Town and Country Planning Act 1990
Supporting Statement in Respect of a Planning Application for the:

Full Planning Consent for a Development of a Renewable Energy Centre & Pelleting Plant
at
Upper Higham Lane, Higham Ferrers, Northamptonshire, NN10 0SU
For Loco Energy Ltd

By their Agent:
Dalol Energy Ltd

Local Planning Authority: Northamptonshire County Council
Planning Portal Reference: PP-04882290
April 2016
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1.0 Introduction and Background

1.1 This Planning Support Statement is being submitted in support of a planning application for full planning consent for a Renewable Energy Centre & Pelleting Plant. The application is being made to Northamptonshire County Council as a ‘Waste and Minerals planning application.

1.2 Dallol Energy Ltd act as planning agent on behalf of Loco Energy Ltd (‘Loco’), the applicant. The landlord since 1997 is Greenfield Properties (UK) Ltd (‘GPL’) and they have given their consent for this application (Appendix 1). Subject to planning consent, Loco have secured an option for a 20-year lease.

1.3 The statement should be viewed in conjunction with a submission made to Northamptonshire County Council via the Planning Portal. The reference code is PP-04882290.

1.4 The site is located at Latitude = 52.295376, Longitude = -0.546062 (See Appendix 2)

1.5 This application is for a new construction to house the plant and is situated on previously developed land within the boundary of site and the development is known as the Renewable Energy Centre and Pelleting plant.

1.6 The whole site will be split into two. GPL will continue to operate on the southern portion. This application relates to the northern part. (See Appendix 3)

1.7 The northern site is redundant, but was most recently used as a processing plant for tyre waste. Uninterrupted history of industrial use goes back to 1950. The whole site enjoys a certificate of lawful use, dated 2002, allowing for the treatment of and transfer specific wastes. This consent was issued by Northamptonshire County Council (NCC) as local authority responsible for waste related development.

1.8 A current Waste Management License (Licence Number EA/WML/73098) is in place covering the southern site and the license holder is GPL. It is regulated by the Environment Agency. There is an exception certificate for the northern portion of the site.

1.9 The Advanced Thermal Treatment Plant will be regulated under a bespoke Part A (1) Environmental Permit regulated by the Environment Agency.

1.10 Global Warming or Climate Change is generally accepted as a reality. A recognised approach to combat it that is supported by UK Government and Local Authority policy is to move away from using fossil fuel derived energy to that available from renewable sources. Waste is considered to be a renewable resource under these policies.

1.11 The entire site is land designated for industrial and commercial use including waste management developments according to Policy 17 of the Northamptonshire Waste & Minerals Local Plan. (See Appendix 4)
1.12 The site is accessed from Higham Lane, a public highway via an existing and approved splay. It has established 24hr use for multiple HGV deliveries but movements normally take place during the hours of 8am to 6pm.

1.13 Town and Country Planning (Environmental Impact Assessment) (England & Wales) Regulation 1999. The Applicant submitted a screening opinion request to NCC and it was determined that no formal Environmental Impact Assessment was required although several suggestions were made as to what was required in terms of the potential for the development to effect the environment. (see Appendix 5)

1.14 The Applicant and Agent met with the Environment Agency to discuss the attached plan and receive the Agency’s initial thoughts on 07th April 2016 at Nene House, Kettering. The meeting was positive and they look forward to receiving this Application as consultee.
2.0 The Application Proposal

General

2.1 The purpose of this development is to build a processing plant, where 0.014Mtpa tonnes of Refuse Derived Fuel (RDF) considered to be a Renewable Fuel under the Renewable Obligation Order 2009, will be thermally treated into Combined Heat & Power (CHP) to allow 0.036Mtpa of the same material to be processed into energy pellets using heat for drying and electricity to power the entire plant. (See Appendix 6)

2.2 The energy pellets produced by the plant and the fuel for the plant are produced from fuel pre-processed off-site under an agreement for which the applicant has secured a Letter of Intent from an international company with good covenant. The pellets will be exported via lorry to cement manufacturing plant or similar permitted installations within or near the county in order to provide renewable energy to mitigate the use of fossil fuel by industry. The Applicant holds a similar Letter of Intent for this Off-take Agreement.

2.3 This RDF material (See Appendix 7) is already being produced in or near the county but is currently either disposed of to land-fill or transported via shipping container cross-border to be used as a resource in Energy plants across the European Union. Plants in Belgium, Netherlands, Sweden and Germany are typical users of this material as a fuel. This point 2.3 justifies entirely why there is a need for this development.

2.4 The Renewable Energy Centre and Pelleting Plant will operate on a 24/7 basis. However deliveries to and from the development will only take place between the hours of 6am and 8pm Monday to Friday and 6am to 1pm on Saturday. There will be no Sunday or Bank-Holiday external activity at the site. The Applicant would like to reserve the right not to observe these opening hours in the event of an emergency.

2.5 After drying and pelleting the tonnage is reduced from 0.036Mtpa to an output (for export from the site) of 0.024Mtpa of RDF energy pellets.

2.6 It is estimated by the fuel offtake agreement supplier that there is a near local market for 0.25Mtpa of this fuel.

2.7 Other than the enclosed fuel hall & pellet store there will be no other storage of RDF or any other material on the site. It should be stressed that the apron of the development will only be used for transport. The will be no storage external to the building.

2.8 Dallol Energy Ltd specialise in the design, installation and project management of turn-key commercial and industrial biomass & waste fuelled plant. Dallol through its own endeavours and that of various sub-contractors will be responsible to the development for providing the plant design, technological integrity, and project management experience and training in order to leave our client with a highly sustainable renewable energy centre.

2.9 After the requisite training and hand-over period the plant will be operated by a dedicated operational team which will create twelve (12) new skilled engineering jobs.
2.10 The site already has planning consent for 0.075Mtpa of waste material to be imported. The proposed plant will utilise 0.05Mtpa of imported loose fuel. In order to make sure that the current limit is not exceeded, World Rubber Limited concede to give up 0.05Mtpa from their WML as part of the lease to Loco. This development therefore requires no increase in the consented tonnage.

2.11 The fuel that will be both consumed by the Energy Centre and used for pelleting is imported to site as a fuel having been pre-processed into RDF elsewhere. There will be no requirement for ‘raw’ waste to be imported to the site. (See Appendix 7)

2.12 Fuel arrives at the site by ‘walking-floor’articulated type HGV. The trailer is reversed through an open roller shutter door into the fuel reception hall. The aperture between the trailer body and the open door is sealed using industry standard polyurethane strips hung from above before the trailer is unloaded within the fuel hall building.

2.13 Using one of two overhead cranes the fuel is then either transported to the reception hopper of either the gasification system or the fuel drying system.

2.14 Thermal energy will be provided from an Advanced Conversion Technology that qualifies under the Department of Energy and Climate Change (DECC) definition of a standard gasifier. A thermal oil boiler will vapourise hot oil through an Organic Rankine Cycle turbine before being cooled. This cooling loop will provide heat for drying via a heat exchanger. 950kWe of electrical energy will be produced, making the plant energy self-sufficient, however a G59 grid connection to the local electrical distribution grid is also required. No new overhead cables are envisaged.

2.15 The plant buildings are equipped with a fire detection system. The fuel store and Pellet store are equipped with a sprinkler system. A developed Fire Plan is a requirement of the Environment Permit.

2.16 There is no effect from the development on Public rights of way.

Traffic impact (See Appendix 8)

2.17 Using Upper Higham Road, the site is located 2.06 miles from the main Higham Ferrers (Kimbolton Road) round-about on the A6

2.18 The proposal will create up to 11 lorry movements per working day but this is too small an increase to be considered to have a material effect on traffic movement by the Highways.

2.19 Carr Brothers Ltd operate a major haulage depot from a different part of the site that uses the same main road access point to Upper Higham Road. Carr Brothers and their tenants operate c64 HGV vehicles and use an Automatic Number Plate Recognition system to control their gate. Recorded Data shows that more than 3000 vehicle movements through that gate is
typical. A further 1500 movements per month are estimated by World Rubber. Keir Waste Services operate a significant fleet of HGV vehicles from their works at Chelveston Airfield that also use the same route to the main road.

2.20 There is good argument that the development will reduce overall lorry journeys to and from the site. At present World Rubber have authority to receive sort and export 0.075Mtpa of waste which equates to 6818 lorry journeys per year. They will reduce their tonnage to 0.025Mtpa which equates to 2272 lorry journeys per year. The development’s process activity reduces over 50% of the material and therefore only 0.024Mtpa will leave the site, a total of 4100 lorry journeys. The overall reduction in traffic is therefore 446 journeys per year.

2.21 There is also no doubt that the process will reduce overall traffic movements within the county and beyond as the average diesel miles per tonne of waste fuel will be reduced as there will be no export to the European Union required (as now) for this material.

2.22 There will be a minor increase to the current labour related traffic, with 12 new employees working on a two on, two off four-day shift basis. Therefore, will be minimal increase in employee car journeys to the site. Adequate parking to building regulation is provided by the development.

2.23 We are aware of an initial historical planning objection from Chelveston-cum-Caldecott Parish Council which was withdrawn upon agreement from Kier Street Services that there would be no HGV movements through the village of Caldecott emanating from their airfield site. We are aware of a similar commitment from Carr Brothers Ltd to act accordingly and our client has agreed to follow this voluntary direction to use NCC Highways ‘Route B’ for access to their site.

Visual impact

2.24 Currently the site is mainly visible from Caldecott Road towards the junction with and from Upper Higham Lane. A derelict and and heavily fire damaged portal frame structure is clearly visible and is considered an eye-sore by Planning Officers. The development seeks to tidy the site and it would be difficult to make any case against it on the grounds of visual impact.

2.25 The nearest external residential receptor in terms of potential visual impact is 0.675km away being the former USAF residential block at Caldecott Crescent. The main road is positioned 1.6m above the ground floor of these properties and the road is flanked by a high fence and mature hedging. Therefore, there is only a view from the upper floors of the properties nearest the road and no view whatsoever from the majority. The existing view is filled by existing development. The new development site is only partly visible as it is almost completely screened by a mainly coniferous copse. The stack is positioned so that it is entirely screened from view by the copse.

2.26 During periods of extreme weather (ambient temperature of less than 2°C) a short plume of water vapour may be visible above the tree line.

2.27 The stack conforms to D1 modelling. (report attached at Appendix 9)
Environmental impact from emissions: Emissions to land, water and air

2.28 The plant produces 0.0021 Mtpa of bottom ash based on a fuel ash content of 15% and 0.00048 Mtpa of fly-ash. The bottom ash will initially be land-filled but the long term plan is to recycle the ash into concrete manufacture. Fly-ash will be disposed of under contract by the appropriate land-fill method having first undergone a recovery and clean-up process.

2.29 General trade waste generated on site, will be source separated and stored in one of three 1000lt wheeled bins and emptied under contract to a local commercial and industrial waste collector.

2.30 Although the site is fully drained via an underground drainage system within the existing concrete slab, the drainage system is currently blocked with detritus. The development will reinstate this drainage so as to prevent the build-up of rainwater on the site. Rainwater from the roof and the external slab will pass through a new natural water-treatment facility (reed bed) before being released into an existing culvert to the north of the site.

2.31 A welfare unit within the new building will drain to existing mains sewer.

2.32 There is no aqueous emission from the process.

2.33 Flood Risk Statement (See Appendix 11)

2.34 The plant uses a sophisticated off-gas cleaning equipment. Urea injection post gasification ensures that Emission Limit Values (ELVs) are kept within the permitted limits. Once energy has been transferred from the gasification process, spent gases pass through a mechanical cyclone to remove particulate before being passed through an industry standard bag-house filter. The bag house filter uses a mixture of activated carbon and lime (or a product known as Sorbacal) to both neutralise any acidic gases and remove particulate. It is worth noting that the filter will perform to far lower limits than the permitted ELVs meaning that local residents can have confidence that there will be no harmful emissions to atmosphere from the plant.

