

**Halton Action Group Against The
Incinerator (HAGATI)**

**Objection to
Environmental Permit
Application
EPR/EP3731XL/A001**

PART THREE

**Response to Appendices to the
Environmental Permit Application**

Halton Action Group Against The Incinerator (HAGATI)

Executive Committee

Chairman	Sir Kenneth Green Kt; BA; MA; DLitt; CIMgt
Vice Chairman	Mr Jeff Meehan HNC Elect Eng; End Electronics/Computing
Secretary	Mrs Sue Bowden (Local Government Officer)
Treasurer	Mr Alan Gorry (Company Director (Retired))
Committee Members	Dr John Beacham CBE; DSc; FRSC
	Dr Simon La Frenais MB; ChB; DObstRcog
	Mrs Debbie Middleton JP
	Mr Mike Stackpool MSc; Cphys; MInstP
Advisers	Professor John S. Dearden BSc; MSc; PhD; ACGI; MRPhrmS
	Mrs Susan Smith BSc. Hons. MInstP. CPhys.

Index

PART THREE – Responses to Environmental Permit Application Appendices

		Page
Appendix C	Air Quality	4
Appendix D	Noise	7
Appendix E	HHRA	12
Appendix F	Habitats Assessment	18
Appendix G		
Appendix H		
Appendix I	Site Condition Report	22

HAGATI consider that their Responses to Appendices G and H are contained in Part One and Part Two of the Response to the Environmental Permit Application already submitted to the Environment Agency.

Appendix C

Air Quality

The paragraph of the site description (page 4 Para 2.1) contains an error in that the site is in fact wholly to the west of the existing railway line. It is such simple mistakes that give cause for concern to residents who are unsure whether this is laxity by the consultants or lack of knowledge. Residents' unease about the validity and efficacy of the assertions within the Appendix is heightened and emphasised by other comments about adjacent stacks and visibility of plumes from cooling towers.

No wind direction given in the assessment on the effects of building such a large structure at the same height as the twin stacks of the Scottish Southern Power CHP plant less than 100m away. HAGATI is convinced that building down wash (caused by winds from the east through to the south east quadrants) has the possibility of adversely affecting the dilution and dissipation of the emissions from the stack.

The Appendix addresses this in the following manner:

The analysis illustrates that for stack heights below 65m, the building wake effects associated with the EfW facility main building are predicted to affect dispersion of exhaust gases from the CHP plant stack. For stack heights above this height, ground level contributions do not reduce materially with increasing stack height.

What exactly in layman's terms does this mean? The CHP plants stacks are only 42m not 65m high, so their dispersion characteristics will be negatively affected, but to what extent? Should a development which has this adverse effect on an installation that has been built and operated for a number of years without complaint be allowed to disrupt an existing installation?

The Appendix states:

Although an increase in CHP stack height is desirable to reduce air quality effects resulting from the proposed EfW facility development, it is not considered essential as resultant concentrations of NO₂ are predicted to achieve relevant air quality objectives and limit values taking into account combined effects with the EfW facility itself and background concentrations.

Again without access to the full data (particularly wind direction) it is impossible for anyone to draw meaningful conclusions.

The predictions for plume visibility from the cooling towers seem counterintuitive, given local experience and empirical knowledge. This is especially important given the close proximity of houses to the cooling towers. Not only will these houses be under the cloud of water vapour developed by the cooling towers, but also it must be

remembered that the reason for the plume losing visibility is the condensing and consequent precipitation of the water onto the adjoining houses and gardens. The loss of amenity value to houses under this cloud of water vapour, dampened by the moisture condensate, is considerable. The calculation provided in the appendix that the plumes would only be visible for less than 30% of the time is simply not a believable figure.

The emissions data appears to be from generic waste incinerators. However as RDF will have undergone a process which will remove a large proportion of the organic material, the effect will be to increase the ratio of plastics that will be incinerated, dramatically affecting the propensity for the formation of chlorine atoms which, together with carbon atoms, are the precursors of Persistent Organic Pollutants (POP's). Further as no dates or sites are given as to how the emission data has been prepared, it is impossible to assess whether due account has been made for the increased likelihood of the occurrence in the waste of mercury appearing as a result of the ban on filament bulbs with the consequent rise in the use of High Efficiency (HE) bulbs in households.

Comments on Appendix C

Page 62 Plume Visibility para 6.67 Based on the above the plume visibility ranges from zero to high. *Considering that a permit application was rejected by the Environment Agency on the basis of plume visibility effects on a local beauty spot, will this plume, which Entec warn will have the potential to ground in the vicinity of Runcorn Hill, not be classed the same particularly as Runcorn Hill is classed as a Local Nature Reserve?*

Page 2 1.6 The proposed EfW facility has been designed to minimise pollutant emissions using Best Available Techniques. *Appears to be BATNEEC not BAT*

Page 4 2.1 Inaccuracy, EfW site is not between existing railway and the Expressway. *It is solely to the west of the railway.*

Page 5 Fig 2.1 Does show Weston Point Power Station on adjacent site. *This was omitted on the original application where RPS stated that there were no other sources within 525m of the incinerator chimney and it could therefore be treated as a single point source.*

Page 5 Fig 2.1 Does not show combustion plant in Percival Lane that is within the 525m range. *This is a plant that has given local residents much cause for complaint and is documented by HBC.*

Page 5 Fig 2.1 Does not show the Ince Marsh 600,000 tonne per year waste burning incinerator. *Are there deemed to be no cumulative effects from two incinerators so close together?*

Page 5 Fig 2.1 Does not show the three operational toxic waste incinerators already on the Ineos site. *A vital element in consideration of 'worst case conditions' is the possibility of any cumulative effects of the failure of any of these toxic waste incinerators.*

