

TIME TO TELL THE TRUTH ABOUT INCINERATION

The North London Waste Authority (NLWA) has responded to calls for a **PAUSE AND REVIEW** of its North London Heat and Power Project (NLHPP)—which includes plans to construct a new incinerator in Edmonton—with statements that include some questionable claims. These statements appear in a letter signed by NLWA chair Cllr Clyde Loakes and dated 21 April 2020, and in a *Hackney Citizen* article of 11 March 2020, which quotes Hackney Cllr Jon Burke.¹ They reveal that the NLWA still is not taking recycling or climate breakdown seriously.

In this document, Extinction Rebellion (XR) corrects the record with the intention of convincing North London councillors to **PAUSE AND REVIEW** the NLHPP so that the seven boroughs that constitute the NLWA may be free to pursue more sustainable waste management options and help London meet its circular economy policy objectives. The current incinerator is operational until 2027, so there is time for a rethink, as long as procurement and preparatory works are put on hold.

This rebuttal is meant as a complement to a letter that XR sent to all North London councillors on 11 March 2020. That letter provides a thoroughly sourced rundown of the environmental, financial, and governance problems associated with the NLHPP, as well as details on proven alternatives to incineration. It is available at: <https://stop-edmonton-incinerator.org/wp-content/uploads/2020/03/2020-03-11-XR-incinerator-letter.pdf>.

This rebuttal comprises three main sections:

I. A RESPONSE TO THE LETTER BY COUNCILLOR CLYDE LOAKES

This section offers a rebuttal to claims made by Cllr Loakes in his letter of 21 April 2020.

II. A RESPONSE TO COUNCILLOR JON BURKE: CO₂, OFFSETTING, AND THE CCC

An economist with a PhD in energy systems modelling raises questions regarding the accuracy of Cllr Burke's figures.

III. BUSTING THE NLWA LOW-CARBON MYTH: A STEP-BY-STEP GUIDE TO CO₂ EMISSIONS

This section is for you if you are wondering why the NLWA argues that the “climate impact” of the NLHPP is “equivalent to 28,000 tonnes of carbon dioxide” although the incinerator would actually emit 700,000 tonnes of CO₂ per year.



I. A RESPONSE TO THE LETTER BY COUNCILLOR CLYDE LOAKES

In his open letter to Extinction Rebellion dated 21 April 2020,² Cllr Clyde Loakes repeats assertions that are put out by the incinerator industry, which spends a fortune on lobbying (not unlike the oil & gas industry and the tobacco industry). In this section, we dispel claims that relate to recycling, carbon emissions, air quality and health risks, and other issues of particular concern to the residents of North London.

RECYCLING, WASTE MANAGEMENT NEEDS, ALTERNATIVES

THE NLWA SAYS: “Pausing the project would be irresponsible, risking up to 700,000 tonnes of non-recyclable waste being sent to landfill in the future.”

THE TRUTH IS: This sentence is misleading in several ways.

First, the seven boroughs currently produce about 580,000 tonnes³—not “700,000 tonnes”⁴—and the amount of waste has been decreasing despite flatlining recycling rates (see **TABLE 1**).⁵

Second, more than half of what the NLWA refers to as “non-recyclable” waste could in fact be recycled or composted using existing council services. Across the seven boroughs, **55%–85% OF THE WASTE THAT IS INCINERATED COULD BE RECYCLED OR COMPOSTED**, meaning that **NORTH LONDON ACTUALLY PRODUCES A MAXIMUM OF 260,000 TONNES OF RESIDUAL WASTE** (waste that cannot be recycled or composted).⁶ By the same token, the **NLWA BURNS AT LEAST 320,000 TONNES OF RECYCLABLE AND COMPOSTABLE WASTE**—and up to 490,000 tonnes—every year. The money earmarked for the new incinerator could be better spent on education and on expanding reuse, recycling, and composting services, to ensure that households avoid sending recyclable and compostable waste to incineration.

Third, as some other incinerators are operating below capacity, they could be used for materials that cannot be recycled or composted, meaning that there is no real “risk” that all residual waste would be sent to landfill.

Fourth, what is “irresponsible” is using a false dichotomy to imply that the only alternative to incineration is landfill and misleading both councillors and the public about the facts, including the drawbacks of incineration, the leaps and bounds made in other waste treatment technologies over the past 20 years, and the NLWA’s consistent failure to meet local and national recycling and composting targets. Specifically, **ONLY 30% OF NORTH LONDON’S WASTE IS CURRENTLY RECYCLED** and it is **UNCLEAR HOW THE NLWA INTENDS TO REACH THE 50% TARGET FOR 2020**.⁷ In fact, the **RATES AND THE AMOUNTS OF COLLECTED WASTE THAT ARE RECYCLED AND COMPOSTED HAVE BEEN DECREASING** for more than five years (see **TABLES 1 AND 2**).

TABLE 1 Percentage of household waste reused, recycled, or composted, 2011/12–2018/19

Year	% of household waste reused, recycled, or composted
2011/12	30%
2012/13	32%
2013/14	33%
2014/15	33%
2015/16	33%
2016/17	32%
2017/18	31%
2018/19	30%

Note: The North London Joint Waste Strategy of 2009 sets the strategic framework for the NLWA and the seven constituent borough councils, including **RECYCLING AND COMPOSTING TARGETS FOR HOUSEHOLD WASTE OF 45% BY 2015 AND 50% BY 2020**.⁸

Sources: NLWA annual reports⁹

TABLE 2 Total change in tonnes of mixed dry recyclable and compostable waste processed by the NLWA, 2014/15–2018/19

Financial year	Waste processed (tonnes and % change)	
	Mixed dry recyclable	Compostable
2014/15	116,872	53,547
2015/16	118,042	52,741
2016/17	114,559	54,784
2017/18	110,996	50,101
2018/19	110,096	46,064
Total change	-6,776 (-6%)	-7,483 (-14%)

Sources: NLWA financial reports¹⁰

It is unclear who is accountable for the NLWA’s unsatisfactory performance, but the time and funding committed to this specific project are unlikely to have helped renew focus on the need for improved recycling, not least since the capacity being planned appears to be sending the message to the boroughs that the NLWA expects no increase in recycling. In 2018, well after planning for the project commenced and permission for the NLHPP was granted, the government published its Resources and Waste Strategy, including a target to achieve 65% recycling by 2035, as XR pointed out in its letter of 11 March 2020.¹¹ The UK has also committed to net zero by 2050, and the recycling target might be considered a stepping stone in this direction. It is extremely difficult to see why the NLWA would still champion a project such as the NLHPP at this time, when the writing is emerging ever more clearly on the wall.

If the NLWA were to correct its trajectory and place itself firmly on the path towards a circular economy—notably by investing far more than it has in recycling infrastructure and waste education—the **AMOUNT OF RESIDUAL WASTE COULD BE REDUCED BY AROUND TWO-THIRDS**; the remaining amount would more closely reflect the level of genuinely residual material in the so-called “residual waste” category. That far smaller amount could be treated in ways that are more sustainable, more climate-friendly, and less costly than incineration. For more details, see XR’s letter of 11 March 2020.¹²

THE NLWA SAYS: “The NLHPP is part of north London’s overarching waste strategy, which focuses on waste prevention and recycling.”

THE TRUTH IS: The NLWA’s strategy cannot be said to “focus” on waste prevention and recycling.

Indeed, XR’s review of the NLWA’s financial reports reveals that between 2014 and 2019, the NLWA **SPENT NEARLY FIVE TIMES MORE ON THE NEW INCINERATOR THAN ON PROMOTING RECYCLING AND WASTE PREVENTION**. As highlighted in **TABLE 3**, below, the NLWA spent a total of £2.5 million on waste prevention and recycling campaigns over five years (columns 2 and 3), whereas it spent £11.8 million on the incinerator project during the same period (column 4).

Given the limited investment in efforts to reduce waste and promote recycling, it may come as no surprise that the amount of waste recycled and composted in North London actually decreased over these five years, as shown in **TABLE 2**, above.