2.35 The monitored operation of the plant under the permit must remain within the emission limit values set by legislation and therefore ensure that there will be no adverse effect on air quality or the local environment from the activity being carried out. With the exception of a plume during extreme weather conditions there will be no effect on the environment from emissions to air. East Northamptonshire Council EHO will be the Local Authority responsible for ensuring the plant complies with legislation that forms the basis of the SWIP. They are empowered to shut-down the plant if not satisfied either with the environmental performance of the plant or the record keeping to demonstrate it.

2.36 As part of the SWIP application process full Atmospheric Dispersal Modelling will be undertaken. As the plant cannot operate without this permit there should be no need for this work to be presented as part of the planning application.
2.37 East Northamptonshire Borough Council has undertaken an assessment of the air quality within the Borough and concluded that there was no requirement to declare an Air Quality Management Area. (AQMA)

2.38 Bedford Borough Council has declared four AQMAs. Three of these were located within the town with the fourth is situated in Great Barford, to the east of Bedford. The AQMAs are located approximately 17 miles from the proposed development site and are considered to be too far away to be directly affected significantly by emissions from the proposed development.

**Odour Control**

2.39 The heavy plastic barrier between the trailer body and the building during the unloading phase is temporary. When the trailer has unloaded its cargo and driven away, the door is shut. Both these methods serve to eliminate the contamination of the site with blown material and also to act as a barrier to contain any odour within the fuel.

2.40 Gasification air is taken from vent nozzles within the fuel reception hall. This is a well tested method of reducing odour in the fuel hall prior to the fuel being dried. Under running conditions, the building is operated under a slight negative pressure. This also serves to eliminate any odour or dust emission from the generation hall.

2.41 The dryer evaporates moisture contained within the fuel. This moisture is released to atmosphere in the form of water vapour having first passed through a proprietary scrubber. The scrubber uses a chemical dosing to remove (mainly) ammonia from the moisture and produces a by-product that can we re-used as a fertiliser. The manufacturer of the dryer guarantees odourless operation on the fuel type specified by the plant.

2.42 A detailed Odour Control plan forms part of the Environmental Permit application.

**Noise abatement**

2.43 The proposal does not effect current noise impact levels. Enquiry was made of East Northamptonshire Council Environmental Health Department and they advised that a Noise Assessment was not required for the development. They did ask for the inclusion here of data recently gathered for a nearby (and now fully consented planning application) to be sufficient for their purposes. (See Appendix 11)

2.44 A full Noise Impact Assessment will be required by the Environment Agency as part of the Environmental Permit application process.

2.45 The energy transfer medium used by ORC to generate electricity is thermal oil and unlike in steam generation it is a completely closed loop system. Thermal oil is not at pressure either and therefore there are no noise related issues such as boiler blow-down or emergency steam release to atmosphere. The turbine itself is housed within an enclosed ‘clean room’ within the
generation hall. This is primarily to protect the sensitive electrical equipment but it doubles as an acoustic housing.

2.46 The wider site at NN10 OSU already a functions as both a waste treatment site and a transport and haulage hub. There are currently no planning restrictions on hours of operation and the neighbouring rubber recycling plant works 24hrs. The mechanical recovery of the constituent parts of vehicle tyres takes place externally and can be generally considered a noisy operation. By contrast all mechanical operation of the Renewable Energy Centre and Pelleting plant takes place internally and would not be considered a noisy operation.

2.47 The fuel reception hall is sized to allow the plant to run for a prolonged period of time using the fuel reserved within the fuel hall storage area. There will be no external storage of loose fuel therefore and no need for vehicle movements at unsociable hours of the day. The site will operate a tele-handler equipped with a ‘white-noise’ reversing alarm but even that will not be required to operate at night except in an emergency.

2.48 The energy centre will be required to function throughout a twenty-four-hour period however the NCC may wish to restrict the hours of fuel delivery.

2.49 Finished product (pellets) will be conveyed automatically to a separate pellet store building adjacent to the main building.

Ecology, Archaeology and Environment

2.50 The nearest Site of Special Scientific Interest is Yeldon Meadows, 1.24 miles to the east of the site. Therefore, Natural England are not likely to be a Statutory Consultee to the planning application. The site is designated as neutral grassland occurring on clay. Further investigation of magic.gov reveals ‘no features found’ relating to this designation and therefore there is no argument to suggest that this development will have any impact on the SSSI as the site is very low risk. The next nearest SSSI is over 5 miles away.

2.51 A detailed desk-top and site based study has been undertaken to establish what effect the development may have on the ecology of the site and its environs. The study (attached at Appendix 12) concludes that the development will have only marginal effect and that there is no argument against the development from an ecology basis.

2.52 A desk-top study has been undertaken to establish the archaeology of site. Study of OS County Series Mapping for Bedfordshire and Northamptonshire conclude that between 1885 (earliest map) and the 1938 to 1952 Series at 1:10,560 the site was established as an agricultural enclosure.

2.53 The topography of the site reveals no suggestion of ancient or pre-historic archaeology

2.54 The geology of the site reveals shallow topsoil on heavy clay. It is unlikely therefore that it was used for a purpose other than for agriculture prior to the known modern history of the site
2.55 In 1941 The Air Ministry developed the neighbouring RAF airfield at Chelveston. When the airfield was taken over by the USAF in 1942 the development site provided hospital, mortuary and other facilities to the airfield. The current subterranean drainage system is all that remains on the actual site although the wider site still contains several buildings from this period. The airfield was officially closed in 1947 but then re-opened in 1951 to accommodate USAF heavy bombers and a nuclear capability. The development site was not reinstated to the airbase.

2.56 In 1952 the site was sold by the Air Ministry and Chamberlin Phipps Ltd established it as a recycling and manufacturing facility. They provided a service to the county’s shoe making industry where the majority of that industry’s waste leather off-cuts etc were pulverised and reformed into ‘leatherboard’. This was sold back as a material from which the soles of shoes were then manufactured. The southern development site was developed between 1965 and c1968 and was initially a division of Chamberlin Phipps (owned by its Pension Fund) and known as Rushden Granulating. The current business, World Rubber can trace its roots back to the development of rubber regrinding, manufacture and recycling in also in connection with shoe manufacture as rubber soles became more popular than leather.

2.57 Thermal treatment, most likely coal fuelled process steam generation was found on the site up till the late 1970s and there is some photographic evidence of the existence of several stacks. The stack on the development site was demolished in the 1970s.

A full archaeological assessment was made of the surrounding area in 2006 and that report has been studied for this application. It reports that although minor archaeological previously occurred within the parishes of Chelveston and Yelden close to the development site most interest has been in Roman remains found in the River Nene valley and medieval remains in Raunds. There is crop mark evidence to suggest that some settlement activity may have taken place beginning in the Iron Age but again this is limited to the river valleys of the Nene and Til. There is little evidence of post Roman development of the higher clay lands of Bedfordshire and Northamptonshire. From medieval period there is some evidence of limited population based around farmsteads some of which had grown into hamlets or villages by 1086 (Domesday) but none by the development site. Field enclosure took place from the late 18th century to the late 19th century but by 1885 (as evidenced on the OS County Series Map of that year) all the land in the vicinity of the site was enclosed.

2.58 The development is situated in an area of significant disturbance on ground at the periphery of a former airfield where successive manufacturing processes have necessitated multiple construction iterations incorporating various concrete slabs between 1950 and the present. There exists photographic evidence of this disturbance the most interesting and relevant probably being a picture taken in 1964. Jimmy Harris, a retired employee of both Rushden Granulating and World Rubber worked at the site from boyhood to his retirement in 2006 and has assisted with historical analysis to do with the development site.

2.59 No ground based investigation for archaeology has been undertaken or is planned. The existing concrete slab that forms the base of the site will not be interrupted except for the provision of foundation pits for the portal frame building and a small area of excavation for
the machinery bases. Core samples to establish specific ground make-up will be taken and therefore also examined for any archaeology.

2.60 The existing ground disturbance suggests that the development will have no significant impact on any surviving archaeological deposits and therefore no mitigation measures are considered necessary.

Sustainability

2.61 In 2014 the UK Government introduced the Renewable Heat Incentive Combined Heat and Power (RHI CHP) banding. This is the first scheme of its kind to incentivise commercial and industrial heat users to switch from fossil to renewable fuels. Loco will register the plant for this subsidy structure which will provide an enhanced level of energy security and pricing certainty for the subsequent 20 years. To conform to the RHI the emissions must be abated so as not to breach limits of 30g/GJ of particulate matter and 150g/GJ of Oxides of Nitrogen. The terms of qualification for RHI also require an applicant to demonstrate the fuel used for their heat generation system complies with the highest level of sustainability. The proposed plant and fuel exceed all these performance levels. (See 1.9)

2.62 Project implementation will see the introduction of an ORC turbine and generation set to allow the site to be largely self-sufficient in electricity and will allow import and export to and from the local distribution network via a new G59 grid connection using existing or new below ground and existing overhead cables.

2.63 Material for treatment imported to the site will be sourced either from the Northamptonshire or Bedfordshire cross-border geographical catchment area. This area may extend south to within the M25. As such this facility should be considered a ‘regional’ as opposed to a ‘sub-regional’ installation according to the NCC’s own definitions.

After-care and After-Use

2.64 The development will establish a modern portal frame building on the site surrounded by an existing but improved concrete hard stand. In the event of the process no longer being viable, the most likely eventuality, and the one that provides the most benefit to the public would be that the building would be re-used for a different industrial purpose – meaning other development of potentially less suitable would not be needed. Therefore, there is no plan or precedent to re-instate the land back to agriculture.

2.65 A baseline environmental condition report forms part of the Environmental Permit application. The Applicant or operator of that permit has a legal duty to return the development site back to that baseline condition after use.
3.0 Local and National Planning Policy

3.1 Local Planning Policy Executive Summary

Adopted in October 2014, The Northamptonshire Minerals & Waste Local Plan is the land use strategy for minerals and waste related development that the NCC has committed to follow through to 2031 and forms part of the statutory development plan. The development not only conforms with every relevant Policy within the Local Plan it does not contravene any of the 34 different Policies.

(NB. For the purposes of this application, policy that relates to mineral development (Policies 1 to 10, 21 and 32) is not relevant and therefore is ignored. The following section lists policy taken directly from the plan (in italics) then gives short answers as to why this application conforms with or enhances that plan.)

The Local Plan identifies what waste related development should be, where it should be and it considers the impact of design, sustainability and how it relates to the surrounding community and environment. It also acts as a driver for new investment and addresses any adverse effects. Finally, it lists specific site locations for waste related development.

Before the detail of the Plan is looked at it is worth stating that the development site is already permitted for waste management and is specifically included in the Local Plan at 7. Key Diagram where the site can clearly be seen to be within the ‘Central Spine’ referred to in Policy 12 and perhaps even more specifically at 5.72/3 Sites for Waste Management in a Rural Area and is given the designation WS12 under Policy 17. Although there may be grounds for dispute, in the Applicants opinion, as part of the original Chelveston Airbase this site remains relevant to Policy 17. The Applicants case is backed up by the fact that the specific site is already permitted for waste related activity.

Policy 17: Sites for waste management use in rural areas

The following sites are allocated for waste management use:

WS11: Kilsby
WS12: Chelveston
WS13: Nassington - Kings Cliffe Regeneration Centre

5.72 Sites for waste management uses appropriate to a rural area are allocated through Policy 17. These sites were put forward through the plan-making process (including a change of a temporary facility to a permanent facility). Each site was individually assessed as to whether it was appropriate for a waste management use or for its temporary permission to be made permanent.

5.73 The capacity of the facilities coming forward at these locations cannot be fully calculated until planning applications relating to them are made and determined. It is estimated based on the typical facilities that could go on the identified sites that this would not be less than a combined total of 0.1 Mtpa.