Page 6 2.10 Emissions of mercury from boiler plant. *Have they been taken into account in the cumulative effects?*

Page 8 2.17 States no other new facilities are proposed. *The Ince Marsh incinerator has both planning permission and an Environmental Permit, this beyond the 'proposed stage and needs to be taken into account.*

Page 8 2.18 Consideration of AQMA's. *Where are they and is it known that HBC have plans to introduce more that are specifically concerned with particulates?*

Page 10 Table 2.1 *Omits all the grazing land on Frodsham Score which is in continuous use by sheep and beef cattle.*

The base emission data is based on 100% plant load using CFB technology (p.133). This should give maximum gas velocity, but when the plant load is less for whatever reason, the velocity will reduce and hence this will affect the modelling of fallout - i.e. less dispersion. We can find no discussion of lower loads.

The CFB is converted to Moving Grate technology data by only apparently considering the change in height of the stack.

Moving Grate scenarios 1 and 2, using this data, are then constructed (Tables D6 and 7, p135-136) and it is assumed that the plant will be operated within the WID concentration limits. However how can one know if this is possible at this stage?

There is no reference to RDF composition or any burning pollutant profile for any form of RDF. There is no reference to what the RDF and any other materials may contain.

The references listed are not linked to the text in any way.

Appendix D

Noise

The proposed location has a number of noise sensitive areas nearby – mainly residential.

The applicant has addressed effects of noise on a planning basis and not on the basis of nuisance (the required criteria for the permit application). This is compounded by excluding affected residential areas from the report and from the maps provided (the 'Evolution' development and the houses on Picow Farm Road) and by providing confusing data in a form that masks the real nuisance to be suffered by residents.

The applicant has failed to prove that no noise nuisance will be inflicted on residents, and therefore the permit application should be rejected.

Appendix 1 attached is a technical assessment of the Ineos Noise Data.

Other objections are as follows:

1. Noise generated during construction of the plant
2. Noise generated by operation of the plant
3. Noise generated by HGV servicing the plant travelling locally
4. Noise generated by trains servicing in the plant travelling locally

All these issues are relevant to the granting of an Environmental permit, as they are **core** activities:

1. Construction

Significant noise will be generated during construction of such a large plant and at variable levels. This will be a nuisance to residents living in the vicinity of and the approaches to the plant for a period of around 3 years.

Various measures to mitigate this nuisance have been proposed and it is expected that the Environment Agency will carefully consider whether the mitigation is adequate to protect the local community and to ensure that noise levels are monitored and enforced.

2. Operation

Noise from operation of the plant itself will be controlled by standard industrial measures enforced by the Environment Agency and will be expected to be no worse than for similar industrial processes accepted by nearby residents.

It has not been demonstrated that continuous noise from the cooling towers will not cause a nuisance, particularly to residents in Sandy Lane and Clarks Terrace,

nor is it clear that the noise generated by the shunting of trains or reversing alarms of HGVs has been adequately considered.

3. HGV traffic

There is confusion regarding actual numbers of HGVs, which in appendix D is stated at 200 vehicles per day.

In the HIA, the applicant has quoted 216 for fuel deliveries plus 40 for toxic ash removal.

The actual numbers are significant. In respect of toxic ash transport to Randle Island, it is unclear whether the addition of water in the damping process (which will multiply the weight of the material transported many times) has been accounted for correctly.

Figures D3 and D4 do not show the route of HGVs moving along the new access road from Picow Farm Road. This is considerably closer to the properties in Sandy Lane and it seems the noise nuisance generated here has not been taken into account.

The application does not fully address the noise created by HGV traffic.

4. Trains

This is the most serious area of concern.

90% of the RDF delivered to the plant will be via the spur line running from Runcorn Station to the Incinerator and adjacent to both Picow Farm Road and Percival Lane.

The line is on an embankment, which means the trains run at bedroom height. There are numerous houses along these roads (originally 'accidentally' omitted from the Ineos planning application) and there is the new 'Evolution' housing development to the North of the line bordered by Percival Lane and Runcorn Docks Road, which is not on the maps submitted by Ineos. There are also houses a short distance away and on a level with the line in Hollaway to the South.

Appendix D Table D3 indicates there will be 3 daytime and 2 night time trains (but see Planning restriction) although Ineos state elsewhere there will be three trains per day. This means either 70 or 42 additional movements per week along this line.

The spur line is used **exclusively** for access to the Ineos site and is a **core** aspect of the site as stated in HIA as follows:

Operation Overview

2.17 **Core** operational activities include **fuel delivery**, energy recovery and transportation of residual waste materials. Additional activities are associated with the transportation of staff to the proposed facility.

The effect on properties adjacent to the spur line has been totally excluded from the noise assessment provided.

Noise from the **existing** occasional train using the line creates a nuisance and has been measured at 85Db both by Ineos and by residents.

Curiously Ineos has stated that the trains used for RDF deliveries (which will use this line) are not their responsibility, but that of their suppliers and / or Network Rail, although Ineos have taken noise measurements along this stretch.

Planning conditions include noise restrictions for train movements adjacent to Picow Farm Road and Percival Lane “to ensure that there is proper control of noise for delivery of RDF by rail.” These restrictions are applicable to Ineos and Ineos have seen fit to produce elsewhere a detailed report on noise for trains using the spur line.

They have also stated that RDF deliveries will be made by trains which don't make the same noise as existing ones, which is a difficult concept to comprehend. Complaints by residents concerning existing train noise have been ignored over several years.