TABLE 3 NLWA expenditure on the promotion of recycling and waste prevention vs. the NLHPP, 2014–19

Financial year	Waste prevention programmes (£)	Communications: household waste recycling* (£)	NLHPP (£)
2014/15	220,000	–	2,590,000
2015/16	293,000	–	3,282,000
2016/17	323,000	316,000	1,649,000
2017/18	323,000	294,000	1,622,000
2018/19	458,000	306,000	2,675,000
TOTAL	1,617,000	916,000	11,818,000

Note: * The communications category first appears in the 2016/17 financial report.

Source: NLWA financial reports¹³

In this context, Cllr Loakes’s “call on Extinction Rebellion to work with the NLWA and the boroughs in areas of common interest, such as the vital practical and campaigning work to reduce waste and increase recycling”¹⁴ shows a desire to put the onus on residents instead of setting up a better sorting and recycling system in North London and investing more in waste education. The same inclination is evident in his comment that “the coronavirus pandemic [has] highlighted how much people are failing to recycle and relying on their waste bins”. For more details, including on proven strategies to reduce waste and boost recycling, see XR’s letter of 11 March 2020.¹⁵

THE NLWA SAYS: “The NLHPP is modelled on achieving 50 per cent household recycling rates in north London.”

THE TRUTH IS: The evidence shows that the NLWA is not even approaching those recycling rates. See **TABLES 1, 2, AND 3**, above.

If the recycling rate does climb to 50%, there will be far less residual waste, and the new incinerator’s overcapacity will be all the more striking. In any case, a recycling rate of 50% is **NOT SUFFICIENT FOR A CIRCULAR ECONOMY**. Nor does it meet the UK’s municipal waste recycling targets, which are 55% in 2025, 60% in 2030, and 65% in 2035. The Mayor’s London Environment Strategy aims for a 65% recycling target for London by 2030—five years earlier than the UK strategy. For sources and suggestions on increasing the recycling rate, see XR’s letter of 11 March 2020.¹⁶

THE NLWA SAYS: “If north Londoners achieve recycling rates that are higher than 50 per cent, the facility will be capable of treating waste from other boroughs and businesses.”

THE TRUTH IS: This statement suggests that the NLWA is ignoring the targets set for London and for the UK, and that the NLWA assumes the seven boroughs will follow suit. This is a gamble. The direction of travel is not to *incinerate more*, but to *recycle more and minimise residual waste*. That is why recycling is considered the least harmful thing to do in the context of a circular economy, and why disposing of and treating residual waste is referred to as “leakage”, since the energy, carbon and value embodied in the materials are lost. If the NLWA’s business case rests on securing minimal progress in developing a circular economy, then it should state that clearly. Residents are entitled to question whether that forms a sound basis for making a financial commitment of the nature being suggested at this juncture.

Note that during the limited public consultation for the NLHPP, the NLWA **FAILED TO INFORM RESIDENTS THAT THE FACILITY WOULD BURN BUSINESS WASTE and WASTE FROM OUTSIDE OF NORTH LONDON** (see page 10, below).¹⁷ If the NLHPP does process waste from outside the seven boroughs, it will be competing with Beddington, the existing and the new Riverside capacity, among other incinerators.

XR hopes that the NLWA's use of the word "If" in the above sentence does not call into question North London's ability to exceed a 50% recycling rate (in line with the above-mentioned municipal and national targets) and that the NLWA will invest in the requisite infrastructure and education to achieve those goals.

THE NLWA SAYS: "The NLWA has a statutory duty to dispose of the non-recyclable waste produced by north London's residents. By 2050, we need to be prepared to manage 700,000 tonnes of this waste every year."

THE TRUTH IS: These two statements are drawn together as though they were inextricably linked. It is right that NLWA has a duty to manage (not dispose) of the non-recyclable waste produced by North London's residents. Yet predicting the tonnage requiring management in 2050 as though it provides a sensible basis for planning is neither necessary nor prudent, not least because **THE NLWA ALSO HAS A STATUTORY DUTY TO HAVE REGARD TO THE STRATEGIES OF THE GLA AND OF DEFRA.**¹⁸

While the NLWA's model predicts an increase in the total generation of waste (arising) for North London, the seven boroughs' actual arisings have been declining since 2015/16.¹⁹ By 2018/19, the **SEVEN BOROUGHES WERE ACTUALLY PRODUCING ABOUT 150,000 TONNES LESS WASTE THAN THE NLWA HAD PREDICTED** and, accordingly, 75,000 tonnes less *residual* waste than predicted.²⁰

As planned, **THE NEW INCINERATOR'S OPERATIONAL CAPACITY—700,000 TONNES—WOULD BE 30% GREATER THAN THAT OF THE CURRENT INCINERATOR.**²¹ Since 55%–85% of what the NLWA reports as "residual" waste is actually recyclable or compostable (see page 2), **THE CAPACITY IS UNJUSTIFIABLE**, especially if the NLWA seriously pursues waste reduction strategies and ramps up its recycling efforts, as it is mandated to do.

THE NLWA SAYS: "The NLHPP is instrumental to tackling the Climate Emergency. Failure to build this world-class project in line with the planned timescales will risk the waste from over two million north Londoners being sent to rot in landfill."

THE TRUTH IS: Once again, the NLWA presents a false dichotomy (incineration vs. landfill). This statement highlights that the supporters of this project fail to understand the nature of the decisions they face. If Cllr Loakes has been led to believe—by his staff—that the only choice for managing waste is to burn it or landfill it, then those responsible ought to be removed from their posts for misleading the councillor and others on NLWA's board.

As noted above (see page 2), 55%–85% of North London's incinerated waste is recyclable or compostable. **A FAR SMALLER QUANTITY OF TRULY RESIDUAL WASTE WOULD NEED TO BE PROCESSED IF PRE-SORTING WERE USED** to remove recyclable and compostable materials, such as via mechanical biological treatment (MBT). For that smaller, inert amount, landfill could be favourable to incineration because it stores materials for future reclamation rather than transforming them into atmospheric pollution. In fact, incineration is favourable to MBT only if it replaces energy produced from coal-fired power stations, which is not the case in the UK, where 40% of grid electricity comes from renewables.²²

In its North London Waste Plan of January 2019, **THE NLWA IDENTIFIES AT LEAST FOUR LOCATIONS WHERE MBT FACILITIES COULD BE BUILT** in the future.²³ Yet Cllr Loakes claims that “MBT is neither proven, nor used at scale in the UK” and that “the MBT process increases the carbon footprint of waste treatment and comes at a higher cost than energy recovery”. In explaining its decision to back a new incinerator in 2015, the NLWA similarly cited the “reduced cost of only handling waste only once through an [energy-from-waste] process, rather than the multiple stages seen with MBT scenarios”, but it does not appear to have provided any factual justifications for that claim, such as a cost–benefit analysis of building and operating an incinerator vs. an MBT facility.²⁴ Note that MBT technology has undergone significant improvements since then, which may explain why the North London Waste Plan of 2019 proposes the construction of MBT facilities. A **PAUSE AND REVIEW** of the NLHPP would allow MBT (and other alternatives to incineration) to be reconsidered for North London.

THE NLWA SAYS: “But evidence from the UK and EU shows that very high recycling rates and energy recovery go hand in hand.”

