Town and Country Planning Act 1990

Town and Country Planning Appeals (Determination by Inspectors) (Inquiry procedure) (England) Rules 2000

Proposed development	Construction of an Energy Recovery Facility
PINS reference	APP/D1265/W/23/3327692
LPA reference	WP/20/00692/DCC
Site Address	Portland Port, Castletown, Portland, DT5 1PP
Local planning authority	Dorset Council
Appellant	Powerfuel Portland LTD

RULE 6 PROOF OF EVIDENCE

SUSTAINABILITY – CLIMATE CHANGE

by Paula Klaentschi BA Hons Dip Arch retired architect

on behalf of

STOP PORTLAND WASTE INCINERATOR

14 NOVEMBER 2023

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Fig 1: view of Portland from Hamm Beach showing frequent cloud cap, photo Christine Storey

SUSTAINABILITY, CLIMATE CHANGE

1.0 INTRODUCTION

1.1 I am Paula Klaentschi, I have lived in Weymouth since 2008. When I became a chartered architect and joined the RIBA I signed up to a code of conduct, a Duty of Care. This goes beyond fulfilling a client's commission to also consider the wider implications of what is built including all those who would use the building and be affected by it. Now retired in 2020 I worked for 5 months for Zero Waste Europe tasked with unpacking United Nations Framework Convention on Climate Change data comparing greenhouse gas emissions for landfill and energy from waste incineration submitted by all the EU countries and the UK. Following this work, I became the coordinator of the Stop Portland Waste Incinerator SPWI campaign till the present day.

1.2 I have reviewed the planning application, the regulation 25 requests additional documents, the EA Environmental Permitting Application, the representations made as well as Dorset Council's Committee Report, Update sheet and Decision Notice. I have also reviewed all the Appellant's submitted appeal documentation to date.

1.3 My role as SPWI coordinator is the task of bringing from the overwhelming quantity of research set out in submissions in planning application file: WP/20/00692/DCC to those who have to take the decision whether this is the right proposal in the right place.

1.4 The impact of global warming driven by increased greenhouse gas emissions caused by human activity is climate change that is also causing ecosystems to falter or even collapse. Dorset Council declared a Climate and Ecological Emergency in 2019.

1.5 The evidence I have prepared and provided for this appeal in this Proof of Evidence is true and I confirm that the opinions expressed are my true opinions.

Fig 2: Major storm 2014. view West from High Street, Fortuneswell of the Cove. richbroomephotography.com

1.6 Portland and Weymouth people are very attuned to changes in the weather. Here it is evident that extreme weather is becoming far more frequent with high intensity rainfall overwhelming local drains, high winds in frequent storms and heat waves. In line with the Dorset Council Climate and Ecological Emergency the impact of increasing greenhouse gas emissions of the tonnes of CO_2 byproduct from the prospective ERF is a serious consideration as all these emissions add to global warming and all add to the intensity of the weather we are already experiencing. The Met Office[1.] advice is this: "Across the UK, we expect to see: Warmer and wetter winters Hotter and drier summers More frequent and intense weather extremes. Climate change will make these conditions more likely. The UK's weather will continue to be variable, but we will see more of this type of weather."

Source references - see Appendix: 1. Met Office How will climate change affect the UK

2.0 THE PLANNING APPLICATION PROPOSAL

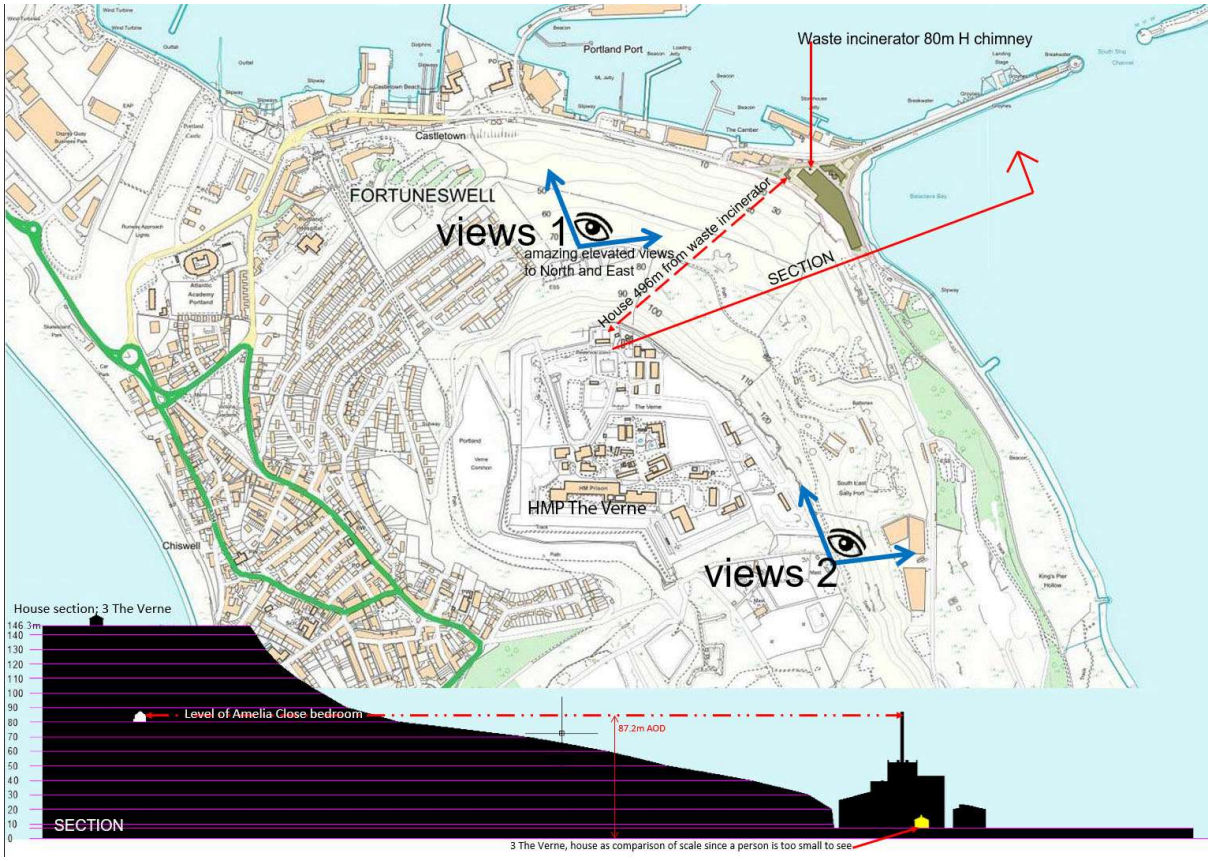


Fig 3: Location map with contours and site topography section, SPWI

2.1 The planning application includes no constraint on the place of origin of the fuel. The Appellant proposes to receive 100% of the fuel needed by HGV lorry and a proportion or possibly 100% by ship from overseas as set out in the extract below.

Assessment scope

5.15 The proposed development is expected to have an operational lifetime of at least 25 years. Therefore, this has been chosen as the study period for the assessment. The elements of the proposed ERF development scoped into the carbon and greenhouse gas assessment are as follows:

- Emissions released from the combustion of fossil fuel-derived carbon in the waste
- Emissions of other greenhouse gases (nitrous oxide (N_2O) and CH_4) from the combustion of waste
- Emissions from the combustion of gas oil in auxiliary burners
- Emissions from the transport of waste, reagents and residues, based on scenarios of 100% transport by road and 100% transport by sea
- Emissions offset from the export of electricity from the proposed development
- Emissions offset from the export of heat from the proposed development, if this were to be provided
- Emissions offset from the export of power to ships moored at Portland Port, if this were to be taken up by shipping operators

Fig 4: highlighted Extract, [CD1.36f] 16/09/2020 - ES Chapter 5: Carbon Balance & Greenhouse Gas Emissions

2.2 The provision of a district heating network is explained by the Appellant[2]. [CD ref2.7]:

"4.27. Where location is not a challenge there is still the investment risk to be considered. A DHN is a high capital expenditure project with uncertain returns where the supply is to a disparate group of offtakers – from an investment perspective whilst the capital expenditure is understood the revenues can be very uncertain – both volume or heat and the price paid per unit of heat can be variable. This contrasts with the economics of an ERF where a number of the key revenue streams can be addressed via contracts."

"4.28. The DHN schemes that have been successfully implemented in the UK to date have been possible due to local and national government support/subsidy." The Minister of Justice's agent with responsibility for the prison HMP The Verne has made a very clear statement of being neutral relying on others to ensure the suitability and safety of the proposal. District heating issues arise because this type of facility has a problem with heat, a considerable proportion of the input energy must be dissipated. Where an ERF is collocated to symbiotic uses like a cement factory this can be advantageous and is supported by Government policy. However here on Portland I find it a distraction to consider supplying heating to residential end-users who would be locked into, and potentially expensive entrapped by, a single supplier. This is well explained by Citizens Advice [3] report 'If your home is on a heat network' and the Heat Trust[4] advice – 'Urgent action needed to protect half a million homes on heat networks'. The Appellant presents a main raison d'etre is to supply shore power from a proposed facility that has to shut down for a 4 week block every year. The distraction of CHP combined heat and power, or district heating, is a future of unresolved conflict in supply to whom and when and which. The necessity of a secondary back up provision for dwellings or the prison to be practical, renders the option unattractive and duplicatory. District heating provision is not included in the planning application.

2.3 The issue of carbon capture is also explained by the Appellant[5]:

"5.30 It is recognised by both government and the waste industry that CCS is not currently commercially viable, without some form of financial support. The Department for Business, Energy, and Industrial Strategy (BEIS) is giving consideration to potential mechanisms for supporting the application of CCS in the waste sector in respect to new and existing ERF. These uncertainties reduce the weight that should be given to these claimed benefits."

Carbon capture requires significant additional parasitic load. The provision is not included in the planning application.

2.4 The Appellant has stated that both district heating and carbon capture provisions have financial uncertainties. As neither are certain neither therefore can be taken into account as benefits of the scheme.

Source references - see Appendix:

2. Core Document ref 2.7 Extract ePg11 para 4.27. Appellant document17/08/2021 - District Heating Paper. WP-20-00692-DCC_Other+documents_dist_heat.
3. Citizens Advice - If your home is on a heat network.
4. Heat Trust - Urgent action needed to protect half a million homes on heat networks
5. Core Document ref 2.3. Extract ePg79 para 5.30. Appellant document 17/08/2021 - Supplemental planning supporting statement, WP-20-00692-DCC_Other+documents_supp_pss-1 ePg79 para 5.30. WP-20-00692-DCC_Other+documents_supp_pss.

3.0 THE SITE SETTING - CLIMATE IMPACT CONTEXT

3.1 The proposed ERF is situated in the setting of England's only natural World Heritage Site. UNESCO's webpage[6]. Climate Change states: *"Climate change is one of the defining issues of our time. Over 30 UNESCO programmes in the sciences, education, culture and communication contribute to creating knowledge, educating and communicating about climate change, and to understanding the ethical implications for present and future generations."* Such world recognition by this citation, these particular Dorset geological formations, provide the embodied information of how our planet responds to climate change. These fossil records explain the impacts of rising carbon dioxide and subsequent sea level rises. It is therefore my view that to permit unnecessary tonnes of CO2 every year from this proposed ERF within the setting of this embodied knowledge ignores this information and is disrespectful to the world.

3.2 The Royal Meteorological Society[7]. explains that: *"The last time carbon dioxide was so plentiful in our planet's atmosphere was in the Pliocene era, around 3 million years ago. Life on Earth was dominated by giant mammals; humans and chimps had shared their last common ancestor. Although the sun's force was about the same, the sea levels were 15 metres higher and Arctic summer temperatures were 14 degrees higher than the present day."* I therefore draw attention to the knowledge that the study of geology provides for us that in turn should inform our decisions. Accumulation of greenhouse gases in the atmosphere leads to a heating of the earth's surface. This in turn leads to impacts such as shifting seasons, rising sea-levels, disappearing Arctic sea-ice and more intense heat waves. In this particular coastal location, the impact of the increased energy in weather systems is already noticeable.

3.3 SPWI and I concur with World Heritage Watch[8], Stephan Doempke's 15.01.2023 representation to the planning application from Berlin that exactly because of the UNESCO citation we have an obligation to the United Nations Education Science and Culture Organisation (UNESCO) of the world to make clear:

"By being inscribed on the World Heritage List, the property has ceased to be a British heritage alone; it has become a common heritage of all mankind which the United Kingdom has taken the responsibility to take care of for all of us on the planet.

As an organization enshrined to protect the world's values, we find that there is nothing

more rampant than the consequences of climate change and resources depletion to cause conflict changing our world irrevocably. We ask you to consider the international message that in Dorset with its 'maps' of mass extinction you can tell the world that mindset change is indeed happening. We can be all effective in starting to put right the imbalance in our world. Please reject the planning application." This obligation is underlined because education precedes science and culture in the aims of UNESCO. The area's important fossil sites and classic coastal geomorphologic features have contributed to the study of earth sciences for over 300 years. This Dorset WHS geology informs us of previous events and how the world responded then to the carbon dioxide concentrations in the atmosphere.

The knowledge of the impact of elevated levels of carbon dioxide in the atmosphere is matched by the evidence of extinction of species found in the fossil records here in the Dorset Jurassic geological records.

3.4 The Environment Agency May 2023 Guidance Combustion Energy from Waste: examples for your adapting to climate change risk assessment[9]. identifies that ERFs are vulnerable to climate change impacts. This guidance sets out necessary resilience measures to seek to ensure that the expected impact of greater risks of fugitive odour and pests, increased risk of fire, temperature impact on pipework, flash flooding, increased reliance on mains and portable water, increased dust, and the expected damage to structures from high winds are all incorporated into the design. Existing plants are advised to plan for summer daily temperature rises that *"may be around 7°C higher compared to average summer temperatures now, with the potential to reach extreme temperatures as high as over 40°C with increasing frequency based on today's values*" and *"winters could be 4°C more than the current average with the potential for more extreme temperatures, both warmer and colder than present."* with *"Daily rainfall intensity could increase by up to 20% on today's values"* and *"Sea level rise which could be as much as 0.6m higher compared to today's level."*. The appeal site ground level is +7.20 AOD is safely above current sea level for now. The issue in considering the Portland ERF proposal is not how to design out the consequences from climate change of the identified foreseeable impacts but to evaluate the need for the proposal at all. Not to build is in my view the responsible decision and thereby remove the unnecessary and consequential contributing greenhouse gas emissions from the

pressure on our habitat. To build what is unnecessary is contrary to the obligations of responding to the Climate and Ecological Emergency.

Source references:

6. UNESCO Climate Change, screen shot from https://www.unesco.org/en/climate-change
7. The Royal Meteorological Society, screen shot from https://www.rmets.org/event/pliocene-last-time-earth-had-400-ppm-atmospheric-co2
8. 16/01/2023 - Representation World Heritage Watch 15 01 23 WP-20-00692-DCC_Neighbour+Responses_Representation_-_World_Heritage_Watch_-_15-01-23_Redacted
9. EA Guidance Combustion energy from waste examples for adapting to climate change risk assessment https://www.gov.uk/government/publications/adapting-to-climate-change-industry-sector-examples-for-your-risk-assessment/combustion-energy-from-waste-examples-for-your-adapting-to-climate-change-risk-assessment.

4.0 SITE LOCATION, LOCAL CLIMATE CHANGE IMPACTS

4.1 Weymouth is a coastal town situated on a sheltered bay at the mouth of the former estuary of the river Wey. The Isle of Portland has one access road that crosses a low-lying causeway to Weymouth. The ever-changing influence of the coastal weather and the ongoing coastline erosion is something local people are very aware of. Here we already have regular experience of the force of change unfolding due to global warming. Repeated mainland Dorset heathland wildfires put the public and firefighters at risk and can be devastating to endangered plants and animals.

4.2 The increasing frequency and severity of weather from storms, flash flood downpours and heat waves brought home our fragility when the storms in 2014 inundated the Portland Beach Road A354 cutting off the island till the tide went out hours later. These events threaten our trade, our safety and our wellbeing.

Fig 5: A354 completely inundated 5th Feb 2014 Island cut off for hours. photo Grant Armfield C.Eng

4.3 Storm Ciarán hit Portland and Weymouth with gusts of 62mph overnight 01.11.23 combining with high tides that caused the Portland Beach Road A354 to be closed to traffic from early morning and remained closed for many hours with pedestrians being advised not to venture across.

Fig 6: A354 completely inundated 2nd Nov 2023 Island cut off for hours. photo SPWI

5.0 RECYCLING AND THE CIRCULAR ECONOMY

5.1 Overcapacity of energy from waste incinerators, ERFs, competes with waste prevent and undermines the circular economy. Dorset Council's Outline Statement on Waste Need[9.] [CD11.3] Pg 9 concludes *"1.18 This assessment of the best available data confirms that, there is no compelling need case at local, regional or national level for an EfW plant of the capacity subject of this Appeal."*. ERFs need to be fed and the ERF charges customers attractive gate fees to ensure even with paying transport coats to bring waste to the gate it is still economically attractive to send material to such a facility. An ERF must ensure a flow in of material to ensure it can function. Where it is economically advantageous to send products that are recyclable, they will be pressured to follow the ERF route rather than take up the obligation to remain as a reusable resource. As shown in the www.letsrecycle.com[10.] data areas with easy access to ERFs, like Hampshire, are areas with the poorest recycling rates.

5.2 Victoria Prentis[11.] The Minister of State Defra answering Parliamentary questions 30.06.22 advised: *"The Government's view is that Energy from Waste (EfW) should not compete with greater waste prevention, re-use, or recycling. Proposed new plants must not result in an over-capacity of EfW waste treatment provision at a local or national level."* UKWIN Technical Annex[12.] report draws together the data from WRAP, Defra and the Environment Agency which build a clear identified insight that there remain

products of high recyclability from municipal, commercial and industrial waste arisings which are being diverted from being moved up the waste hierarchy because they are being sent to fuel energy from waste incinerators.

5.3 ERFs are primarily designed as waste management facilities. Professor Ian Boyd[13], as Chief Scientific Adviser, Department for Environment, Food and Rural Affairs in January 2018 spoke to the Environment, Food and Rural Affairs Committee clearly setting out that: *"If there is one way of quickly extinguishing the value in a material, it is to stick it in an incinerator and burn it. It may give you energy out at the end of the day, but some of those materials, even if they are plastics, with a little ingenuity, can be given more positive value. One thing that worries me is that we are taking these materials, we are putting them in incinerators, we are losing them for ever and we are creating carbon dioxide out of them, which is not a great thing. We could be long-term storing them until we have the innovative technologies to reuse them and turn them into something that is more positively valued."* It is obvious to me that in the short term the continued linear economy habit of make a product, use a product, throw away a product ignores the reality of depleting resources and the climate & ecological impact of our actions. With time running out to decarbonise in time before consequential global temperature rises cause chaotic change each new facility that adds significantly to the greenhouse emissions must I suggest be evaluated for its true necessity.

5.4 The Government Waste Prevention Programme for England- Maximising Resources, Minimising Waste 08.10.2023 [14].[CD??] states: *"To drive down the amount of waste we produce, and encourage reuse and recycling, the government has set an Environment Act 2021 environmental target to halve residual waste (excluding major mineral wastes) kg per person by the year 2042. This will be measured as a reduction from 2019 levels, which is estimated to be approximately 574 kg per capita. The target will:*

- *help to deliver our overarching aim for zero avoidable waste by 2050*
- *support the commitment in the government's Net Zero Strategy to the near elimination of biodegradable municipal waste to landfill from 2028 and reduced emissions from landfill and incineration, saving an estimated 35 MtCO2e by 2050*

- *build on the Resources and Waste Strategy commitments to help achieve a 65% municipal recycling rate and send less than 10% of municipal waste to landfill by 2035*
- *support the government commitment to eliminate avoidable plastic waste by 2042"*

Environmental Improvement Plan 2023 [15], also pledges: *"We will halve 'residual' waste (excluding major mineral waste)produced per person by 2042."* Both these programmes sets out that the prospect of rising recycling waste and driving down waste to meet the identified target and delivering those outcomes can be met by waste minimalizing and recycling. The Government has not stated that more incineration is needed to achieve this outcome. With these Government incentives to improve recycling rates throughout the UK we can confidently expect change. Dorset is well placed with over 60% that is already recycled. This together with the projected increases in recycling rates and newly improved Dorset waste management recycling sites will, I consider, necessitate the proposed Portland ERF from sourcing its needs for fuel from much further away. Increasing distance for sourcing fuel from beyond the region contravenes the proximity principle and is not sustainable.