Note: The development seeks to process 0.05 Mtpa which is broadly in-line with the Plan’s estimate for a typical facility.
If it can be accepted therefore that the location for this development is appropriate for waste related development (Policy 12 & 17), then the main purpose of this section is to demonstrate how the specific development proposal fulfils the vision and objectives of the Local Plan. Given that the site is already fully permitted for waste related activity, the development also adheres specifically to Policy 33 by ‘safeguarding waste management related development from alternative uses’

Policy 13 deals with the development criteria required for non-inert and hazardous waste management facilities. It should be stressed that the development does not seek to receive, treat, recover or recycle any hazardous waste. The development should be considered an advanced treatment and fully concurrent with the objectives of Policy 13 it does not conflict with the spatial strategy for waste management and it promotes the establishment of a sustainable network of waste management facilities to service the counties capacity requirements. Local rather than foreign treatment of RDF is evidence of need. Also further to the criteria of Policy 13, waste is pre-treated before it reaches site and is located in the central spine, near enough to the arising of the waste to encourage genuine sustainable transport (Policy 23) The re-use of energy is fully maximised as the process is energy self-sufficient including heat use. As a previously developed site it would not be flippant to say that Policy 13 was written with this development specifically in mind.

5.2 In recent years Northampton has experienced a growth in the waste management industry. This has been beneficial to the development of a sustainable waste management network throughout the county and has greatly increased our operational capacity, particularly in relation to preliminary treatment, i.e. preparing for re-use and recycling. Although the county has made headway in this regards, there is still a need to continue to drive waste up the hierarchy, recognise waste as a resource and maximise recovery.

The development enhances the Plan at Policy 18 and 19 because it creates a resource from waste, maximises recovery and moves it up the hierarchy.

5.22 Although classed as being in economic development, minerals and waste related development has a very limited role to play in addressing the structural issues highlighted above compared to other elements of planning and development, Waste development has the greater role of the two, particularly as new technologies for waste management come forward and the industry moves from being a predominantly, low value, low skilled sector into being a more balanced one. Waste management is a key part of the Environmental Technologies job sector, along with renewable energy, and this job sector is one that Northamptonshire’s economic agencies consider should be supported to grow in the county, particularly in North Northamptonshire.

The proposal enhances the Plan as it represents Best Available Technique (BAT) in thermal treatment technology. It will provide 12 FTE skilled engineering jobs and creates renewable energy from waste to sustain itself. This further enhances compliance with Policy 12, the Spatial strategy for waste management by sustaining existing rural employment uses.

5.32 The following indicative capacity gaps have been identified by the end of the plan period (2031):
- inert recycling 0.31 Mtpa, NOT RELEVANT TO THIS APPLICATION
- hazardous recycling 0.02 Mtpa, NOT RELEVANT TO THIS APPLICATION
- advanced treatment 0.53 Mtpa
- non-inert landfill 0.67-0.85 Mtpa,
- inert landfill 0.14 Mtpa, and NOT RELEVANT TO THIS APPLICATION
- hazardous landfill 0.006-0.02 Mtpa. NOT RELEVANT TO THIS APPLICATION

The county is short of capacity for Advanced Treatment. This development enhances the Plan and adheres to Policy 11 by providing a reduction to the gap of 0.05Mtpa or 9.43%. Looked at in a different way, it could also claim to remove 0.05Mtpa from non-inert landfill.
5.33 A range of different facilities of various types and sizes will be required to manage waste produced within Northamptonshire and ensure that waste is moved up the waste management hierarchy; maximising the recovery of resources. The indicative waste management and disposal capacity requirements suggest that there are opportunities for increased capacity for recycling of inert and hazardous wastes as well as advanced treatment and disposal to landfill of mixed (MSW, C&I and CD&E) and hazardous wastes at various stages during the plan period.

The development fits exactly with the vision of multiple technologies being used to move waste produced in Northamptonshire up the hierarchy. (Policy 13, 18 and 19)

5.38 The Local Plan recognises that waste management is becoming more specialised and is also a higher value industry than previously. It is not appropriate to oppose facilities serving wider catchments when other industries and commercial enterprises are not so constrained. However, in the wider interests of sustainability, it is not envisaged that Northamptonshire should take on a role as a key sub-national location for waste management or disposal facilities.

The development is located at the southern end of the Central Spine and seeks to use Commercial & Industrial Waste from within the immediate catchment area. According to the plan (Policy 11) there is a capacity gap of 0.47Mtpa for Advanced Treatment prior to 2021. However according to 2.38 it should not be prevented from sourcing material from cross-border or further afield.

5.35 National guidance states that Local Plans should identify, through all the allocation of sites, waste management capacity equivalent to at least ten years. In addition the Waste Framework directive also seeks the clear identification of allocated sites. This Local Plan therefore attempts, in the interest of flexibility and deliverability, to strike a balance between identifying allocations and also allowing non-allocated sites to come forward. Consequently the Local Plan seeks to secure delivery of the indicative capacity requirements on two ways: (1) identification of specific sites for waste management uses would be acceptable in principle; and (2) identification of locally specific policies on which the acceptability of proposals for waste-related development that come forward on non-allocated sites can be determined.

The local plan (Policy 12 and 17) specifically allocates the site as being suitable for waste related development. It will help to plug the capacity gap between the current situation and that required by the plan (Policy 11) for the future.

5.40 A sustainable waste management network requires both primary and advanced waste management facilities. This in turn should reflect both the catchment area and functional role. These should also go to locations where investment can be optimized and sustainable development can occur. More significant facilities for waste management should also seek to create higher value waste management related jobs at the respective facility. The key driver for the location of these facilities will be their relationship to what this Local Plan defines as Northamptonshire’s local spine.

This development is a good example of advanced waste management facility although it is smaller in scale in terms of the definitions in the Plan (Policy 13). It neatly reflects the catchment area by drawing its raw material directly from the surrounding south Northamptonshire, north Bedfordshire area. It is fully sustainable as it creates renewable energy and is energy self sufficient and it vastly reduces either the diesel miles that waste of this type uses up or saves it from landfill.

5.41 Northamptonshire’s waste management network will be developed to incorporate a centralized distribution of advanced treatment facilities supported by a network of local and neighbourhood preliminary treatment facilities. These facilities should be co-located together and with other forms of complimentary development where appropriate, for example commercial, industrial or residential development. In interpreting the spatial strategy for waste management reference should be made to the local hierarchy, catchment areas and functional roles in relation to facilities.

Electricity not used by the plant will be used by existing neighbouring businesses. It is a good example of co-location as some of the other businesses are also waste management businesses (Policy 31).
5.52 Proposals must also demonstrate a specific need for the facility, specifically addressing the intended functional role and catchment area. All proposals should identify both the intended functional role and catchment area of the facilities included in the proposed development. Allocations for sites for integrated waste management facilities, waste management use in or adjacent to urban areas would be expected to have a catchment area greater than that of ‘neighbourhood’.

The case for need (Policy 13) has been established on the site for decades. Initially there was a need for the Shoe making industry to have somewhere to take its waste in order to recover some of that waste as a product to be reused by itself. The development continues this circular economy. Waste created in a local catchment area is reduced in volume and turned into a product that will be used in energy recovery also within the catchment area. The end users currently import material through the county and this will also be reduced. The waste itself is currently either landfilled or sent as fuel to Europe. The need for this development is beyond doubt.

5.53 The intended functional role of facilities should be considered within the broader context of creating a sustainable waste management network within Northamptonshire. The intended functional role and contribution that the development makes towards the waste management capacity requirements should be clearly set out in the proposal. Proposals should also demonstrate that there is a clearly identified market base for the waste outputs, and that the intended catchment area for the facility is in general conformity with the principle of managing waste close to its source. In this regard the operation of the facility should minimize transportation of waste from its source, and collect and recover waste in the most efficient way possible. Specifically regarding advanced treatment facilities, proposals must ensure that waste has undergone preliminary treatment prior to advanced treatment.

The development benefits from an infeed and off-take agreement Letter of intent which although commercially sensitive and not therefore disclosed within this Application clearly demonstrates the local market for the end product. Indeed the Applicant intends to use the development to lobby the Environment Agency in order to establish end of life use status for the pellets and thereby take them out of the waste category altogether. (this has been successful in the Netherlands where pellets made from RDF using the same equipment have since 2010 been no longer considered a waste.)

5.55 The development of non-inert waste management facilities should maximize the use of previously developed (brownfield), despoiled or redundant sites. Proposals for non-inert waste management facilities on greenfield or previously undeveloped sites will be required to demonstrate a need for the facility at that specific location.

The site is a previously consented waste management site at a brownfield location

5.110 Catchment areas are to be defined against the following criteria;
National – Waste to be managed on site originates from within England or an equivalent geographical area within Great Britain.
- The facility is of a specialized nature specifically relating to the waste to be managed or the nature of the process involved; on the basis of its specialized role the facility is one of the very few of its type nationally (or identified area).
- Waste to be managed does not include untreated /unsorted MSW, CD & E or green waste.
- The facility supports the waste hierarchy and is not for the disposal of waste, unless disposal forms the last available option.
Regional – Waste to be managed on site originates from within the East Midlands or an equivalent geographical area.
- The facility is of a specialized nature specifically relating to the waste to be managed or the nature of the process involved; on the basis of its specialized role the facility is one of only one or two within the region (or identified area).
- Waste to be managed does not include untreated/unsorted MSW, CD & E or green waste.
- The facility supports the waste hierarchy and is not up for the disposal of waste, unless disposal forms the last available option.
Sub-regional – Waste to be managed on site originates from within Northamptonshire or an equivalent geographical area.
- May include a wide variety of waste types including MSW, CD & E and green waste.
- The facility supports the waste hierarchy and is not for the disposal of waste, unless this is the last available option.
Local – Waste to be managed on site originates from within up to two local adjacent planning authority areas or an equivalent geographical area.
- The facility is intended to serve either an urban area and its immediate rural hinterland, or be located in a rural area for the purpose of dealing with agricultural and/or similar wastes produced locally.
- The facility should be for preliminary treatment, however in certain circumstances may be for advanced treatment.
- The facility supports the waste hierarchy and is not for the disposal of waste.
The development conforms to all of these requirements but should not just be considered as a local facility.

6.14 Northamptonshire’s landscape has been largely altered by the actions of man; this has in turn led to locally-distinctive landscapes and features that are part of our cultural heritage. It is important to protect the country’s landscapes for the sake of their intrinsic character and beauty, the diversity of wildlife, as well as the wealth of their natural resources. Once lost such features can be difficult to re-create.

The attached ecology study coupled with the small scale of this development allows conformity with 6.14 and Policy 24 in general.

6.33 Waste management facilities involving advanced treatment often include some form of emission stack (chimney) and increasingly feature the use of lighting for the joint purpose of security and visual interest, and may include the use of reflective surfaces as a design feature. This is particularly important in Northamptonshire given the presence of military flight paths and a large number of migratory birds. The presence of tall structures (particularly when involving atmospheric emissions) or reflective surfaces under flight paths may represent air safety risks. Proposals for development surrounding areas known to be of importance for migratory bird species (e.g. the Upper Nene Valley Gravel Pits SPA and associated habitats) should also consider the potential for building bird strike resulting from tall structures and reflective surfaces. It is therefore important to highlight the need for consideration of such matters during the formative stages of proposal research and design.

The development includes a 25m stack. It will be painted in a light blue colour. Although it needs to include a lightening conductor, it will not require any warning light or reflective paneling. There is no risk to migratory birds from this development. It stands in the shadow of several significantly higher constructions being the wind turbines at Chelveston Airbase. Policy 22 which aims to minimize the impact of proposed minerals and waste development is fully adhered to therefore.

6.41 Restoration should maximize public and environmental benefit, but it’s after-use should be determined in relation to its land use context and surrounding environmental character. Public benefit could include uses that benefit the local community, whilst environmental benefit could include habitat creation that meets Northamptonshire BAP priorities. A wider scope of restoration, rather than a simple re-instatement to the previous use, allows for consideration of both local circumstance and broader linkages and can support the integration of investment priorities in line with spatial planning principles.

As the development site is brownfield it is unlikely that after-use will allow community involvement and the public benefit will best be served by re-use of the building as an industrial unit of some sort, thereby reducing the pressure to develop other more sensitive greenfield sites and fully complimenting Policy 28 (Restoration and After-use)

6.53 Planning obligations can be used not only to mitigate the effects of development, they can also bring tangible and more subtle benefits to the local community, including the:
- provision of waste awareness and publicity campaigns for the local community and/or the introduction of local waste minimization projects, and
- enhancement of local community facilities.