THE TRUTH IS: This statement is untrue. As long as recycling rates are above 50%, then—by definition—no more than 50% can be sent for energy recovery. So, in cities and towns that achieve recycling rates of 80% or more (as is the case in some municipalities in Europe) or 60% or more (as is now the case in many UK municipalities), the rate of energy recovery cannot exceed the balance after recycling. In future, the proportion of all forms of residual waste is set to shrink further. Across London, the UK, and across the European Union, the target for the recycling of municipal waste is 65%, either by 2030, or by 2035. At that point, the balance—no more than 35% and potentially much less—will be recovered in the form of energy. If the NLWA has a high rate of energy recovery, it will be because it has failed on recycling. That is the only reason the NLWA would be able to claim a “high rate” of energy recovery in the future. Which begs the question: **IS THE NLWA PLANNING TO FAIL ON RECYCLING?**

Many European countries are on record saying that they need to be burning less so that they can recycle more. The European Commission’s January 2017 communication on the role of waste-to-energy in the circular economy states:

“The transition towards a circular economy requires striking the right balance when it comes to waste-to-energy capacity for the treatment of non-recyclable waste. This is critical to avoid potential economic losses or the creation of infrastructural barriers to the achievement of higher recycling rates. Previous experience in some Member States shows the **RISK OF STRANDED ASSETS IS REAL** [...] the statistics show that some individual Member States are excessively reliant on incineration of municipal waste [...] such high rates of incineration are **INCONSISTENT WITH MORE AMBITIOUS RECYCLING TARGETS** [...] the role of waste incineration—currently, the predominant waste-to-energy option—needs to be redefined to ensure that increases in recycling and reuse are not hampered and that **OVERCAPACITIES FOR RESIDUAL WASTE TREATMENT ARE AVERTED.**”²⁵

Denmark’s resource management strategy acknowledges that **INCINERATION HAS COME AT THE EXPENSE OF RECYCLING** and that the only way for Denmark to increase recycling is by reducing incineration.²⁶

Incinerators lock councils and communities into an expensive system that requires a certain amount of waste to burn each year, which may act as a disincentive to improving recycling rates. As new recycling technologies emerge, such as for plastics, North London residents may also be locked into sending their waste to the incinerator instead of recycling it.

In its Outline Business Case, the **NLWA ACKNOWLEDGED THE CRITICISM THAT INCINERATION KEEPS RECYCLING RATES DOWN**, that energy-from-waste acts “as a **DISINCENTIVE TO RECYCLING AND RECOVERY**”, and that “pre-treatment to extract all recoverable and recyclable materials before energy recovery takes place is therefore a key policy principle of the London Plan”. It also recognised that this approach favours models that incorporate mechanical biological treatment and anaerobic digestion “into their technology mix to glean recoverable materials and recyclables from the residual waste stream”.²⁷

Indeed, **NATIONAL REGULATIONS REQUIRE ORGANISATIONS THAT HANDLE WASTE TO TAKE ALL REASONABLE STEPS TO APPLY THE “WASTE HIERARCHY”**, which very clearly puts prevention and recycling ahead of energy-from-waste.²⁸

CARBON EMISSIONS

THE NLWA SAYS: “The climate impact of the new facility is equivalent to 28,000 tonnes of carbon dioxide when treating 700,000 tonnes of non-recyclable waste.”

THE TRUTH IS: To date, **THE NLWA HAS AVOIDED CITING TOTAL PROJECTED CARBON EMISSIONS OF THE NLHPP**. At the same time, it has refrained from explicitly disputing XR’s figure of 700,000 tonnes of CO₂ per year. Instead, the NLWA uses **QUESTIONABLE ACCOUNTING** and undefined expressions such as “climate impact”, which create the impression that the NLHPP will secure a “carbon saving” and release only 28,000 tonnes—rather than 700,000 tonnes—of CO₂ per year. See **SECTION III** for a step-by-step breakdown of the NLWA’s carbon calculations, which discount CO₂ emissions from biogenic matter although the guidelines of the Intergovernmental Panel on Climate Change explicitly call for their inclusion.

For the record: The fossil carbon intensity of incineration is more than twice that of energy produced by combined cycle gas turbines, and only slightly less than that of energy generated by burning coal. Since plastics—more than 99% of which are made from fossil fuels—account for about 50% of the calorific value of the Edmonton incinerator’s feedstock, **ITS FOSSIL CARBON INTENSITY IS CORRESPONDINGLY HIGH, NOT LOW**.

Another point to note is that the UK currently draws 40% of its grid electricity from renewable sources such as offshore wind—significantly more than five years ago, when plans were drawn up for the NLHPP.²⁹ If we apply a more up-to-date carbon factor for grid electricity,³⁰ then **HEAT PUMPS ARE A SUBSTANTIALLY LOWER-CARBON SOLUTION THAN GAS- OR INCINERATION-BASED DOMESTIC HEATING SYSTEMS**; the electricity carbon factor is also expected to decrease further in the future.³¹ See XR’s letter of 11 March 2020.³²

THE NLWA SAYS: “It [the NLHPP] contributes to tackling the Climate Emergency by reducing the requirement to use landfill in the future.”

THE TRUTH IS: As discussed above, the incineration–landfill dichotomy is a false one. If the two are to be compared, however, it is worth noting that **LANDFILLING PLASTIC AVOIDS THE CO₂ EMISSIONS ASSOCIATED WITH INCINERATION** and permits plastic to be mined as a resource in the future, as testified by the UK’s then chief environment scientist, Professor Ian Boyd.³³

As energy systems have decarbonised, there has been a decrease in benefits associated with incinerating waste (such benefits come from avoiding the generation of energy through alternative means). This point has been recognised in various studies, indicating that at some stage, the performance of landfills and incinerators reaches equivalence, and as energy systems decarbonise further, the analysis favours landfills, as long as the gas capture is relatively high (which, in the UK, has generally been assumed to be the case).

Landfill waste that has gone through processes such as mechanical biological treatment (MBT)—which has benefited from dramatic technological advances in recent years—leads to fewer greenhouse gases than incineration, not only because the prior sorting has improved significantly over recent decades, allowing for further contributions to be made to the recycling rate, but also because landfilling of stabilised waste results in close to zero methane emissions if the landfill is operated with a suitable oxidation layer. Unlike unsorted residual waste, waste that has gone through such a process benefits from the removal and appropriate treatment of plastics, metals, glass, and other items; suitably configured, much of the output is “compost-like”, meaning that it is sufficiently stabilised to be landfilled with very few greenhouse gas emissions.³⁴ Indeed, in its report *The Potential Contribution of Waste Management to a Low Carbon Economy*, Eunomia clearly demonstrates that MBT is favourable to both landfill and incineration for reducing greenhouse gas emissions.³⁵

THE NLWA SAYS: “The UK waste sector has achieved major greenhouse gas reductions in recent years, but landfill is still by far the main contributor.”

THE TRUTH IS: The NLWA fails to acknowledge that **INCINERATION FIGURES ARE NOT LISTED IN THE WASTE SECTOR DATA**, but rather in the energy sector data.³⁶

THE NLWA SAYS: “Energy from waste accounts for only 0.05% of total UK greenhouse gas emissions.”

THE TRUTH IS: To back up this statement, the NLWA cites a document produced in June 2013 based on old data. There has been an increase in incineration capacity since then. According to BEIS, the total UK CO₂ emissions were 448.85 million tonnes of carbon dioxide equivalents (CO₂e) in 2018.³⁷ The total emissions from municipal solid waste (MSW) incineration in 2018 were around 6.3 million tonnes of fossil CO₂.³⁸ This means that fossil CO₂ from MSW incineration was around **1.4% OF THE UK’S TOTAL FOSSIL CO₂E EMISSIONS IN 2018** (6.3/448.5). In view of the amount of incineration capacity under construction and other decarbonisation efforts, we can expect MSW incineration to become an increasingly large part of total CO₂—and a larger part of energy sector CO₂.

Furthermore, we can expect that incineration will be the most carbon-intensive form of energy generation by the 2050 horizon indicated in Cllr Loakes’s letter, even if only the fossil-derived CO₂ emissions are considered. The only way to avoid this scenario is to remove a substantial portion of the fossil carbon, which is likely to be the case only if a) the use of plastic declines massively, b) mechanisms are in place to extract the plastics before incineration (presumably through recycling), or c) elements of both a) and b) happen. Under these circumstances, the NLWA’s residual waste forecasts seem extraordinarily unlikely, particularly since the basis for the forecasts will have been shown to be wrong.

In short, the only way that the facility could perform relatively well in climate terms over the medium to long term is if none of the assumptions upon which the facility's development have been based prove to be correct.

AIR QUALITY AND HEALTH RISKS

THE NLWA SAYS: “The prime responsibility of councillors serving the public must at all times be to provide responsible, effective solutions which safeguard our communities from social, health and environmental risks. The North London Heat and Power Project meets exactly these requirements.”