5.5 The Appellant draws attention to a shortfall of 234k tonnes of residual waste treatment capacity by 2033 as set out in the 2019 Dorset Waste Plan [CD 7.1]. However, this same Plan explains in para 1.8 *"This Plan will cover a period from adoption to the end of 2033. The end date influences the projected waste arising that drives the need for new waste management facilities."* and in para 1.9 *"Although the Waste Plan covers a 15 year period, it is likely that a review will take place well before this time."* This review is part completed within the Dorset Council's Outline Statement on Waste Need [CD11.3] para 1.2 states: "shows that the arisings of residual waste that may be suited to EfW from the subregion is currently in the region of between 178kt (2021) and 184kt (2022). This is substantially below the projection of 320ktpa of residual waste given in the adopted Waste Local Plan for 2023."

and [CD11.3] para 1.11 also advises: *". . . Therefore, contrary to the Appellant's claim, there is not a compelling need case for additional EfW capacity to serve the South West region either."*. I therefore am confident in stating that the proposed ERF in Portland will not be necessary and will not serve an identified waste management need.

5.6 Clearly once built an ERF has to be fed or become a stranded asset. The consequence of overcapacity and its impact on pressure to burn recyclate products is made obvious in the infographic Fig 7, which clearly shows the small part that landfill provides in the waste stream and how the overall total waste is allocated to incineration and recycling back into the circular economy. I have added colour to the infographic ePg6 of Hampshire County Council[16], report submitted in respect to proposed Portland ERF at the planning application. This report explains: *"1.10 EfW infrastructure has an operational life of at least 30 years and so has a considerable impact on how waste will be managed in future. If insufficient capacity is developed then waste will continue to be landfilled but, on the other hand, if too much is developed then management of waste in accordance with the waste hierarchy, in particular the achievement of recycling targets, may be hindered. Indeed, once capacity is operational it is not commercially possible to reduce inputs to enable waste to be managed by recycling and other methods further up the waste hierarchy. Hence waste is locked into a long term supply. Figure 2 below provides an illustration of how 'surplus' EfW capacity might occur."* It can be seen from Fig 7 *(Figure 2)* that once UK capacity is reached building new ERF demands burning recyclates or importing waste.

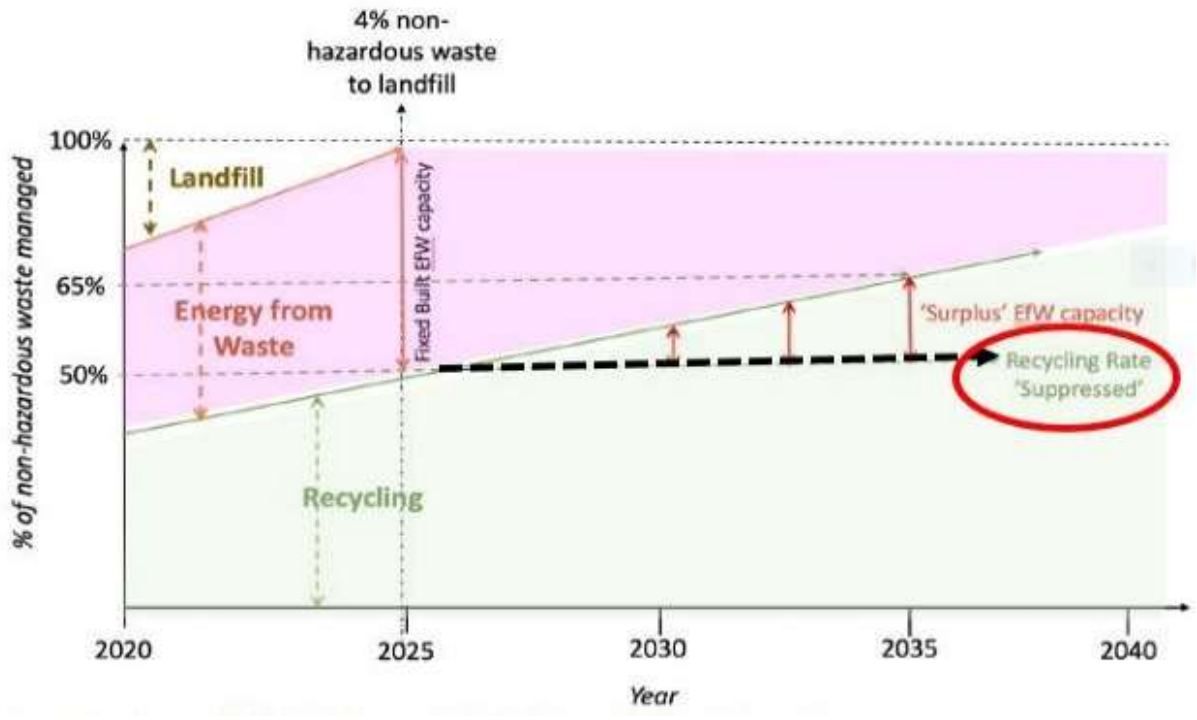


Fig 7: (HCC Fig2) Surplus' EfW Capacity Scenario (for illustrative purposes only)

Fig 7 infographic also identifies that Landfill is no longer significant in the decision-making process. Dorset landfill is already a very small component and represents those products which are not suitable for incineration. Government Waste Interrogator Summary Tables South West Region[17] last updated 10 Nov 2023 identifies that Dorset landfill is inert material such as rubble and excavation material and is mainly used for land reclamation landfill as occurs on Portland in the disused quarries. The very reduce availability of landfill site capacity and the Government objective of substantial 50% reduction of residual waste being sent to landfill further removes landfill from the debate. I consequently consider that Landfill is not the relevant comparison when considering carbon intensity evaluations of waste management or energy generated from ERFs.

5.7 The Appellant is very keen on the value to the proposal of bringing waste into Dorset by sea. Natural England[18] [CD 4.95] has identified risks associated with ship to shore transfers in this highly exposed location. I question knowing commercial pressures, operative doing a job of work and in our local winds, how these transfers can be achieved without inevitable operational spillages and consequential pollution to our sea, our international sailing arena, and our beaches. It should also be remembered that from each tonne of waste burnt there are also emissions and also roughly 20-25% becomes a new byproduct for Dorset of ash which requires disposal or treatment to render safe to use and only in controlled restricted circumstances. Natural England within the same document are also raising concerns over the IBA transfer spillage issue.

5.8 The Appellant's Supplemental Planning Supporting Statement[19] 17.08.2021 [CD 2.3] explains that Dorset Council municipal waste which is already fully contracted out will be in the near future handled as *"RDF from Canford Magna will be transported to Bridgwater rather than to Europe."*. The desirability of exporting a waste problem to another Country sits very badly in most people's minds. Importing waste from other Countries where they are not able to manage their own waste and perhaps continue a profligate behaviour consuming resources in the old linear habit also sits badly with environmental groups. Climate impact considerations requires the best use to be first made of already expended embodied energy in built facilities such as the new Bridgwater ERF to the west or to Marchwood ERF in Southampton to the east. Dorset

waste is already well managed and I am confident that the best use will be made of existing facilities especially as areas like Southampton make rapid improvements to their current low recycling rate.

5.9 The Environment Act 2021 establishes a legal commitment *"to halve residual waste (excluding major mineral wastes) kg per person by the year 2042."*

The proposed Portland ERF would be in competition for Dorset waste for fuel with nearby ERFs in particular the Southampton's Marchwood facility where the local recycling rate is very low. This understanding is explained further when considering waste or resources management issues more directly by others in this Inquiry. Dorset Council is ranked 8th in the Letsrecycle[10.] overall performance table 2020-21 currently recycling over 60% of the collected municipal waste in contrast to Southampton City Council at 317th ranking living with its Veolia Marchwood ERF currently only achieving a recycling rate of 27.5%.

5.10 The Canford Magna ERF MVV Environment Ltd[20.] response submitted as objection to this Appeal states: *"the Canford EfW CHP Facility located adjacent to the MBT facility at CRP consequently best placed to meet the residual waste capacity needs identified in the BCP and Dorset Waste Plan (2019)."* The planning implications of using an allocated site as opposed to unallocated Portland Port site will be addressed in the Dorset Council evidence reinforcing the first Planning Reason for Refusal for the Portland ERF proposal.

5.11 With the Government incentives to improve recycling rates throughout the UK, with Dorset being well placed in the rate that is recycled together with the projected increases in recycling rates give rise to the sourcing of fuel for the proposed Portland ERF from much further away. Increasing distance for sourcing fuel from beyond the region contravenes the proximity principle and is not sustainable.

5.12 The Department for Levelling Up, Housing and Communities and Ministry of Housing, Communities & Local Government[21.] latest update guidance states: "*The National Planning Policy Framework explains that all communities have a responsibility to help increase the use and supply of green energy, but this does not mean that the need for renewable energy automatically overrides environmental protections and the planning concerns of*

local communities. As with other types of development, it is important that the planning concerns of local communities are properly heard in matters that directly affect them."

The community made evident their concerns by the very large number of detailed objections both at the planning application stage and to this Appeal that they are clearly not in support of an ERF in Portland Port. The supply of energy should not override such objections.

5.13 The ReLondon[22.] Report explains: "*On top of the substantial environmental gains that a circular economy can deliver, it also has the double dividend of contributing significantly to job creation and economic growth*." and further advises "*Preventing 10,000 tonnes of waste bound for incineration would lead to the loss of 1 incineration job and the creation of 386 jobs in circular businesses*."

On this basis we are comparing an ERF of 202,000 tonnes per year capacity with replacing 7,797 people's jobs with 20 workers. The Appellant sets out in their report concerning Economic Effects[23.] the future opportunities as "*The ERF is conservatively expected to create some 30 directly employed FTE permanent jobs*". This proposal imperils more jobs than it creates.

5.14 Consultants like the Ellen MacArthur Foundation are enabling manufacturers to respond to the Environment Act 2021 Extended Producers Responsibility obligations to redesign products that facilitate easy recycling. British engineers and material scientists are reengineering how we employ resources in keeping with this commitment to the future. The circular economy generates new high-level skills needed to engineer and design out waste and pollution, enabling products and materials to circulate at their highest value and promote the regeneration of our natural environment. The circular economy is an economic system that delivers better outcomes for people, and the environment.

Source references:

10. LetsRecycle LeagueTable2020-21selected
11. Victoria Prentis SoS Defra 11.07.22
12. Extract Pg 12-14inc UKWIN Technical Annex Interested Part representation
13. Extract Prof Ian Boyd Q31 Efra Committee 31.01.2018
14. Extract Pg4,5 Waste Prevention Programme for England- Maximising Resources, Minimising Waste 08.10.2023
15. Extract Pg147 Environmental Improvement Plan 2023
16. Hampshire County Council_Redacted Reg25 18-10-21
17. Waste Interrogator SW Landfill input
18. CD4.95 Pg4. WP-20-00692-DCC_Consultee+Responses_Response_Natural_England_-08-03-23
19. CD2.3 Extract ePg44 para 3.138 Appellant document 17.08.2021 - Supplemental planning supporting statement.

20. Extract Pg33 para 2.36 Interest party representation MVV IP statement
21. Gov.uk_guidance_renewable_and_low_carbon_energy
22. ReLondon The-circular-economy-at-work_jobs-and-skills-for-Londons-low-carbon-future
23. CD1.37f ePg20 para 1.5.2.2. Appellant document 22.09.2020 - ES Technical Appendix F2 Economic Effects

6.0 CLIMATE CHANGE AND CARBON INTENSITY

6.1 The proposed ERF at Portland should not be considered low carbon.

6.2 Carbon intensity is a measure of how clean our electricity is. It refers to how many grams of carbon dioxide CO_2 together with other greenhouse gases are released to produce a kilowatt hour (kWh) of electricity. The highest source of calories is provided by fossil fuel derived products namely plastics to achieve the sweet spot for an efficient burning.

6.2 The definitive working capacity, the tonnage of waste it requires to be fed of this proposed ERF is set out in Appellant's Updated Carbon Assessment [CD 11.8] Table1 Pg8 identifies a nominal throughput of fuel of 182,640 tpa and the maximum of 201,912 tpa.

6.3 The true mix of residual waste can only be assumed today as until actual delivery contracts are established once the facility is built nothing is for real. Addressing the Appellant's Updated Carbon Assessment [CD 11.8] Table 5 Pg10 we read that the proposed ERF will emit during normal operations 89,796 tCO_2e pa, tonnes of fossil carbon dioxide equivalent a year. This is a significant amount of greenhouse gas emissions which would continue throughout the whole life of the facility of 25+years well past 2050.

6.4 There are also carbon impacts arising from transportation of material being brought to and away from this proposed facility. The Appellant [CD 11.8] has identified that this ERF will generate a total of 80 HGV lorry transits every day that has been provided in Table 14 Pg19 namely for the year total of 2,600 tCO_2e pa.

6.5 As presented the greenhouse gas generating emissions the Appellant's Updated Carbon Assessment [CD 11.8] sets out that the direct emissions will be 89,796 tCO_2e pa plus 2,600 tCO_2e pa from HGV transport emissions, a total 92,396 tCO_2e pa when running at its nominal capacity.

6.6 The ability of the ERF to generate electricity is defined in Appellant's Updated Carbon Assessment [CD 11.8] Table 6 Pg12 as Net electricity exported 136,800MWh.

Therefore, the carbon intensity of the energy that would be exported by this proposal would be around 92,396 ÷ 136,800 = 0.675 tCO_2e/MWh. which is equivalent to 675 gCO_2e/kWh.

This can then be compared to other sources of electricity generation. Looking at the Fig8 the comparison to wind and solar is stark. The power that would be generated from the proposed Portland ERF, without offsets, is nearly twice the intensity of unabated gas power stations that run between 340 – 372 gCO_2e/kWh as shown in Fig 8 and the Defra Fuel Mix Disclosure Table[24.] which is the same source referred to by the Appellants Updated Carbon Assessment [CD 11.8] both identifying the combined-cycle gas turbine CCGT electricity intensity as 372tCO_2e/kWh. From this comparison SPWI advance that the low carbon benefits of the Incinerator have been overstated.

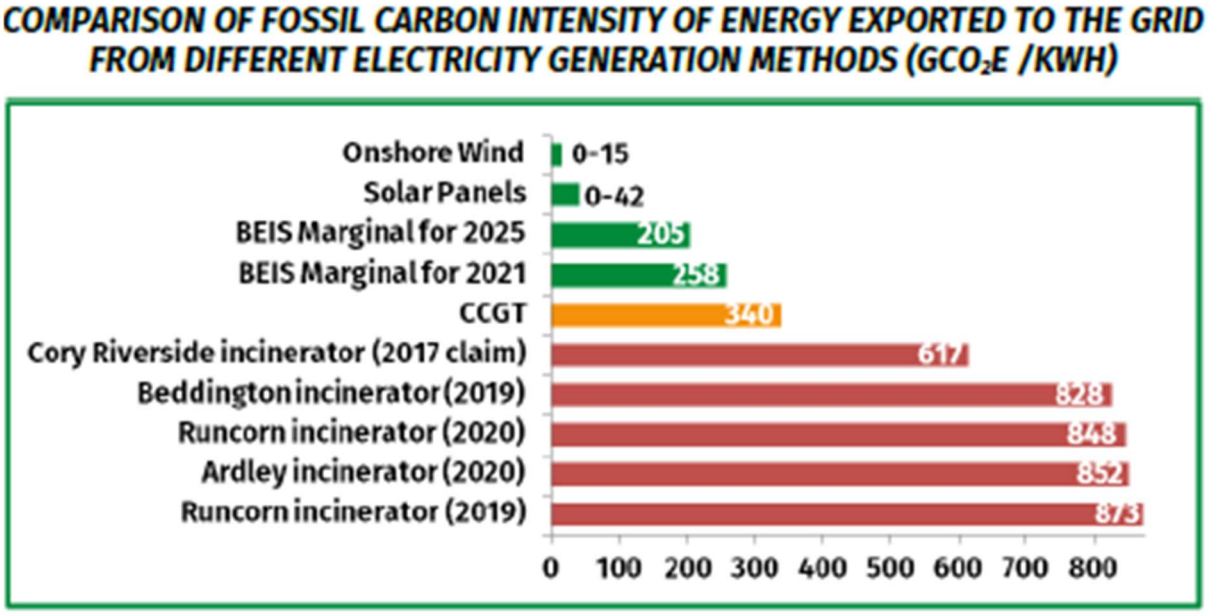


Fig 8: UKWIN Good Practice Guidance for Assessing the GHG Impacts of Waste Incineration ePg82[25.]

6.7 Energy generated at 675 gCO_2e/kWh is over three times the current carbon intensity of the UK national grid. The Government's Fuel Mix Disclosure Data table[24.] the overall average from 01.04.22-31.03.23 was 186 gCO_2e/kWh. By opening the website www.carbonintensity.org.uk everyone can view the real time insight to the National Grid Electricity System Operator ESO. This data is prepared in partnership with Environmental Defense Fund Europe, University of Oxford Department of Computer Science and WWF, it has been developed as the world's first Carbon Intensity forecast

with a regional breakdown. The snapshot recorded in Fig 9, taken whilst writing this report, shows the actual and forecast carbon intensity at that moment. This enables a direct comparison of the Portland proposal. This interface also communicates data collated from all the UK large metered power stations, interconnector imports, transmission and distribution losses and accounts for national electricity demand embedded wind and solar generation reflecting the consequences of demand and weather.

The proposed Portland ERF 675 gCO_2e/kWh would not even feature on the top of this chart Fig 9 and provides evidence that the carbon intensity of electricity that would be generated by the Portland ERF should not be considered low carbon.

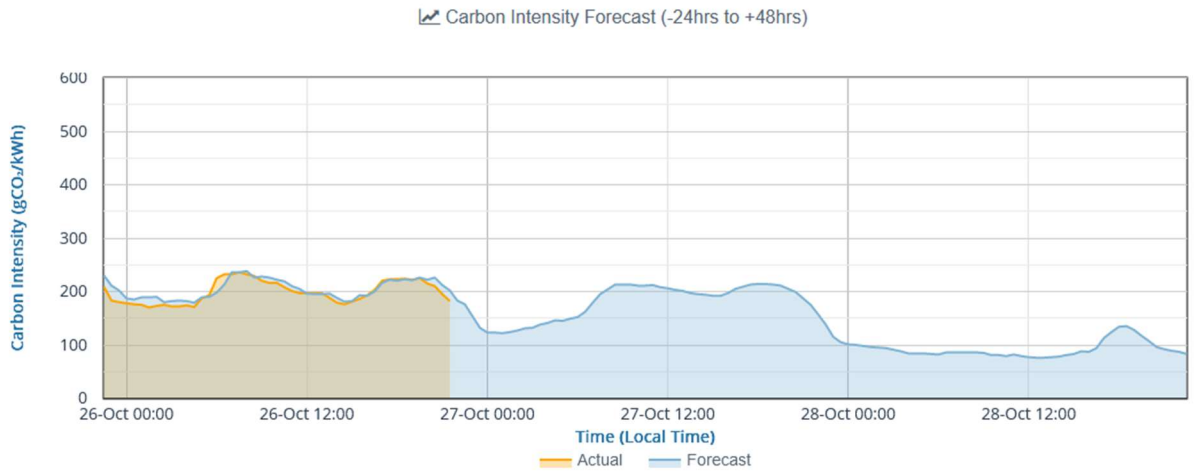


Fig 9: Nation Grid ESO's Carbon Intensity API related to electricity generation only.

6.8 By the time the proposed Portland ERF could be completed the rapid decarbonisation of the national grid will be in marked contrast to the carbon emissions and intensity of this proposal.

6.9 It is my considered view that building an unnecessary ERF would undermine the national grid's decarbonisation programme. In May 2023 the National Grid [26] Report Delivering for 2035 makes no mention of energy from waste incineration yet explains thatin upgrading the grid for a secure, clean and affordable energy future the national grid will:

"Fully decarbonising the power sector by 2035 will require decisive action from industry,

government and Ofgem." And in doing do the nation grid will: *"Put communities and consumers at the forefront of the transition".*

6.10 The Prime Minister's explains in the Forward of the Environmental Improvement Plan 2023[27]. This blueprint is not just to halt the decline of nature in our country, but to reverse it. The proposed Portland ERF will however add a new chemicals and particulates into the environment, and it will increase the release of greenhouse gases into our atmosphere.