It is clear that increasing train movements by 70 (or even 42) per week will cause considerable additional nuisance to residents. A recording of noise from an existing train passing property in Picow Farm Road is enclosed which demonstrates the nature of the nuisance, but obviously can not demonstrate the volume.

Regarding the Secretary of State's planning restrictions, the restrictions relate to 'transportation of RDF by rail' where it is 'not reasonably practical between 07:00 and 23:00.'

Ineos appears to interpret the restrictions in a particular way, in that they have:

- a) indicated that there will be scheduled night time train movements with a loose definition of 'not reasonable practicable' to operate in daytime; and
- b) indicated that restrictions only apply to incoming trains carrying RDF but not to trains leaving the site.

The WHO indicates that nuisance noise events are those most likely to interrupt sleep.

It is unquestionable that peaks of 85Db are excessive, and even if these events are only 'daytime' (between 07:00 and 23:00) they will be a nuisance and significantly so for babies and young children who are generally expected to be

asleep well before 23:00, their parents, shift workers and the elderly. If a permit is granted, then a condition must be attached to the effect that this time slot should be reduced to between 07:00 and 19:00.

A further concern is that the Environment Agency has stated that it will not consider noise issues outside the boundaries of the facility site itself. This means that there would be no regulatory consideration of nuisance from daytime trains using the track from the Main Line to the Ineos site, except perhaps when the incinerators were in operation, £400m had been invested (including taxpayers PFI funding) and Greater Manchester Council's waste disposal arrangements were dependant on the Ineos facility.

It is highly unlikely that local noise abatement authorities would feel able to close down the Ineos site as a result of noise nuisance being inflicted on residents. They would be forced to compromise to the detriment of residents. In this situation, it is imperative that noise nuisance which is identifiable now is dealt with comprehensively within any Environmental Permit to operate (and therefore construct) the plant.

It would be unreasonable, unfair, and unjust for these issues on nuisance to residents near to the spur line not to be considered by the Agency and specifically addressed in any permits issued

A further issue is the restricted capacity of Network Rail facilities during daytime hours, and conflicting demands which are likely to either compress train movements or may be used to justify night time movements as follows:

- Engineering work at Rugby has removed a bottleneck on the West Coast Main Line (WCML), which will allow a 25-30% increase in passenger traffic from 2010.
- Any trains required to transit between Weston Docks Runcorn (via the Runcorn Spur Line) and Ditton 3MG depot in Widnes (via the WCML) would require lengthy time slots to shunt between the WCML and the Runcorn Spur Line.

It should be made quite clear in any permit issued that no planned night-time movements are to be permitted.

Existing trains often stop, with engines running, on the line adjacent to houses on Picow Farm Road for up to 15 minutes whilst waiting for permission to access the main line. 70 or 42 additional trains a week doing this will not only greatly increase the noise nuisance, but will create significant harmful pollution adjacent to residential gardens.

Appendix 1

Technical review of Ineos noise data in Appendix D

Reports generated on behalf of INEOS with respect to noise are based upon planning guidance and not nuisance.

Numerical data gathered for INEOS shows an increase of between 11.7 dBA and 27.1 dBA during the passing of trains for between 5 and 11 minutes in total. Guidance relating to nuisance states that an increase of over 10dBA will generate justified noise complaints.

The raw data gathered, whilst accurate in the reports with respect to the noise levels, has been presented in a planning context and not from the perspective of neighbours affected by noise from the site. For example whilst identifying increased noise levels Page 23, table 0.2 of the originating report shows the noise levels of passing trains from 65.8 – 76.9 Laeq (average noise level during the duration of the event) for a length of time of 42 – 85 seconds, and shows peak readings of 82.9 to 94.2 Laeq. Yet in Appendix D3 (report of 25/09/2009), the daytime and night-time trains are given values of -6, 0, -2, and 0. This shows the “net” contribution of a train passing when the plant is operational over a 16 hour day period as -6 dB at ground level or 0dB at first floor level, and for an 8 hour night period as 0dB at ground level or -2dB at first floor level.

This method of presenting the data has in effect averaged out the noise level of a passing train over 16-hour or 8-hour period so that on paper the results show that a train movement quite literally blends in to the background.

This is simply not accurate. When it comes to the nuisance residents will experience, this can be seen as 10 separate train movements throughout a 24hour period with real time readings showing an additional 11.7dBA to 27.1dBA for each train pass above the noise levels they currently experience.

Appendix E

HHRA

Comments on 'Human Health Risk Assessment', part of an Environmental Permit application by INEOS Chlor for an Energy from Waste Project on the INEOS Chlor chemical site at Runcorn, Cheshire

Prepared by Professor J.C. Dearden
BSc, MSc, PhD, ACGI, MRPharmS(Hon)

QSTAR CONSULTING

February 2010

The Robins
10 Landscape Dene
Helsby
Cheshire WA6 9LG

Tel: 01928-722292

The consultancy company RPS has prepared a second version of their Human Health Risk Assessment (HHRA) as part of the Environmental Impact Assessment in connection with the Ineos Chlor planning application for an Energy from Waste plant on the Ineos Chlor site at Runcorn, Cheshire.

Their first HHRA was submitted as part on the planning application in January 2007. It contained numerous errors and contradictions, which I pointed out in my report dated February 2007.

The second version of the HHRA is, strangely, also dated January 2007, and has taken account of many of my criticisms. However, some errors remain, and these are discussed below.

Thallium toxicity

On page 16 of the HHRA, it is stated that: “In the absence of toxicological data for thallium it has not been included in the assessment”.

There are many published data for thallium toxicity¹, and it is known to be extremely toxic^{2,3}. It should, therefore, have been included in the assessment.

The absence of thallium toxicity assessment in the first HHRA was noted in my first Report.