It is the intention of the Applicant to use the development for organized educational visits although it would not expect these to be an obligation of planning consent.

8.4 The County Council, as the MWPA, will therefore seek to meet the Local Plan objectives through its own actions such as:
- Waste management activities – for example, encouraging behavioural change, through the preparation of the JMWM and procurement of waste management services (contracts).
- Corporate Behaviour – for example, through the procurement of materials and goods which in their production have sought to minimize waste, made efficient use of materials that are used, encouraged the use of recycled materials and used local materials.
- Its development and construction activities – for example, in the construction and operation of County council owned new schools and community facilities.
- Implementation of other plans and strategies – for example, the Local Transport Plan.

The development demonstrates excellence in waste treatment practice. The Applicant welcomes inclusion in any external local or national initiative to spread the potential for this kind of best practice.

General Summary: This application will improve or maintain the amenities of nearby land users as it will maintain air-quality and noise levels, and will reduce visual impact by installing the new building in the place of the current dereliction.

The installation of this plant complies with the Landfill Directive (99/31/EEC) in reductions to waste going to landfill and by using RDF to fuel the plant lowers the amount of waste being exported to other European energy recovery plants. Overall lorry miles will be reduced.

The development takes place within the boundaries of an existing industrial facility alongside other complimentary industrial development that is located in Northamptonshire’s central spine, described as a ‘key driver’ above. The site would be an improvement on visual impact, with the possible exception of a 25m chimney stack, but are several 120m wind turbine within view of the site (1.5 km). The nearest residential receptor is owned by the landlord and there are no other receptors within 0.5 miles. There will be no additional noise, smell or other nuisance caused by the development. Stack height has been modelled to fully disperse any emission. The prevailing wind direction means that the nearest residential receptor in its direction is over 0.675m away, more than adequate distance to allow for the full dispersal of any stack emission. The equipment being deployed complies with RHI emission legislation which is significantly lower than Clear Air Act 1993 standards. It is designed to surpass the expectation of the Environment Permit ELVs. (see 1.9)

The development can be shown not to have any adverse effect upon these or any other properties.

There is no material effect on traffic to the site.

A maximum of 0.024Mta tonnes of RDF pellets will be created for export from the site. These will be taken offsite to be used elsewhere in the region. The development is on a purpose built B2 industrial complex with existing highway splay. There is no effect on any aviation, military or defence installation.

The development site offers potential for future expansion and therefore increased capacity in the medium to long term, processing more RDF and offering more sustainability and further reducing the Local Plan capacity gap.

In addition to the answers already given, the proposal demonstrates that appropriate operational requirements are capable of being satisfied at this site (including accessibility and suitability of the road network, ability to connect to the grid and the proximity of the feedstock) and that appropriate measures are in place for after-use. Traffic, Dust, Noise, Smell or any other pollution will be unaffected by the development and monitored and regulated by a strict Environment Permit. The power export of the Energy Centre is limited to 950kW and will mainly be consumed on-site. In the event of electricity being exported it will utilise the existing local distribution network. For all of the above reasons Policies 11,12,13,17,18,19,22,23,24,27,28,30,31,33 and 34 are fully complied with. It would be difficult to envisage a waste related development that was more suitably located, designed and resourced in terms of the Local Plan than this.
3.2 National Planning Policy

This Planning Support Statement will allow the planning merits of the application to be assessed in accordance with these sections on Achieving Sustainable Development from the National Planning Policy Framework March 2012:

1. Building a Strong competitive Economy
2. Supporting a Prosperous Rural Economy
3. Promoting Healthy Communities
4. Protecting Green Belt Land
5. Meeting of Climate Change
6. Conserving and Enhancing the Natural Environment
7. Facilitating the Sustainable Use of Minerals

The application may also be examined in accordance with:

- Renewable Energy Strategy 2009
- Energy White Paper 2007

**Renewable Energy Strategy 2009**

The Renewable Energy Strategy of 2009 recognised that biomass will have an important role to play in generating renewable electricity and heat. The Strategy sought to ‘ramp up’ the supply and use of biomass for heat and power, whilst ensuring sustainability and protecting the environment.

The Strategy also confirmed that the end date for the Renewables Obligation would be extended (this is now 2035) to encourage greater investment and remove the cap on renewable energy generation in the UK, which then sat at 20%. Renewable energy generation using virgin woodchip or A-grade waste wood qualifies as ‘Biomass’ under the Renewables Obligation Order.

The fact that this development comprises a Small Scale Biomass Power Plant means that it will generate renewable heat for the factory and in the future the possibility is that it will generate electricity for the site and export the balance to the National Grid and contribute towards the Government’s carbon reduction obligations and renewable energy targets.

**Energy White Papers 2007 (note – This pre-dates RHI)**

The paper recognised the progress made within the UK for biomass derived energy production but also that it still lagged some way behind that of many European countries. The Government has set national targets for electricity generated from renewable sources and expects 10% of total electricity generation by 2010, 15% by 2015 and 20% by 2020.

The Government recognised the importance of recovering energy from biomass and stated that such facilities should be sized and contracts sensitively designed in accordance with the local availability of fuel. The use of biomass as a fuel can produce benefits best exploited where energy from biomass plant is designed as a Combined Heat and Power (CHP) system. To meet the Government’s targets on renewable energy generation, power generation processes such as energy from biomass must be considered. The Energy White Paper 2007 indicated that the Government would be looking to work with regional and local planning bodies to deliver its objectives, including establishing regional targets for renewable energy generation.

**Achieving Sustainable Development**

Sustainable development is the core principle underpinning planning. At the heart of sustainable development is the simple idea of ensuring a better quality of life for everyone, now and for future generations. A widely used definition was drawn up by the World Commission on Environment and Development in 1987:

“...development that meets the needs of the present without compromising the ability of future generations to meet their own needs.”
The following key principles are identified in the framework and should be applied by planning authorities to ensure that development plans and decisions taken on planning applications contribute to the delivery of sustainable development:

- Development plans should ensure that sustainable development is pursued in an integrated manner, in line with the principles for sustainable development set out in the UK strategy. Regional planning bodies and local planning authorities should ensure that development plans promote outcomes in which environmental, economic and social objectives are achieved together over time.

- Regional planning bodies and local planning authorities should ensure that development plans contribute to global sustainability by addressing the causes and potential impacts of climate change — through policies which reduce energy use, reduce emissions, promote the development of renewable energy resources, and take climate change impacts into account in the location and design of development.

1 Building a Strong Competitive Economy

This standard voices an optimistic approach to green lighting development. Paragraph 18 stipulates that the planning system should operate on the basis that applications for development should be allowed, having regard to the development plan and all material considerations, unless the proposed development would cause demonstrable harm to interests of acknowledged importance. It goes on to say that development control should not place unjustifiable obstacles in the way of development which is necessary to provide homes, investment and jobs, or to meet wider national or international objectives.

In an increasingly competitive and knowledge-driven global economy, the planning system is a key lever the Government has to contribute towards improving productivity and the UK’s long-term economic performance. It is the responsibility of the regional planning bodies and local planning authorities to determine how best to plan for economic development, in the context of their responsibilities and taking account of their particular local circumstances.

3 Supporting a Prosperous Rural Economy

This section focuses on making sure that planning decisions work towards enhancing employment within any given community directly or indirectly. It is clear that an application to build a development that is certainly categorised as sustainable that replaces an existing development that is certainly categorised as not sustainable is in line with this directive. Energy centres are prime examples of departments which will teach connected employees skills which are highly desirable to commercial and industrial employers.

8 Promoting Healthy Communities

The first point raised in this section refers to the inclusive community interaction brought about by planning applications such as this one. This wider discussion, as well as being a chance for locals to express opinions for concern or suggestions for amelioration, is an opportunity to educate those thus far passive towards the benefits that development and especially green energy development can bring.

Biomass energy centres are an ‘in’ point for electricity generation for local areas and some schemes provide possibilities for district heating. Industrial development feeds residential development, which feeds commercial development which is in turn supported by industrial development.

9 Protecting Green Belt Land
Energy centres are generally built in urbanised areas in order to benefit from the grid connectivity for heat and power. They are normally exempt from any restrictions on perceived harmful emissions since pollutants are successfully abated. Where possible, the centres are built on disused private land and will adhere to the guidelines set out in paragraphs 84 and 85. Green belt villages are not to use this status in combination with any conservation area status they might have such as being in part of an area of outstanding natural beauty or a heritage site.

Paragraph 89 excludes new energy centres on previously used land from being inappropriate for the green belt by saying “the replacement of a building...not materially larger than the one it replaces” and “redevelopment of...brownfield land” are exceptions to this suggestion.

10 Meeting of Climate Change

The planning system needs to deliver economic development in a way which is sensitive to the challenges of climate change. Businesses which are able to respond rapidly to environmental challenges by adopting new technologies such as low-carbon innovation may also be able to improve their competitiveness in the global marketplace. Economic development can also help to deliver environmental and social benefits.

11 Conserving and Enhancing the Natural Environment

The overall aim of planning and pollution control policy is to ensure the sustainable and beneficial use of land (and in particular encouraging reuse of previously developed land in preference to Greenfield sites). It states:

Pollution control is concerned with preventing pollution through the use of measures to prohibit or limit the release of substances to the environment from different sources to the lowest practicable level. It also ensures that ambient air and water quality meet standards that guard against impacts to the environment and human health. The planning system controls the development and use of land in the public interest. It plays an important role in determining the location of development which may give rise to pollution, either directly or from traffic generated, and in ensuring that other developments are, as far as possible, not affected by major existing, or potential sources of pollution. The planning system should focus on whether the development itself is an acceptable use of the land, and the impacts of those uses, rather than the control of processes or emissions themselves.

Planning Authorities should work on the assumption that the relevant pollution control regime will be properly applied and enforced. They should act to complement but not seek to duplicate it. Besides financial benefits, biomass energy centres carry with them the peace of mind of having reduced emissions compared to fossil fuels and fewer maintenance trips being required for new tech; also there is typically reduced traffic flow due to proximal fuel sources.

The impact of noise can be a material consideration in the determination of planning applications. The planning system has the task of guiding development to the most appropriate locations. The planning guidance identifies a number of key measures that can be introduced to control the source of, or limit exposure to, noise.

Engineering: reduction of noise at point of generation (e.g. by using quiet machines and/or quiet methods of working); containment of noise generated (e.g. by insulating buildings which house machinery and/or providing purpose-built barriers around the site); and protection of surrounding noise-sensitive buildings (e.g. by improving sound insulation in these buildings and/or screening them by purpose-built barriers); Layout: adequate distance between sour end noise-sensitive building or areas; screening by natural barriers of other buildings.

13 Facilitating the Sustainable Use of Minerals

This is the revised statement for renewable energy in England and provides a clear framework of objectives and issues to be considered by regional and local planning authorities across the range of
renewable energy technologies. It understands the importance of renewable energy development in delivering the Government’s commitment on both climate change and energy generation from renewables. Positive planning which facilitates renewable energy development can contribute to all four of the elements of the Government’s sustainable development strategy, these being; social progress, effective protection of the environment, prudent uses of natural resources and maintenance of high and stable levels of economic growth and employment.

This section states that regional planning bodies and local planning authorities should adhere to the following key principles to planning for renewable energy:

- Renewable energy developments should be capable of being accommodated throughout England in locations where the technology is viable and environmental, economic and social impacts can be addressed satisfactorily.

- Regional spatial strategies and local development documents should contain policies designed to promote and encourage, rather than restrict, the development of renewable energy resources. Regional planning bodies and local planning authorities should recognise the full range of renewable energy sources, their differing characteristics, locational requirements and the potential for exploiting them subject to appropriate environmental safeguards.'

- At the local level, planning authorities should set out the criteria that will be applied in assessing applications for planning permission for renewable energy projects. Planning policies that rule out or place constraints on the development of all, or specific types, of renewable energy technologies should not be included in regional spatial strategies or local development documents without sufficient reasoned justification.

- The wider environmental and economic benefits of all proposals for renewable energy projects, whatever their scale, are material considerations that should be given significant weight in determining whether proposals shall be granted planning permission.