Source references:

24. Defra Fuel Mix Disclosure Table
25. CD Extract ePg82 UKWIN Good practice guidance, Interested Party representation.
26. National Grid - Delivering for 2035
27. Extract Pg4 Environmental Improvement Plan 2023

7.0 POWER GENERATION

7.1 The Appellant would like the current constraints of the national grid to work in their favour explaining that the ERF is the only viable means to provide shore power within the next 10 years [CD 11.1] para 1.53 the Appellant states: *"there is insufficient power available within the distribution grid, to facilitate the provision of shore power and it is not economically viable for the Port to secure an upgrade to the electricity grid, with such an upgrade unlikely to be delivered for over 10 years given the limited capacity on the distribution grid. There is therefore a need for a distributed energy solution."*. However, this is a consequence of the route and decisions taken. SSEN DSO Transition Manager (Future Networks) [28.] explains that *"Reinforcement works are only undertaken once a customer triggers them through applying for a connection. Having said that, when we make improvements to the network we do forecast future load growth and ensure we take the opportunity to cater for that as part of the reinforcement."*. The Port not having triggered these improvements that would have also provided consequential side benefit to other local businesses is of note. Not seeking to be a customer in this way is working in the opposite direction to the area's needs. Government has prioritised improvements to infrastructure. Dorset's electric network provider SSEN-Future [29.] commits to reaching net zero by 2050 with an energy system targeted for earlier decarbonisation by 2035 explaining that: *"We are already at the leading edge of this system change and are determined, as the pace accelerates, to ensure that our networks are an enabler for a smart, equitable transition to net zero, rather than a constraint."*. I challenge the speed of contribution to the electricity grid that the Appellant advances that would be achieved by this proposed ERF by looking at how generally an ERF project progresses to completion. In doing so I wish to give context to the timeline to 2035 that the planned improvements to the national infrastructure are not the overriding critical constraints that have been identified by the Appellant.

7.2 I consider that the applicants have not been realistic about the real time it takes to complete a waste incinerator and generate electricity.

7.3 This planning appeal has been recovered which will require additional sufficient time for the Secretary of State to consider the Planning Inspectors report.

7.4 As current ERF projects in roll-out, like the STC Power Bridgwater Resource Recovery Facility prove, 2035 could come around without the Portland ERF completing. Bridgwater was approved at planning one month after submission in April 2015 and has had a clear run through construction. It is my understanding that the ERF at Bridgwater is still undergoing the hot final commissioning with no power generation as yet, 8 years later.

7.5 All civil and industrial engineering projects have critical path and complicated roll outs. The key stages are:

a. Unlock a full planning permission with completed conditions and Section 106 fulfilled and achieve an agreed Environmental Permit approval, this takes time and as of now the EA and planning permission is not approved.

b. The project development phase to achieve Financial Close with its many interlocking arrangements takes time and the project may falter. Financial Close requires securing an [EPC] Engineering Procurement and Construction Contract, forming Operating and Maintenance agreements, establishing feedstock contracts, Power off take contract, Grid connection agreement all with due diligence oversight from the funding bodies; otherwise, the Financial Close will not be achieved and the project fails. There is a shortage of EPC Contractors in the UK. Bridgwater is being built by STC Power, an Italian EPC Contractor.

c. The development phase of the project starts with a design review, and this is when the original planning consent is flexed to marry the requirements of the EPC and/or the EA permit obligations with the reality on the ground. This takes time. The proposed ERF design has been developed by a shell company rather than an industry leader like Veolia. With this application in this exposed location this might involve the height of the chimney, the unusual subdivided shallow tipping arrangement bunker design, fire water containment provision or ground issues in relation to adjoining cliff instability. Portland people are very sensitive to “flexing” or what is generally referred to as “planning minor amendments”. There is a legacy of public outcry over this site. This is due to removing public scrutiny when such closed-door agreements might be allowed to happen. Local people do not forget how it was agreed without it generally being known to change the extant approval from burning palm oil to burning car tyres by a planning minor

amendment. The consequences of "flexing" in the future on this location, in this setting of the World Heritage Site, would I contend require full public scrutiny.

The development process can go round and round in circles and often depends on the investors view on the risks involved.

d. Construction may run without any hitches and take about 2 years but with the limited size of this construction site, the complexity of subcontracts, Brexit, procurement of materials and skills shortages many hold ups lead to potential renegotiations with cost implications. Realistically there are plenty of problems and challenges to resolve which all take time.

e. Commissioning and handover is a diligent process that needs to be fully certified before the plant can operate and generate power not just burn waste.

As SSEN[30.] as local electric network provider advise over Chickerell GSP BSP *"With regards to the constraints, the screenshots below show the upstream constraint is likely to be the National Grid constraints detailed under "Transmission Works" within the GSP information. These are ongoing works that more often than not require certain curtailments for a project until the Transmission works are complete, rather than delaying the connection itself."*

Therefore, these network curtailments would impact the proposed Portland ERF timeline too, given that it was approved.

7.6 I comprehend that, as this planning application was submitted under waste designation rather than as a power station, there was no obligation to substantiate the power source or to explore and evaluate alternative methods of electricity generation. Opting for an inappropriate facility on this site merely to supply shore power adequate for only two vessels simultaneously with a top up from the national grid within a port with berths for numerous additional vessels, represents in my view investment in the wrong direction. Furthermore, this solution is not extendable into the future and is evidently not considered by local people to be environmentally friendly nor can it be considered low carbon.

Source references:
28. SSEN DSO Transition Manager Future Networks email 01.12.21
29. Pg3 SSEN_RIIO_ED2-Final-Business-Plan_Exec-Summary
30. SSEN Chickerell GSP BSP

8.0 CLOSING REMARKS

8.1 Sustainable solutions improve the environment and avoid risks. Setting out all these factors SPWI consider our review of the proposal substantiates the Dorset Council Minerals & Waste Planning department to have made the correct advice to the planning committee. The democratic representatives of the community voted unanimously to refuse this application.

8.2 Received 02.10. 2023 from the Ambassade du Royaume Uni[31.] Paris, Permanent Delegation of the United Kingdom of Great Britain and Northern Ireland to UNESCO together with World Heritage Watch[7.] Berlin, continue an international monitoring of this case closely. The Department for Culture Media & Sport[32.] Letter of 23 10.2023 advises: *"As England's only World Heritage Site inscribed for natural criteria, it is vital that the site remains protected from a wide range of threats, such as climate change and harmful planning and infrastructure developments."*

8.3 This location is not suitable for this proposed ERF. The community does not consider the proposal would protect or enhance our natural, built and historic environment. Better use could be made of this vital land. There is no need to add tonnes of CO_2e every year for the entire proposed life of the facility of 25+ years. SPWI consider that this proposal will compromise the ability of future generations to meet their own needs and will therefore not be in accordance with the requirements of NPPF paragraph 7.

This application is in my view not sustainable and would undermine the Council's stated efforts to address climate change and to become carbon neutral.

Fig 10: Jurassic Coastline with White Nothe Cliff and Durdle Door taken from The Verne Citadel. by TPA

Source references:

31. 02.10.2023 United Kingdom Delegation to UNESCO
32. DCMS TO2023_09931_RS Response 23.10.23.

a. APPENDIX

The climate in the UK

The UK has a temperate maritime climate. In general, that means that we have a cool and mild climate, with changeable weather.

We all know the weather here can change quickly. It's not unusual for us to see many different weather conditions in one day.

Lots of different factors influence our weather. Warmer tropical air meets colder arctic air in the air mass above us. This is what causes the large changes in weather we experience and fuels our more severe storms.

So, how will climate change impact this? Will it change the weather we experience in the UK? If so, what sort of changes could we see? And how could that change our lives?

How will climate change affect the UK?

Across the UK, we expect to see:

- Warmer and wetter winters
- Hotter and drier summers
- More frequent and intense weather extremes

Climate change will make these conditions more likely. The UK's weather will continue to be variable, but we will see more of this type of weather.

In the future, we will still see a lot of the weather we experience today. The difference, though, is that the intensity of some weather types will change.

You may have heard of Spanish plumes, which bring hot conditions in the summer. We could see these become more intense, creating even hotter summer weather. But Spanish plumes could also bring more intense downpours during summer thunderstorms.

More rainfall could happen in winter storms, too. While the temperatures may be milder, winters will tend to be wetter, with more potential for flooding.

How will climate change affect your local area?

In 2020, we worked with the BBC to create a new way of visualising climate change

4.22. If there are existing agreements in place with heat offtakers then a facility can be classified as a CHP plant and therefore will meet the first of the BAT tests. This is not a typical position in the UK, given the lack of infrastructure to enable the offtake of heat and the reluctance of offtakers to engage until a potential ERF is fully permitted.

4.23. If there are not agreements in place with heat users (as is the case for the proposed ERF) then a project that is capable of achieving an Environmental Permit is likely to meet the criteria to be classified as a "CHP-ready facility", which means that it will be designed to be ready, with minimum modification, to supply heat in the future. This is the case for the proposed ERF.

4.24. However, post receipt of the Environmental Permit, historically ERFs have been built and operated on a power-only mode basis with the result that the efficiency and carbon benefits are significantly lower than could otherwise be achieved.

Typical Barriers to ERF Heat Offtake

4.25. The majority of ERFs do not export heat. The key reason for this is because there are no available offtakers that have sufficient heat demand and financial standing, locally to support the upfront capital investment in the DHN.

4.26. Historically ERF facilities have been located in rural areas, away from large housing or industrial communities. This means that a heat connection is not viable as the distance to the end users is too great. Again, this contrasts with Europe where government and municipal authorities influence waste and energy planning, resulting in the development of ERF facilities close to end heat users (in many cases within large cities).

4.27. Where location is not a challenge there is still the investment risk to be considered. A DHN is a high capital expenditure project with uncertain returns where the supply is to a disparate group of offtakers – from an investment perspective whilst the capital expenditure is understood the revenues can be very uncertain – both volume or heat and the price paid per unit of heat can be variable. This contrasts with the economics of an ERF where a number of the key revenue streams can be addressed via contracts.

4.28. The DHN schemes that have been successfully implemented in the UK to date have been possible due to local and national government support/subsidy. The below table provides some context on the existing schemes and public support provided.

If your home is on a heat network

This advice applies to England.

Heat networks (sometimes called 'district' or 'communal' heating) are a way of heating blocks of flats or groups of homes.

If your home is on a heat network:

- you can't switch your heat network supplier
- you might pay your heating bills to a management company or housing association - if you're renting this might be part of your rent
- you might have to pay for maintenance costs - how much you need to pay can change over time

If you already live in a home on a heat network and you're having problems there are steps you can take to solve them.

If you haven't decided to move in yet it's worth checking how much you'll pay first.

Get a discount on your energy

The government launched the Energy Bill Discount Scheme on 1 April 2023. The previous scheme ended on 31 March 2023 - this was called the Energy Bill Relief Scheme.

If your heat network supplier gets a discount they must contact you to tell you how they will pass the discount on to you. They should be in touch within 30 days of receiving the discount.

If you haven’t had a discount from your supplier

Check with your supplier if they haven't been in touch about your discount by 31 May 2023. Not all suppliers get an Energy Bill Discount Scheme price reduction.

If you don’t know who your heat network supplier is, you should:

- check your heat supply contract, lease or tenancy agreement
- contact the developer, your landlord or your managing agent
- contact the organisation that sends out their bills

If you disagree with your heat network supplier

If you haven't had the discount and you think you should, you can complain.

Contact your supplier using the template letter for heat network consumers on GOV.UK (https://www.gov.uk/government/publications/pass-through-requirements-for-energy-price-support-provided-to-intermediaries).

Your supplier has 8 weeks to reply.

If your landlord is your heat network supplier

Talk to an adviser (https://www.citizensadvice.org.uk/about-us/contact-us/contact-us/contact-us/) for help before challenging your landlord. An adviser can help you challenge your landlord so they're less likely to make you leave the property.

Making a complaint

Contact the energy ombudsman (https://www.energyombudsman.org/) if you haven't heard from your supplier within 8 weeks of sending them a letter or you can't reach an agreement. Your supplier should be registered with the ombudsman if they get an energy discount from the Energy Bill Discount

Scheme.

Contact an adviser (https://www.citizensadvice.org.uk/about-us/contact-us/contact-us/contact-us/) if you need any help with the complaints process.

If you're thinking about moving into a home on a heat network

Ask whoever you're buying or renting from for details about your energy supply.

It's worth asking for everything in writing and keeping it in case you need it in future.

Ask for:

- a copy of the energy performance certificate - this will tell you how much your heat should cost
- information about any maintenance charges and service fees you'll have to pay
- contact details for the heat network supplier and information about who you should speak to if there's a problem

You should also check whether the heat network supplier is part of a consumer scheme like the Heat Trust. If it is, you'll have more

protection if you have problems with your heat supply.

You can also get an estimate of how much you'll pay (https://www.heattrust.org/heat-cost-comparator) using the Heat Trust calculator. You'll need to know who the heat network supplier is.

If you think something seems unfair you should ask about it and get your answer in writing. Keep it as evidence in case you need to challenge something in future.

If you think you've been wrongly billed by your heat network supplier

If you think a bill you've been sent is wrong you should contact your heat network supplier to challenge it.

You can find your heat network supplier's contact details on their website. If you don't know who your heat network supplier is, ask your home's management company or whoever you pay rent to.

When you speak to your heat network supplier, ask them to explain how the bill has been calculated.

Check your tenancy or lease agreement to see if it matches what you think you should be paying.

If you still think the bill is wrong or unfair you should complain.

If you think the bill is right but you can't afford to pay it, ask if you can arrange a repayment plan. If your heat network supplier won't agree to a repayment plan you can contact the Citizens Advice Consumer service for more help (https://www.citizensadvice.org.uk/consumer/get-more-help/if-you-need-more-help-about-a-consumer-issue/).

If you're renting your home and pay for your heat as part of your rent, you could be at risk of eviction if you get behind on your payments. Contact your nearest Citizens Advice for help (https://www.citizensadvice.org.uk/about-us/contact-us/contact-us/contact-us/) if you're in this situation.

If you often struggle to pay your bills

It's worth asking your heat network supplier if they can move you to a cheaper tariff. Check the terms and conditions of any new tariff they offer to make sure you'll pay less.

Check if you can get any grants or benefits (htt

ps://www.citizensadvice.org.uk/consumer/energy/energy-supply/get-help-paying-your-bills/grants-and-benefits-to-help-you-pay-your-energy-bills/) to help pay for your energy bills.

You should also make sure your home is energy efficient (https://www.citizensadvice.org.uk/consumer/energy/energy-supply/save-energy-at-home/make-sure-your-home-is-energy-efficient/) so you only pay for the energy you need.

Complaining about your heat network supplier

You might need to complain if:

- you were sent a bill you think is too high
- there's been a problem with your heat supply
- you think something in your contract is wrong

It's best to follow your supplier's complaints procedure - you should be able to find this on their website or a recent bill.

If complaining doesn't solve your problem

You should check if your heat network supplier

is a Heat Trust member on the Heat Trust website (https://heattrust.org/members).

If they are, 8 weeks after your first complaint to your supplier you can complain to the Energy Ombudsman Service (https://www.citizensadvice.org.uk/consumer/energy/energy-supply/complain-about-an-energy-company/complain-to-the-energy-ombudsman/) to help resolve your problem.

If they aren't a Heat Trust member you should ask if they're willing to use an 'alternative dispute resolution' scheme to help solve the problem. This means an independent organisation looks at the problem and makes recommendations for how to resolve it. Your heat supplier might not have to follow the scheme's recommendations.

If they won't use alternative dispute resolution, or they refuse to follow any recommendations if you do use one, contact the Consumer service for help (https://www.citizensadvice.org.uk/consumer/get-more-help/if-you-need-more-help-about-a-consumer-issue/).

If you live in a council or housing association home you can ask the Housing Ombudsman to help with your problem (https://www.housing-ombudsman.org.uk/).

If you're renting from a private landlord and

you think they've broken your contract by charging you too much for your heating you might be able to take them to court.

Contact your nearest Citizens Advice (https://www.citizensadvice.org.uk/about-us/contact-us/contact-us/contact-us/) for help deciding whether you should take your landlord to court.

If you need more help

Contact the Citizens Advice Consumer service (https://www.citizensadvice.org.uk/consumer/get-more-help/if-you-need-more-help-about-a-consumer-issue/) - they can help you understand your heating costs and the steps you can take to deal with your problem.

Help us improve our website

Take 3 minutes to tell us if you found what you needed on our website. (https://www.research.net/r/PZ7TFCQ?p=%2Fconsumer%2Fenergy%2Fenergy-supply%2Fproblems-with-your-energy-supply%2Fif-your-home-is-on-a-heat-network) Your feedback will help us give millions of people the information they need.

Page last reviewed on **23 July 2019**

News

LATEST NEWS (/LATEST-NEWS)

NEWSLETTERS (/NEWSLETTERS)

SUBSCRIBE (/SUBSCRIBE)

Urgent action needed to protect half a million homes on heat network (/news-events/156-urgent-action-needed-to-protect-half-a-million-homes-on-heat-networks)

Published: 24 January 2022

Reports of bills rising by up to 700% on some schemes

A consumer protection body has warned that more than half a million households on communal and district heating network should not be locked out of any government support to protect people against spiralling gas prices.

Heat Trust, the independent national consumer protection scheme for heat networks, says those living on communal or distr heating systems are set to be amongst the worst affected by the soaring cost of gas, which is driving up heating bills.

The government's price cap does not currently apply to the heat network market where operators have to buy gas on the commercial rather than domestic markets. Commercial gas prices are currently around 4 times pre-crisis levels.

Heat networks are seen as a major part of the UK's decarbonisation plans, and can deliver low carbon, low cost energy to hor However, as the market is currently unregulated, consumers are not protected in the same ways as other energy markets.

Commercial gas saw a 1000% price increase last year, rising from 1.5p per unit to 15p per unit before Christmas. The price is currently hovering between 6p and 7p per unit.

Consumers and landlords operating heat networks are already reporting examples of price rises of up to 700% - the equivale price of milk rising to £3.85.

Heat Trust is calling for urgent government intervention by:

- Allowing heat network operators to purchase gas at the capped domestic tariff rates and pass on the saving to consumer
- Ensuring heat network operators and consumers are able to access any government support aimed at helping families fo to choose between eating and heating
- Bringing forward its plans to regulate the heat network market via Ofgem which were confirmed in December last year

Stephen Knight, Director of Heat Trust, said: *"The government is fully committed to making heat networks a key part of its energy policy, and must not leave families living on these schemes behin*

"Heat networks have the potential to offer low-cost, low-carbon heat, but without intervention hun of thousands of families are facing horrendous and unaffordable heating bills this winter."

Heat Trust is also calling for changes to the Landlord and Tenant Act rules which currently ma difficult for landlords to buy gas more than 12 months in advance, making them vulnerable to fluctuations. If they could buy gas for longer periods of time, it would further protect consum from market volatility.

Knight added: *"Our mission is to protect heat network customers.*

"Gas price increases such as those experienced at the end of 2021 are simply not sustainable for heat network customers. They are c up household bills in unprecedented ways – many people will have to choose between heat and food.

"Heat networks are becoming increasingly common with social landlords, meaning the most vulnerable people in society are the one most affected by the current crisis. We can't let that happen."

Prev (/news-events/157-urgent-action-needed-to-protect-half-a-million-homes-on-heat-networks-2)

Next (/news-events/154-heat-trust-response-to-government-announcement-on-heat-network-regulat

Our Registered Participants

industrial land available within the port that could accommodate the land based elements of the system. The Portland Port has agreed to make the required land available. The Portland ERF can therefore be considered to be 'CCS ready'.

5.30 It is recognised by both government and the waste industry that CCS is not currently commercially viable, without some form of financial support. The Department for Business, Energy, and Industrial Strategy (BEIS) is giving consideration to potential mechanisms for supporting the application of CCS in the waste sector in respect to new and existing ERF.

5.31 As set out in the CCS paper, the applicant is willing to commit in principle to installing CCS at Portland, given that the site has unique locational advantages in the Dorset context that would enable it to accommodate CCS, provided this is technically feasible and commercially viable.

5.32 The above route map can be encapsulated in the legal agreement, ensuring that the ERF becomes zero carbon during its lifetime, alongside the net-zero commitment.

Shore power

5.33 As set out in the Planning Supporting Statement (chapter 8), the applicant and Portland Port have reached an agreement that the proposed ERF, if consented, would provide power to this facility. As such, the applicant and Portland Port are willing to enter into an obligation that would encourage visiting shipping to make use of the shore power facility, if they are equipped to do so. It is envisaged that this will predominantly be used by visiting cruise liners and the resident RFA fleet but would also be available to other shipping as appropriate.