THE TRUTH IS: Health risks of incineration have been highlighted in recent scientific studies that link particulate matter (PM) and air quality to intelligence and to Covid-19.³⁹ Incinerator filters appear to be relatively effective at removing PM_{2.5} and PM₁₀, but the opposite is true of **ULTRA-FINE PARTICLES, SUCH AS PM_{0.1}, WHICH ARE PARTICULARLY HAZARDOUS** to human health, especially in communities around incinerators. As MP Kate Osamor underscored in a Westminster Hall debate in February 2020, “research shows that particulates such as those currently emitted at the Edmonton incinerator **CAUSE THE LOSS OF AN AREA THE SIZE OF TWO LARGE EGGS IN THE LUNGS OF EVERY CHILD.**”⁴⁰

Having studied emissions from incinerators, Mike Reeks, Professor Emeritus of Fluid Dynamics, Newcastle University, concluded: “There is a very real health concern associated with the inhalation of toxic gases and aerosols produced during the incineration/combustion of municipal solid waste.” His measurements “indicate that **OVER 90% OF THE EMITTED PARTICLES ARE ULTRA-FINE PARTICLES** (UFPs) <0.1 micron in size”, implying that “the bag filters used for the removal of particles produced in the incineration process have a very low efficiency for the removal of UFPs, contradicting assertions that these filters have a high removal efficiency for UFPs.” His analysis of fibre filter retention revealed “**FILTER EFFICIENCY AS LOW AS 5%**, compared to 100% for particle sizes >1 micron”.⁴¹

In the words of former MP Dr David Drew, who chairs the Particulate Research Group: “Scientific evidence has shown that the real dangerous impact of incineration comes from the smallest particles, PM_{0.1} and PM₁, because they are absorbed into the bloodstream through the lungs. **THESE PARTICLES ARE TOO SMALL TO BE FILTERED AND ARE THEREFORE EMITTED DIRECTLY INTO THE AIR THAT WE BREATHE.**”⁴²

Echoing these findings, Vyvyan Howard, Emeritus Professor of Nano Systems Biology at the Centre for Molecular Bioscience, University of Ulster, said that “epidemiological studies worldwide have consistently demonstrated links between ambient particulate matter exposure and adverse health outcomes, including increased rates of **RESPIRATORY AND CARDIOVASCULAR ILLNESS, HOSPITALISATIONS, AND PREMATURE MORTALITY.** Studies have shown that ultrafine particles are more toxic than larger particles.” He further noted that “bag filter systems on municipal waste incinerators cut out the larger particles and produce an aerosol of the smallest particles, which are precisely those that are most hazardous to health. This is likely to have **LONG-TERM HEALTH IMPACTS ON COMMUNITIES IN THE VICINITIES OF WASTE INCINERATORS.**”⁴³

Other harmful pollutants that are released into the air by incinerators include nitrogen oxides (such as nitrogen dioxide), sulphur oxides, hydrogen chloride, dioxins, furans, and heavy metals. Another concern is related to the planned incinerator’s overcapacity, which exposes residents to the risk of **CARBON-INTENSIVE WASTE SHIPPING** from outside the seven boroughs.

For details on **ENVIRONMENTAL RISKS**, see the endnote and XR’s letter of 11 March 2020.⁴⁴

PUBLIC ENGAGEMENT, VALUE FOR TAXPAYERS, RUBBISH & HOT AIR

THE NLWA SAYS: “It [the NLHPP] was subject to extensive public engagement, consultation and then to an examination in public.”

THE TRUTH IS: Few residents in North London know about the planned incinerator. The NLWA conducted a public consultation in 2014–15, in only two of the seven boroughs, **AFTER WHICH THE PROJECT EXPANDED TO INCLUDE NON-HOUSEHOLD WASTE**. We know of no articles that appeared in the local press during that time to explain the planned project. During the limited public consultation that did take place, the **NLWA DID NOT INFORM RESIDENTS THAT THE FACILITY MIGHT BURN WASTE FROM OUTSIDE OF NORTH LONDON**. See the consultation notices.⁴⁵

THE NLWA SAYS: “The project represents excellent value for taxpayers and is more cost-effective than the alternative options.”

THE TRUTH IS: This statement is misleading in that it fails to declare that the NLWA benefits significantly from the fact that incineration pays no tax, unlike other routes of waste disposal and energy generation, which are taxed and thus go some way to compensate for the public health costs arising from CO₂ emissions. The **UNPAID PUBLIC HEALTH COSTS FROM THE FOSSIL CO₂ FROM INCINERATION MUST ULTIMATELY BE PICKED UP BY THE TAXPAYER**. Would the NLWA still consider the project good value for money if an incineration tax were to be introduced? Note that if government policies fail to deliver waste ambitions, “the Government outlined in the 2018 Budget that [it] will consider introducing a tax on the incineration of waste”.⁴⁶

A newly released study by the UK Without Incineration Network (UKWIN), commissioned by a group of North London residents, makes specific **RECOMMENDATIONS FOR A VALUE FOR MONEY REVIEW OF THE NLHPP**, based on concerns that **ASSESSMENTS TO DATE HAVE INSUFFICIENTLY ADDRESSED THE PROJECT’S FINANCIAL RISKS**. The report is available at <https://ukwin.org.uk/vfm>.⁴⁷

THE NLWA SAYS: “It [the NLHPP] will be the first facility in the UK to invest in Selective Catalytic Reduction to reduce emissions of NO_x—the same technology used in the world-class Amager Bakke facility in Copenhagen.”

THE TRUTH IS: The “world-class” Danish project has become known as a “costly mistake” and a “symbol of unfulfilled environmental aspirations of Denmark, which may see its **CLIMATE AND ENERGY TARGETS COMPROMISED FOR DECADES TO COME**”.⁴⁸

THE NLWA SAYS: “The alternatives to energy recovery were rigorously analysed in the DCO [development consent order], in the Alternative Assessment Report produced by technical specialists Ramboll.”

THE TRUTH IS: This assessment from 2015 **PREDATES THE UK GOVERNMENT’S DECEMBER 2018 RESOURCES AND WASTE STRATEGY** and its current proposals for the Environment Bill. The NLWA does not seem to have assessed the costs and benefits of using genuinely renewable zero-carbon energy rather than an energy-from-waste recovery process to generate electricity and/or heat. Such an **APPRAISAL SHOULD BE INCLUDED IN AN ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT**.

CONCLUSION

THE NLWA SAYS: “We can choose solutions that minimise [the] impact [of waste disposal].”

THE TRUTH IS: Building the incinerator is not among the solutions. To minimise the impact, we need to:

- **REDUCE WASTE**
- **RECYCLE MORE OF THE WASTE THAT IS GENERATED** (the current 30% is significantly below the mandated 50%)
- **MANAGE THE SMALLER QUANTITY OF RESIDUAL WASTE IN A MORE RESPONSIBLE MANNER.**

To achieve those aims, we ask councillors to **PAUSE AND REVIEW** the North London Heat and Power Project. For details, see Extinction Rebellion’s letter of 11 March 2020 at <https://stop-edmonton-incinerator.org/wp-content/uploads/2020/03/2020-03-11-XR-incinerator-letter.pdf>.

For a **SUMMARY OF THESE FINDINGS**, see XR’s press release of 26 May 2020 at <https://stop-edmonton-incinerator.org/extinction-rebellion-26-may-2020-press-release/>.

II. A RESPONSE TO COUNCILLOR JON BURKE: CO₂, OFFSETTING, AND THE CCC

By Dr Rembrandt Koppelaar, economist, PhD in Energy Systems Modelling, resident of Hackney and member of XR Hackney

In an article titled “Extinction Rebellion writes to over 400 councillors asking for halt to Edmonton incinerator”, which appeared in the *Hackney Citizen* on 11 March 2020, Hackney Cllr Jon Burke is quoted as claiming that the carbon emissions figures provided by Extinction Rebellion (XR) are incorrect. Let me respond to two of his points in turn. And please bear with me if I get a bit technical, as I think most lay readers will be able to follow.

First, Cllr Burke asserts that “XR’s letter is based on a completely false premise”. He states: “The capacity of the new energy from waste plant is 700,000 tonnes of material, yet XR and other groups continue to falsely maintain that the CO₂ output of the plant is 700,000 tonnes per annum. In fact, the CO₂ emissions from the plant operating at maximum capacity would be circa 300,000 tonnes a year.”