Vanadium toxicity

On page 16 of the HHRA, it is stated that: “In the absence of chemical-specific data for vanadium for the estimation of its concentration in different exposure media, vanadium was not included in the assessment”.

In fact, as with thallium, there are many published data available¹, including methods for its determination in a range of exposure media, for example in animal tissues⁴. It is an extremely toxic metal, and should have been included in the assessment.

The absence of vanadium toxicity assessment in the first HHRA was noted in my first Report.

Infant exposure to dioxins

The present HHRA repeats a dangerous error in the first HHRA.

On page 33 of the present HHRA it is stated that, for infants, the USEPA (United States Environmental protection Agency) intake target level intake of 2,3,7,8-TCDD TEQ (toxicity equivalents of the most toxic dioxin) is 50 pg/kg/day. This is recklessly incorrect.

I quote from my critique of the first HHRA:

“In fact the USEPA has no intake target level, preferring to base estimates of toxicity on body burdens (i.e. the total amount of dioxins in the body). This was confirmed to me by Dr. Dwain Winters of the USEPA in a telephone conversation on 21 February 2007. He stated that the typical United States dioxin intake was 1 pg/kg/day, which he stated is a level to cause concern, and said that a safety factor of 10-100 could be applied to that figure, yielding an acceptable intake level of 0.01-0.1 pg/kg/day. Even the top level is 500 times lower than that claimed incorrectly by the HHRA. However, Professor Janna Koppe of The Netherlands has stated⁵ that there is no safe level of dioxin intake for babies. Prof. Koppe is an internationally recognised expert on the effects of dioxins on infants and children, and has published widely on the subject⁶⁻¹⁰. Boersma and Lanting¹¹ have pointed out that the daily dioxin intake of breast-fed infants may be 80 times higher than in adults.

“Table 3.9 in the HHRA shows predicted daily dioxin intakes for infants at various receptors around the proposed EfW plant. The HHRA claims that levels at all receptors are well below their (incorrect) target level of 50 pg/kg/day. In fact, using the target level suggested by the USEPA of 0.01-0.1 pg/kg/day, levels at all receptors are above the 0.01 pg/kg/day level, and in all but two cases are above the 0.1 pg/kg/day level.

“It follows that the proposed EfW plant, far from yielding dioxin levels well below the USEPA target level, would yield dioxin levels well above acceptable levels for infants. Hence effects such as those found by Koppe (*loc. cit*) and others could be expected. This is an extremely serious failure of the HHRA.

“Another serious failure of the HHRA is that it makes no mention of pre-natal uptake of dioxins, which is a well-known route. Dioxins are very lipophilic (2,3,7,8-TCDD has a log K_{ow} value of 6.8¹²) and readily cross the placenta¹³. Thus babies born to mothers exposed to dioxins will have the chemicals in their bodies at birth. Koppe and co-workers have recently presented data¹⁴ showing delayed initiation of breast development in girls with higher prenatal dioxin exposure; this confirms similar findings in rats¹⁵. Other health risks of pre- and peri-natal dioxin intake are effects on thyroid function, leading to hypothyroidism¹³ and cretinism¹⁶.

“Bearing in mind that the half-life of 2,3,7,8-TCDD in humans is 7-11 years¹⁷, clearly prenatal dioxin intake needs to be taken into account, as well as lactational dioxin intake, in assessing health risks. The HHRA is at fault for not doing so.

“The HHRA calculations are based solely on the emissions from the proposed EfW facility. They take no account of existing background levels of dioxins and other pollutants, which themselves may be at levels that could give rise to concern. The HHRA has thus failed to give valid estimates of overall risk to local populations from the combined effects of existing levels and those from the proposed EfW plant”.

It must also be borne in mind that dioxins and furans are especially dangerous to foetuses and infants because their immune and enzyme systems are not fully developed. It is therefore incorrect (and dangerous) to suggest that because infants' immune and enzyme systems are fully developed by, say, one year of age, the dioxins in their bodies, being diluted by increased growth, are of little consequence.

Lead exposure

The second HHRA states on page 34 that: “The UK annual mean air quality objective for lead is currently 0.5 $\mu\text{g}/\text{m}^3$. This air concentration is required to be reduced to 0.25 $\mu\text{g}/\text{m}^3$ by the end of the year 2008”.

This suggests that the second HHRA really was written in January 2007. The statement should read: “The UK annual mean air quality objective for lead is currently 0.25 $\mu\text{g}/\text{m}^3$ ”.

Helsby and Frodsham sensitive receptors

In my report on the first HHRA I criticised the absence of sensitive receptors in Helsby and Frodsham.

In the second HHRA a token effort has been made to respond to my criticism, but four of the additional receptor locations are farms, and one is simply labelled “agricultural land”.

There are two primary schools, one very large high school and two residential care homes in Helsby, and there are four primary schools and two residential care homes in Frodsham.

Why were one or more of these locations, which contain many sensitive receptors, not included?

Acceptable cancer risk levels

In both HHRA's, the “target” level is stated (without any supporting evidence) to be 10^{-5} , or 1 in 100,000.

What this means is that the HHRA is saying that the lifetime risk of someone's dying from cancer caused by the emissions from the proposed EfW plant at Ineos Chlor is 1 in 100,000. I criticised this in my report on the first HHRA, but it is still being used in the second HHRA.

To my knowledge there is no official Government or regulatory recommendation that this figure is to be used.

I repeat below the comments that I made in my report on the first HHRA.

“The HHRA states that the target level for cancer risk is 1 in 100,000, or 10^{-5} . It then goes on to state that the calculated cancer risks for children and adults at various receptors around the proposed EfW plant are all significantly below the target level of 10^{-5} . In fact, several of the calculated cancer risks are quite close to the 1 in 100,000 target level, and one is actually slightly above.