- Regional planning bodies and local planning authorities should not make assumptions about the technical and commercial feasibility of renewable energy projects. Small scale projects can provide a limited but valuable contribution to overall outputs of renewable energy and to meeting energy needs both locally and nationally. Planning authorities should not therefore reject planning permission simply because the level of output is small.

For biomass projects, the need to transport crops to the energy production plant does have the potential to lead to increases in traffic. LPAs should make sure that the effects of such increases are minimised by ensuring that generation plants are located in as close proximity to the sources of fuel that have been identified.

But in determining planning applications, planning authorities should recognise that there are other considerations (such as connection to the National Grid and the potential to use heat generated from the project) which may influence the most suitable locations for such projects. However the simultaneous or indeed asynchronous application for more than one biomass energy project within the same area from more than one party does not require the local authority to reject one or both of the proposals. Biomass centres do not compete with each other for fuel and do not compete to provide heating or power in district schemes but are able to work in tandem to reduce the end users’ costs for warmth and electricity.
4.0 Summary and Conclusions

4.1 The proposal fully accords with European and National guidance on the use of renewable fuel to replace fossil fuel derived energy.

4.2 The proposal fully accords with National, Regional and Local planning guidance on energy production, industrial development and sustainability. The proposal will assist NCC to meet capacity gaps identified in the Local Plan.

4.3 The development will have no adverse impact on the local environment, amenity, highways or landscape.

4.4 Operations will be strictly controlled and monitored under an environmental Permit from the Local Authority and a waste management license from the Environment Agency.

4.5 The Renewable Energy centre will serve as an exemplar for the local area creating 12 FTE skilled jobs.

4.6 The fuel used will be sourced where possible from local waste arisings and hauled by local hauliers securing at least four other rural jobs.

The application should clearly demonstrate there is no planning regulation based reason why this development should not be given consent. The Applicant would respectfully request that the development be recommended for approval within the shortest possible time-frame. It is critical to the restoration of the site and the commerciality of the business that this development can take place as soon as possible. The Applicant respectfully requests that subject to the circumstances allowing it, the Planning Officers consider this application under delegated powers.
Appendices 1, 2, 3, 5, 6, 9 and 12 are lodged as separate documents on the Planning Portal at PP-04455906

Appendix 4 - Environmental Designation
The area is shown as having no SSSI’s other than Yeldon Meadows.
National Grid Reference: TL 010674
Description: Neutral grassland occuring on clay. *Alepocurus-Sanguisorba* is local to the midlands and southern parts of England.
The development poses a very low risk to this SSSI.

Appendix 7
Typical Fuel Quality
The performance of the equipment is dependent on the fuel specifications. The gasification system is designed to be compliant with a wide variety of fuel particle size, moisture and energy content. The quality of the fuel on each delivery is visually inspected for dimensions & quality and microwaved to assess the moisture content against a set fuel testing methodology. In order to comply with Renewables Heat Incentive eligible fuel guidelines, sample compositions are analysed monthly. A typical batch of RDF may have the following chemical properties and in the second table origination make-up.

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Appendix 8
Traffic Statement

1.0 This Traffic Statement has been produced in support of a planning application for a Renewable Energy Centre and Pelleting Plant at Upper Higham Lane, Higham Ferrers, NN10 0SU.

2.0 The site is under the full ownership Greenfield Properties UK Limited who also own World Rubber Limited which operates an existing and established tyre process plant that enjoys a properly sited & constructed access splay onto the public highway at Higham road.

3.0 The access is shared by multiple site users including Carr Brothers Ltd who operate a large haulage, storage and warehousing business on a different part of the site.

4.0 The development requires that a maximum of 0.05Mtpa tonnes of material will be used by the process. This fuel is produced off site from Refuse Derived Fuel (RDF). Each fuel delivery accounts for 0.000018Mtpa and therefore 7 to 10 delivery journeys per day will be required.

5.0 Finished product (Pellets) will be back-loaded on the same transport at the rate of 3 to 4 journeys per day.

6.0 Ash removed from site will account for up to 3 HGV journeys per week.

7.0 Other HGV deliveries to site will be less than 2 per week.

8.0 The Renewable Energy Centre will require maintenance but we expect a maximum of one van based visit per month once the new system is fully commissioned. This equates to 12 visits per year.

9.0 The site will increase headcount with 12 full time employees. The development will therefore increase private car traffic at a very small scale.

10.0 Taken together there will be a minor increase in vehicle movements.

11.0 The site is not currently encumbered with any restrictions on vehicle movements and it has planning consent for the import of 0.075Mtpa of material.

12.0 With the exception of winter evenings, the majority of any incidental deliveries will take place during the hours of daylight.

13.0 The proposed development will have no adverse impact upon Junction Safety.

14.0 The local road network is uncongested and operates in a safe manner. The proposed development is predicted to reduce traffic movements and therefore no mitigation measures are required.

15.0 The proposed development will not have any adverse effect on accident patterns on the local road network. No mitigation measures are required for road safety reasons.
Appendix 10
Flood Risk Statement

1.0 The development site is made up of land previously developed for industrial purposes. It is situated at 90m above sea level on a slight falling slope to the north. It contains an upper and a lower elevation with the difference between the two being 1.4m. This produces natural fall into an existing site drainage system built by the Air Ministry in the 1940s.

2.0 The wider site has been permanently occupied since the 1940s. The current landlord has been in occupation since 2002 when that company took over an existing manufacturing plant on the site. There is no record of site flooding in living memory.

3.0 Although the site is nearer to the River Til topography ensures that the site drains lead storm water via a system of culverts and field ditches past Caldecott and Chelveston villages towards the River Nene where it flows into Stanwick Lakes at a distance of 4 miles following the water course.

4.0 The site sits some 60m above the flood plain of the River Nene. Investigation of the Environment Agency Flood Risk web mapping tool for relevant risk profiles reveals:

- Risk of Flooding from Rivers and Seas – Less than very low risk
- Risk of Flooding from Surface Water – Very low risk
- Risk of Flooding from Reservoirs – No risk

5.0 On the basis of the desk-top and site based study undertaken overall flood risk for the site would be reduced from an already very low or no risk basis following development.

Appendix 11
Noise Statement

1.0 The Local Authority responsible for Environmental Health is East Northamptonshire Council (ENC). At the suggestion of NCC Planning Dept, enquiry was made of ENC’s Environmental Health Officers to see if a full Noise Impact Assessment was required. Given the nature of the development set against the background of the sites existing use the Agent was advised that this was not necessary for the purposes of determining planning consent. However the EHO suggested that background information should be included within the application and that recent precedent noise study information had been collated for the Chelveston Renewable Energy facility nearby.

2.0 The only receptors within 1km of the development are:
- Airfield Farm – used as a clay-pigeon shooting ground (derelict non-residential) 400m
- Buscott’s Lodge (residential) 800m
- Chelston Rise (residential) 675m
- Other occupants of the immediate NN10 0SU site (non-residential)
3.0 Noise Predictions

The external area of the site is often used by World Rubber for the storage and recovery of elements from vehicle tyres. The development would move this activity onto a different part of the site. Noise levels from the specific site will therefore be reduced after development.

The external area of the development will only be used for vehicle movements with all processing being undertaken within a portal framed building. The site stack should be considered an external noise emitter however.

The significant elements from a plant noise perspective with their data sheet noise dB level at 1m are as follows:

The significant elements from a plant noise perspective with their data sheet noise dB level at 1m-3m and 50m are as follows:

Stack – 69db L_{A90} at 1m decaying to 36.5db L_{A90} at 50m
Building – 58db L_{A90} at 3m decaying to 32.6db L_{A90} at 50m.

4.0 Background noise levels representative of the nearest property record that at lower wind speeds night noise levels can be as low as 20dB L_{A90} and at higher wind speeds up to 6m/s range between 20dB L_{A90} and double that.

5.0 The predicted noise level at 100m beyond the property will be less than the 35dB L_{Aeq} considered acceptable at the nearest residential receptor in terms of the advice in BS4142:2014 a considerable distance of 675m.

6.0 Therefore it can be concluded that there will be no increase in noise to any nearby receptor from the development.
Surface Water proposals
Addendum to the planning statement
Surface Water Proposals
J2184 - Chelveston.
Client: Dallol.

The Site

The total site area, calculated from the proposal drawings is 6811m².

The plan area of the proposed building is 3085m². With a 9º roof pitch this creates an effective area of 3123m².

Including the roof area, the total effective area of the site is considered to be 6849m².
Surface Water Proposals
J2184 - Chelveston.
Client: Dallol.

Existing Drainage.

The existing site is situated over two levels with a fall of 1.4m between the southern boundary and that at the north. It is made up entirely of concrete hard stand upon which a derelict and defunct agricultural type building now stands on the higher southern section. The structure has no effective rainwater collection system. The whole site (and that of the neighbouring site to the south – World Rubber) drains to a point at the north east point of the hard stand. Water then flows through an existing pipe to a brick transfer chamber before being allowed to discharge into a small pond which then drains via the field into a channel which becomes a brook to the north west end of the entire site.

The site was previously part of Chelveston Air base and the drainage system built for that purpose still exists, has full integrity and is in use. The existing drainage system was built to accommodate rain water run off from a far larger area of concrete, (being the runways that were broken up and removed to be used as hard core during the construction of Milton Keynes in the 1970s.) Approximately 1/3 of the old airfield drains to the culvert and stream that then runs past Chelveston village and eventually into the River Nene. Our enquiries reveal that there is no history of any flooding in Chelveston in living memory. The area is categorised as having the lowest level of flood risk according to Environment Agency data. The development seeks to repair and redevelop but the overall area of built environment remains unchanged.
Proposed Drainage

The proposals intend to create a comprehensive drainage system for the site. The system intends to maintain the disposal of the surface water via the existing method, albeit with a more comprehensive on site catchment system, and with run-off attenuation.

The rate of discharge into the existing drainage system is not known and there is currently no evidence of any existing attenuation system.

The development proposals increase the effective impermeable area on site by only 38m², that being of the roof pitch to the proposed building. However, it is considered necessary to design a drainage system with underground storage capacity for a 1 in 30 year return rainfall event, and for additional surface water from a 1 in 100 year return event to be retained on site avoiding flooding to third party land.

A discharge rate of 5ltrs/sec has been used to calculate required attenuation storage. The is, in our opinion, regarded as an appropriate discharge rate considering the site already has evidence of positively draining via the existing system.

Attenuation storage calculations have added an additional 30% to account for climate change and have yielded a total attenuation requirement for 828.8m³ for storm water from a 1 in 100 year return rainfall event. Calculations also show the need to store 454m³ below ground for a 1 in 30 year return event.

The 1 in 30 year attenuation requirement can be accommodated for within storage cells 13m x 13.5m x 2.8m deep.

Surface water from the attenuation storage system can then discharge at 5ltrs/sec into the existing system.

The location of the below ground attenuation is to be located with the adjacent field to the east. Prior approval has already been sought and approved with the land owners for use of the land. The developer should be advised to have written confirmation of this agreement.

Additional surface water generated from a 1 in 100 year return rainfall event would be accommodated for above land but kept within the confines of the development site.

Available hard standing space on site is approximately 3445m², while the calculated additional surface water generated from a 1 in 100 year event is 361.97m³.

This surface water across the site results in a total flood depth of 105.4mm. This can be adequately contained within the site using raised kurb edging to border the edge of the site. A raised “speed bump” on the vehicular access to the site would prevent surface water discharging into the highway.
Surface Water Proposals
J2184 - Chelveston.
Client: Dallol.

This drainage scheme is considered to be the most appropriate plan for the development proposals considering the existing site currently positively drains, albeit via an inadequate (to current standards) on-site drainage system.