It is unclear what evidence Cllr Burke is using to challenge XR’s estimate, which is similar to the one provided in an assessment commissioned by the North London Waste Authority (NLWA) and carried out by Ramboll, a Danish engineering consultancy. The study indicates that the 700,000 tonnes of waste that are to be burnt at the new Edmonton incinerator would contain an estimated 186,000 tonnes of carbon, resulting in 683,000 tonnes of CO₂ emissions when burnt.⁴⁹ Rounded up, that’s 700,000 tonnes.

In its carbon accounting rules for 2019, the Intergovernmental Panel on Climate Change spells out that “if incineration of waste is used for energy purposes, both fossil and biogenic CO₂ emissions should be estimated”. In North London, about half of the estimated carbon emissions would come from fossil fuels (mostly oil) and the remainder would have biogenic origins (from carbon that plants absorbed from the atmosphere). In his calculations, Cllr Burke appears to have left out the biogenic CO₂.

Note also that the current incinerator was reported to have emitted 581,019 tonnes of CO₂ in 2016. Since the NLWA has not argued that the new incinerator would have lower total emissions, it may be altering the accounting system instead, which would help explain Cllr Burke’s calculation.

Accounting aside, even if Cllr Burke’s estimate of 300,000 tonnes of CO₂ emissions per year were correct, it would be unjustifiably excessive. Let’s put this volume into perspective: Hackney’s total fossil fuel CO₂ emissions from homes, workplaces, and transport are estimated at 648,000 tonnes for 2017, according to the London Energy and Greenhouse Gas Inventory. XR’s letter proposes alternatives that would release far fewer emissions (at a fraction of the cost).

Second, Cllr Burke claims that offsetting would allow the new incinerator’s net emissions to be much lower than XR suggests, noting that “if we were applying a strict carbon accounting exercise, the net emissions of the plant would be drastically less, when taking into account the electricity for 127,000 homes it will generate and the waste heat from the plant that will power the Meridian Water heat network”.

The logic of offsetting is based on the erroneous assumption that it significantly reduces carbon emissions. Cllr Burke reasons that the new incinerator will replace electricity and heat produced by both gas boilers and gas

power plants. In fact, it will not. The current incinerator produces electricity, and the new incinerator will take over that role, adding only a small net emissions gain over the system that's been in place at Edmonton since 1970 (the gain would come from the use of waste heat).

For argument's sake, let's say that Cllr Burke and Ramboll's estimates are taken at face value, councils carry on with business as usual, Alok Sharma (the recently appointed Secretary of State for Business, Energy and Industrial Strategy) chooses not to revoke planning permission—which he could do even without the NLWA's consent—and construction on the new incinerator begins in late 2022. Would the incinerator be viable? Not for long, according to research by the Committee on Climate Change (CCC), the body that charts the UK's net zero carbon future.

The CCC reports that carbon emissions from waste incineration swelled from 0.6 to 4.7 million tonnes between 2000 and 2017. That surge mirrors a rise in the percentage of waste that is incinerated in the UK—from 7% in 2000 to 42% today. The CCC also points out that waste incineration now accounts for 6.5% of all power sector emissions, emphasising that if the UK is to reach a net zero carbon scenario, these emissions have to decline to zero by 2050—a year that corresponds roughly to the middle of the new incinerator's "useful life". In its 2019 report *Net Zero: The UK's Contribution to Stopping Global Warming*, the CCC finds that the 2050 goal will require incinerators to be retrofitted with carbon capture and storage technology, which will—even with technological advances—cost three times more than electricity from renewable energy. You do the maths.

Large-scale waste incineration has no future in a zero-carbon economy. In its thoroughly researched letter to councillors, XR rightfully opposes infrastructure that will lock North London into high-carbon emissions for decades to come.

XR's letter is available at <https://stop-edmonton-incinerator.org/wp-content/uploads/2020/03/2020-03-11-XR-incinerator-letter.pdf>.

III. BUSTING THE NLWA LOW-CARBON MYTH: A STEP-BY-STEP GUIDE TO CO₂ EMISSIONS

As noted in Section I of this document, **THE NLWA HAS AVOIDED CITING TOTAL PROJECTED CARBON EMISSIONS OF THE NLHPP**. At the same time, it has refrained from explicitly disputing XR's figure of 700,000 tonnes of CO₂ per year. Instead, the NLWA uses **QUESTIONABLE ACCOUNTING** and undefined expressions such as "climate impact", which creates an impression that the NLHPP will secure a "carbon saving" and release only 28,000 tonnes—rather than the actual 700,000 tonnes—of CO₂ per year.

THE NLWA SAYS: "The claim that the new ERF [energy recovery facility] will release 700,000 tonnes of carbon dioxide each year is misleading in understanding the climate impact of north London's waste; in fact, the ERF will be a major part of tackling the Climate Emergency and the most sustainable way of treating non-recyclable waste in north London. The climate impact of the new facility is equivalent to 28,000 tonnes of carbon dioxide when treating 700,000 tonnes of non-recyclable waste.⁵⁰ The carbon impact is so low because the ERF will (a) prevent methane generated in landfill (b) displace more carbon-intensive energy generation, like natural gas power plants and (c) enable metals left after the combustion process to be recycled (in 2018/2019 alone, 18,500 tonnes of metal was recovered for recycling at Edmonton EcoPark)."

THE TRUTH IS: The NLWA's assertions are based on a report prepared by the engineering consultancy Ramboll, on which this section draws.⁵¹ [Note that Cllr Jon Burke's claim that the facility would emit about 300,000 tonnes of CO₂ per year (discussed in Section II, above) is at odds with the figure proposed in Cllr Loakes's letter, which we dispute in this section.]

A careful reading of the report reveals that Ramboll presents only **SELECTED DATA AND SCENARIOS** in arguing that waste incineration generates low CO₂ emissions.⁵²

First, **RAMBOLL LIMITS WASTE MANAGEMENT OPTIONS TO INCINERATION OR TRADITIONAL LANDFILL, IGNORING ALTERNATIVES** such as mechanical biological treatment (MBT), or a combination of the 4R strategy (reduce, repair, reuse, recycle) with MBT and some landfill of stabilised materials.

Second, **RAMBOLL OMITTS BIOGENIC CO₂ EMISSIONS, CONTRARY TO THE GUIDELINES OF THE INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE (IPCC)**.

Third, **RAMBOLL CHERRY-PICKS DATA RELATING TO THE GENERATION OF ELECTRICITY AND HEAT**, which has the effect of exaggerating the CO₂ offsets of incineration.

Read on for a more detailed explanation.



RAMBOLL SAYS: "As the waste is combusted in an ERF, all of the carbon (biogenic and fossil) is converted to CO₂. *As a general rule of thumb one tonne of CO₂ is emitted when one tonne of waste is combusted*" (emphasis added).⁵³

THE TRUTH IS: There is nothing wrong with this statement. It shows that Ramboll accepts the fundamental principle that burning 700,000 tonnes of waste results in 700,000 tonnes of CO₂. Ramboll fails to apply this calculus, however, as explained below.

RAMBOLL: The IPCC guidelines on calculating CO₂ emissions from the burning of municipal solid waste indicate that biogenic waste (cardboard, paper, food waste, etc.) should be subtracted from the total emissions. Since biogenic waste accounts for 55% of North London’s waste, that proportion should be subtracted from the total CO₂ emissions.

THE TRUTH IS: In fact, the 2019 IPCC instructions say that “if incineration of waste is used for energy purposes, both fossil *and biogenic* CO₂ should be estimated [and reported]” (emphasis added).⁵⁴

TABLE 4, below, shows how Ramboll calculates the fossil-derived emissions and arrives at a total of 455 kg CO₂ equivalents (CO₂e) per tonne of waste. This amount is a gross underestimate since it leaves out direct emissions of biogenic CO₂.

TABLE 4 Ramboll’s calculation of CO₂e emitted by the Edmonton ERF per tonne of waste⁵⁵

Emission type		Amount emitted per year (kg CO ₂ e/tonne of waste)
Direct	CO ₂	439.0
	Methane	0.1
	NO ₂	1.7
Indirect	Consumables	14.0
Total		454.8

RAMBOLL: A total of 415 kg CO₂ per tonne of waste may be offset from the new incinerator’s total annual CO₂ emissions, in view of lower CO₂ emissions associated with the production of electricity (281 kg CO₂ per tonne of waste), district heating (94 kg), and recovered metals (40 kg).