“However, the main criticism of the HHRA in this respect is that the USEPA's generally accepted target level for cancer risk is not 1 in 100,000, but 1 in 1,000,000 (one in a million). This is a *de minimis* level¹⁸, and Michaelson¹⁹ has pointed out that the USEPA has usually determined that only *de minimis* levels of risk (one in a million) are acceptable. This means that for 23 out of the 37 receptors, the calculated cancer risk from the proposed EfW plant is greater than the accepted target level. Hence the proposed plant is shown, by the calculated figures given in the HHRA, to be a serious cancer risk for the surrounding population.

“Furthermore, the HHRA calculations are based solely on the emissions from the proposed EfW facility. They take no account of existing background levels of dioxins and other pollutants, which themselves may be at levels that could give rise to

concern. The HHRA has thus failed to give valid estimates of overall risk to local populations from the combined effects of existing levels and those from the proposed EfW plant”.

It should also be noted that the Committee on Toxicity of Chemicals in Food, Consumer Products and the Environment recommended in 2007 that the acceptable risk level should be 1 in 1,000,000²⁰.

Conclusions

Although the second HHR is somewhat improved over the first, it still contains some grave deficiencies and significant errors.

It is currently not fit for purpose.

References

1. Chemidplus website: chem.sis.nlm.nih.gov/chemidplus
2. Saha A. Thallium toxicity: a growing concern. *Indian journal of Occupational and Environmental Medicine* **9** (2005) 53-56.
3. Anonymous. Toxicity of thallium. *British Medical Journal* (1972) 717.
4. Kwiatek W.M., Kubica B., Gryboś R., Krośniak M., Dutkiewicz E.M. and Hajduk R. Determination of vanadium in animal tissues by PIXE and AAS. *Journal of Radioanalytical and Nuclear Chemistry* **247** (2004) 175-178.
5. Koppe J.G. E-mail dated 22 February 2007 to Prof. J.C. Dearden.
6. Pluim H.J., Koppe J.G., Olie K., van der Slikke J.W., Kok J.H., Vulsma T., van Tijn D. and de Vijlder J.J.M. Effects of dioxins on thyroid function in newborn babies. *Lancet* **339** (1992) (No. 8804) 1303.
7. Pluim H.J., Koppe J.G., Olie K., van der Slikke J.W., Slot P.C. and van Boxtel C.J. Clinical laboratory manifestations of exposure to background levels of dioxins in the perinatal period. *Acta Paediatrica* **83** (1994) 583-587.
8. ten Tusscher G.W. and Koppe J.G. Perinatal dioxin exposure and later effects – a review. *Chemosphere* **54** (2004) 1329-1336.
9. ten Tusscher G.W., de Weerd J., Roos C.M., Griffioen R.W., de Jongh F.H. Westra M., van der Slikke J.W., Oosting J., Olie K. and Koppe J.G. Decreased lung function associated with perinatal exposure to Dutch background levels of dioxins. *Acta Paediatrica* **90** (2001) 1292-1298.
10. Koppe J.G., Leijds M., ten Tusscher G. and Boer P.D. Dioxins and congenital malformations. In: *Congenital Diseases and the Environment* (Nicolopoulou-Stamati P., Hens L. and Howard C.V., Eds.), Springer Verlag, Berlin, 2007.
11. Boersma E.R. and Lanting C.I. Environmental exposure to polychlorinated biphenyls (PCBs) and dioxins: consequences for long-term neurological and cognitive development of the child (from) lactation. In: *Short- and Long-Term Effects of Breast-Feeding on Child Health* (Koletzko B., Michaelsen K.F. and Hernell O., Eds.), Kluwer Academic/Plenum Publishers, New York, 2000, pp. 271-288.
12. Shiu W.Y., Doucette W., Gobas F.A.P.C., Andren A. and Mackay D. Physico-chemical properties of chlorinated dibenzo-*p*-dioxins. *Environmental Science and Technology* **22** (1988) 651-658.
13. Giacomini S.M., Hou L., Bertazzi P.A. and Baccarelli A. Dioxin effects on neonatal and infant thyroid function; routes of perinatal exposure, mechanisms of action and evidence from epidemiology studies. *International Archives of Occupational and Environmental Health* **79** (2006) 396-404.

14. Leijds M.M., Koppe J.G., Olie K., de Voogt P., Vulsma T., van Aalderen W.M.C., Westra M. and ten Tusscher G.W.. Delayed initiation of breast development in girls with higher prenatal dioxin exposure. *Organohalogen Compounds* **68** (2006) 968-971.
15. Fenton, S.E., Hamm J.T., Birnbaum L.S. and Youngblood G.L. Persistent abnormalities in the rat mammary gland following gestational and lactational exposure to 2,3,7,8-tetrachlorodibenzo-*p*-dioxin (TCDD). *Toxicological Sciences* **67** (2002) 63-74.
16. Nagayama J., Kohno H., Kunisue T., Kataoka K., Shimomura H., Tanabe S. and Konishi S. Concentrations of organochlorine pollutants in mothers who gave birth to neonates with congenital hypothyroidism. *Chemosphere* **57** (2007), published online 20 February 2007.
17. Mukerjee D. Health impact of polychlorinated dibenzo-*p*-dioxins: a critical review. *Journal of the Air and Waste Management Association* **48** (1998) 157-165.
18. Castorina R. and Woodruff T.J. Assessment of potential risk levels associated with U.S. Environmental Protection Agency reference values. *Environmental Health Perspectives* **111** (2003) 1318-1325.
19. Michaelson J. Rethinking regulatory reform: toxics, politics, and ethics. *Yale Law Journal* **105** (1996) 1891-1925.
20. COT (Committee on Toxicity of Chemicals in Food, Consumer Products and the Environment) report: Variability and uncertainty in toxicology of chemicals in food, consumer products and the environment, March 2007.