The proposed design significantly reduces run-off the existing system and ultimately the brook to the north of the site and also help reduce overland run-off across the site and affecting third party land.
1. Copas Formula 1 in 30yr

1.1 Calculate the Required Storage Capacity

Return Rainfall Event (I) = 30 years
Restricted Discharge Rate (Q) = 5 litres/sec
= 0.005 m³/sec
Impermeable Area (Aₚ) = 6811 m²
= 0.681 ha
Storage Capacity Required (Cₐₚ) = 349.19 m³
plus 30% = 453.95 m³

1.2 Calculate the Provided Storage Capacity - Option 1: Pipe Network

From storage capacity within SW drainage system = m²

1.2 Calculate the Provided Storage Capacity - Crate storage (95% void ratio)

Pond Depth (d) = 2800 mm
Pond Length (L) = 13 m
Pond Length (W) = 13.5 m
Pipe Capacity (Cₚprov) = 466.83 m³ (Approx. Pond)

1.3 Design Check

Total Capacity = Option 1 + Option 2

466.83 > 453.95

Design OK

∴ Pipe and/or Pond has Sufficient Capacity
2. Copas Formula 1 in 100yr

2.1 Calculate the Required Storage Capacity

Return Rainfall Event (I) = 100 years
Restricted Discharge Rate (Q) = 5 litres/sec
= 0.005 m³/sec
Impermeable Area (Aₚ) = 6811 m²
= 6.811 ha
Storage Capacity Required (C_{req}) = 637.54 m³ plus30% 828.8 m³

2.2 Capacity already within attenuation storage from 1 in 30yr event

= 466.83 m³

2.3 Remaining surface water run-of to be stored above ground.

= 361.97 m³

2.4 Total flood depth on site

available site area = 3445 m²
1 in 100 year flood depth = 105.07 mm

Run-off from 1 in 100 year event can adequately be stored within curtilage of site.

2.6 Copas Formula Definition

\[ C = 8.02 \times A_p^{1.5} \times I^{0.5} + Q^{0.5} \]

Where: C is the Storage Capacity required in m³
Aₚ is the impermeable area in hectares
I is the return rainfall event in years
Q is the (restricted) rate of outflow from the storage area in cumecs (m³/sec)
The proposed pond & existing system will be protected by a 150mm kurbing. The boundary is proposed 1 in 30 year attenuation storage system. The proposed piped discharge will be bunded with 150mm kurbing.
SMALL WASTE INCINERATION PLANT DEVELOPMENT
NEAR RUSHDEN, NORTHANTS

ECOLOGICAL ASSESSMENT

August 2016

Dallol Energy Ltd

Ecological Planning,
Design and Management

18 Fisher Close
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1.0 INTRODUCTION

1.0.1 This report describes an ecological assessment undertaken at the site of a former tyre recycling facility, Upper Higham Road, near Rushden, Northamptonshire. The report has been prepared to support an application by Dallol Energy Ltd to Northamptonshire County Council for permission to develop a small waste incineration plant (SWIP) at the site, following remediation of the existing tyre recycling facility.

1.0.2 The assessment presented in this report provides a summary of key findings from a desk study review of archive information on designated nature conservation sites in the locality of the former tyre recycling facility and ecological walkover surveys undertaken at the site. The principal aim of the assessment is to identify the potential for significant adverse impacts of the proposed SWIP development on protected flora and fauna species and on designated nature conservation sites.

1.1 Methodology

1.1.1 As part of their site assessment activities, Dallol Energy Ltd has commissioned or undertaken the following ecological appraisal tasks for the Upper Higham Road site:

- Information for designated nature conservation sites within the area surrounding the development site has been obtained from the Multi-Agency Geographic Information for the Countryside (MAGIC) database;

- Three site walkover surveys have been carried out during March and April 2016 to ascertain the general ecological value of land within the proposed development site. The site surveys were undertaken to identify the main habitats and associated plant species present within the site, and to record observations on fauna species of nature conservation interest using the site.

1.1.2 With regard to the latter consideration, the assessment has focused on features at the site with the potential for use by fauna species that benefit from enhanced statutory protection. These include bats, nesting wild birds, reptiles, amphibians and badgers.

1.1.3 Both the desk study and site walkover surveys were used to inform the present ecological assessment and are summarised in the following sections of this report.

2.0 BASELINE APPRAISAL

2.1 Overview and Nature Conservation Context

2.1.1 The proposed development site is located within a landscape that mainly comprises intensively managed agricultural land, as shown in Figure One. Sites of nature conservation interest within this area are typically confined to discrete locations where less intensive land management has enabled the development of localised habitat interest and opportunities for wildlife.
2.1.2 Immediately adjacent to the proposed development site to the north is a light industrial complex, with an area of coniferous plantation woodland approximately 250 metres to the north-east, and small areas of deciduous woodland approximately 500 metres to the north and south east.

2.1.3 With regard to sites of known nature conservation interest, no part of the proposed development site has been recognised by a formal nature conservation designation, and no nature conservation designation applies to any area of land adjacent to or in proximity to the proposed development site.

2.1.4 Several statutory nature conservation sites have been designated in the countryside around the proposed development site, with the closest located at a distance of approximately 1.6 km to the east. This is Yelden Meadows Site of Special Scientific Interest, designated in recognition of its nationally important species-rich unimproved neutral grassland.

2.2 Assessment of Proposed Development Site

2.2.1 The location of the proposed development site is shown in Figure One, and its general character is shown in Plates One to Four.

2.2.2 These show that the site is confined to a hard concrete slab, with mounds of inert shredded waste from tyre processing present along the northern site boundary. This material comprises a mixture of tyre ‘fabric’ and tiny shards of sharp metal from shredded tyre bands. An area approximately 25m x 25m in extent is present adjacent to the tyre waste storage area where blocked land drains result in occasional accumulation of surface water with visible hydrocarbon contamination. The site also contains the remains of a derelict, fire damaged warehouse. This building has a prefabricated steel girder construction with corrugated sheet cladding. A section of building that has been most significantly affected by fire damage has collapsed onto the concrete slab.

2.2.3 With regard to features of nature conservation interest, the present condition of the site is of no value. In particular, the following characteristics detract from the site’s biodiversity potential and nature conservation interest:

- The site has no substantive vegetation cover that could provide either botanical interest or features of potential value as wildlife habitat;

- The accumulations of tyre recycling debris within the site do not comprise materials or features that could provide habitat potential for ground dwelling wildlife species such as reptiles or ground nesting birds;

- Both the extant and collapsed buildings provide no features of potential wildlife habitat interest. In particular, the open construction that comprises corrugated metal cladding on a pre-cast steel girder superstructure provides no enclosed cavities that could be of any interest to roosting bats;

- The accumulated tyre recycling materials and other debris have an inert character, providing no decay microhabitat features that could provide small scale wildlife habitat interest.
3.0 IMPACT ASSESSMENT

3.0.1 This section describes the extent to which the proposed development is likely to result in significant adverse impacts on features of notable nature conservation interest. The potential for significant direct impacts on features of interest within the proposed development site is initially considered, followed by an assessment of the potential for significant indirect impacts on sites and features of notable nature conservation interest beyond the boundaries of the proposed development site.

3.0.2 In the event that the proposed development has the potential for significant adverse direct or indirect ecological impacts the incorporation of ecological impact mitigation measures into the proposed development would be required.

3.1 Direct Ecological Impacts

3.1.1 Previous sections of this report have described the current condition of the proposed development site and the lack of any features of intrinsic nature conservation interest. As a consequence of the lack of nature conservation interest features within the site the proposed development will have no direct adverse impacts on features of nature conservation interest. As a result of this situation, no impact mitigation measures would be required to address the risk of significant direct ecological impacts of the proposed development.

3.2 Indirect Ecological Impacts

3.2.1 As described in previous sections of this report, Yelden Meadows Site of Special Scientific Interest is located around 1.6 km to the east of the proposed development site. When considered against the Nottinghamshire County Council Biodiversity Planning Checklist, it is apparent that the proposed development site is sited within a notional Impact Risk Zone of the Yelden Meadows Site of Special Scientific Interest.

3.2.2 In order to ensure that the risk of significant indirect impacts to Yelden Meadows Site of Special Scientific Interest is investigated, an air quality impact screening assessment was undertaken for the Yelden Meadows using the Simple Calculation of Atmospheric Impact Limits (SCAIL) website screening tool.1

3.2.3 The SCAIL screening tool identifies the habitat type and location, and calculates emissions dispersal for oxides of nitrogen (NO\textsubscript{X}) and sulphur dioxide (SO\textsubscript{2}) on the basis of input data relating to the location of the chimney, the height of the chimney, the diameter of the chimney, the exit temperature and emission rates for NO\textsubscript{X} and SO\textsubscript{2}.

3.2.4 The SCAIL assessment for the proposed development shows that current nitrogen deposition levels within the Yelden Meadows SSSI currently exceed the 10 kgN/ha/yr lower critical load. However, the increase in nitrogen deposition at the nearest point within the Yelden Meadows SSSI, as a result of emissions of NO\textsubscript{X} from the proposed SWIP, is not expected to exceed 0.5% of current levels.

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1 [http://www.scail.ceh.ac.uk/combustion/index.html](http://www.scail.ceh.ac.uk/combustion/index.html)
3.2.5 The exceedance of a predicted Critical Load for NO\textsubscript{x} deposition is not a quantitative forecast of likely damage to a particular habitat or vegetation type, but indicates the potential for damage to occur. The results of a Common Standards Monitoring Condition Assessment undertaken for Yelden Meadows Site of Special Scientific Interest by Natural England\textsuperscript{2} indicates that the entire site is in Favourable Condition, with no indication that air quality impacts are, or have the potential to, result in significant adverse impacts on the intrinsic nature conservation value and importance of the site.

3.2.6 As a consequence of the preceding assessment, the incremental increase in nitrogen deposition attributable to emissions of NO\textsubscript{x} from the proposed SWIP development is considered unlikely to result in a measurable adverse effect on the ecological integrity and neutral grassland conservation value of Yelden Meadows Site of Special Scientific Interest. An increase of the magnitude predicted for the proposed development site can be screened out as non-significant in relation to relevant guidance from the Environment Agency and Natural England\textsuperscript{3}.

3.2.7 SCAIL screening assessments were also carried out for the conifer plantation and broadleaved woodland locations in proximity to the proposed development site. Predicted increases in NO\textsubscript{x} and SO\textsubscript{2} deposition at deciduous woodland located approximately 500 metres to the north of the proposed development site were estimated to be approximately 0.3% and 0.6% of current levels. These can be screened out as non-significant levels. The results were similar for coniferous plantation woodland approximately 250 metres to the north of the development site.

4.0 BIOGRAPHICAL NOTE

4.0.1 This document has been prepared for Dallol Energy Ltd by David Broom, Consultant Ecologist. David holds Undergraduate and Postgraduate qualifications in Environmental Science and Ecology from the University of Bradford and the University of London, and holds a Certificate in Environmental Impact Assessment from Oxford Brookes University. David has worked as a consultant ecologist for over 25 years, and for over 15 years has held a post as sessional lecturer in ecology, restoration ecology and Environmental Impact Assessment within the schools of Plant Science and Biological Science at the University of Reading.

4.0.2 David has a long track record in ecological impact assessment for the waste management, mineral extraction and mining sectors, having undertaken full ecological assessments for a substantial number of sites both within and outside the United Kingdom.

\textsuperscript{3}https://www.gov.uk/guidance/air-emissions-risk-assessment-for-your-environmental-permit
Proposed development site

Figure One
Proposed Small Waste Incineration Plant development near Rushden, Northants

Location and Extent of Proposed Development Site
Plate One – General character of proposed development site

Plate Two – Remains of collapsed building
Plate Three – Fire-damaged debris within collapsed building

Plate Four – Typical character of tyre heaps
Dallol Energy Ltd

Chimney Height Assessment for the Proposed EfW Facility, Chelveston

April 2016

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Summary

An assessment has been undertaken of the height of the chimney that will be required for an EfW facility to be installed on a brownfield site on the outskirts of Chelveston, East Northamptonshire. The EfW facility is to be provided by Dallol Energy Ltd and will burn RDF fuel under the terms and conditions of regulations imposed by the EU Industrial Emissions Directive for waste co-incineration plant. The assessment involved a calculation based upon the procedures in HMIP Guidance Note D1.

Emissions data and stack discharge conditions were provided by Dallol Energy Ltd and building dimensions were taken from site plans and process drawings, also supplied by Dallol Energy Ltd, and GIS data from the UK Grid Reference Finder website.