THE TRUTH IS: This accounting is open to challenge. Let’s unpack it.

ELECTRICITY: The Ramboll report assumes that the electricity produced by the Edmonton facility will replace that produced by a gas power station with a carbon intensity of 373 kg CO₂ per megawatt hour.

Ramboll also ignores the carbon intensity of alternative sources, such as the current mix that supplies the grid, or low-carbon sources such as onshore wind. **TABLE 5** shows that if we choose other sources of energy—such as the current mix feeding the UK grid, or low-carbon sources—we arrive at different amounts of offsets that are significantly less favourable than the ones chosen by Ramboll.

TABLE 5 Offsetting figures based on different sources of electricity generation

Source of electricity	Carbon intensity of electricity generated (kg CO ₂ /MWh)	CO ₂ emitted per 0.75 MWh (kg)	CO ₂ offset per 700,000 tonnes of waste (tonnes)
Gas-powered station	373*	281	196,000
UK grid (current average of high- and low-carbon electricity)	150**	113	78,750
Low-carbon station (onshore wind)	12**	9	6,300

Notes: *Ramboll does not provide the source of this figure. ** See <https://carbonintensity.org.uk/>.

This approach allows Ramboll to offset 281 kg CO₂ per tonne of waste for electricity generated by the new incinerator, based on an expected output of 0.75 MWh per tonne.

DISTRICT HEATING: Ramboll offsets 94 kg CO₂ per tonne of waste for district heating, based on an expectation that by burning 700,000 tonnes of waste the new incinerator will deliver 0.4 MWh per tonne. Ramboll assumes that the heat from the new incinerator will replace heat from gas. Given that the UK is phasing out gas-fired heating and that new technologies are being introduced to reduce emissions, this comparison is similarly based on challengeable assumptions. A fair projection would also consider the carbon emissions of new technologies, such as ground-source heat pumps. In doing just that, **TABLE 6** demonstrates that these alternatives yield far less favourable offsets.

TABLE 6 Comparison of CO₂ offsets from the generation of heat

Source of heat	Carbon intensity of generated heat (kg CO ₂ /MWh)	CO ₂ emitted per 0.4 MWh (kg)	CO ₂ offset per 700,000 tonnes of waste (tonnes)
Gas boiler	236*	94	65,800
Ground-source heat pump (320%)†	49**	20	14,000
Ground-source heat pump (400%)†	39**	16	11,200

†Operational energy efficiency. *Ramboll does not provide the source of this figure.

**See https://www.icax.co.uk/Carbon_Emissions_Calculator.html.

METALS: Ramboll offsets 40 kg CO₂ per tonne of waste for metals that are recovered from bottom ash and recycled, noting that they reduce the need for ore extraction and processing. Here the question is: why are metals not removed prior to incineration, especially since some are completely lost in the process?

RAMBOLL'S TOTAL OFFSET: Ramboll adds these three categories of debatable offsets (281 kg CO₂ per tonne of waste for electricity + 94 kg for district heating + 40 kg for recovered metals) and arrives at a total offset of 415 kg CO₂ per tonne of waste.

RAMBOLL: A total of 415 kg CO₂e per tonne of waste may be offset from 455 kg CO₂e per tonne to yield the new incinerator's total annual CO₂ emissions: 40 kg CO₂e per tonne of waste, or 28,000 tonnes per 700,000 tonnes of waste.

THE TRUTH IS: As demonstrated above, Ramboll overestimates the offset total (at 415 kg CO₂e per tonne) by ignoring alternative waste management options and cherry-picking data; at the same time, it underestimates the total CO₂e emitted (at 455 kg CO₂e per tonne) by failing to follow the IPCC requirements. As mentioned above, the IPCC instructs us to count biogenic CO₂ as well when incineration of waste is used to produce energy. Ramboll's calculations conceal the reality that waste incineration is *not* a low-carbon energy source.

By following the above-mentioned IPCC requirements—which indicate that 1 tonne of incinerated waste results in 1 tonne of CO₂—we arrive at the conclusion that **INCINERATING 700,000 TONNES OF WASTE SENDS 700,000 TONNES OF CO₂ INTO THE ATMOSPHERE.**

Interestingly, in another part of the report, Ramboll states that the total carbon content of this waste is 26.6%, or 186,200 tonnes of carbon. When incinerated, this amount of carbon combines with oxygen to produce 682,795 tonnes of CO₂ (186,200 x 3.667). That figure is extraordinarily close to our 700,000 tonnes of CO₂—and nowhere near the NLWA's 28,000 tonnes.

NOTES

We gratefully acknowledge the support of UKWIN (United Kingdom Without Incineration Network, ukwin.org.uk) and the Stop the Edmonton Incinerator Now project (stop-edmonton-incinerator.org). More sources and details are available upon request.

¹ See Cllr Loakes's letter at <http://northlondonheatandpower.london/media/crgld5b0/nlwa-response-to-extinction-rebellion-letter-03-11-20.pdf> and Cllr Burke's comments at <https://www.hackneycitizen.co.uk/2020/03/11/extinction-rebellion-writes-400-councillors-halt-edmonton-incinerator/>.

² See <http://northlondonheatandpower.london/media/crgld5b0/nlwa-response-to-extinction-rebellion-letter-03-11-20.pdf>.

³ In 2018/19, 511,577 tonnes of local authority-collected waste were sent for energy recovery by incineration; 64,793 tonnes were sent to landfill. See page 34 of http://www.nlwa.gov.uk/media/2799/annual-monitoring-report-2018_19-final-v2.pdf.

⁴ In the same letter, Cllr Loakes links the 700,000-tonne figure to the seven boroughs when he writes: "The NLWA has a statutory duty to dispose of the non-recyclable waste produced by north London's residents. By 2050, we need to be prepared to manage 700,000 tonnes of *this* waste every year" (emphasis added). See the rebuttal to this statement on page 5.

⁵ The amount of residual waste has dropped by one-third since 2003: from 867,336 tonnes in 2002/03 to 582,779 tonnes in 2018/19. See <http://nlwa.gov.uk/media/2354/nlwa-final-accounts-2003-04-final-version-with-front-page-annotated.pdf>, <http://nlwa.gov.uk/media/2223/report-nlwa-mar-06-statement-of-accounts-year-endsept06.pdf>,

<http://nlwa.gov.uk/media/2081/report-2007-08-statement-of-accounts-appendix-b.pdf>, and

<http://nlwa.gov.uk/governance-and-accountability/financial-statements/>. For the 2008/09 figures, search online for "2008/09 Statement of Accounts - North London Waste Authority". See also note 19, below, on decreases in total arisings.

⁶ See <https://stop-edmonton-incinerator.org/wp-content/uploads/2020/03/2020-03-11-XR-incinerator-letter.pdf>.

⁷ See <http://nlwa.gov.uk/media/1755/north-london-joint-waste-strategy.pdf>. It is not clear when the 2009 Joint North London Waste Plan will be replaced. The proposed replacement plan, submitted in August 2019, has not yet been found sound (see note 23, below); due to the pandemic, it is also unclear when consultation on modifications will begin (see https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/884716/LPA_Other_Plan_Progress_-_1_May_2020_.pdf and <https://www.nlwp.net/examination/>). The UK-wide target for 2020 is also 50% recycling for household waste and the England/UK-wide target for 2035 is 65% recycling for municipal waste, including commercial and industrial (C&I) waste, which is similar to household waste. In addition, the London-wide target for 2030 is 65% of municipal waste (again, including C&I). See Figure 45 in the London Environment Strategy of May 2018, which models recycling rates at 77% of business municipal waste and 50% of household waste

(https://www.london.gov.uk/sites/default/files/london_environment_strategy_0.pdf). Further, the Mayor's August 2018 C40 Advancing Towards Zero Waste Declaration says: "We pledge to advance towards zero waste cities by: (1) reducing the municipal solid waste generation per capita by at least 15% by 2030 compared to 2015; and (2) reducing the amount of municipal solid waste disposed to landfill and incineration by at least 50% by 2030 compared to 2015, and increase the diversion rate away from landfill and incineration to at least 70% by 2030."