Appendix F

Habitats Assessment

Runcorn Hill Nature Reserve

1 The Unique Character

The site proposed for the Ineos incinerator is located some 600m to the west of Runcorn Hill, which can be described as follows:

Runcorn Hill is a unique combination of Formal Park and Local Nature Reserve at the heart of industrial Runcorn. Once extensively used for quarrying, it is today a peaceful escape from its industrial backdrop and its elevation gives spectacular views to the Welsh Mountains, the Mersey Estuary and North Cheshire. Runcorn Hill LNR includes the largest area of lowland heath in North Cheshire. The woodlands, ponds and scrub along with its geological structure complete a unique mosaic of habitats. Remains of its quarrying past, together with the variety of habitats, offer an excellent resource for schools and colleges.

(Source:Ref 1. Green Flag Award Web Site. www.greenflagawards.org.uk)

2 Local Nature Reserve

“Runcorn Hill is a mixture of Heathland, Woodland Scrub and recreational areas. It is owned by Halton Borough Council and managed by the Mersey Valley Partnership and a resident ranger service:

“Over thousands of years, the dry sandstone soil and moist climate produced heathland, a habitat with its own particular plants and animals, only found in this part of the world. Now very little remains. As an example, less than half a percent of Cheshire now survives as heathland, as rare and precious in its way as the rainforests.

The Heathland is particularly important as this is the fastest disappearing habitat in Cheshire. Only 0.5% remains in the County and is home to rare plants and animals, like bilberry, common lizards and many insects, all found nowhere else in Halton”

(Source:Ref 2. Bluedome Climbing & Walking Web Site www.Bluedome.co.uk)

3 UK Biodiversity Action Plan.

Biodiversity and Geological Conservation are among the statutory obligations in the plan and one of the key principles (section 1.4) states that:

(vi) The aim of the planning decisions should be to prevent harm to biodiversity and geological conservation interests. Where granting planning permission would result in significant harm to those interests, local planning authorities will need to be satisfied that the development cannot reasonably be located on any alternative sites that would result in less or no harm. In the absence of any such alternatives, local planning authorities should ensure that, before planning permission is granted, adequate mitigation measures are put in place.

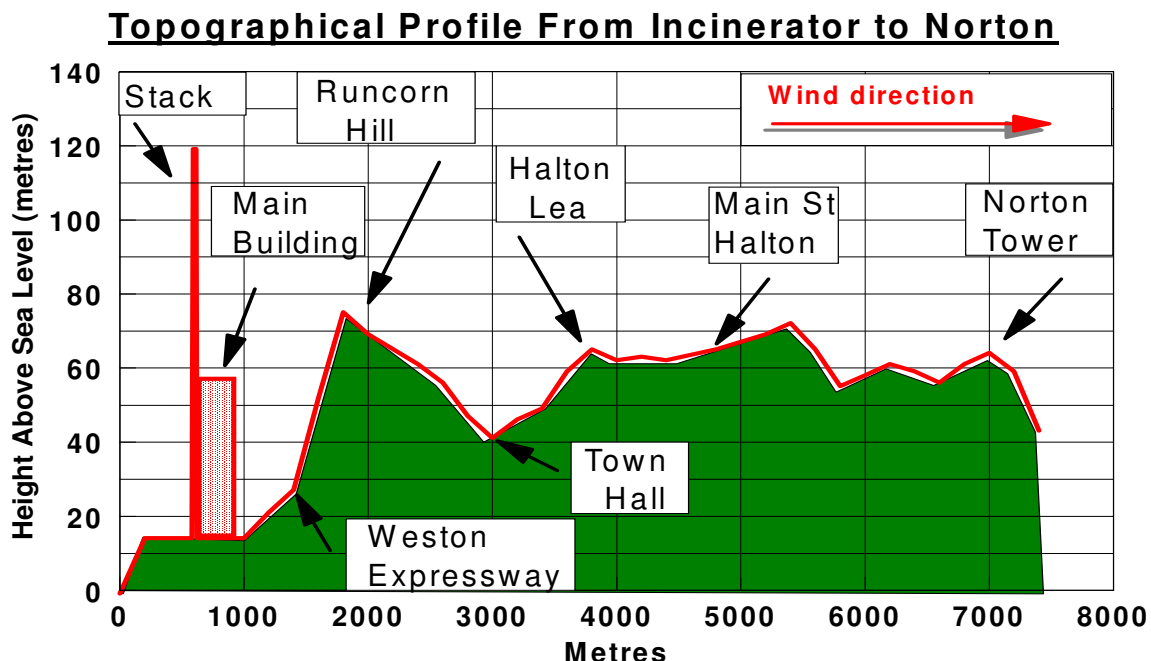
Where a planning decision would result in significant harm to biodiversity and geological interests, which cannot be prevented or adequately mitigated against, appropriate compensation measures should be sought. If that significant harm cannot be prevented, adequately mitigated against, or compensated for then planning permission should be refused.

(Source : Ref 3. -UK Planning Policy Statement 9: (2005))
[www.communities.gov/UK/documents/planningand building](http://www.communities.gov/UK/documents/planningand%20building)

4 Potential Damage to Runcorn Hill Local Nature Reserve

The location of Runcorn Hill Local Nature Reserve is down-wind of the incinerator, and there is great concern that emissions from it will threaten fragile and rare species that are unique to Runcorn Hill.