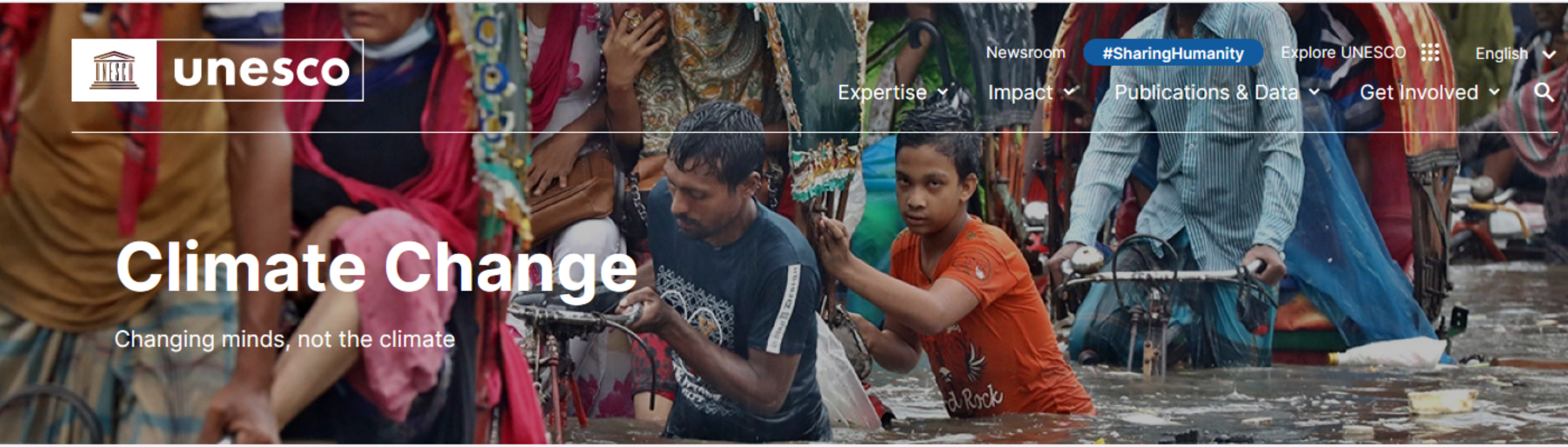
5.34 The applicant and the port believe that the price at which shore power could be provided will create a great incentive to encourage its use i.e. there will be a material cost reduction in meeting their customer's power needs.

5.35 The applicant reaffirms this commitment and the details of such an obligation can be discussed further with Dorset Council officers.

Off-site ecology

5.36 As discussed in chapter 3 of this statement, a Biodiversity Plan has been agreed with the Dorset Natural Environment Team (DNET), to mitigate for the loss of on-site habitat. This will comprise the re-provision of some compensatory habitat on the ERF site, but the majority of this will be achieved off-site. The Biodiversity Plan uses a standardised methodology that calculates the required off-site biodiversity compensation cost. The Biodiversity Plan also sets out the measures that would be implemented to achieve a biodiversity net gain.

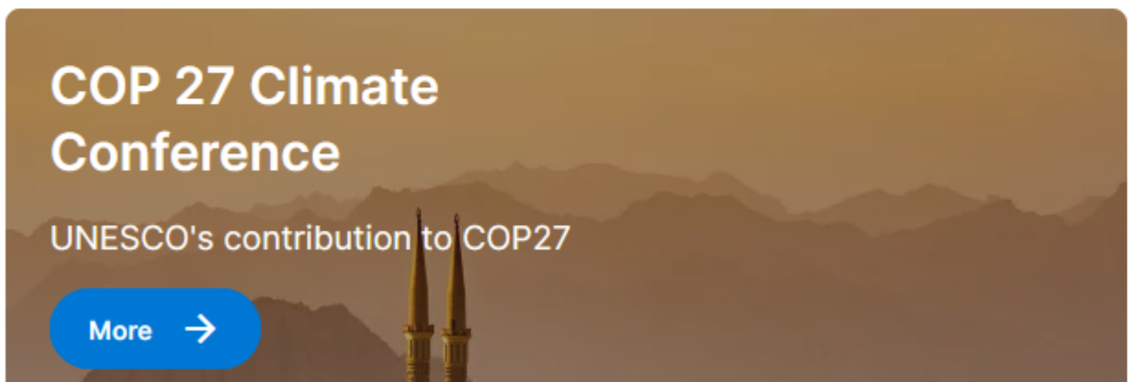
5.37 The approved Biodiversity Plan includes an agreed biodiversity payment of £82,231.28. This is expected to be used by DNET to secure the restoration of associated habitats. Whilst the allocation of funding to projects will ultimately be determined by DNET, the applicant is supportive of this being applied to projects in the Portland area, which may include measures to improve habitats within the port estate at East Weare below the prisons.

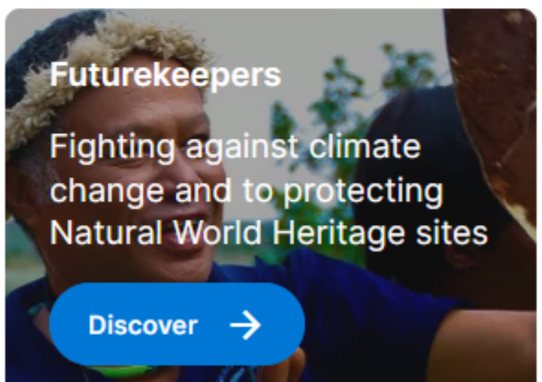


Climate Change

Changing minds, not the climate

Climate change is one of the defining issues of our time. Over 30 UNESCO programmes in the sciences, education, culture and communication contribute to creating knowledge, educating and communicating about climate change, and to understanding the ethical implications for present and future generations.





National Meetings ·

The Pliocene: The Last Time Earth had >400 ppm of Atmospheric CO2

The last time carbon dioxide was so plentiful in our planet's atmosphere was in the Pliocene era, around 3 million years ago. Life on Earth was dominated by giant mammals; humans and chimps had shared their last common ancestor. Although the sun's force was about the same, the sea levels were 15 metres higher and Arctic summer temperatures were 14 degrees higher than the present day.

Come to this meeting to hear about the climatic conditions in the Pliocene, how we know this, and what it tells us about our modern climate. If the effects of human-induced climate change are slow to act, or a tipping point is yet to be reached, what does the science tell us to expect?

WORLD HERITAGE WATCH

Mike Garrity
Head of Planning
Economic Growth and Infrastructure
Dorset Council
County Hall
Dorchester DT1 1XJ
United Kingdom

via email

Planning application: WP/20/00692/DCC
Construction of an energy recovery facility with ancillary buildings and works including administrative facilities, gatehouse and weighbridge, parking and circulation areas, cable routes to ship berths and existing off-site electrical sub-station, with site access through Portland Port from Castletown.

Berlin, 15 January 2023

Dear Mr. Garrity,

For some time, our organization has followed the planning procedure for a waste incinerator at the Portland Port, in direct vicinity to the Dorset and East Devon UNESCO World Heritage Site. We have recently been informed that the Dorset Council may grant a final permission to build that incinerator ("energy recovery facility").

We herewith express our categorical opposition to this project, and in particular to any decision being taken before it has been examined by the World Heritage Committee and its Advisory Body IUCN according to § 172 of the Operational Guidelines to the World Heritage Convention, to which the UK is a state party.

It has been demonstrated that the planned incinerator may have detrimental effects on the Outstanding Universal Value of the World Heritage property which you are obliged to protect for all of humanity.

Furthermore, the value of the site has more far-reaching implications. According to consensus of the international community as represented in the World Heritage Committee,

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contact@world-heritage-watch.org • www.world-heritage-watch.org

"The Dorset and East Devon Coast has an outstanding combination of globally significant geological and geomorphological features. … The property … is renowned for its contribution to earth science investigations for over 300 years, helping to foster major contributions to many aspects of geology, palaeontology and geomorphology. This coast is considered to be one of the most significant teaching and research sites [in the field of natural history] in the world." (Statement of Outstanding Universal Value)

The Jurassic Coast is evidence of a period when the earth underwent cataclysmic change which resulted in the extinction of most major life forms, most notably the dinosaurs. At a time when again our planet is entering a phase of global climate change and mass extinction, we feel it would be irresponsible towards not only your own nation but the planet as a whole to take a decision which will in one strike contribute to the imminent climate catastrophe and to the elimination of evidence which stands as a reminder of its consequences.

By being inscribed on the World Heritage List, the property has ceased to be a British heritage alone; it has become a common heritage of all mankind which the United Kingdom has taken the responsibility to take care of for all of us on the planet.

As an organisation enshrined to protect the world's values, we find that there is nothing more rampant than the consequences of climate change and resources depletion to cause conflict changing our world irrevocably. We ask you to consider the international message that in Dorset with its 'maps' of mass extinction you can tell the world that mindset change is indeed happening. We can be all effective in starting to put right the imbalance in our world.

Please reject the planning application.

Sincerely

Stephan Doempke
Chair

Environment Agency

Guidance

Combustion energy from waste: examples for your adapting to climate change risk assessment

Updated 17 May 2023

Applies to England

Contents

This publication is available at https://www.gov.uk/government/publications/adapting-to-climate-change-industry-sector-examples-for-your-risk-assessment/combustion-energy-from-waste-examples-for-your-adapting-to-climate-change-risk-assessment

Possible impacts and mitigation measures to consider when preparing your climate change risk assessment.

Summer daily maximum temperature

This may be around 7°C higher compared to average summer temperatures now, with the potential to reach extreme temperatures as high as over 40°C with increasing frequency based on today's values.

Impact 1

Greater potential for odour and pests from received and stored waste.

The mitigation for this could be to make sure:

- odour management systems are well maintained
- odour management procedures remain effective
- pest management systems are well maintained
- waste inventory is minimised as far as possible during shutdowns

Impact 2

Increased risk of fire, depending on waste storage and management.

The mitigation for this could be to make sure there is an:

- effective fire prevention plan
- appropriate fugitive or diffuse emissions plan

Winter daily maximum temperature

This could be 4°C more than the current average with the potential for more extreme temperatures, both warmer and colder than present.

Impact 1

Extremely cold temperatures could lead to pipes freezing and associated process disruption. But risks are likely to be low due to most pipework being internal. The main risk is likely to be freezing of condensate from air-cooled condensers, particularly under lower plant load.

The mitigation for this could be to:

- regularly inspect and maintain insulation, particularly on pipework and equipment in exposed areas of the site
- consider insulation on condensate pipework

Daily extreme rainfall

Daily rainfall intensity could increase by up to 20% on today's values.

Impact 1

Flooding could lead to increased site surface water and flash flooding, leading to:

- damage to on-site equipment
- possible flooding of the waste bunker

The mitigation for this could be to prepare flood plan with reference to the guidance Preparing for flooding: A guide for sites regulated under EPR and COMAH (https://www.gov.uk/government/publications/preparing-for-flooding-a-guide-for-regulated-sites).

Impact 2

The site may experience flash flooding issues. Storage lagoons may require more capacity or careful management. The capacity of surface water discharge points may become overwhelmed.

The mitigation for this could be to make sure:

- drains and lagoons are managed correctly
- surface falls are considered at the design stage
- the surface water management plan takes increases into consideration

Impact 3

Potential for contaminated floodwater or surface water run-off from site causing pollution.

The mitigation for this could be to:

- make sure there is secure storage of chemicals
- maintain drainage systems, including interceptors and traps, to avoid uncontrolled washout of pollutants

Impact 4

Other related extreme daily rainfall events may damage building structures, with increased potential for fugitive odour emissions.

The mitigation for this could be to:

- assess potential for storm damage
- repair or maintain building integrity

Average winter rainfall

Average winter rainfall may increase by over 40% on today's averages.

Impact 1

This could lead to localised site flooding causing:

- damage to on-site equipment
- possible flooding of the waste bunker

The mitigation for this would be to prepare flood plan with reference to the guidance Preparing for flooding: A guide for sites regulated under EPR and COMAH (https://www.gov.uk/government/publications/preparing-for-flooding-a-guide-for-regulated-sites).

The plan should include:

- risk assessment of process equipment and services at greatest risk from flooding
- provision of emergency pumps to remove floodwater and identification of lowest risk location for discharge of floodwaters

- protection of control and electrical systems
- identification and protection of flat bottom tanks at risk of floating in floodwater

Sea level rise

Sea level rise which could be as much as 0.6m higher compared to today's level.

Impact 1

If located near the coast, a site could experience increased:

- risk of flooding and associated impacts
- corrosion due to increase in saltwater spray

The mitigation for this would be to prepare flood plan with reference to the guidance Preparing for flooding: A guide for sites regulated under EPR and COMAH (https://www.gov.uk/government/publications/preparing-for-flooding-a-guide-for-regulated-sites).

The plan should include:

- risk assessment of process equipment and services at greatest risk from flooding
- provision of emergency pumps to remove floodwater and identification of lowest risk location for discharge of floodwaters
- protection of control and electrical systems
- identification and protection of flat bottom tanks at risk of floating in floodwater

To prevent corrosion, measures could include protecting plant and equipment prone to corrosion through:

- painting with resistant coating
- regular inspection and maintenance

Impact 2

There could be localised issues with surface water discharge, leading to backing up and worsening site flooding.

The mitigation for this could be to:

- monitor and review the situation
- consider site-specific flood defence measures depending on level of risk

Drier summers

Summers could see potentially up to 40% less rain than now.

Impact 1

Potential increased use or reliance on mains water for dust suppression and cleaning, particularly at biomass co-incinerators.

The mitigation for this could be to make sure:

- measures are in place to review and minimise water use and maximise collection and use of rainfall
- mains water capacity is adequate, taking into account reduced availability of rainwater for activities such as dust suppression and cleaning

Impact 2

There is potential for increased reliance on potable water for incinerator bottom ash (IBA) quenching.

The mitigation for this would be to make sure:

- sources of water for dust suppression and IBA quench are sufficient and not reliant on rainfall
- opportunities for rainwater harvesting and on-site reuse and recycling of water are maximised

Impact 3

There is likely to be more dust from the waste and the ash produced on site.

The mitigation for this is to make sure the dust management plan takes this into account.

River flow

The flow in the watercourses could be 50% more than now at its peak, and 80% less than now at its lowest.

Impact 1

The occurrence is likely to be low as Energy from Waste (EfW) plant is not a high water user and only clean surface water is discharged to water course (with any on-site effluent discharged to foul sewer) other than two hazardous waste incinerators which discharge treated effluent to watercourse.

The mitigation would be to monitor and review the situation.

Impact 2

At low flow there is likely to be increased stress on a river if the plant is discharging into it.

The mitigation for this could be to:

- manage the discharge flow rate to avoid impacts
- consider additional holding capacity

Storms

Storms could see a change in frequency and intensity. The unique combination of increased wind speeds, increased rainfall, and lightning during these events provides the potential for more extreme storm impacts.

Storms and high winds could damage building structures with increased potential for fugitive odour emissions.

The mitigation for this could be to:

- review the design of vulnerable and tall structures and buildings
- review wind loading calculations, providing reinforcement if necessary
- maintain building integrity

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Scenario 2042 Capacity 2050 Capacity

Scenario	2042 Capacity			2050 Capacity		
Facility Type	EfW	EfW CCS	*Total*	EfW	EfW CCS	*Total*
Scenario 1	7Mt	7Mt	*14Mt*	1Mt	11Mt	*12Mt*
Scenario 2	7Mt	6Mt	*13Mt*	1Mt	9Mt	*10Mt*
Scenario 3	9Mt	7Mt	*16Mt*	4Mt	10Mt	*14Mt*
Scenario 4	6Mt	6Mt	*12Mt*	1Mt	8Mt	*9Mt*

The estimated capacity requirements for EfW in 2042 (including both EfW and EfW with CCS) in the lowest scenario are approximately 12Mt (scenario 4). The highest capacity requirements are approximately 16Mt (scenario 3). In 2050 the lowest capacity requirements are approximately 9Mt and highest requirements approximately 14Mt under the same scenarios."
Waste Infrastructure Technology Mix Report for National Infrastructure Commission Ricardo (page 74)

1.17 Therefore based on the very latest analysis of the national position, in order to meet the legally binding target of reduction in residual waste by 2042 as per the Environment Act, EfW capacity would be expected to fall from the current operational or consented amount of 17Mt[18]. Hence contrary to the Appellant's claim, there is no compelling need case for additional EfW capacity in England.

Conclusion

1.18 This assessment of the best available data confirms that, there is no compelling need case at local, regional or national level for an EfW plant of the capacity subject of this Appeal.

[18] By at least 1 million tonnes or as much as 5 million tonnes depending on which scenario is followed.

LETSRECYCLE COUNCILS LEAGUE TABLE 2020-21 OVERALL PERFORMANCE			
RANK	Local Authority	Authority type	RECYCLING RATE % of household waste sent for reuse, recycling or composting (Ex NI192)
8	Dorset Council	U	60.10%
9	East Devon District Council	C	60.00%
15	Bath and North East Somerset Council	U	59.20%
16	Cotswold District Council	C	58.90%
19	South Gloucestershire Council	U	58.50%
27	Mole Valley District Council	C	56.60%
32	Devon County Council	D	55.30%
35	West Devon Borough Council	C	55.20%
48	Mid Devon District Council	C	53.70%
60	Somerset Waste Partnership	U	52.40%
65	Bournemouth, Christchurch and Poole Council	U	51.30%
69	Gloucestershire County Council	D	50.60%
81	North Devon District Council	C	49.40%
115	Bristol City Council	U	46.40%
165	Wiltshire	U	42.30%
189	Winchester City Council	C	40.50%
196	Eastleigh Borough Council	C	40.20%
222	Test Valley Borough Council	C	37.60%
223	Hampshire County Council	D	37.60%
238	East Hampshire District Council	C	36.20%
248	Torbay Council	U	35.50%
262	New Forest District Council	C	34.10%
269	Cornwall	U	33.30%
271	Havant Borough Council	C	33.00%
295	Plymouth City Council	U	30.60%
313	Exeter City Council	C	27.80%
317	Southampton City Council	U	27.50%
322	Gosport Borough Council	C	26.60%
326	Portsmouth City Council	U	24.70%
https://www.letsrecycle.com/councils/league-tables/2020-21-overall-performance-2/			

Catherine West

Labour

Hornsey and Wood Green

Commons

To ask the Secretary of State for Environment, Food and Rural Affairs, with reference to the Answer of 6 October 2020 to Question HL 8373 on Incinerators: Recycling, whether the further monitoring provided adequate evidence of incinerator capacity planned...

Show full question

Answer

Victoria Prentis

Conservative

Banbury

Commons

Answered on

11 July 2022

The Government's view is that Energy from Waste (EfW) should not compete with greater waste prevention, re-use, or recycling. Proposed new plants must not result in an over-capacity of EfW waste treatment provision at a local or national level. Officials are currently assessing planned incinerator capacity against expected future residual waste arisings. This further assessment of residual waste treatment capacity needs will be published in due course.

Answered by

Department for Environment, Food and Rural Affairs

Incineration harms recycling

A summary of the case for how incineration harms recycling is set out in the main briefing. This section of the Technical Annex sets out the evidence base cited in that briefing alongside providing further supporting evidence.

Evidence of conflict between incineration and recycling cited in the main briefing:

The data used for the chart showing the correlation between high rates of incineration and low rates of recycling across England was taken from Defra's 'Local authority collected waste generation annual results 2021/22 (England and regions) and local authority data annual results 2021/22' spreadsheet, which is available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1144270/LA_and_Regional_Spreadsheet_202122.xlsx

Evidence to support the statements that "most of what is incinerated is material that is readily recyclable (including paper, plastic, food, etc.), meaning a significant proportion of what is currently incinerated could and should have been recycled or composted" and that "Of total residual waste from household sources in England in 2017, an estimated 53% could be categorised as readily recyclable, 27% as potentially recyclable, 12% as potentially substitutable and 8% as difficult to either recycle or substitute" can be found in Defra's 'Resources and Waste Strategy Monitoring Progress' 2020 document, available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/907029/resources-and-waste-strategy-monitoring-progress.pdf

The reference to how "Similar studies focussed on commercial and industrial waste arrive at similar conclusions about the high recyclability of what is currently treated as residual waste" relates to WRAP Cymru's 2020 'Composition analysis of Commercial and Industrial waste in Wales' available at: https://wrapcymru.org.uk/resources/report/composition-analysis-commercial-and-industrial-waste-wales (which found that "The majority of the [residual C&I] waste analysed...could have potentially been recycled.") and the 'North West of England Commercial and Industrial Waste Survey 2009' produced for the Environment Agency (which found that: "up to 97.5% of the C&I waste landfilled in the region could be recycled if the correct facilities and services were available") available at: https://webarchive.nationalarchives.gov.uk/ukgwa/20140329075720/http://cdn.environment-agency.gov.uk/genw0410bsjm-e-e.pdf

The Climate Change Committee's (CCC's) 2021 Report to Parliament, which warned that: "If EfW usage is left to grow unchecked, EfW emissions will quickly exceed those of the CCC pathway while undermining recycling and re-use efforts", is available at: https://www.theccc.org.uk/publication/2021-progress-report-to-parliament/ (page 181).

Defra's acknowledgement of the need to minimise the amount of waste going to incineration can be found on pages 28-30 of the Government's May 2022 'Consultation on environmental targets', which is available at: https://consult.defra.gov.uk/natural-environment-policy/consultation-on-environmental-targets/supporting_documents/Environment%20Targets%20Public%20Consultation.pdf

Further reading about how incineration harms recycling:

Further evidence from a range of waste composition studies which found a high level of recyclability in the residual waste stream can be found via:
https://ukwin.org.uk/facts/#recyclability

Further analysis showing how for councils in England with above-average rates of incineration there is a clear correlation between higher rates of incineration and lower rates of recycling is set out alongside other arguments at: https://ukwin.org.uk/oppose-incineration/#recycling

Examples of the view being expressed that incinerator feedstock would not necessarily otherwise be sent untreated to landfill (e.g. because it could be recycled) are set out in UKWIN's 2021 Good Practice guidance for Assessing the GHG Impacts of Waste Incineration.