In line with Environment Agency guidance for modelling of the short term conversion of NO\textsubscript{X} to NO\textsubscript{2}, it was assumed that 50\% of the NO\textsubscript{X} emission is released as NO\textsubscript{2} and that this value is added to a value of twice the existing long term background NO\textsubscript{2} concentration. The calculations also assumed that all of the particulate emissions were as PM\textsubscript{10}, which probably overestimates the significance of the particulate release. Estimates of existing background concentrations of NO\textsubscript{X}, NO\textsubscript{2} and PM\textsubscript{10} were taken from the DEFRA 2011 Background Maps website for 2016.

The results from the D1 calculation are presented in Appendix 1, and show that the theoretical height of the discharge stack for the EfW facility should be at least 15.4 metres high, ~6 metres above the roof of the building through which the chimney protrudes. When adjacent buildings and structures are taken into consideration, a chimney height of 22 metres above the site datum level is estimated.

The D1 calculation procedure is a screening technique, and makes the following statement with regard to accuracy:

\textit{It lays out a relatively simple, non-specific method of approximately determining the heights of discharge stacks for polluting emissions, which should be adequate in normal circumstances.}

It should be noted that as a precautionary measure, Dallol Energy Ltd proposes to install a chimney for the EfW facility with a height of 25 metres, which will provide an additional 3 metres of height to increase the effectiveness of dispersion of pollutant emissions from the RDF combustion process. This will ensure that people living and working nearby are not exposed to pollutant concentrations that could be detrimental to their health.

The precautionary approach to chimney height proposed by Dallol Energy Ltd should ensure effective dispersion of pollutant emissions from the chimney of the proposed EfW facility. Detailed assessment would require the use of atmospheric dispersion modelling software, such as ADMS Version 5.1, which is used routinely for predicting potential air quality impacts of emissions from processes such as the proposed EfW facility.
1. Introduction

1.1 Introduction

1.1.1 GF Environmental Ltd (GFE) was commissioned by Dallol Energy Ltd to undertake a D1 calculation to estimate the required discharge stack height to provide effective dispersion of pollutant emissions from a new EfW facility to be installed on a brownfield site on the outskirts of Chelveston, East Northamptonshire. The EfW will burn RDF fuel, and pollutant emissions from the biomass boiler will be discharged to atmosphere via a dedicated chimney to be erected through the roof of the main building. The EfW facility will be equipped with a high efficiency abatement plant to minimise emissions of particulates from the RDF combustion process.

1.1.2 A chimney height calculation has been carried out in accordance with the procedures outlined in Her Majesty’s Inspectorate of Pollution, Technical Guidance Note (Dispersion) D1 (1993)\(^1\). The calculation method assumes that the chimney (discharge stack) height is governed by the need to limit local ground level pollutant concentrations below a maximum level that might occur for short periods.

1.1.3 Technical information relating to the proposed installation were provided by Dallol Energy Ltd, developers of the proposed EfW facility.

---

\(^1\) Her Majesty's Inspectorate of Pollution, Technical Guidance Note (Dispersion) D1, “Guidelines on Discharge Stack Heights for Polluting Emissions”, HMSO, (1993)
2. **D1 Calculation Procedure**

2.1 **Calculation Procedure**

2.1.1 The first step in the procedure is to calculate the pollution index for the chimney. The pollution index is then used to calculate the final discharge stack height, correcting for the presence of nearby tall buildings if necessary. Finally, attention is given to subsidiary matters such as absolute minimum stack heights, discharge conditions etc.

2.2 **Calculating the Pollution Index**

2.2.1 The pollution index is defined as,

\[
P_{i} = \frac{D}{(G_d - B_c)} \times 1000
\]

where,

- \(D\) is the discharge rate of the pollutant in g s\(^{-1}\);
- \(G_d\) is the guideline concentration of the pollutant in mg m\(^{-3}\), and,
- \(B_c\) is the background concentration of the pollutant for a particular district in mg m\(^{-3}\).

2.2.2 The major pollutant, or group of pollutants, is that which produces the highest pollution index, and this value is then used to calculate the chimney height. For the purpose of this study, the calculations were based on emissions of pollutants subject to regulation by the Industrial Emissions Directive (IED) for waste co-incineration plant; oxides of nitrogen (NO\(_X\)), sulphur dioxide (SO\(_2\)), carbon monoxide (CO), fine particles (PM\(_{10}\)), hydrogen chloride (HCl), hydrogen fluoride (HF) which are the most significant pollutants associated with the combustion of the RDF fuel to be utilised by the EfW facility, in terms of their short term air quality impacts. The calculation procedure assumes that all of the particulate release is as PM\(_{10}\), which may overestimate the significance of the particulate release to a certain extent.

2.2.3 Chimney discharge parameters (temperature and fluegas volumetric flowrate) for the proposed biomass boiler installation were supplied by Dallol Energy Ltd. The efflux velocity (m s\(^{-1}\)) was calculated by dividing the fluegas volumetric flowrate (Am\(^3\)s\(^{-1}\)) by the corresponding cross-sectional area of the flue (m\(^2\)) to provide an efflux velocity of ~19 m s\(^{-1}\).

2.3 **Determining the Guideline Concentration for the Pollutant**

2.3.1 The guideline concentration is one to which the general population may be safely exposed for continuous periods of up to one hour, and which may be repeated intermittently in the longer term. There is little formal advice on guideline concentrations of this sort and it is common practice to use modified values of, e.g., occupational exposure limits such as those issued by the HSE\(^2\). The value commonly used is one fortieth of the Short Term Exposure Limit (STEL). If only a Time Weighted Average (TWA) is given, then a value of one fortieth of the TWA is used. If the pollutant is scheduled under COSHH regulation and has a Maximum Exposure limit (MEL), then a value of one hundredth of the MEL is used.

2.4 **Correcting for Background Pollutant Concentrations**

2.4.1 Account is taken of the situation of a process in respect of the background concentration of a particular pollutant. Guidance Note D1 gives a range of values for common pollutants for situations ranging from rural areas with little development to major city centres/ heavy industrial areas.

2.4.2 The calculation procedure requires a judgement to be made on the type of district in which the process is situated. For the current study, estimated background pollutant concentrations for

\(^2\) [http://www.hse.gov.uk/pubns/priced/eh40.pdf]
2016 were taken from the DEFRA 2011 Background Maps website\(^3\) for a location close to the development site, situated within an area under the jurisdiction of East Northamptonshire Council.

2.5 **Combinations of Pollutants**

2.5.1 Technical Guidance Note D1 recommends that for groups of pollutants of similar type, e.g. acidic gases, their pollution indices \(P_i\) are added together to produce a combined pollution index.

\[
P_i(\text{Combined}) = P_i(1) + P_i(2) + P_i(3), \text{etc}
\]

2.5.2 For certain substances, e.g. acidic gases, it is necessary to correct for the background concentrations of similar pollutant types by calculating the polluting equivalent of the individual components. This is accomplished by scaling the concentration of the background pollutant by the ratio of the guideline concentrations of the discharged pollutant to that of the background pollutant.

\[
B_c = B_c \times \left(\frac{G_d}{G_b}\right)
\]

2.5.3 Where,

- \(B_c\) is the actual concentration of the background pollutant;
- \(G_d\) is the guideline concentration of the discharged pollutant, and
- \(G_b\) is the guideline concentration of the background pollutant.

2.6 **Calculation of Discharge Stack Height**

2.6.1 Uncorrected discharge stack heights are calculated on the basis of the buoyancy and momentum of the discharge respectively. If necessary, the final stack height is calculated, corrected for the downwash due to adjacent buildings.

2.7 **Calculation of Uncorrected Chimney Height for Buoyancy \(U_b\)**

2.7.1 The first stage is the calculation of the heat release rate \(Q\) using the formula;

\[
Q (MW_{th}) = \frac{V \left(1 - \frac{283}{T_d}\right)}{2.9}
\]

2.7.2 Where,

- \(V\) is the volumetric flowrate of the discharge from the stack in m\(^3\) s\(^{-1}\), at the discharge conditions, and,
- \(T_d\) (K) is the temperature of the discharge.

Note: The ambient temperature is assumed to be 283K.

2.7.3 The uncorrected chimney height \(U_b\) is then calculated from the pollution index as follows:

\[
U_b = 10^a - P_i^b
\]

2.7.4 Where,

for $Q \leq 1$ MW, $a = -1.11 - 0.19 \log_{10} Q$, 
\[
 b = 0.49 + 0.005 \log_{10} Q.
\]
for $Q \geq 1$ MW, $a = -0.84 - 0.1 \exp(Q^{0.31})$, 
\[
 b = 0.46 + 0.011 \exp(Q^{0.32}).
\]

The limits of application for the calculation of $U_b$ are:
- $U_b$, minimum 1 m, maximum 200 m;
- $Q$, minimum 0.03 MW, maximum 100 MW, and
- $P_i$, minimum 50, maximum $10^7$.

### 2.8 Calculation of Uncorrected Chimney Height for Momentum ($U_m$)

#### 2.8.1
The first stage in the calculation is the estimation of the discharge momentum. Provided that the discharge is of combustion products, the discharge momentum ($M$) is calculated as follows:

\[
 M = \frac{283}{T_d} \cdot V \cdot w
\]

Where,
- $T_d$ is the discharge temperature,
- $V$ is the volumetric flowrate, in $m^3 \cdot s^{-1}$, at the discharge temperature, and,
- $w$ is the discharge velocity in m $s^{-1}$.

#### 2.8.3
Knowing $M$ and $P_i$, the discharge stack height for momentum can be calculated from,

\[
 \log_{10} U_m = x + (y \cdot \log_{10} P_i + z)^{0.5}
\]

Where,
\[
 x = -3.7 + (\log_{10} M)^{0.9},
 y = 5.9 - 0.624 \cdot \log_{10} M,
 z = 4.24 - 9.7 \cdot \log_{10} M + 1.47(\log_{10} M)^2 - 0.07(\log_{10} M)^3
\]

#### 2.8.5
The limits of application for the calculation of $U_m$ are,
- $U_m$, minimum 1 m, maximum 200 m,
- $M$, minimum 1, maximum $2 \times 10^4$, and
- $P_i$, minimum 50, maximum $10^7$.

#### 2.8.6
There are minimum values of $U_m$ for particular values of $M$, irrespective of the values of $P_i$. These override lower calculated values of $U_m$. Minimum discharge stack heights for momentum can be calculated from,

\[
 \text{Minimum} U_m = 0.82 M^{0.32}
\]

#### 2.8.7
The lowest value of $U_m$ for any value of $M$ is 1 metre.
2.9 Calculation of Final Discharge Stack Height, Corrected for Nearby Buildings

2.9.1 The presence of large structures in the vicinity of discharge stacks can adversely affect the dispersion of pollutants emitted. It is necessary, therefore, to correct the calculated chimney height to take account of the downwash created by adjacent buildings. Buildings within 5 \( U_m \) of the chimney of the biomass boiler were considered in the analysis. If the lesser of \( U_b \) or \( U_m \) is greater than 2\(\frac{1}{2} \) times the tallest building, then no building correction is required. If \( U < 2\frac{1}{2} \) times the tallest building, then the following procedure is adopted.

2.9.2 For the commonly occurring case where there is a single, dominant building that is wider than it is high, the final discharge stack height is given by:

\[
C = H + 0.6 \left[ U + (2.5H - U)(1 - A^{-H}) \right]
\]

Where,
- \( H \) = Building Height,
- \( U \) = lesser of \( U_m \) or \( U_b \).

2.9.3 If there is no value of \( U_b \), or if \( U_b > U_m \), then \( A = 1 \) and the equation reduces to,

\[
C = H + 0.6U
\]

Which is the same correction as in the 1981 Chimney Heights Memorandum\(^2\).