(Compressed distance from incinerator to Norton Tower)



For example, the stack height of the incinerator at 105m causes concern that plume grounding and emissions from the stack will be blown on the prevailing winds towards the hill which rises approximately 80m due East of the incinerator.

5 Relevant Environmental Assessment Data (Dispersion Model)

Statements on emissions contained within the Ineos-Chlor Environmental Assessment show that they cannot guarantee that emissions will not affect this area of Runcorn:

Appendix 10.1 Air Quality assessment (Section 6.18):

“A number of commercially available dispersion models are available to predict ground level concentrations arising from emissions to atmosphere from elevated point sources such as an EfW facility. No dispersion model is wholly accurate and all models will produce variations in results under certain conditions”.

Appendix 10.1 Air Quality assessment (Section 6.78):

“A number of approaches can be used to determine whether the potential air quality effects of a development are significant. However, there remains no universally recognised definition of what constitutes ‘significance’.”

These types of statement give no confidence to the immediate and long-term environmental damage to the Nature Reserve that could result from the inappropriate location of the incinerator adjacent to Runcorn Hill.

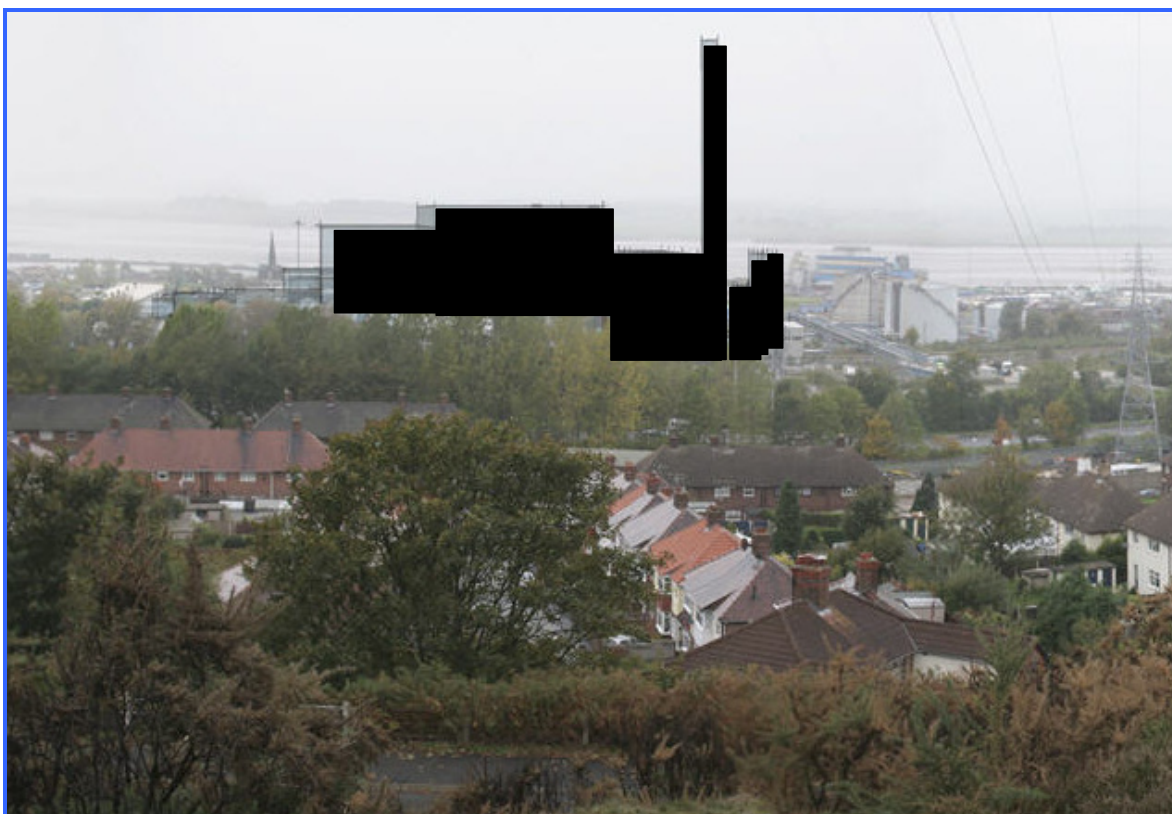
Heathland such as that on Runcorn Hill is rapidly disappearing and it is a natural resource that is too important to both local residents and visitors for risks to be taken with operating an incinerator in such close proximity to it.

If this unique area is destroyed by pollution it is gone forever, and future generations will be deprived of a remarkable recreation area that we should now fight to be preserved for posterity.

6. Visual Impact of Incinerator.

Once extensively used for quarrying, Runcorn Hill is today a peaceful, heathland and wooded area where it is possible to enjoy the natural beauty of the park which had its sandstone features formed many millions of years ago.

The hill's elevation presently provides spectacular views to the Welsh Mountains, the Mersey Estuary and North Cheshire and it is therefore of grievous concern that the visual impact of the incinerator will destroy this stunning view forever.



View from Weston Road

The extensive array of 40m high buildings, the 105m chimney stack and the sheer scale of the largest incinerator in the UK, will not meld into any existing industrial complex which is relatively unobtrusive, but will result in a development which will be an unacceptable blight on the landscape.

Equally, it is impossible to mitigate against the visual effects of such a large development as none of the proposed plants and trees could ever be of a scale to hide the buildings which represent an “eye sore” in every sense of the phrase.

Appendix I

Site Condition Report

The report does not present an accurate picture of the area in which the site is located.