This Guide includes relevant quotes from Zero Waste Scotland, Professor Sir Ian Boyd, 2012-2019 Chief Scientific Adviser to Defra, the Welsh Government, the Secretary of State for BEIS, Green Alliance, Friends of the Earth, the Centre for Energy and the Environment at the University of Exeter, and the London Assembly's Environment Committee. See: https://ukwin.org.uk/files/pdf/UKWIN-2021-Good-Practice-Guidance-for-Assessing-the-GHG-Impacts-of-Waste%20Incineration.pdf (pages 66-69).

In their February 2018 report on 'Energy from Waste' the London Assembly's Environment Committee explained how: "Investing in more EfW can negatively affect long term recycling rates. This investment needs to be paid for by an assured income stream, usually through contracts with local authorities to pay the EfW operator to take waste. Contracts are often lengthy – the majority are over 20 years. The terms of contracts, such as minimum annual payments, or a low fee per tonne of waste, can undermine the financial viability for the local authority of reducing waste, or sending it to other destinations such as recycling".

The full report is available at: https://www.london.gov.uk/sites/default/files/waste-energy_from_waste_feb15.pdf

Many councils are signed up to long-term waste contracts that involve incineration, and many of these councils have told the Government that their low recycling rates are due to their incineration-based waste contracts that undermine their incentive or ability to invest in improvements to recycling services.

These contracts usually ensure the council takes on the primary risk of there not being enough waste to burn, meaning councils are in effect penalised for not sending enough waste for incineration. Incinerators cost around £200m+ to build and that money cannot then be spent on recycling.

Contractual mechanisms such as 'minimum tonnage guarantees', 'put-or-pay' clauses and 'banding mechanisms' undermine the economic incentive to reduce, re-use and recycle even where funds are available.

UKWIN's 6-page summary from July 2019 which provides examples of incineration harming recycling, and which is available at: http://ukwin.org.uk/files/pdf/UKWIN-Examples-of-incineration-harming-recycling-July-2019.pdf

The blogpost entitled 'UKWIN welcomes EFRACOM's incinerator caution', is available at: https://ukwin.org.uk/2014/10/22/ukwin-welcomes-efracoms-incinerator-caution/

UKWIN's 26-page written evidence from May 2014 submitted as part of the Environment, Food and Rural Affairs Committee (EFRACOM) Inquiry on Waste Management in England, is available at:
http://data.parliament.uk/writtenevidence/committeeevidence.svc/evidencedocument/environment-food-and-rural-affairs-committee/waste-management/written/9294.pdf

More information about the correlation between high rates of incineration and low rates of recycling can be found at the following sources:

- Supplementary written evidence submitted by Professor Nicky Gregson, Durham University, available at:
  https://data.parliament.uk/writtenevidence/committeeevidence.svc/evidencedocument/housing-communities-and-local-government-committee/implications-of-the-waste-strategy-for-local-authorities/written/103388.pdf

- Oral evidence from Professor Nicky Gregson of Durham University on the 'Implications of Waste Strategy for Local Authorities' (EFRACOM, 20 May 2019) is available at:
  http://data.parliament.uk/writtenevidence/committeeevidence.svc/evidencedocument/housing-communities-and-local-government-committee/implications-of-the-waste-strategy-for-local-authorities/oral/102483.pdf

For another academic perspective, see 'Is incineration repressing recycling?' (Masashi Yamamoto, Thomas C. Kinnaman), published in the Journal of Environmental Economics and Management (Volume 111, 2022) is available at:
https://www.sciencedirect.com/science/article/pii/S0095069621001364

In February 2022 UKWIN provided evidence about how incineration harms recycling to the Scottish Incineration Review. See: https://ukwin.org.uk/files/pdf/UKWIN-Submission-to-Scottish-Incineration-Review-February-2022.pdf (especially UKWIN's answer to Q8 on pages 17-27).

The Scottish Incineration Review was subsequently published in May 2022, warning about the risk of incinerator lock-in. See: https://www.gov.scot/publications/stop-sort-burn-bury-independent-review-role-incineration-waste-hierarchy-scotland/documents/

companies that are manufacturing things to reuse recycled product rather than raw material.

Professor Boyd: It would. To answer your question about whether we have a circular economy, in some areas we do. In other areas, it is in its inception and it is developing. We have to be patient. We are travelling along a road here, and in some areas it is easier to get a circular economy. The construction industry, for example, has well over 70% and perhaps over 80% recycling of materials. It is relatively easy by mass there, because you have big amounts of material and you can reuse them in different sorts of ways. Household waste is probably one of the most difficult examples, and it is the one that we are exposed to mostly. It is only 14%. I say "only"; it is a significant amount of our total waste, but it is one we get worked up about, and rightly so.

Your point about making sure that materials have a function at the end of the day is important. Plastics are a classic case where, in most cases, it is cheaper to buy new raw materials than it is to recycle the plastics. A tax on raw materials would make recycling much more cost effective. There are a lot of innovative technologies out there about recycling plastics: pyrolysis, for example. There are several companies that want to put pyrolysis systems right next to every waste plant. These would take the plastics in and turn them into fuel oils—which is done relatively straightforwardly and easily—which can then be burned, usually in ships. They would turn it into quite high-grade marine fuel oil.

There are ways of making this happen more quickly, and it is a matter of deciding what the policy is and putting it in at the critical point. It is about knowing that critical point. It is also about knowing that you might get it wrong first time and, politically, being broadminded enough to say, "We got it wrong. We have to shift it to another place."

Chair: I am sure the Opposition will be kind to us about that.

Q30 **Sandy Martin:** How safe are municipal waste incinerators?

Professor Boyd: I cannot answer that question, because I have not really looked at safety in municipal waste incinerators.

Chair: Are we trying to drill down on the amount of pollution?

Sandy Martin: I have a series of questions here, Chair, and I am starting with the first one.

Professor Boyd: Is this a pollution question?

Q31 **Sandy Martin:** There is a lot of public concern about the potential health impacts from municipal waste incinerators. I wondered whether, as Defra's chief scientist, you had looked at this, whether you think this is part of your remit and whether you should be doing more to persuade people that they are safe.

Professor Boyd: I will give you a general answer to the question. Anything that adds particulate matter or toxic chemicals to the

atmosphere in the urban area ought not to be encouraged. While municipal waste incinerators are probably not the main source of urban air pollution, they will add to it to some extent. There is also the possibility of putting scrubbers into them, and many of them will have scrubbers, so they will be relatively clean.

I want to make a more general point about incinerators. If there is one way of quickly extinguishing the value in a material, it is to stick it in an incinerator and burn it. It may give you energy out at the end of the day, but some of those materials, even if they are plastics, with a little ingenuity, can be given more positive value. One thing that worries me is that we are taking these materials, we are putting them in incinerators, we are losing them for ever and we are creating carbon dioxide out of them, which is not a great thing. We could be long-term storing them until we have the innovative technologies to reuse them and turn them into something that is more positively valued.

This brings me to a more general point about landfill. Quite rightly, we have had a policy of trying to eliminate landfill in this country, because it has been seen as a major source of greenhouse gas pollution and, to some extent, groundwater pollution. That is because we put biodegradable organics in—food waste, garden waste and things like that. Landfill is a very low-marginal-cost method for storing highly resistant materials like plastics and metals for long periods of time, if we cannot extract the value from them now.

This is one caveat I would put around the current direction of travel on landfill. We should not lose sight of the fact that, in a few decades' time, or maybe a bit longer, we might be mining our landfill sites for the resources they contain. Rather than putting some of those resources into incinerators and losing them for ever, we might want to think differently about the landfill sites.

Q32 **Sandy Martin:** You may not know the answer to this. In 2013, the Health Protection Agency, which is now Public Health England, said that modern incinerators emit only small amounts of chemicals to air in comparison with older incinerators. How old are the older incinerators that Public Health England was talking about? Are they still around and, if they are still around, how soon are we going to get rid of them?

Professor Boyd: I am afraid I cannot answer that question, because I do not have those facts to hand, but I am very happy to come back with an answer to those questions if you want one.

Q33 **Sandy Martin:** Okay. You have talked about landfill tax. Clearly, there was a massive incentive for local authorities and commerce to divert away from landfill in the shape of the landfill tax. That had an enormous incentive effect on the growth of recycling. In fact, I should declare that I was one of the main architects of the Suffolk joint municipal waste management strategy back in 2001.

Why do we need to take action on waste prevention?

Greater demand for products and materials globally puts increasing pressure on our natural resources and contributes to accelerating the challenges of climate change, biodiversity loss and pollution. Managing large quantities of waste is a challenge, considering volumes, cost and impacts.

Figures presented in the Climate Change Committee's 2022 Progress Report to Parliament (https://www.theccc.org.uk/publication/2022-progress-report-to-parliament/#downloads) show waste emissions in 2020 were approximately 25 million tonnes carbon dioxide equivalent (MtCO2e), almost 6% of UK emissions. Much of this comes from landfill, particularly biodegradable waste which degrades anaerobically to create methane, a greenhouse gas 25 times more potent than CO2. Through the Net Zero Strategy (https://www.gov.uk/government/publications/net-zero-strategy), we are committed to explore options to work towards the near elimination of biodegradable municipal waste to landfill from 2028.

Sustainable consumption and production, embodied by United Nations Sustainable Development Goal (SDG) 12 (https://sustainabledevelopment.un.org/SDG12), is vital for achieving transformative change to address this. Using resources efficiently is one of the main pillars of this Sustainable Development Goal, and action to prevent waste is critical in this respect.

At the 15th Conference of Parties to the United Nations Convention on Biological Diversity in December 2022, nations adopted 4 goals and 23 targets for 2030 in the landmark United Nations biodiversity agreement known as the Kunming-Montreal Global Biodiversity Framework (https://www.cbd.int/article/cop15-cbd-press-release-final-19dec2022). Target 16 sets out the ambition to significantly reduce our consumption and waste generation in order for all people to live well. It aims to do this by ensuring that people are encouraged and enabled to make sustainable consumption choices including by establishing supportive policy, legislative or regulatory frameworks, improving education and access to relevant and accurate information and alternatives, and by 2030, reducing the global footprint of consumption in an equitable manner and halving global food waste.

Waste prevention has huge potential, as a number of reports discuss including from Business In The Community (https://www.bitc.org.uk/), Green Alliance (https://green-alliance.org.uk/), Waste and Resources Action Programme (https://wrap.org.uk) and Aldersgate Group (https://www.aldersgategroup.org.uk/). Products and materials need not become waste with good design, systems and services, and data. Benefits include:

- Reducing waste decreases emissions across the whole product lifecycle, increases resource security, safeguards our natural environment, creates jobs in value retention activities such as remanufacturing and helps us achieve net zero.
- Products that last longer and can be affordably repaired rather than replaced, perhaps with multiple use cycles and owners, present an important opportunity for consumers to save money.
- Where more products are reused, repaired, and remanufactured, a larger sharing economy is achieved, and where material inputs are required, secondary materials are more frequently used.
- By substantially reducing the rate at which products and materials become waste, benefits include lower greenhouse gas emissions, increased resource security, safeguarding of the natural environment, plus jobs and affordable products. Consumers can save money by repairing rather than replacing items that are worn or no longer work, and by buying quality pre-owned products which are designed to last.
- When resources are valued, people are less likely to litter them. For instance, a deposit return scheme for drinks containers would boost recycling levels, reduce littering, and offer greater opportunities to collect higher quality, uncontaminated materials in greater quantities thus promoting a circular economy.

We want to encourage business models which maximise the value of end products, for example through sharing of products supported through digital systems. Or greater servitisation where the company retains ownership and responsibility for maintenance but sells the product as a service, for example online music platforms. This maximises the useful life of the product. This will be supported by the adoption of ecodesign principles in marketed products, aiding consumers to make even more informed decisions using reliable information about the sustainability of their product choices, and collection of more products once consumers no longer have use for them. Reuse and repair facilities and services will increasingly be available for consumers, and information about the availability of secondary materials will be more readily available to manufacturers which want to use them.

How does this programme relate to "Our Waste, our Resources: A Strategy for England" and to our wider environmental and economic goals?

The new programme builds on and embeds strategic principle 2 from our Resources and Waste Strategy - to prevent waste from occurring in the first place and manage it better when it does. Our goal is for a circular economy approach which retains products and materials in circulation for as long as possible and at their highest value.

To drive down the amount of waste we produce, and encourage reuse and recycling, the government has set an Environment Act 2021 environmental target (https://www.gov.uk/government/consultations/environment-act-2021-environmental-targets) to halve residual waste (excluding major mineral wastes) kg per person by the year 2042. This will be measured as a reduction from 2019 levels, which is estimated to be approximately 574 kg per capita. The target will:

- help to deliver our overarching aim for zero avoidable waste by 2050
- support the commitment in the government's Net Zero Strategy to the near elimination of biodegradable municipal waste to landfill from 2028 and reduced emissions from landfill and incineration, saving an estimated 35 MtCO2e by 2050
- build on the Resources and Waste Strategy commitments to help achieve a 65% municipal recycling rate and send less than 10% of municipal waste to landfill by 2035
- support the government commitment to eliminate avoidable plastic waste by 2042

The target sets a clear direction for reducing the amount of waste per person and can be delivered both by waste minimisation and recycling.

Waste prevention will help with our commitments to double the resource productivity of our economy by 2050, protect our natural capital, and contribute to goals in areas such as:

- natural capital - water, air and biodiversity: globally, we extract three times the resources we did in 1970, and this is estimated to more than double by 2060.
- greenhouse gas emissions - as stated in the Net Zero Strategy, greater resource efficiency will help cut emissions from manufacturing including processing of construction materials (16% of UK's emissions in total), whilst also reducing waste emissions (6% of UK's emissions). It will also help reduce consumption-related emissions from the production of goods and services consumed here but partly generated overseas. As stated in the UK and England's carbon footprint to 2019 (https://www.gov.uk/government/statistics/uks-carbon-footprint), embedded emissions from imports to the UK stand at approximately 300 MtCO2e (2018) and UK production emissions attributable to UK final consumption at 255 MtCO2e. Reuse compared to recycling reduces emissions from processing and manufacture as well as extraction of raw materials.
- economic resilience - resource security: better management of our Material footprint in the UK (https://www.ons.gov.uk/economy/environmentalaccounts/articles/materialfootprintintheuk/2018) is estimated at 971 Mt consumption-based emissions (in 2018), including 400 Mt of imports, increases our economic resilience and supports a transition to a low carbon economy.
- jobs and growth - a significant proportion of products consumed in England are imported, so shifting towards a more circular economy has the potential to increase jobs locally. Chartered Institution of Wastes Management's Beyond Waste: Essential Skills for Greener Tomorrow (https://www.circularonline.co.uk/wp-content/uploads/2023/03/Beyond-Waste-Essential-Skills-for-a-Greener-Tomorrow.pdf) estimated an aggregated total of new roles on top of today's baseline to be 238,600.

Also relevant to waste prevention are the 2021 to 2025 Greening Government Commitments (https://www.gov.uk/government/collections/greening-government-commitments). These set out the actions being taken by Government to improve the environmental performance of its own estate and operations. It sets an overall target to reduce the amount of waste generated by 15% from the 2017 to 2018 baseline and includes further sub-targets to aid this such as removing consumer single use plastic from the central government estate, measuring and reporting on food waste.

Consultation outcome

The consultation on the Waste Prevention Programme 'Towards a Resource Efficient Economy' (https://www.gov.uk/government/consultations/waste-prevention-programme-for-england-2021) conducted in 2021 showed there was broad support for greater focus on waste prevention and for embedding circular economy approaches in policy, making use of levers such as ecodesign and Extended Producer Responsibility (EPR). We recognise the importance of a shift to a circular economy and agree that Extended Producer Responsibility is a powerful tool to deliver this as part of our Resources and Waste Strategy. As with any tool, we need to make sure it is the right tool to solve the problem, therefore Extended Producer Responsibility will be considered alongside a framework of policy options. Respondents also wanted to see more definitive actions and timelines. We have added these where possible but in many cases policies are still in development with timelines to be agreed.

Working together across the UK and the government

Though this is an England-only programme, as waste policy is devolved, we have shared goals across the United Kingdom and agreed ways of working together, set out in the provisionally agreed Resources and Waste Common Framework. We welcome the contributions other nations have made in moving towards greater circularity, notably the Welsh Beyond Recycling Strategy (https://gov.wales/beyond-recycling), the Scottish Making Things Last: a circular economy strategy for Scotland (https://www.gov.scot/publications/making-things-last-circular-economy-strategy-scotland/) and the Waste Prevention Programme for Northern Ireland- Stopping Waste in its Tracks (https://www.daera-ni.gov.uk/publications/waste-prevention-programme-northern-ireland-stopping-waste-its-tracks). We also recognise the benefit for consumers and producers of common provisions in some areas across markets and are committed to working closely in particular on regulatory measures including where we consider Extended Producer Responsibility schemes.

Targets and commitments

Long term target:
By 31 December 2042, the total mass of residual waste excluding major mineral wastes in a calendar year does not exceed 287 kg per capita.

Interim target 1:
By 31 January 2028, the total mass of residual waste excluding major mineral wastes in the most recent full calendar year does not exceed 437 kg per capita.

We set a stretching long-term target to halve 'residual' waste (waste that is sent to landfill, put through incineration or used in energy recovery in the UK or overseas) by 2042. This is an intentionally broad target, which will include the most environmentally harmful materials like plastics, rather than banning a single type of material and risk producers moving to a different, more harmful material.

This interim target reflects the trajectory that will be required for the long-term target. Achieving the interim target will mean a 24% reduction of residual waste from 2019 levels, setting us on track towards achieving the long-term target, which is equivalent to a 50% reduction from 2019 levels.

We will halve 'residual' waste (excluding major mineral waste) produced per person by 2042

Interim target 2:
By 31 January 2028, the total mass of residual waste excluding major mineral waste in the most recent full calendar year does not exceed 25.5 million tonnes.

This sets an overall waste tonnage interim target alongside the per capita target. This will ensure that progress towards the long-term target also involves a substantial reduction in the overall tonnage of waste sent to residual end-of-life treatment, irrespective of any unexpected population change. Achieving this target will reduce the total mass of residual waste by 21% from 2019 levels.

Planning

From:	Planning Policy [redacted]
Sent:	18 October 2021 10:23
To:	Planning
Cc:	Planning Policy
Subject:	RE: Consultee chase - Regulation 25 Consultation - Portland Port, Castletown, Portland - WP/20/00692/DCC
Attachments:	Report on Residual Waste Capacity in the South East v5.0 FINAL.pdf; Wider South East Residual Waste Capacity Report Final 2021.pdf

Dear Mr. Lynham,

Please accept my apologies for the lateness of this response, and I hope you are able to take our comments into account.

I would like to take this opportunity to draw your attention to two documents which were produced in May 2021 surrounding the issue of residual waste treatment in the South East of England.

While these documents do not include your planning area, I hope they offer some assistance in the determination of the application, please find them attached.

Hampshire County Council support the application of the net self-sufficiency principle of waste management and also the appropriate application of the waste hierarchy, both of which should be considered in the decision making process.

Should you have any questions, please don't hesitate to contact us.

Kind regards

Andy Denton ***BSc. (Hons) MSc. MIEnvSc***
Minerals and Waste Policy Officer
Strategic Planning
[redacted]
Economy Transport and Environment
Hampshire County Council
EII Court West, 1st Floor, The Castle
Winchester, Hampshire, SO23 8UD

South East Waste Planning Advisory Group (SEWPAG)

Residual Non-Hazardous Waste Treatment Capacity in the South East

V5.0 Final Report

20 May 2021

Cool Planet Resources

Contents

1. Introduction and Context

1.1 The Wider South East of England is covered by three regional waste advisory groups which include the Waste Planning Authorities (WPAs) within each region as follows:

- South East Waste Planning Advisory Group (SEWPAG)
- East of England Technical Advisory Body (EoETAB)
- London Waste Planning Advisory Forum (LWPF)

1.2 Amongst other matters, each group monitors the development and evolution of waste management capacity within its region.

1.3 A particular area of focus for all three groups is the extent to which waste management capacity for managing 'residual non-hazardous waste' is being developed by the waste industry. This is with both a concern to ensure sufficient capacity is available to meet future needs, but also to ensure waste will be managed in accordance with the Waste Hierarchy (see Fig 1).

