regime that would not be allowed in the UK, and is not what is proposed in this application.
- 2.33 Furthermore, the study does not present any new or project specific information that would question or contest the original HIA or the Human Health Risk Assessment (HHRA).
- 2.34 To reiterate, the original HIA already assessed potential risk from changes in exposure to particulate matter (PM<sub>10</sub>, PM<sub>2.5</sub> and Nano particulates), and included a hypothetical, worst-case assessment, where the facility is operating at the maximum permitted concentration under the Industrial Emissions Directive, that all PM<sub>10</sub> is assumed to be PM<sub>2.5</sub> (applying the higher risk ratio) and that the entire population of Antrim, Belfast and Newtownabbey reside in the same hypothetical household subject to the highest process contribution for a year. Even in this highly unrealistic hypothetical assessment, the relative change in air quality is still not sufficient to quantify any measurable change in health outcome.
- 2.35 A detailed consideration of the health pathways and exposure response for the other pollutants that would be emitted from the proposed development (such as metals, dioxins and furans, and volatile organic compounds) is addressed through the HHRA that by regulatory requirement accompanies the permit application to the Environment Agency.
- 2.36 The HHRA concludes that even when applying a worst case scenario, the proposed facility does not present any material risk to health.
- 2.37 Professor Howard's representation does not introduce any new information that might require an amendment to the HIA, HHRA, or would question the draft NIEA permit, indicating that this specific project could be adequately controlled and will remain well within standards set to protect the environment and health.

### 3 Conclusion

---

- 3.1 Following a review of current regulatory and policy requirements, in combination with a review of the supporting evidence, technical inputs, baseline data and suitability of the assessment protocols applied, the HIA remains appropriate, complies with current requirements and the findings have been reinforced through ongoing research.
- 3.2 The conclusion and recommendations of the original HIA stand, and no supplementation is required.

## References

---

- 1 Notice of Opinion
- 2 Health Protection Agency (2009). The Impact on Health of Emission to Air from Municipal Waste Incinerators: Advice from the Health Protection Agency. Available at [www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/384592/The\\_impact\\_on\\_health\\_emissions\\_to\\_air\\_from\\_municipal\\_waste\\_incinerators.pdf](http://www.gov.uk/government/uploads/system/uploads/attachment_data/file/384592/The_impact_on_health_emissions_to_air_from_municipal_waste_incinerators.pdf)
- 3 Health Protection Agency (2010). The Impact on Health of Emission to Air from Municipal Waste Incinerators: Advice from the Health Protection Agency. Available at [www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/335090/RCE-13\\_for\\_web\\_with\\_security.pdf](http://www.gov.uk/government/uploads/system/uploads/attachment_data/file/335090/RCE-13_for_web_with_security.pdf)
- 4 DEFRA (2004). Review of Environmental & Health Effects of Waste Management', Enviros Consulting Ltd, University of Birmingham, Open University & Maggie Thurgood, Defra, 2004
- 5 The Chartered institute of Water and Environmental Management Policy Position Statement. Energy Recovery from Waste. Available at: <http://ciwem.org/wp-content/uploads/2016/04/Energy-Recovery-from-Waste.pdf>
- 6 Notice of Opinion
- 7 Department of the Environment. (2002). Planning Policy Statement 11 (PPS 11) Planning and Waste Management. Available [http://www.planningni.gov.uk/index/policy/policy\\_publications/planning\\_statements/pps11-waste-management.pdf](http://www.planningni.gov.uk/index/policy/policy_publications/planning_statements/pps11-waste-management.pdf).
- 8 Rebecca E. Ghosh, Anna Freni-Sterrantino, Philippa Douglas, Brandon Parkes, Daniela Fecht, Kees de Hoogh, Gary Fuller, John Gulliver, Anna Font, Rachel B. Smith, Marta Blangiardo, Paul Elliott, Mireille B. Toledano, Anna L. Hansell. (2019). Fetal growth, stillbirth, infant mortality and other birth outcomes near UK municipal waste incinerators; retrospective population based cohort and case-control study. Available at <https://www.sciencedirect.com/science/article/pii/S0160412018316398>