There are twelve 'Site Reconnaissance Photographs'. None show the adjacent Scottish Power Southern Energy CHP Plant or its associated 42m chimney stacks that are clearly visible in the two photographs below.

The importance of the Scottish Power Southern Energy CHP plant stacks is that, at a height of 42m, they are exactly the same height as the massive Ineos facility that would be built less than 100m away. It is inconceivable that the dispersion and dilution from these stacks will not, under certain meteorological conditions be adversely affected by this construction.



View from Weston Road



View from Sandy Lane

There two photographs of the adjacent Runcorn Weston canal (disused) canal, but neither shows the dilapidated Millers Gate lock or the Sandy Lane Bridge onto the docks.

The Sandy Lane Bridge is culverted to connect the unused arm of the canal to the Weaver Navigation canal via the Millers Gate lock.



View of Millers Gate Lock from west bank of Weaver Navigation Canal

The significance of the culverted Sandy Lane Bridge and the Milers Gate lock (which cannot be opened), is that the incinerator 'process water' is to be channelled into the Runcorn Weston canal above the culvert.

This increase in flow down to the Weaver Navigation canal is crucial in that there siphon traps are in place from existing industrial sites, and these also direct water into the canal. If the flow from the incinerator is too great when combined with the existing drainage, any consequent increase in water level in the canal would overwhelm these traps, and a back flow of contaminated water could result.

Historically there were 3 main water discharge points from the Weston site, two of which were located in the Runcorn Weston Canal and the third went to the foul sewer. Currently surface water run-off and rainwater from the area to be occupied by the proposed EfW facility is disposed of via the discharge outfall located at the canal. Discharges to the foul sewer were restricted to hygiene facilities from office buildings and also the waste water produced from the vehicle washing area.

The surface water strategy for the new facility has been designed to re-use water within the facility (see figure 8 to the Main Application). Rainwater is collected in a storage tank and mixed with the cooling tower purge. This water will be re-used within the process with any excess overflowing to the new outfall point (see Figure 4 to the Main Application).

In the original plan for the new 'Service Road' applied for by Westlink Holdings in January 2008 there was provision for a road and rail link to be provided to the expansion of Weston Point Docks via a new combined bridge.

The outline drawings of the bridge confirmed that width and height of the span were sufficient to ensure that the canal could be brought back into use as a link between the three canal systems of the Runcorn Weston, Weaver Navigation and Manchester Ship canals. Importantly the new bridge would have superseded the Sandy Lane dock entrance and the restricted culvert removed.

However there has been an apparent shift in policy and the new 'Service Road' appears to be under construction in a different position from that agreed at the Planning and Development Committee and vitally there seem to be no provision for the new bridge.

Project Pathway. Review of Picow Farm Caustic Stock Tanks, Heavy Fuel Oil Storage Tanks and Road Loading Areas (c.1998)

This report further reviewed potential contamination in the area of the caustic tanks on site to the north and the heavy fuel oil tanks in the northern part of the application site.

It incorporated the historical review report (Land Contamination - Maps Historical Review. Picow Farm Storage, Road and Boat Loading, 1994) with the addition of the following information, which has been directly quoted from the report:

"...In 1978 there was a spillage of heavy fuel oil in the stock tank area. At the time the area was unbunded and the ground in the area was covered with loose hard core. A JCB was used to excavate the heavy fuel oil and the area was subsequently bunded."

It is believed that the level of caustic contamination within the groundwater beneath the area to the west of the Picow Farm caustic stocks and the level of caustic contamination within the surface soil within the fenced Picow Farm caustic stock tank area, could cause skin irritation (through dermal contact and may cause harm by ingestion)."

Factual Report no. 7015-110. New Caustic Tank. Picow Farm. Strata Surveys Ltd. January 2000

This report pertains to the land adjacent to the northern boundary of the site and encompasses the three caustic tanks:

An intrusive investigation was previously undertaken prior to the installation of the third caustic tank on the Picow Farm site, immediately north of the project site. Five boreholes were drilled to depths of between 6.0m and 15m. These revealed made ground over a sand horizon over clay. The made ground was found up to 4.7m thickness comprising hard-core overlying clay fill deposits. The made ground was found to be alkaline (up to pH 12.3) in nature and in one borehole contaminated by raw caustic liquor. Below the made ground in all but one borehole a sand horizon, ranging from 0.50m to 1.40m thickness, was encountered comprising a medium dense dark brown/grey brown fine to medium sand.

Groundwater was encountered in the boreholes but at varying depths. The groundwater was found to be alkaline, up to pH12.

Off site to the north, vegetation was noted to be sparse and sporadic in the vicinity of the caustic tanks, which is possibly as a result of caustic spillages over time, which has caused damage to surrounding vegetation.

This is merely proof that the site encompasses contaminated land due to its historical use for a variety of chemical manufacture and associated activities. What is missing from the 'Site

Condition Report' is what is going to be done by way of remedial work. If this is to be done on site are there environmental consequences to consider?

Bearing in mind the recent rulings that were given by the Court in the Corby litigation, where contaminated earth transported through the town for remediation or disposal was linked to birth defects in children whose mothers were exposed to particulate pollution from this transportation whilst pregnant, is there any suggestion that the contaminated earth will be transported off site and what, if any, are the precautions to be taken if this course of action is decided upon?

The majority of the Appendix is taken up with tables of results of borehole investigations that are meaningless to lay people. However it is noted that there does not appear to be the recommended solid sub-strata of rocks (which is a desired feature for large scale development), rather a succession of striated layers of variable geological composition. Further the word 'Weak' appears regularly in the descriptive column and although we accept that could be a geological term its presence would seem to suggest weak bonding between layers of differing geological properties, which seems hardly the ideal foundation for such a large development.