2.9.4 In cases other than for single, wide buildings, the procedure is slightly different,

\[
C = H_m \left( 1 - \frac{H_m}{T_m} \right) \left[ U + \left( T_m - U \right) \left( 1 - A^{-H} \right) \right]
\]

Where,
- \( H_m \) = Maximum H considering all relevant buildings,
- \( T_m \) = Maximum disturbed height (\( H + 1.5K \)) considering all relevant buildings,
- \( H \) = Building Height, and
- \( U \) = lesser of \( U_m \) or \( U_b \).

2.9.5 If there is no value of \( U_b \), or if \( U_b > U_m \), then \( A = 1 \) and the equation reduces to,

\[
C = H + U(1 - \frac{H_m}{T_m})
\]

Which is the same as the correction in the 1981 Memorandum\(^4\).

\(^2\) Chimney Heights Memorandum (HMSO,1981)

\(^4\) Chimney Heights Memorandum (HMSO,1981)
3. Input Data

3.1 Plant Details

3.1.1 The location and dimensions of the chimney associated with the proposed EfW facility, along with those of adjacent buildings and structures were obtained from information site layout and elevations drawings supplied by Dallol Energy Ltd. Additional information on off-site building dimensions was also obtained using the GIS measurement tool available on the UK Grid Reference Finder website.

3.1.2 The proposed EfW facility will be installed within a new building on the development site, and will have its own dedicated chimney flue of diameter \( \sim 0.75 \) metres, which will ensure an efflux velocity of \( \sim 19 \) m s\(^{-1}\).

3.1.3 The following parameters were estimated for use in the calculations:

- **Stack Dimensions and Discharge Conditions**
  - Stack diameter: 0.75 metres
  - Efflux temperature: 140 °C
  - Fluegas Volumetric Flowrate: 8.28 Am\(^3\) s\(^{-1}\)
  - Efflux Velocity: 18.7 m s\(^{-1}\)

- **Associated Building Dimensions**

<table>
<thead>
<tr>
<th>Building</th>
<th>Height</th>
<th>Length</th>
<th>Width</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main 1</td>
<td>9.5</td>
<td>46.7</td>
<td>18.0</td>
</tr>
<tr>
<td>Main 2</td>
<td>15</td>
<td>46.7</td>
<td>49.0</td>
</tr>
<tr>
<td>Large Building to the West</td>
<td>15</td>
<td>57.6</td>
<td>48.4</td>
</tr>
</tbody>
</table>

3.2 Pollutant Emissions

3.2.1 The assessment was based upon emissions of pollutants prescribed for regulation under the IED for waste co-incineration plant; oxides of nitrogen (NO\(_X\)), sulphur dioxide (SO\(_2\)), carbon monoxide (CO), fine particles (PM\(_{10}\)), hydrogen chloride (HCl), hydrogen fluoride (HF) which are the most significant pollutants associated with the combustion of the RDF fuel to be utilised by the EfW facility, in terms of their short term air quality impacts.

3.2.2 The pollutant discharge rates used in the chimney height assessment were based upon process information provided by Dallol Energy Ltd, and represent the condition for maximum output while burning the RDF fuel.

3.2.3 Pollutant discharge rates were calculated by multiplying the pollutant emission concentration by the corresponding fluegas volumetric flowrate (19.700 Nm\(^3\) hr\(^{-1}\)), both based upon the same reference conditions.

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Emission Concentration (mg Nm(^{-3}))</th>
<th>Discharge rate (g s(^{-1}))</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oxides of Nitrogen</td>
<td>400</td>
<td>2.19</td>
</tr>
<tr>
<td>Nitrogen Dioxide</td>
<td>200</td>
<td>1.09</td>
</tr>
<tr>
<td>Sulphur Dioxide</td>
<td>50</td>
<td>0.27</td>
</tr>
<tr>
<td>Carbon Monoxide</td>
<td>50</td>
<td>0.27</td>
</tr>
<tr>
<td>Particulates (PM(_{10}))</td>
<td>10</td>
<td>0.05</td>
</tr>
<tr>
<td>Hydrogen Chloride</td>
<td>10</td>
<td>0.05</td>
</tr>
<tr>
<td>Hydrogen Fluoride</td>
<td>1</td>
<td>0.005</td>
</tr>
</tbody>
</table>

3.3 Assumptions

3.3.1 Environment Agency guidance\(^6\) for air quality modelling suggests that for short term modelling of NO\(_2\) where atmospheric chemistry is not incorporated, as is the case in the D1 calculations, it should be assumed that as a worst case basis for assessment, 50% of the NO\(_X\) is released as NO\(_2\), and that this value should be added to a value of twice the existing long term

\(^{6}\) [http://gridreferencefinder.com/](http://gridreferencefinder.com/)

[http://www.environment-agency.gov.uk/static/documents/Conversion_ratios_for__NOx_and_NO2_.pdf](http://www.environment-agency.gov.uk/static/documents/Conversion_ratios_for__NOx_and_NO2_.pdf)
background NO₂ concentration.

**Calculation of Hourly Average NO₂ Predicted Environmental Concentration**

\[(\text{Hourly NO}_X \text{ Modelled} \times 0.5) + (\text{Annual NO}_2 \text{ Measured} \times 2)\]

3.3.2 Particulate emissions were also assumed to be totally as PM₁₀, which probably overestimates the significance of the particulate release and provides a worst case basis for assessment.

3.3.3 Background air quality for the locality of the development site for 2016 were taken from the 2011 DEFRA Background Maps website.⁷

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Annual Average Concentration (µg/m³)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>NO₂</td>
<td>9.9</td>
</tr>
<tr>
<td>NOₓ</td>
<td>13.4</td>
</tr>
<tr>
<td>PM₁₀</td>
<td>16.9</td>
</tr>
</tbody>
</table>

* Concentrations at grid point 499500,267500

3.4 **Results from the D1 Calculation**

3.4.1 The results from the D1 calculation are presented in Appendix 1, and show that the theoretical height of the discharge stack for the biomass boiler should be ~6.0 metres above the ridge of the building through which the chimney protrudes. The building is 9.5 metres high, therefore the chimney should be at least 15.4 metres above the datum point of the site. When adjacent buildings within 5Uₘ (~44 metres) are taken into account, the estimated chimney height requirement increases to 22.0 metres.

3.4.2 It should be noted that the D1 calculation procedure is a screening technique, and the D1 guidance makes the following statement with regard to accuracy:

> It lays out a relatively simple, non-specific method of approximately determining the heights of discharge stacks for polluting emissions, which should be adequate in normal circumstances.

3.4.3 Accordingly, the results from the D1 calculation should be taken as indicative of the discharge height required to ensure effective dispersion of pollutant emissions from the chimney of the proposed EFW facility.

---

4. Conclusions

4.1.1 An assessment has been undertaken of the height of the chimney that will be required for an EfW facility to be installed on a brownfield site on the outskirts of Chelveston, East Northamptonshire. The EfW facility is to be provided by Dallol Energy Ltd and will burn RDF fuel under the terms and conditions of regulations imposed by the EU Industrial Emissions Directive for waste co-incineration plant. The assessment involved a calculation based upon the procedures in HMIP Guidance Note D1.

4.1.2 Emissions data and stack discharge conditions were provided by Dallol Energy Ltd and building dimensions were taken from site plans and process drawings, also supplied by Dallol Energy Ltd, and GIS data from the UK Grid Reference Finder website.

4.1.3 In line with Environment Agency guidance for modelling of the short term conversion of NOX to NO2, it was assumed that 50% of the NOX emission is released as NO2 and that this value is added to a value of twice the existing long term background NO2 concentration. The calculations also assumed that all of the particulate emissions were as PM10, which probably overestimates the significance of the particulate release. Estimates of existing background concentrations of NOX, NO2 and PM10 were taken from the DEFRA 2011 Background Maps website for 2016.

4.1.4 The results from the D1 calculation are presented in Appendix 1, and show that the theoretical height of the discharge stack for the EfW facility should be at least 15.4 metres high, ~6 metres above the roof of the building through which the chimney protrudes. When adjacent buildings and structures are taken into consideration, a chimney height of 22 metres above the site datum level is estimated.

4.1.5 The D1 calculation procedure is a screening technique, and makes the following statement with regard to accuracy:

   It lays out a relatively simple, non-specific method of approximately determining the heights of discharge stacks for polluting emissions, which should be adequate in normal circumstances.

4.1.6 It should be noted that as a precautionary measure, Dallol Energy Ltd proposes to install a chimney for the EfW facility with a height of 25 metres, which will provide an additional 3 metres of height to increase the effectiveness of dispersion of pollutant emissions from the RDF combustion process. This will ensure that people living and working nearby are not exposed to pollutant concentrations that could be detrimental to their health.

4.1.7 The precautionary approach to chimney height proposed by Dallol Energy Ltd should ensure effective dispersion of pollutant emissions from the chimney of the proposed EfW facility. Detailed assessment would require the use of atmospheric dispersion modelling software, such as ADMS Version 5.1, which is used routinely for predicting potential air quality impacts of emissions from processes such as the proposed EfW facility.
APPENDIX 1  D1 Calculation Based Upon 50% Conversion of Emissions of NO\textsubscript{X} to NO\textsubscript{2}
Calculation of Chimney Height Using Method in Technical Guidance Note D1
RDF Boiler - Chelveston
Calculations Based on Data Supplied by Dallol Energy Ltd
April 21, 2016

Gas Temp C 140
Heat Release MWth 0.30

Gas Temp K 413

Q<1  a  -1.10
b  0.49

Slack Diameter 0.75
0.90

Q>1  a  -1.10
b  0.49

Gas Rate Am³/s 6.28

Gas Velocity m/s 18.7

FG O₂ (%) NA

If emissions data available, enter in appropriate Cell in Column C (19 to 27).

Building Height m 9.5

FG NO₂ (%) NA

Entry to appropriate Cell in Column C (19 to 27).

FG H₂O (%) NA

Otherwise Enter Discharge Rates

<table>
<thead>
<tr>
<th>SO₂</th>
<th>NOₓ</th>
<th>NO₂</th>
<th>HF</th>
<th>PM</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>400</td>
<td>200</td>
<td>20</td>
<td>10</td>
<td>6073</td>
</tr>
<tr>
<td>0.27</td>
<td>2.19</td>
<td>1.09</td>
<td>0.05</td>
<td>0.05</td>
<td>2.35E-03</td>
</tr>
<tr>
<td>0.44</td>
<td>4.40</td>
<td>0.20</td>
<td>0.02</td>
<td>0.02</td>
<td>2.35E-03</td>
</tr>
<tr>
<td>0.008</td>
<td>0.007</td>
<td>0.007</td>
<td>0.017</td>
<td>0.017</td>
<td>6073</td>
</tr>
</tbody>
</table>

Discharge Conc. (mg/Sm³)
Discharge Conc. (mg/m³)
Discharge Rate (g/s)
Guideline Concentration (mg/m³)
Background Concentration (mg/m³)
Pollution Index (m³/s)

Case for Single Building

Ub (m) M (m³/s²) Min Um (m) Um (m) U Corrected Chimney Height (Metres) Height Above Building (Metres)
5.6 106.3 3.5 8.7 15.4 5.9

Case for Multiple Buildings within 5Um

5Um = 43.6 metres

Main 1
Distance (metres) 0 1 9.5 9.5 46.7 18.0 9.5 23.8
Height (H) 9.5 15.0 57.6 48.4
Width (B) 0 0 0
Length (metres) 0 0 0
K (Min H & B) 0 0 0
I (H+1.5K) 0 0 0

Main 2
Distance (metres) 3 1 15 15 46.7 49.0 15.0 37.5
Height (H) 15.0 15.0 15.0
Width (B) 0 0 0
Length (metres) 0 0 0
K (Min H & B) 0 0 0
I (H+1.5K) 0 0 0

Building to West
Distance (metres) 58 0 15 15 0 0
Height (H) 58.0 48.4
Width (B) 0 0
Length (metres) 0 0
K (Min H & B) 0 0
I (H+1.5K) 0 0

Building to West
Height (H) 58.0 48.4
Width (B) 0 0
Length (metres) 0 0
K (Min H & B) 0 0
I (H+1.5K) 0 0

Building to West
Height (H) 58.0 48.4
Width (B) 0 0
Length (metres) 0 0
K (Min H & B) 0 0
I (H+1.5K) 0 0