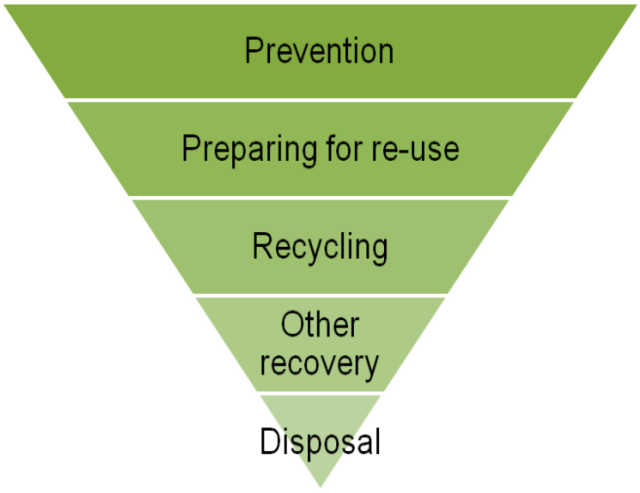

Fig. 1 The Waste Hierarchy[1]

1.4 Residual non-hazardous waste is waste which cannot be practically recycled or managed by other methods further up the waste hierarchy[2]. Residual non-hazardous waste is generally managed by energy from waste facilities with a decreasing quantity being managed by landfill. Residual

[1] Source: National Planning Policy for Waste

[2] The recent monitoring report for the Government Resources and Waste Strategy (p.33) describes residual non-hazardous waste as "waste that has not been prevented, reused or recycled. It is usually collected from households or businesses in a black bag or wheelie bin to ultimately end up at an energy recovery plant or landfill." The actual waste captured by the term can be expected to change over time, and as the Defra monitoring report identifies ought to reduce as recycling of wider streams become more viable.

non-hazardous waste is derived from Local Authority Collected Waste and Commercial and Industrial waste streams.

1.5 Government has indicated[3] that it intends to achieve 65% recycling of municipal waste by 2035 and this is reflected in many Waste Local Plans in the South East. The government considers that its *'major waste reforms – including consistent recycling collections in England and extended producer responsibility for packaging – will drive progress towards achieving this target'*[4]. It should also be noted that some WPAs in the South East have set a 70% target for recycling municipal waste.

1.6 If the 65% target is achieved then there will be no more than 35% of municipal waste remaining (the 'residual waste' fraction) to be managed by landfill or 'other recovery' such as Energy from Waste (EfW)[5]. Municipal waste includes waste from households and wastes of a similar type arising from businesses.

1.7 EfW facilities already exist across the South East and are making an important contribution to reducing the amount of waste being managed by landfill. Many WPA areas in the South East have EfW facilities within them that were developed to ensure that the amount of biodegradable household waste being landfilled reduced in line with Landfill Directive targets[6]. These facilities are also managing some residual non-hazardous waste from commercial and industrial sources.

1.8 In addition to EfW, there is some Mechanical Biological Treatment (MBT) capacity which may also be counted towards 'other recovery' at Brookhurst Wood in West Sussex. MBT is considered 'pre-treatment' and is an intermediate process before recovery. The MBT process separates out recyclable/digestable material and the remaining residual waste is reduced through moisture extraction to become refuse derived fuel (RDF). Around 40% of the capacity of the Brookhurst Wood facility can be counted as 'other recovery' of residual waste.

1.9 Additional EfW facilities have been consented and some of these are undergoing construction (See Tables 3 and 5). Planning applications have also been made for such facilities and are currently being determined by the relevant WPA. In addition, EfW capacity has been, and is being, developed

[3] Resources and Waste Strategy for England, 2018
[4] Government Response to the National Infrastructure Assessment, November 2020
[5] For the purpose of this report EFW includes all forms of Thermal Treatment
[6] For example, East Sussex, South Downs and Brighton & Hove contract for MSW management involved construction of the Newhaven Energy Recovery Facility.

via the Nationally Significant Infrastructure Projects (NSIPs) route provided for by the Planning Act 2008. For example, an application for a Development Consent Order (DCO) for a new EfW and expansion of existing EfW at Kemsley in Kent (commented on by SEWPAG) is currently in the process of being determined by the SoS and another aimed at adding a new line at the existing Allington EfW plant, also in Kent, is expected to be submitted in 2021. An application for an EfW NSIP in Hampshire was made but subsequently withdrawn in 2020.

1.10 EfW infrastructure has an operational life of at least 30 years and so has a considerable impact on how waste will be managed in future. If insufficient capacity is developed then waste will continue to be landfilled but, on the other hand, if too much is developed then management of waste in accordance with the waste hierarchy, in particular the achievement of recycling targets, may be hindered. Indeed, once capacity is operational it is not commercially possible to reduce inputs to enable waste to be managed by recycling and other methods further up the waste hierarchy. Hence waste is locked into a long term supply. Figure 2 below provides an illustration of how 'surplus' EfW capacity might occur.

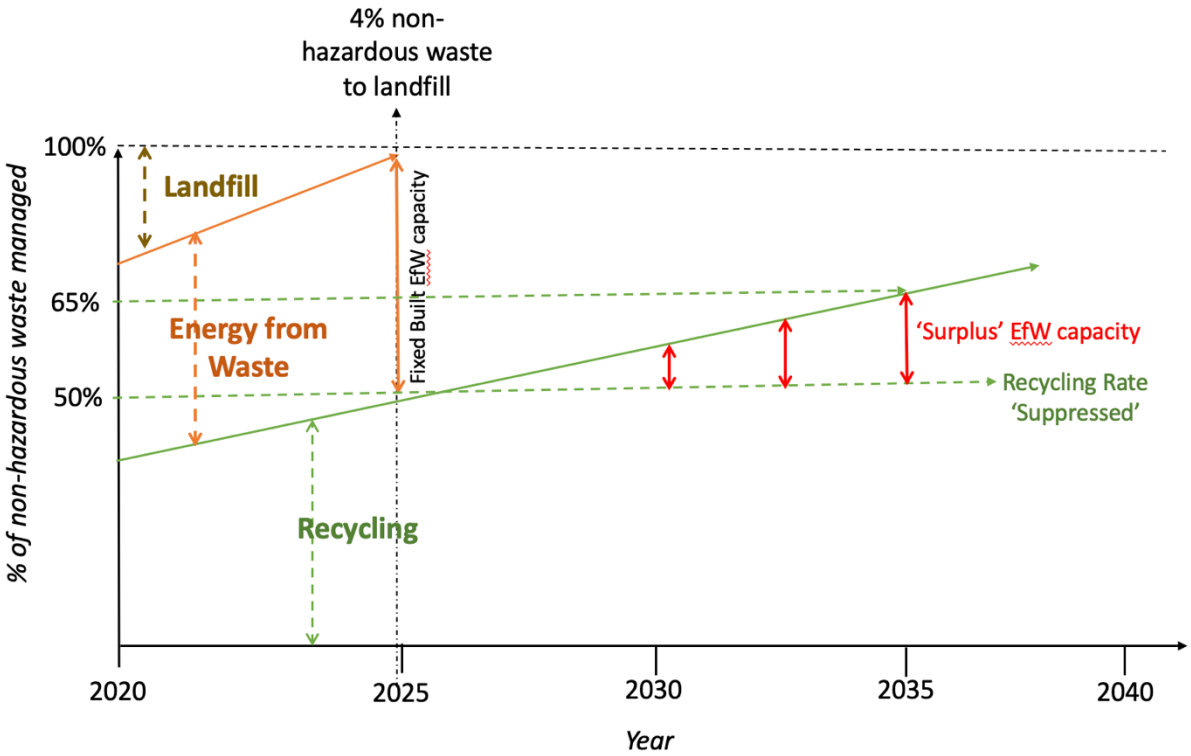

Fig. 2 'Surplus' EfW Capacity Scenario (for illustrative purposes only)

This study contributes towards a Wider South East study intended to give a sense of the extent to which additional residual non-hazardous waste

management capacity is needed to minimise landfill and at the same time avoid hindering the management of waste further up the waste hierarchy.[7]

1.11 EfW plants are normally developed in accordance with economies of scale. That is to say the larger the plant the lower the cost per unit of waste processed. This means that developers may build plants of such a size that they attract waste from beyond the WPA area within which they are located. It is likely therefore that residual non-hazardous waste will be transported across regional 'boundaries' for management and hence it is considered that the findings from a study which covers the Wider South East will provide a more useful indicator of need for residual non-hazardous waste management capacity.

1.12 Ultimately the findings will provide information to help the regional waste planning groups and their WPAs with the following:
- Responding to planning applications made for non-hazardous residual waste management capacity (including DCOs); and,
- preparing Waste Local Plans.

1.13 Members of SEWPAG have been consulted on earlier drafts of this report and have contributed to ensuring the accuracy of the underpinning data.

2. Scope and Limitations of the Study

2.1 This study considers residual non-hazardous waste treatment capacity in the South East in the form of EfW capacity that is operational, being commissioned or being constructed. It does not include other forms of 'recovery' capacity including Anaerobic Digestion. It also doesn't account for RDF manufacture (e.g. by Mechanical Biological Treatment).

2.2 Notwithstanding the approach of the Study, it is recognised that London Boroughs and other WPAs may count RDF manufacture e.g. by Mechanical Biological Treatment, as residual waste management capacity alongside EfW capacity when establishing 'other recovery' requirements in their Waste Local Plans.

2.3 When estimating the need for residual waste treatment capacity a '4% to landfill' factor has been applied. This has been included to reflect the fact that there will likely always be some waste that will be managed by landfill.

[7] Please note that this report has been prepared independently of similar reports that may have been, or are being, prepared by SEWPAG members.

4% reflects the 96% diversion of LACW achieved by East Sussex, South Downs and Brighton & Hove in 2018/19 (according to its latest Authority Monitoring Report (AMR))[8]. It should be noted that Defra data[9] indicates 8.7% of municipal waste was managed by landfill in 2018/19.

2.4 The study has not taken account of existing landfill capacity as its intention is to identify how much residual non-hazardous waste treatment capacity is required under a virtual 'zero' waste to landfill scenario which is consistent with the Waste Hierarchy and Waste Local Plans of South East WPAs.

2.5 The study does not consider the Construction, Demolition and Excavation waste stream. The vast majority of this waste stream is inert and related residual waste cannot be managed via 'other recovery' facilities of the type considered in this report.

2.6 The study is intended to provide a snapshot of the estimated capacity gap at the end of 2020.

2.7 Except where indicated, estimates of forecast arisings and existing capacity are based on existing WPA data and projections included in adopted plans and related evidence base reports including AMRs.

2.8 Details of how 2020 arisings estimates have been derived is set out in a separate excel document but the basic approach taken is as follows:

- Where a projection for 2020 is available this has been used.
- Where a projection for the year 2020/21 exists this has been taken as arisings in 2020.
- In a few cases extrapolation of projections has been applied.

2.9 While different WPAs apply different methods of estimating arisings, the values presented have been taken as presented in their documentation. That is to say no attempt has been made to standardise them and it is possible that there could be disparities between the methods used to establish estimates.

2.10 Existing capacity is taken as those facilities currently in operation as well as those being commissioned and those under construction. The report indicates how much of the total capacity is not yet operational but is under construction. The capacity of facilities that are under construction but won't be operational until after 2020 are included.

[8] The East Sussex, South Downs and Brighton & Hove Waste and Minerals Plan landfill diversion target for 2015/16 was 98%; Kent CC achieved 98.5% diversion of MSW from landfill in 2019/20.
[9] https://www.gov.uk/government/statistical-data-sets/env18-local-authority-collected-waste-annual-results-tables

2.11 In a few cases data used was taken from reports and plans published some time ago and more recent data would likely improve the accuracy of the findings especially with regard to the WPAs responsible for Slough and the Isle of Wight.

2.12 The calculation of residual waste assumes that all waste managed at a recycling facility will be recycled, however in reality some material losses take place at recycling facilities where a percentage of material then needs to be disposed of at another facility such as incineration or landfill[10]. It is estimated that the average reject rate for MRFs in England is approximately 10%. As this has not been taken account in the calculation of residual waste requiring management, the resulting capacity gap values are underestimates.

2.13 In light of the above, the findings should be taken as 'ballpark' i.e. they provide an indication of what capacity gap for residual waste management capacity exists under different recycling scenarios in the South East and thus inform SEWPAG's response to applications for additional capacity, particularly DCOs.

2.14 Consultation with WPAs on the raw data underpinning the findings was undertaken and this report takes account of the responses received.

2.15 An assessment of the impact of various assumptions has been included in Appendix 1.

3. Method

3.1 Projected arisings data for local authority collected waste and commercial and industrial waste for the calendar year 2020 or the financial year 2020/21 were extracted from adopted waste plans and related evidence base reports including AMRs. These arisings were summed together to give a total projected tonnage for non-hazardous waste arisings as shown in Table 1 below.

3.2 Projections made on a financial year basis i.e. for 2020/21 were taken to apply to 2020. Where WPA projections for arisings have been made for 2021 and 2022 these were taken to apply to 2020.

Table 1 – Estimated non hazardous waste arisings by WPA for 2020

WPA	LACW	C&I	Total
Buckinghamshire	279,000	582,000	861,000

[10] https://www.local.gov.uk/lga-over-half-million-tonnes-recycling-rejected-point-sorting

Central and Eastern Berkshire	262,817	508,920	771,737
East Sussex (inc. B&H & SDNP)	385,000	516,420	930,420
Hampshire (inc Soton and Portsmouth)	809,974	1,257,500	2,067,474
Isle of Wight	45,946	63,530	109,476
Kent	721,188	1,274,080	1, 995,268
Medway	129,639	206,125	335,764
Milton Keynes	147,000	34,000	181,000
Oxfordshire	343,000	560,000	903,000
Slough**	59,472	381,000	440,472
Surrey	540,000	744,000	1,284,000
West Berkshire	81,483	174,090	255,573
West Sussex (inc. SDNP)	435,000	456,000	891,000
Totals	**4,158,036**	**6,558,575**	**10,741,611**

3.3 To establish the amount of residual waste that would be managed by 'other recovery' i.e. not managed by recycling and landfill, the following scenarios were applied:
Landfill: 4%[11] (i.e. 96% diversion from landfill)
Recycling:

- 50%
- 55%
- 60%
- 65%
- 70%

3.4 Although the 65% level is not envisaged to occur until 2035 it has been applied to the estimated waste arisings in 2020 to give a 'snapshot' feel for how much 'other recovery' capacity could be needed to achieve 96% diversion from landfill overall. The 70% value has been included to reflect the fact several WPAs in the South East have included this as a target in their Waste Local Plans.

3.5 It should be noted that Defra data[12] indicates 47.2% of household waste was 'sent for reuse, recycling or composting' in England in 2018/19.

Table 2 – Estimated residual non hazardous waste arisings by WPA

[11] To allow for landfill 4% of the total waste arising was subtracted from the quantities remaining after recycling
[12] https://www.gov.uk/government/statistical-data-sets/env18-local-authority-collected-waste-annual-results-tables

WPA	Recycling Scenarios				
	50%	**55%**	**60%**	**65%**	**70%**
Buckinghamshire	430,500	387,450	344,400	301,350	258,300
Central and Eastern Berks	385,869	347,282	308,695	270,108	231,521
East Sussex (inc. B&H & SDNP)	450,710	405,639	360,568	315,497	270,426
Hampshire	1,033,737	930,363	826,990	723,616	620,242
Isle of Wight	54,738	49,264	43,790	38,317	32,843
Kent	997,634	897,871	798,107	698,344	598,580
Medway	167,882	151,094	134,306	117,517	100,729
Milton Keynes	90,500	81,450	72,400	63,350	54,300
Oxfordshire	451,500	406,350	361,200	316,050	270,900
Slough**	220,236	198,212	176,189	154,165	132,142
Surrey	642,000	577,800	513,600	449,400	385,200
West Berkshire	127,787	115,008	102,229	89,451	76,672
West Sussex (inc. SDNP)	445,500	400,950	356,400	311,850	267,300
Total Residual Waste	*5,498,592*	*4,948,733*	*4,398,874*	*3,849,874*	*3,299,155*
4% to landfill	*219,944*	*197,949*	*175,955*	*153,961*	*131,966*
Residual waste for 'other recovery'	**5,278,648**	**4,750,783**	**4,222,919**	**3,695,054**	**3,167,189**

3.6 The existing 'other recovery' capacity available to manage the residual waste arisings within the South East is estimated to be **3,724,460 tpa.** The facilities counted as providing this capacity and sources of the estimates are set out in Table 3 below.

Table 3 Existing residual non-hazardous waste management capacity ('other recovery')

Name of EfW/MBT facility and WPA (operational/under construction)	**Capacity (tonnes per annum)**	**Source**
Newhaven EfW (East Sussex) (operational)	242,000	Veolia (Operator)
Greatmoor EfW (Buckinghamshire) (operational)	345,000	As above

Forest Road ERF (Isle of Wight) (under construction)	44,000	Environment Agency - Notice of variation and consolidation, p. 2
Lakeside EfW at Colnbrook (Slough) (operational)	460,000	Environment Agency - Application for an environmental permit Part C3, p. 6 (Table 5)
Slough Multifuel (Slough) (consented)	438,000	Environment Agency - non-technical summary, p. 1 SSE (Operator)
Portsmouth ERF (Hampshire) (operational)	210,000	Veolia - Annual Performance Report 2019 for Portsmouth ERF, p. 3
Chineham ERF (Hampshire) (operational)	110,000	Veolia - Annual Performance Report 2019 for Chineham ERF, p. 5
Marchwood ERF (Hampshire) (operational)	220,000	Veolia - Annual Performance Report 2019 for Marchwood ERF, p. 3
Allington (Kent) (operational)	500,000	Surrey County Council, Communities, Environment and Highways Select Committee 18 June 2020 document pack, p. 29
Kemsley K3 (Kent) (commissioning)	550,000	Application Letter as part of National Infrastructure Planning application pack
Charlton Lane Eco Park (Surrey) (commissioning)	55,460	Determination of an Application for an Environmental Permit, p. 14
Oxfordshire Ardley ERF (operational)	326,000	Viridor (Operator)
Milton Keynes Waste Recovery Park (Milton Keynes) (operational)	93,600	Amey (Operator)
Brookhurst Wood MBT (West Sussex) (operational)	130,400[13]	WDI 2019
Total Capacity	**3,724,460**	

3.7 The gap between residual waste arisings not managed at landfill and 'other recovery' capacity was then calculated by subtracting the estimated total capacity value in Table 3 from the total residual waste arisings value arrived at in Table 2.

4 Results

4.1 Table 4 below shows the additional 'other recovery' capacity required for the management of residual non-hazardous waste assuming the achievement of

[13] Facility has capacity of 310,000tpa – value shown relates to final 'other recovery' of residual waste rather than intermediate treatment prior to management at another facility.

increasing levels of recycling. It also show the capacity 'gap' if consented capacity were to be built.

Table 4 Estimated 'other recovery' capacity gap in the South East for 2020 (negative values indicate surplus)

Recycling Scenario	50%	55%	60%	65%	70%
'Other Recovery' capacity gap	1,554,188	1,026,323	498,459	-29,406	-557,271
'Other Recovery' capacity gap inc. consented	1,267,188	739,323	211,459	-316,406	-844,271

4.2 Around 1,042,000 tpa of additional 'other recovery' capacity (in the form of EfW) has either been consented or applied for in the South East as shown in Table 5 below.

Table 5 Residual non-hazardous waste management capacity not built out i.e. consented or consent applied for ('other recovery')

Name of EfW facility and WPA (consented or consent applied for)	Capacity (tonnes pa)	Source
Consented:		
Britanniacrest 3R, Brookhurst Wood (West Sussex) (consented)	180,000	WSCC Planning Committee Report 19 June 2018
Kemsley K3 (Kent) (consented)	107,000	Application Letter as part of National Infrastructure Planning application pack
New Circular Technology Park, Ford (Grundon)	140,000	WSCC
Sub-total	*427,000*	
Applications:		
Ford EfW (West Sussex) (application)	135,000[14]	Viridor/Grundon (Operator)
'Energy Recovery Centre', Reading Quarry (West Berkshire) (application)	150,000	Planning Application
Alton energy recovery facility (Veolia) (Hampshire) (application)	330,000	Planning Application

[14] Application is for 275,000tpa but 140,000tpa will replace consented capacity at the same site

Sub-total	*615,000*	
Total	**1,042,000**	

5 Conclusion

5.1 Within the South East, if the use of landfill for the management of residual non-hazardous waste is minimised to 4%, the range of residual waste treatment capacity ('other recovery') required based on an estimate of arisings in 2020 and recycling scenarios ranging between 50% to 70% is estimated at between 1.55 million tpa and -557,271tpa.

5.2 Notwithstanding the limitations of this study, including the fact that it is solely based on the position within the South East, it may be concluded that there is a risk that if any of the 'other recovery' capacity in the pipeline (i.e. consented and applications pending) came on stream then it might not be possible to achieve 65% recycling of LACW and C&I waste.

5.3 The findings from this study have been combined with those undertaken for the London Waste Planning Forum and East of England Waste Technical Advisory Body to establish a picture of residual waste requirements across the Wider South East.