⁸ See <http://nlwa.gov.uk/media/1755/north-london-joint-waste-strategy.pdf>.

⁹ See <http://nlwa.gov.uk/governance-and-accountability/annual-reports>.

¹⁰ See <http://nlwa.gov.uk/governance-and-accountability/financial-statements>.

¹¹ See more details in note 7, above, and at <https://stop-edmonton-incinerator.org/wp-content/uploads/2020/03/2020-03-11-XR-incinerator-letter.pdf>.

¹² See <https://stop-edmonton-incinerator.org/wp-content/uploads/2020/03/2020-03-11-XR-incinerator-letter.pdf>.

¹³ See <http://nlwa.gov.uk/governance-and-accountability/financial-statements>.

¹⁴ See <https://www.hackneygazette.co.uk/news/environment/north-london-boroughs-sign-letter-backing-incinerator-project-after-extinction-rebellion-s-calls-for-postponement-1-6621587>.

¹⁵ See <https://stop-edmonton-incinerator.org/wp-content/uploads/2020/03/2020-03-11-XR-incinerator-letter.pdf>.

¹⁶ See <https://stop-edmonton-incinerator.org/wp-content/uploads/2020/03/2020-03-11-XR-incinerator-letter.pdf>. See also note 7, above.

¹⁷ See http://northlondonheatandpower.london/media/y4on22na/ad01-04_newspaper_notices_lores.pdf.

¹⁸ See the North London Joint Waste Strategy (<http://nlwa.gov.uk/media/1483/north-london-joint-waste-strategy-1.pdf>).

In particular, the Waste and Emissions Act 2003 requires the Strategy to “have regard for guidance given by the Government. In addition, sub-section 32(6) requires that the strategy has regard to the Mayor’s Municipal Waste Management Strategy. The new Greater London Authority (GLA) Act now makes it a requirement that this Strategy should also be ‘in general conformity’ with the Mayor of London’s own Municipal Waste Management Strategy for the capital.” Moreover, “assessment of new and emerging technologies will need to be undertaken by the North London Waste Authority as the Partner Authorities progress towards the North London Waste Authority letting a new contract or contracts for waste management services in North London from 2014. This will have regard to more recently published reports and analyses from the Mayor of London and others, particularly in relation to climate change.” Further, the “Partner Authorities will share good practice on waste reducing activities and will have regard to the effects on waste arising when introducing new waste services.”

¹⁹ See <http://nlwa.gov.uk/governance-and-accountability/financial-statements/>. See also page 7 of the NLWA’s Annual Monitoring Report 2018/19 (http://www.nlwa.gov.uk/media/2799/annual-monitoring-report-2018_19-final-v2.pdf), which states: “When the [2009 North London Joint Waste Strategy] was published it was envisaged that an increasing population would produce an increase in the amount of waste arising which in turn would require a combination of an increase in the waste treatment capacity provided and intensification in the use of the existing facilities. Unexpectedly, the amount of waste produced between 2006/07 and 2012/13 fell despite the increase in population and dwelling stock [...] and it would appear to be related to the economic downturn during this period. 2013/14 saw a return to increasing waste volumes but this has not been sustained and the waste produced in the north London area has decreased again in 2018/19.”

²⁰ For 2018/19, the NLWA reported a total of 818,285 tonnes of local authority-collected waste, 147,470 tonnes less than the predicted 965,755 tonnes. For the same period, North London produced 582,779 tonnes of residual waste, 74,653 tonnes less than the predicted 657,432 tonnes. The residual waste prediction was made under the NLWA’s “low” recycling scenario, which is more reflective of the current 30% rate than the “central” or “high” scenarios, yet patently unsuitable given that it assumes a now unattainable 40% recycling rate by 2020/21. Note, however, that the “high” scenario is the only one that is “in line with the London Plan and the Mayor’s Waste Strategies”. For year-by-year projections under the three scenarios, see https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010071/EN010071-000390-AD05.04_Need_Assessment.pdf; for actual figures for 2018/19, see http://nlwa.gov.uk/media/2799/annual-monitoring-report-2018_19-final-v2.pdf.

²¹ See https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010071/EN010071-000390-AD05.04_Need_Assessment.pdf, especially sections i.iii.viii, 3.3.63, and 3.4.9.

²² See Eunomia’s *Carbon Impacts of Waste Management*, <http://www.eunomia.co.uk/wp-content/uploads/2015/11/Technical-Appendices-EN-1.pdf>. For more details on MBT, see page 8 of this rebuttal.

²³ The North London Waste Plan (NLWP) of January 2019 identifies four locations in Enfield and Haringey: Eley Estate (in Enfield) and Brantwood Road, North East Tottenham and Friern Barnet Sewage Works/Pinkham Way (in Haringey). Under “Submission Plan”, see “Appendix 2 Enfield Area Profiles Jan 2019” and “Appendix 2: Haringey Area Profiles Jan 2019” at <https://www.nlwp.net/document-centre>.

Note that the NLWP has come under heavy fire. The Pinkham Way Alliance (PWA), for one, has critiqued it as “not sound” and “not consistent either with national policy and guidance, or with policies in the draft London Plan 2018 (currently at examination stage) and the adopted Local Plans of its member councils”. The PWA finds that “the overall need case and the prospective spatial strategy to manage waste generation and management over the plan period is not the most appropriate nor is it based on sound evidence nor is it effective.” See http://www.pinkhamwayalliance.org/download/i/mark_dl/u/4013625592/4636068791/PWA%20Reg%2019%20NLWP%20-%20Submission%202019%20April%2029.pdf.

Theresa Villiers, MP, provided similarly critical comments, noting that “the NLWP has disregarded the apportionments in the London Plan, and has chosen the NLWA independent forecasts [which] are nearly 40% higher than the waste apportionment for the 7 member councils set out in the London Plan. [...] The NLWP asserts that waste will grow as population increases. However, I am informed that the latest evidence does not support this assertion – since 2006 total population in the NLWA area has risen by over 25%, whilst total waste arisings have fallen. Therefore [...], it would seem

odd that the NLWP, a subset of the London Plan, has reached a completely different conclusion despite assessing the same evidence.” See <https://www.nlwp.net/download/representations-received-at-regulation-19-in-representor-order-august-2019/?wpdmml=1742&refresh=5ebbf300487b1589378096>.

²⁴ See page 11 (section 3.1.13) and page E.1 (section E1.2.1) of the Alternatives Assessment Report of 2015—part of the NLWA’s application for a development consent order (DCO) for the new Edmonton incinerator—at http://northlondonheatandpower.london/media/asvicpm2/ad05-03_alternatives_assessment_lores.pdf. Note that the NLWA gives MBT biodrying with solid recovered fuel a pass in Appendix E.

²⁵ See <http://ec.europa.eu/environment/waste/waste-to-energy.pdf>.

²⁶ Denmark’s November 2018 waste strategy, entitled *Denmark without Waste: Recycle More – Incinerate Less*, states: “We incinerate an enormous amount of waste in Denmark; waste which we could get much more out of by more recycling and better recycling [...] the Government has a vision that Denmark will protect its resources and materials, and recycle more household waste, while incinerating less. This will entail more materials being sent back into the economic cycle with benefits for the environment [...] far too many of the valuable materials today end in waste incineration plants [...]. By recycling more, we can ensure that many materials which could otherwise be exploited are not just wasted. Recycling a number of ordinary materials such as paper, cardboard, plastic, glass and food from households has not really moved forward for the past ten years [...]. The Resources Strategy therefore anticipates that over the years to come more household waste will be separated and recycled rather than being incinerated at waste incineration plants.” See http://mfvm.dk/fileadmin/user_upload/MFVM/Miljoe/Ressourcestrategi_UK_web.pdf.

²⁷ See http://nlwa.gov.uk/media/1663/nlwa-obc-012910_final.pdf.

²⁸ Exceptions are only justified if they are designed to “achieve the best overall environmental outcome”. See Regulation 12 of the Waste (England and Wales) Regulations 2011 at <https://www.legislation.gov.uk/ukxi/2011/988/regulation/12/made>. See government guidance on the waste hierarchy at <https://www.gov.uk/government/publications/guidance-on-applying-the-waste-hierarchy>.