Appendix 1 - Assessment of Impact of Assumptions on Estimate of Residual Waste Management Capacity Requirements

Assumption	Impact on Estimate of Residual Waste Management Capacity Requirements (increase in estimate = green; decrease in estimate = red)	Direction of Effect
The vast majority of residual non-hazardous waste is derived from Local Authority Collected Waste and Commercial and Industrial waste streams and so non-hazardous CDEW has not been factored into the overall estimate of arisings	CDEW is largely inert and so cannot be managed by residual waste management options in particular energy from waste. However, by not factoring this in it may be said that a slight underestimate of residual non-hazardous waste arisings has occurred.	
WPA projections for arisings in 2021 and 2022 were applied to 2020.	As WPAs generally predict an increase in arisings over time it is more likely that this assumption will lead to an over-estimate of the residual waste arisings in 2020.	
4% of residual waste will be managed by landfill	If more than 4% of residual waste is managed by landfill then the amount of residual non-hazardous waste arisings requiring management by 'other recovery' (e.g. EfW) will be lower, it should be noted that some SE WPAs have assumed higher levels of landfill e.g. Oxon has assumed 5%. In addition, the Government goal[15] is for no more than 10% of municipal waste to be managed by landfill by 2035.	

[15] Our Waste, Our Resources: A Strategy for England, 2018

Landfill and Residual Treatment Capacity in the Wider South East of England

including the

- East of England
- the South East of England
- London

for the

East of England Waste Technical Advisory Body

South East Waste Planning Advisory Group

London Waste Planning Forum

Final Report

May 2021

Sacks | Consulting
Deborah Sacks
BSc MA MRICS MRTPI

with

Cool Planet Resources

VITAKA

Contents

1 Introduction

The purpose of this report is to obtain an understanding of the current requirement for residual waste management capacity in an area known as the Wider South East, which covers the planning regions previously known as the East of England, the South East of England and London. These three regions are closely inter-related with a significant part of this area comprising the travel to work area for London. Waste from London has historically been sent to landfill in sites outside the Capital and waste management facilities are more commonly located outside the dense urban area. The high land values in London also make development of waste management facilities difficult there, although the land values in many of the areas surrounding London are also very high for residential and commercial uses.

There is therefore a need to understand the waste management capacity available in the wider region. This report has been commissioned by the Regional Waste Planning Advisory Groups for each of the three regions: the London Waste Planning Forum, the East of England Waste Technical Advisory Body and the South East Waste Planning Advisory Group. The membership of these three groups is given in Appendix 2. The Report takes information gathered for each of these bodies and brings it together in a single report so as to provide an overall snapshot picture for the Wider South East of England.

The report has been drafted by Sacks Consulting in conjunction with Cool Planet Resources and Vitaka Consulting. These three consultants are the convenors of the respective Waste Planning Advisory Groups for the East of England, the South East of England and London.

Ideally, local planning authorities would benefit from understanding the total waste management capacity in the UK, but this information is not currently available. It is hoped that this gap in the information at a UK or national (England) level will be filled by central Government, notwithstanding a number of very useful industry reports that have been issued in recent years.

A particular area of focus for all three regional planning groups is the extent to which waste management capacity for managing 'residual non-hazardous waste' is being developed. This is with both a concern to ensure sufficient capacity is available to meet future needs, but also to ensure waste will be managed in accordance with the Waste Hierarchy (see Fig 1).

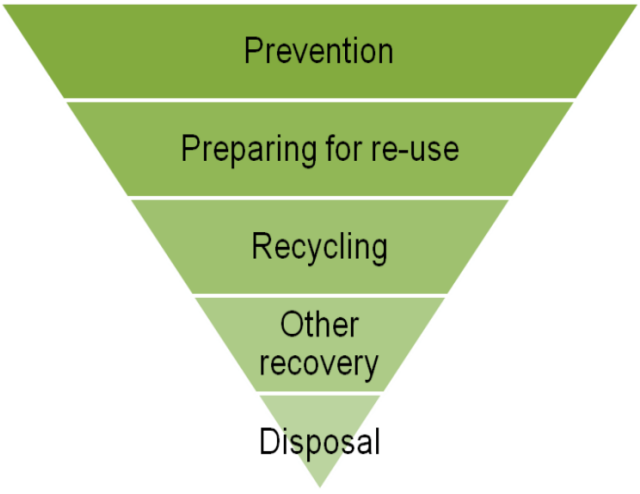

Figure 1 The Waste Hierarchy

The Waste Planning Authorities in the Wider South East of England all have Waste Plans at various stages of preparation or adoption. Data for this report has been taken from these Plans and the background information supporting them, as well as the Environment Agency's Waste Data Interrogator, the London Plan and discussions with Council officers and some operators.

Most Waste Planning Authorities have planned for net self-sufficiency so as to have sufficient waste management capacity in their area to manage the equivalent amount of their total waste arisings. However, in practice only some of these planned facilities have been delivered and waste is often managed in neighbouring authority areas or further afield.

While it is desirable that there is self-sufficiency among the WPAs of the Wider South East, it should also be noted that there are a number of residual waste management facilities outside this area that have contracts to treat waste arising within the area. A key example of this is the Severnside EfW in South Gloucestershire which manages waste from West London. This reveals the limitations of a regional study and further work for the UK would usefully address these.

The report is concerned with the management of non-hazardous waste that cannot be recycled. "Non-hazardous waste" can also be defined as the Local Authority Collected Waste (LACW) and Commercial and Industrial (C&I) waste streams.

Non-hazardous waste management capacity includes landfill, thermal treatment facilities (energy from waste) and a proportion of mechanical biological treatment (MBT). It does not include the capacity to manage organic wastes such as composting and anaerobic digestion facilities, recycling capacity nor capacity to manage inert wastes at landfill or recycling centres.

The London Plan includes MBT capacity in the definition of waste "management" and therefore Boroughs can count MBT capacity towards their contribution for net self-sufficiency. For the purposes of this Study, 10% of input material is assumed to be extracted for recycling and is therefore excluded from the calculation for residual waste capacity. Of the remaining throughput, 30% has been counted as residual waste management capacity, equivalent to the average amount of waste reduction through moisture removal. Refuse Derived Fuel (RDF) is mainly sent to export as discussed below.

It should be noted that this report reflects a moment in time (snapshot), and the most up to date data available (2019) has been used. Residual waste management capacity is likely to change over time as new capacity is developed, existing facilities close, waste authority contracts are procured and new legislative and tax regimes are put in place. In addition, non-hazardous waste arisings may differ from their projected amounts in light of Covid and other influences. Therefore, residual waste arisings and treatment capacity for non-hazardous waste should be monitored regularly.

2 Context

2.1 Waste arising

Recycling rates in England have plateaued just below the level of 50% of total waste arisings for LACW. The target for recycling and composting in Defra's Resources and Waste Strategy follows the EU target of 65% and significant efforts will need to be made to reach this target. Such efforts will include changes to collection systems, more separate collection and treatment of organic wastes and perhaps most importantly, improving the design of products so that they can be re-used, dismantled and recycled more easily. The main driver for such changes to product design in the UK is likely to be a system of Extended Producer Responsibility (EPR) which will require companies that place products on the market to contribute more directly to the costs of managing such products at

the end of their life. Defra has issued a consultation on EPR[1] for packaging and progress is expected on this work in the coming year.

2.2 Residual Waste Treatment Facilities

Residual waste is treated through a variety of routes including landfill, and disposal or recovery at Energy from Waste facilities. It can also be converted into RDF or Solid Recovered Fuel ((SRF), typically more highly processed than RDF) for recovery or landfilling. This report looks at the facilities available and planned to manage the material that becomes residual waste because there are currently no economic options for recycling it.

Many large non-hazardous landfill sites in the Wider South East of England have closed in the last five years. Several of these sites have been restored while others have been mothballed for possible future use. The expense of sending non-hazardous waste to landfill is largely due to the requirement to pay landfill tax which is levied at a rate of £94.15 per tonne from 1st April 2020. In addition to this, haulage costs will typically add a further £25 to £40 per tonne to the costs of disposal.

WRAP publish a report each year which gives a good picture of the overall costs of different waste management options and these reports can be found at https://wrap.org.uk/resources/report/gate-fees-reports

The median cost of sending non-hazardous waste to landfill before the addition of landfill tax in England was reported to be £24 per tonne although the figure for the East of England was £5 per tonne.

The total cost of disposing of non-hazardous waste to landfill can therefore easily reach £120 per tonne and cheaper options such as sending the material to energy from waste facilities either within the UK or abroad are more attractive for both local authorities and commercial waste managers.

Exports or imports of waste for disposal are prohibited, except for a few exceptions. Importing and exporting waste for recovery is possible, depending on country controls, waste type and destination.

Waste sent abroad to energy recovery facilities is usually first processed into RDF or SRF. Exporters need to have a legally enforceable written contract from the buyer of the product. Currently the Energy from Waste (EfW) facilities that receive this material in continental Europe are often more energy efficient than EfW facilities in the UK because they are connected to heat networks and achieve the R1 efficiency status required for the process to qualify as energy recovery rather than waste disposal. While facilities in the UK may achieve R1 status this is often because they are built to allow heat offtake at some point in future rather than immediately following their construction.

In 2019, 2.6 million tonnes of RDF was exported from the UK. Nearly half of the RDF sent to Continental Europe is treated in the Netherlands as is shown in the chart below:

[1] https://consult.defra.gov.uk/extended-producer-responsibility/extended-producer-responsibility-for-packaging/

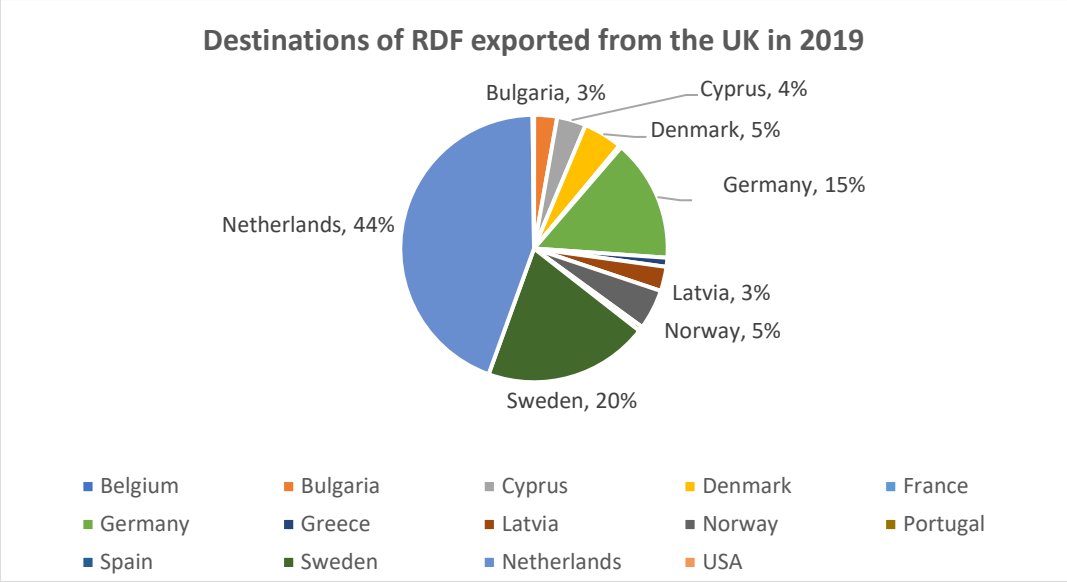

Figure 2 Destinations of RDF Exports from the UK

Source: Environment Agency: International Waste Shipments Exported from England
https://ea.sharefile.com/share/view/s00d603b19484ef09
https://data.gov.uk/dataset/18594948-d111-4dd4-a8f1-0df55eb8a94a/international-waste-shipments-exported-to-england

However, incineration taxes are being introduced in the countries that receive waste from the UK and the costs of this treatment route will become less attractive as a result. The tax rate in the Netherlands was set at €32 per tonne in 2020. In addition, there was a significant mechanical breakdown at the single main facility in the Netherlands that receives waste from the UK which reveals a weakness in the resilience of this outlet.

EfW infrastructure has an operational life of at least 30 years and so has a considerable impact on how waste will be managed in future. If insufficient capacity is developed then waste will continue to be landfilled but, on the other hand, if too much is developed then management of waste in accordance with the waste hierarchy, in particular waste reduction and the achievement of recycling targets, may be hindered. Indeed, once capacity is operational there may be commercial pressures that prevent the reduction of inputs to these facilities. There remain concerns that easy availability of EfW management routes could reduce the pressures for waste to be managed by recycling and other methods further up the waste hierarchy. The Environmental Services Association has produced a document which seeks to address some of these issues[2].

There is limited understanding of the extent to which operational plants will be taken off-line in coming years. The North London Heat and Power project is planned to replace the aging facility at Edmonton, and other infrastructure built in London may be nearing the end of its life within the next ten years. However it may also be possible to refurbish these plants in the short-term.

[2] *http://www.esauk.org/application/files/2416/1548/0962/22513_ESA_FAQs_March_2021_A4_SCREEN.pdf*

3 Recycling rates and targets

The Resources and Waste Strategy for England identifies five strategic ambitions:

1. To work towards all plastic packaging placed on the market being recyclable, reusable or compostable by 2025;
2. To work towards eliminating food waste to landfill by 2030;
3. To eliminate avoidable plastic waste over the lifetime of the 25 Year Environment Plan;
4. To double resource productivity by 2050; and
5. To eliminate avoidable waste of all kinds by 2050.

In 2000/01, only 12% of all LACW was recycled or composted in England, compared to 42.7% in 2018/19. The proportion of LACW sent to landfill has fallen from 79.0% to 10.8% over the same period. The official England 'waste from households' recycling rate was 45.5 per cent in 2019, up 0.9 percentage points from 44.7 per cent in 2018.

The Waste Management Plan for England[3] provides that recycling rates for waste management plans must include the measures to be taken so that, by 2035 the preparation for re-use and the recycling of municipal waste[4] is increased to a minimum of 65% by weight. The London Plan aspires to reach this target by 2030.

Landfill or incineration without energy recovery should usually be the last resort for waste, particularly biodegradable waste. The landfill tax is one of the key drivers to divert waste from landfill to achieve the 2020 target of no more than 10.161 million tonnes of biodegradable municipal waste to landfill and the 2035 target of no more than 10% of municipal waste to landfill.

4 Scope of the Report

4.1 Capacity of Waste Management Facilities

This report examines the non-hazardous residual waste treatment capacity in the Wider South East of England. This focuses on landfill and thermal treatment facilities (EfW). The main MBT (mechanical and biological treatment) facilities in the study area have also been taken into account on the basis that they reduce the total amount of residual waste by 30%. This figure is an average calculated from discussions with the operators of these sites and publicly available data.

The identity and annual throughput of these treatment facilities has been obtained from Environment Agency sources and planning permissions granted by the relevant Waste Planning Authorities. It should be noted that the capacity of some facilities could therefore be greater than the figure currently identified in their throughput. An example of this is the EfW at Great Blakenham in Suffolk which obtained permission to increase its operational capacity from 269,000 tonnes per annum to 295,000 tonnes per annum in 2020[5].

Other waste management facilities are far more numerous and difficult to assess and have not been analysed here, since they are part of the system of recycling and processing waste and the tonnages treated at such facilities is taken into account in the quantity of waste recycled.

[3] https://www.gov.uk/government/publications/waste-management-plan-for-england-2021

[4] The definition of municipal waste as described in the Landfill Directive includes both household waste and that from other sources which is similar in nature and composition, which will include a significant proportion of waste generated by businesses and not collected by Local Authorities.

[5] http://suffolk.planning-register.co.uk/Planning/Display?applicationNumber=SCC%2F0059%2F19MSART27

The categorisation of these other facilities includes treatment and transfer facilities and the following categories have been used, taken from the Waste Data Interrogator:

- Landfill
- Disposal in or on land
- Incineration
- Treatment
- Processing
- Metal Recycling
- Transfer
- Mobile Plant
- Storage

The capacity of waste management facilities is also difficult to assess definitively, and has been assessed by examining the throughput of waste for each facility in the year 2019 (taken from the Waste Data Interrogator[6] as a proxy for capacity) as well as the capacity in the planning permission for the facility.

4.2 Waste Arisings

Waste arisings need to be assessed from a number of sources. Only non-hazardous waste arisings are considered here, so this report does not consider inert waste arisings which predominantly arise from construction and demolition activity, or separately identified hazardous wastes. Data for arisings of LACW have been taken from the Waste Local Plans of each Waste Planning Authority (WPA) and checked against Defra's most recent data[7]. Data for Commercial and Industrial (C&I) waste arisings has been obtained from each of the relevant WPA's local plan or their Annual Monitoring Report. The source of these figures is a calculation made by each WPA derived from Defra's assessment of C&I waste arisings taking into account the size of the economy in each area and projections of its growth. The baseline data for this waste stream is not as strong as that for LACW since the source of the information is survey data and extrapolations from this.

The estimate for C&I waste arisings for 2018 is from Defra who give a figure of 37.2 million tonnes for England. More information on how this figure is calculated can be found at the following sources:

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/918270/UK_Statistics_on_Waste_statistical_notice_March_2020_accessible_FINAL_updated_size_12.pdf

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/873328/Commercial_and_Industrial_Waste_Arisings_Methodology_Revisions_Oct_2018_contact_details_update_v0.2.pdf

A further element of uncertainty has been introduced with the proposals for the Oxford-Cambridge Arc[8] in the Wider South East. This is a proposal for strategic growth incorporating additional

[6] The Waste Data Interrogator is publicly available at https://data.gov.uk/dataset/d409b2ba-796c-4436-82c7-eb1831a9ef25/2019-waste-data-interrogator

[7] https://www.gov.uk/government/statistical-data-sets/env18-local-authority-collected-waste-annual-results-tables

[8] https://www.gov.uk/government/publications/planning-for-sustainable-growth-in-the-oxford-cambridge-arc-spatial-framework/planning-for-sustainable-growth-in-the-oxford-cambridge-arc-an-introduction-to-the-spatial-framework

businesses and in the order of one million new homes by 2050. If these proposals are implemented, additional waste management infrastructure will be needed accordingly.

4.3 London policy context

The London Plan provides a key part of the policy framework for waste planning in London and waste plans and policies in this area should be in general conformity with the London Plan.

The London Plan states that London should manage as much of its waste within its boundaries as practicable, aiming to achieve waste net self-sufficiency by 2026 in all waste streams except for excavation waste. To meet this aim, the London Plan apportions an amount of LACW and C&I waste to each Borough and requires boroughs to allocate sufficient land and identify waste management facilities to provide capacity to manage the apportioned tonnages of waste.

The London Plan incorporates targets set out in the Mayor's Environment Strategy, including a London-wide target of 65% municipal (household and business) waste by 2030. This breaks down as 50% of LACW by 2025 and 75% of C&I by 2030.

Recent figures[9] show that London has a household waste recycling rate of 33%, a business waste recycling rate of 48% and a municipal waste recycling rate of 41%.

RDF from East London's MBT facilities are mainly exported to Europe and the RDF from Southwark's MBT facility is sent to the South East London Combined Heat and Power Plant (SELCHP) energy recovery plant.

The other uncertain factor is the extent to which the recycling target for Municipal Waste of 65% will be met. The pressures on local authority budgets may restrict the innovation required to exceed current recycling rates and reach this target.

5 Non-Hazardous Waste Management Capacity

This section describes the non-hazardous waste management capacity in the Wider South East of England.

Facilities for managing waste at landfill, disposal onto land, incineration and MBT processing all contribute to taking waste to its final fate. The capacity for transfer, storage and mobile plant are generally intermediate fates where material then needs to undergo further treatment. However, some form of recycling and reuse often takes place at transfer stations, and some material losses take place at recycling facilities where a percentage of material then needs to be disposed of at another facility such as incineration or landfill. While the reporting of this data remains patchy, it is estimated that the average reject rate for MRFs in England is approximately 10%. This means that the quantities of residual waste that require management described in the section below are likely to be underestimates.

There is an on-going debate about the role of MBT facilities, which produce RDF which then needs to be further treated usually at EfW plants. They reduce the volume and weight of material handled, through extraction of water and recyclable materials. The material that is then sent for recycling will be counted in the recycling statistics achieved within each Waste Planning Authority area.

[9] London Environment Strategy (May 2018)

Some WPAs including the London Boroughs, include MBT capacity in their total residual waste treatment capacity. The main facilities for production of RDF and SRF in the Wider South East are listed here, but not included in the total available residual waste management capacity.

5.1 Non-Hazardous Landfill

The data on remaining non-hazardous landfill capacity has been obtained from the Environment Agency which collates information supplied by operators. The information is necessarily approximate and is subject to continuous change. These figures therefore provide a snapshot of the picture at a point in time and are based on the landfill sites given in Appendix 1. The data is largely taken from the Environment Agency's regular report on Remaining Landfill Capacity and the end of 2019.