²⁹ Since 2010, electricity generation from renewable sources has more than quadrupled in the UK. See <https://www.carbonbrief.org/analysis-uk-renewables-generate-more-electricity-than-fossil-fuels-for-first-time>.

³⁰ A more up-to-date carbon factor for grid electricity would be 233 gCO₂ per kWh, as proposed in SAP 10, Version 10.0 of the UK’s Standard Assessment Procedure for Energy Rating of Dwellings (see https://www.benuk.net/pdf/SAP-10.0_24-07-2018.pdf).

³¹ See point 2 of the “conclusions and recommendations” on page 5 of Etude’s study *Low Carbon Heat: Heat Pumps in London*, commissioned by the Greater London Authority, at https://www.london.gov.uk/sites/default/files/low_carbon_heat_-_heat_pumps_in_london_.pdf.

³² See <https://stop-edmonton-incinerator.org/wp-content/uploads/2020/03/2020-03-11-XR-incinerator-letter.pdf>.

³³ See <https://www.thetimes.co.uk/article/bury-plastic-in-landfill-until-science-progresses-and-it-can-be-mined-says-ian-boyd-65slvsl2v>.

³⁴ Regarding MBT, see Southwark Council’s waste management page at <https://www.southwark.gov.uk/bins-and-recycling/general-household-waste/what-happens-to-general-waste>; for additional details and sources, see <https://stop-edmonton-incinerator.org/wp-content/uploads/2020/03/2020-03-11-XR-incinerator-letter.pdf>.

³⁵ See Eunomia’s *The Potential Contribution of Waste Management to a Low Carbon Economy*, <https://www.eunomia.co.uk/wp-content/uploads/2015/11/Technical-Appendices-EN-1.pdf>.

³⁶ The guidelines of the Intergovernmental Panel on Climate Change state: “Only fossil CO₂ should be included in national emissions under Energy Sector while biogenic CO₂ should be reported as an information item also in the Energy Sector.” See page 5.8 at https://www.ipcc-nggip.iges.or.jp/public/2019rf/pdf/5_Volume5/19R_V5_5_Ch05_IOB.pdf.

³⁷ See Table 1 on UK annual greenhouse gas emissions in 1990–2018 in https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/790626/2018-provisional-emissions-statistics-report.pdf.

³⁸ See <https://www.parliament.uk/business/publications/written-questions-answers-statements/written-question/Lords/2020-01-29/HL927/>.

³⁹ For details, see: <https://www.theguardian.com/environment/2018/aug/27/air-pollution-causes-huge-reduction-in-intelligence-study-reveals>, <https://www.theguardian.com/environment/2019/jan/30/children-exposed-to-air-pollution>

more-likely-to-develop-depression, <https://www.theguardian.com/environment/2020/apr/20/air-pollution-may-be-key-contributor-to-covid-19-deaths-study>, <https://www.theguardian.com/environment/2020/apr/07/air-pollution-linked-to-far-higher-covid-19-death-rates-study-finds>.

⁴⁰ See <https://hansard.parliament.uk/Commons/2020-02-11/debates/D1799344-3D26-4DF0-94C1-3AEB397AF375/WasteIncinerationFacilities> based on the research findings of Dr Ian Mudway, King's College London (<https://kclpure.kcl.ac.uk/portal/ian.mudway.html>; <https://fncdn.blob.core.windows.net/web/1/root/fle141119new.pdf>).

⁴¹ See <https://ukwin.org.uk/particulates/>.

⁴² See <https://www.circularonline.co.uk/news/important-caveats-omitted-from-incinerator-health-dangers-group-claims/>.

⁴³ See <https://ukwin.org.uk/files/particulates/PRG-Particulates-Matter-December-2019-Press-Release.pdf>.

⁴⁴ Environmental risks are significant in that the incinerator will a) emit roughly 700,000 tonnes of CO₂ per year (assuming that waste is imported from outside North London to ensure it runs at capacity), around half of which will derive from fossil fuel sources; b) burn fossil fuels—in the form of plastic—at a rate of more than 150,000 tonnes per year; produce power and heat in a process that is hugely carbon-intensive (see above); c) create demand for more rubbish since its planned capacity already exceeds North London's current residual waste production by at least 120,000 tonnes; and d) ossify the waste disposal process, preventing North London from moving up the waste hierarchy and from treating our waste—more than half of which is being incinerated even though it could be recycled or composted—as a resource to be fed back into the circular economy. See <https://stop-edmonton-incinerator.org/wp-content/uploads/2020/03/2020-03-11-XR-incinerator-letter.pdf>.

⁴⁵ See http://northlondonheatandpower.london/media/y4on22na/ad01-04_newspaper_notices_lores.pdf.

⁴⁶ See <https://hansard.parliament.uk/Commons/2020-02-11/debates/D1799344-3D26-4DF0-94C1-3AEB397AF375/WasteIncinerationFacilities>. Note also the Early Day Motion (#591 of the 2017–19 session) regarding a moratorium on waste incineration capacity (<https://edm.parliament.uk/early-day-motion/51049/moratorium-on-new-waste-incineration-capacity>).

⁴⁷ UKWIN's study, entitled *Recommendations for a Value for Money (VfM) Review of the NLWA's Edmonton Incinerator Replacement Project*, was released in May 2020 (see <https://ukwin.org.uk/vfm/>).

⁴⁸ See <https://zerowasteurope.eu/2019/11/copenhagen-incineration-plant/> and <https://zerowasteurope.eu/2017/10/copenhagen-goes-all-in-on-incineration-and-its-a-costly-mistake/>.

⁴⁹ See See Ramboll, *North London Heat and Power Project: Carbon Impact Screening Edmonton ERF*, version 2 (October 2019) at <http://northlondonheatandpower.london/media/udfapcyh/nlwa-carbon-impact-study-report-ver-2-f.pdf>.

⁵⁰ "Carbon Impact Screening for Edmonton ERF, <http://northlondonheatandpower.london/media/udfapcyh/nlwa-carbon-impact-study-report-ver-2-f.pdf>." This footnote appears in the letter by Cllr Loakes, available at <http://northlondonheatandpower.london/media/crgld5b0/nlwa-response-to-extinction-rebellion-letter-03-11-20.pdf>.

⁵¹ See Ramboll, *North London Heat and Power Project: Carbon Impact Screening Edmonton ERF*, version 2 (October 2019) at <http://northlondonheatandpower.london/media/udfapcyh/nlwa-carbon-impact-study-report-ver-2-f.pdf>. This section uses quotation marks around direct quotes from the Ramboll report; text that does not appear in quotes summarises points made by the NLWA and Ramboll.

⁵² Ramboll states on page 1 that it "is assisting NLWA in the process of development and procurement of the new Edmonton ERF facility" (<http://northlondonheatandpower.london/media/udfapcyh/nlwa-carbon-impact-study-report-ver-2-f.pdf>).

⁵³ See page 5 at <http://northlondonheatandpower.london/media/udfapcyh/nlwa-carbon-impact-study-report-ver-2-f.pdf>.

⁵⁴ See page 5.8 at https://www.ipcc-nggip.iges.or.jp/public/2019rf/pdf/5_Volume5/19R_V5_5_Ch05_IOB.pdf. A joint Arcadis and Eunomia report undertaken for the European Commission explains: "Whatever the merits or otherwise of not reporting biogenic CO₂ for the purpose of national inventories, in comparative assessments between processes, it cannot be valid to ignore biogenic CO₂ if the different processes deal with biogenic CO₂ in different ways. Given that different processes often deal with non-fossil CO₂ in different ways, and that the atmosphere does not distinguish between molecules of greenhouse gas depending on their origin, the omission of non-fossil CO₂ from analyses appears dubious." See page 8 of Annex F in the *Assessment of the Options to Improve the Management of Bio-Waste in the European Union* (https://ec.europa.eu/environment/waste/compost/pdf/ia_biowaste%20-%20ANNEX%20F%20-%20environmental%20assumptions.pdf).

⁵⁵ For the data, see <http://northlondonheatandpower.london/media/udfapcyh/nlwa-carbon-impact-study-report-ver-2-f.pdf>.