The role of landfill for disposing of waste has reduced significantly in recent years with many non-hazardous landfill sites being filled more slowly than in earlier decades and sometimes being restored to lower levels than originally anticipated. Landfill is currently regarded as the least desirable management route for waste and the National Planning Policy for Waste (2014) requires Waste Planning Authorities to drive waste management up the waste hierarchy. The Resources and Waste Strategy for England aims to eliminate the sending of food waste to landfill by 2030 and to reduce the amount of municipal waste sent to landfill to 10% or less by 2035. It is possible that the use of landfill for non-hazardous waste will be all but eliminated by that time.

Table 1 Non-Hazardous Landfill Capacity

Waste Planning Authority Area	**Capacity (cubic metres)**
Cambridgeshire and Peterborough	8,148,000
Essex and Southend-on-Sea	2,171,000
Norfolk	5,090,000
Suffolk	4,400,000
Thurrock	5,200,000
Total for the East of England	**25,009,000**

Waste Planning Authority Area	**Capacity (cubic metres)**
Havering	1,142,042
Sutton	10,000
Total for London	**1,152,042**

Waste Planning Authority Area	**Capacity (cubic metres)**
Buckinghamshire total	28,101,363
Hampshire total	780,880
Kent Total	1,746,688
Oxfordshire total	3,801,464
Surrey Total	3,711,635
South East Total	**38,142,030**

Total Non-Hazardous Landfill capacity in the Wider South East**: 66,327,072 cubic metres**

5.2 Residual Waste Treatment Capacity

The residual waste treatment facilities that are considered here comprise EfW facilities. The table below identifies the facilities in the Wider South East that process non-hazardous wastes. The majority of these are operational but also included are facilities that are under construction, or are considered certain to be delivered within the next three years.

Table 2 Residual Waste Treatment Facilities in the Wider South East

East of England	Capacity (tonnes pa)
Peterborough (operational)	85,000
Suffolk (operational)	295,000
Goosey Lodge (Bedford Borough)	255,000
Central Bedfordshire (under construction)	545,000
Essex (Rivenhall - (with planning permission)	595,000
Tilbury Green Power	450,000
Total in the East of England	**2,225,000**

South East of England	Capacity (tonnes pa)
Newhaven EfW (East Sussex) (operational)	242,000
Greatmoor EfW (Buckinghamshire) (operational)	345,000
Forest Road ERF (Isle of Wight) (under construction)	44,000
Lakeside EfW at Colnbrook (Slough) (operational)	460,000
Portsmouth ERF (Hampshire) (operational)	210,000
Chineham ERF (Hampshire) (operational)	110,000
Marchwood ERF (Hampshire) (operational)	220,000
Allington (Kent) (operational)	500,000
Kemsley K3 (Kent) (under construction)	550,000
Charlton Lane Eco Park (Surrey) (commissioning)	55,460
Isle of Wight Resource Recovery Facility (operational)	60,000
Oxfordshire Ardley ERF	326,000
Milton Keynes Waste Recovery Park (Milton Keynes) (operational)	93,600
Slough Heat & Power	438,000
Total in the South East of England	**3,654,060**

London	Capacity (tpa)
Riverside Resource Recovery, Bexley	741,147
Edmonton EfW Facility, Enfield	495,178
South East London Combined Heat and Power (SELCHP) Lewisham	439,083
Beddington Energy Recovery Facility Sutton	276,877
Cory Riverside Energy (consented) Bexley	800,000
North London Heat and Power (additional consented capacity) Enfield	175,000
Total in London	**2,927,285**

Total residual waste treatment capacity in the Wider South East **8,806,345**

Figure 3 Operational and Permitted Energy from Waste Facilities

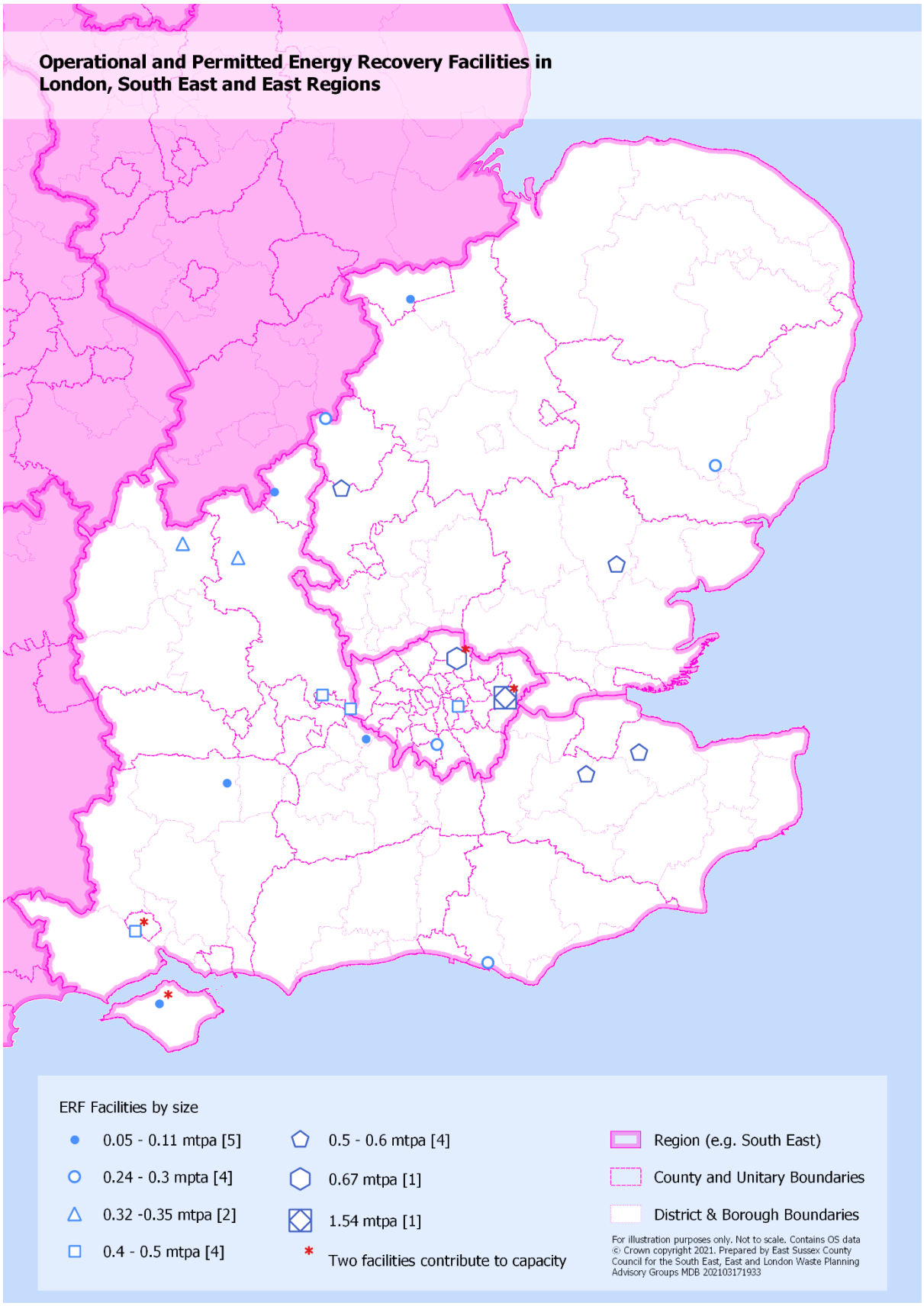

Table 3 MBT Capacity (tonnes)

Annual throughput	Annual throughput (2019)	Treatment capacity (30%)
Jenkins Lane Waste Management Facility (Newham	189,637	56,891
Frog Island Waste Management Facility (Havering)	162,338	48,701
Southwark Integrated Waste Management Facility (Southwark)	85,000	25,500
Total	**436,975**	**131,093**

MBT Facilities outside London	Annual throughput (2019)	Treatment capacity (30%)
Amey (Cambridgeshire)	200,000	60,000
Courtauld Rd (Essex)	417,000	125,100
Brookhurst Wood (West Sussex)	130,400	39,120
Total	**747,400**	**224,220**

Source: Operational data supplied by ELWA, Environment Agency and Southeast London joint waste planning technical paper (December 2019)

Total residual waste treatment capacity from MBT: **355,313 tonnes pa**

In addition, there are a significant number of composting and anaerobic digestion facilities in the Wider South East that are not considered here.

6 Comparison with Waste Arisings

The waste arising in each WPA Area has been taken from Waste Plans, the London Plan and Annual Monitoring Reports. Some of these forecasts may be a little out of date and many caveats need to be applied to waste arising forecasts, especially forecasts of C&I waste where the data for existing arisings is weak.

In addition, the economy is likely to enter a recession following the Covid crisis and C&I waste arisings will be significantly lower than anticipated in any waste forecasts. In 2020 household waste arisings have increased by between 20% and 30% in most areas, but this will not make up for the large reduction in commercial arisings that has occurred in the first half of 2020. The arisings in the table below are therefore likely to be over-estimates.

The table below summarises the non-hazardous waste arisings in each WPA area and shows how much residual waste will need to be managed if recycling and composting rates are achieved ranging from 50% to 65%.

Table 4 Quantities of non-hazardous waste arising (tonnes)

				Residual waste to be managed after recycling rate of			
Waste arisings in 2020/21	LACW	C&I	**Total Non-hazardous waste arisings**	50%	55%	60%	65%
Bedfordshire Authorities	340,000	527,000	**867,000**	433,500	390,150	346,800	303,450
Cambridgeshire	354,000	603,000	**957,000**	478,500	430,650	382,800	334,950
Essex & Southend	737,000	940,000	**1,677,000**	838,500	754,650	670,800	586,950
Hertfordshire	556,000	1,066,000	**1,622,000**	811,000	729,900	648,800	567,700
Norfolk	430,000	1,141,600	**1,730,000**	865,000	778,500	692,000	605,500
Peterborough	97,000	201,000	**298,000**	149,000	134,100	119,200	104,300
Suffolk	401,000	711,000	**1,112,000**	556,000	500,400	444,800	389,200
Thurrock	81,000	88,000	**169,000**	84,500	76,050	67,600	59,150
Total for East of England	**2,996,000**	**5,436,000**	**8,432,000**	**4,216,000**	**3,794,400**	**3,372,800**	**2,951,200**
Buckinghamshire	279,000	582,000	861,000	430,500	387,450	344,400	301,350
Central and Eastern Berkshire	262,817	508,920	771,737	385,869	347,282	308,695	270,108
East Sussex (inc. B&H & SDNP)	385,000	516,420	901,420	450,710	405,639	360,568	315,497
Hampshire	809,974	1,257,500	2,067,474	1,033,737	930,363	826,990	723,616
Isle of Wight	45,946	63,530	109,476	54,738	49,264	43,790	38,317
Kent	721,188	1,274,080	1,995,268	997,634	897,871	98,107	698,344
Medway	129,639	206,125	335,764	167,882	151,094	134,306	117,517
Milton Keynes	147,000	34,000	181,000	90,500	81,450	72,400	63,350
Oxfordshire	343,000	542,000	885,000	442,500	398,250	354,000	309,750
Slough	59,472	381,000	440,472	220,236	198,212	176,189	154,165
Surrey	540,000	744,000	1,284,000	642,000	577,800	513,600	449,400
West Berkshire	81,483	174,090	255,573	127,787	115,008	102,229	89,451
West Sussex (inc. SDNP)	435,000	456,000	891,000	445,500	400,950	356,400	311,850
Total South East	4,239,519	6,739,665	10,979,184	5,489,592	4,940,633	4,391,674	3,842,714
All London	**4,026,000**	**4,191,000**	**8,217,000**	**4,108,500**	**3,697,650**	**3,286,800**	**2,875,950**
Total Arisings for the Wider South East	11,261,519	16,366,665	27,628,184	13,814,092	12,432,683	11,051,274	9,669,864

7 Summary and Conclusions

If the recycling target of 65% is achieved then, without relying on available landfill, there will be a shortfall of capacity for residual treatment of just under one million tonnes per annum. This may be significantly lower if the arisings are an over-estimate as anticipated in section 6.

In the interim before that recycling rate is reached or if it is not reached at all, the gap is likely to be more.

Table 5 Total Forecast Non-Hazardous Residual Waste Capacity Gap

Recycling rate	50%	55%	60%	65%
Total residual waste	13,814,092	12,432,683	11,051,274	9,669,864
Residual treatment capacity	8,844,885	8,844,885	8,844,885	8,844,885
Residual waste treatment capacity gap (tonnes)	**5,007,747**	**3,626,338**	**2,244,929**	**863,519**

Until existing planning permissions start construction, or new facilities come forward, and recycling rates increase, the Wider South East of England is therefore likely to remain at least partially dependent on facilities outside its area as well as facilities abroad. A key example of waste that is sent outside the Wider South East is the waste sent from West London to an energy from waste facility in South Gloucestershire amounting to approximately 300,000 tonnes per annum.

It should be noted that this report does not include any forecasts for population or economic growth, both of which could cause an increase in the quantity of waste arising. It should also be noted that there are significant challenges in achieving the target of 65% recycling and composting of non-hazardous waste: whilst this level has been achieved in Wales, changes on collection and waste management systems will be required to achieve this level throughout the Wider South East of England for both Local Authority Collected Waste and Commercial and Industrial waste.

Notwithstanding the approach of the Study, it is recognised that London Boroughs and other WPAs may count RDF manufacture e.g. by MBT as residual waste management capacity alongside EfW capacity when establishing 'other recovery' requirements in their Waste Local Plans.

Appendix 1 – Details of Non-hazardous Landfill Sites

Cambridgeshire and Peterborough

Site Name	Capacity (cubic metres)
Buckden Landfill Site	1,998,000
Grunty Fen Landfill Site, Ely	129,000
March Landfill Site	30,000
Milton Landfill Site	132,000
Warboys Landfill Site	0
Witcham Meadlands Landfill, Mepal	1,042,000
Ely Road Landfill Site, Waterbeach	2,309,000
Eye Quarry Landfill	700,000
Thornhaugh Quarry I Landfill Site	1,140,000
Eye North Eastern Landfill	518,000
Eye Quarry Landfill	150,000
Total for Cambridgeshire and Peterborough	**8,148,000**

Essex and Southend-on-Sea

Site Name	Non-haz capacity (cubic metres)
Martell's Quarry, Slough Lane, Ardleigh, Colchester	56,000
Bellhouse Landfill, Warren Lane, Stanway, Colchester	2,000,000
Barling Magna Landfill, Barling Marsh, Barling Magna, Southend-on-Sea	100,000
Pitsea Landfill, Pitsea Hall Lane, Pitsea, Basildon	15,000
Total for Essex and Southend-on-Sea	**2,171,000**

Norfolk

Site Name	Capacity (cubic metres)
Blackborough End	4,000,000
Feltwell	1,090,000
Total for Norfolk	**5,090,000**

Suffolk

Site Name	Capacity (cubic metres)
Masons Landfill	3,800,000*
Folly Farm Landfill	600,000
Total for Suffolk	**4,400,000**

*Note that the current planning permission is for restoration of this site by October 2022

Thurrock

Site Name	Remaining Capacity (cubic metres)
South Ockendon	4,500,000
Rainham Landfill	1,700,000
Total for Thurrock	**5,200,000**

Non-Hazardous Landfill Capacity in London

Facility name	Borough	Capacity (cubic metres)
Rainham Landfill	Havering	1,142,042
Beddington Farmlands Landfill Site	Sutton	10,000
Total		**1,152,042**

Non-hazardous Landfill Capacity in the South-East

Facility Name	Planning Sub Region	Remaining Capacity end 2019 (cubic metres)
Springfield Farm Landfill	Buckinghamshire	9,317,863
Bletchley Landfill Site	Buckinghamshire	10,409,626**
Calvert Landfill Site pit 6	Buckinghamshire	5,943,903
Calvert Landfill Site	Buckinghamshire	2,186,371
Land at Meadhams Farm Brickworks	Buckinghamshire	243,600
Blue Haze Landfill	Hampshire	780,880
Greatness Quarry	Kent	11,855
Shelford Landfill Site	Kent	1,734,833
Sutton Courtenay	Oxfordshire	2,505,012
Sutton Courtenay Landfill - Phase 3	Oxfordshire	721,583
Dix Pit Landfill Site	Oxfordshire	137,687
Finmere Quarry Landfill	Oxfordshire	437,182
Redhill Landfill (North East Quadrant)	Surrey	3,661,509
Total		**38,091,904**

**Note that the current planning permission is for imports to this site to cease by February 2022

Appendix 2 – Membership of regional waste planning advisory groups in the Wider South East of England

There are representatives of the following Waste Planning Authorities on the respective waste planning advisory groups. It should be noted that these representatives are unable to bind their authorities to any view or position and their participation is advisory.

East of England Waste Technical Advisory Body

- Cambridgeshire County Council
- Peterborough City Council
- Suffolk County Council
- Norfolk County Council
- Essex County Council
- Thurrock Council
- Southend–on-sea Borough Council
- Hertfordshire County Council
- Central Bedfordshire Council
- Bedford Borough Council and
- Luton Borough Council

Contact details: Deborah Sacks deborah@sacksconsulting.co.uk

South East Waste Planning Advisory Group

- Buckinghamshire County Council
- East Sussex County Council
- Hampshire County Council
- Kent County Council
- Oxfordshire County Council
- Surrey County Council
- West Sussex County Council
- Bracknell Forest Borough Council
- Brighton and Hove Council
- Isle of Wight Council
- Medway Borough Council
- Milton Keynes Council
- Portsmouth City Council
- Reading Borough Council
- Slough Borough Council
- Southampton City Council
- West Berkshire District Council

Contact details: Ian Blake ian.blake@cpresources.co.uk

London Waste Planning Forum

a) All waste planning authorities in London - WPAs in waste planning consortia may choose to be represented by one of the boroughs involved
b) The GLA, LWARB, London Councils and other London organisations dealing with waste
c) Environment Agency
d) Private sector involved with waste planning in London to be coordinated through ESA
e) Community and voluntary sector organisations involved with waste planning in London
f) Representatives from neighbouring regional waste planning fora (East of England and South East England)
g) Other government and non-governmental organisations including waste industry trade bodies and professional bodies as agreed from time to time by the LWPF

Contact details: Victoria Manning [redacted]

https://www.data.gov.uk/dataset/aa53a313-f719-4e93-a98f-1b2572bd7189/2022-waste-data-interrogator

South West: Landfill inputs 2022

All figures are provided in 000s tonnes

Landfill Type	Sub-Region							SOUTH WEST
	Cornwall	Devon	Dorset	Gloucestershire	Somerset	West of England Unitaries	Wiltshire	
Hazardous Merchant	-	-	-	34	-	-	29	**63**
Hazardous Restricted	-	-	-	-	-	-	-	-
Non Hazardous with SNRHW cell	-	16	-	99	184	-	1	**300**
Non Hazardous	-	197	-	261	43	77	237	**814**
Non Hazardous Restricted	-	-	-	-	-	-	-	-
Inert	62	105	108	40	92	941	193	**1,540**
Total	**62**	**318**	**108**	**434**	**318**	**1,018**	**460**	**2,717**

Table Notes:

Data since 2005 has been reclassified into categories used under the PPC permitting of landfills and because of the ban on the co-disposal of waste in landfills in July 2004.

From 16 July 2004, hazardous landfills have only been able to accept wastes classified as hazardous under the Hazardous Waste Directive.

Some non-hazardous sites can accept some Stable Non Reactive Hazardous Wastes (SNRHW) into a dedicated cell, but this is usually a small part of the overall capacity of the site.

The above data do not include waste received by closed landfills for restoration purposes.

Date: 08 March 2023
Our ref: 364855
Your ref: WP/20/00692/DCC

Click here to enter text.

BY EMAIL ONLY

Customer Services
Hornbeam House
Crewe Business Park
Electra Way
Crewe
Cheshire
CW1 6GJ

T 0300 060 3900

Dear Mrs Hart, Mr Rendle

Planning consultation: Construction of energy recovery facility with ancillary buildings/works incl. gatehouse & weigh-bridge, cable routes to ship berths and existing off-site electrical sub-station
Location: Portland Port, Castletown, Portland DT5 1PP

Natural England is a non-departmental public body. Our statutory purpose is to ensure that the natural environment is conserved, enhanced, and managed for the benefit of present and future generations, thereby contributing to sustainable development.

Objection further information required

Access path strategy Feb 2023
The proposed extension to two footpaths (S3/70 and S3/81) as described in paragraph 2.6 of the document:

> "… to realign the current secure boundary fencing at the terminations of these two paths S3/70 and S3/81, to the eastern edge of the access road"

During a site visit to the area to consider the proposed fencing Natural England was aware of the drawing ref 1081_02_38, however not fully aware of the implications of paragraph 3.4 (August 2021 version) which proposes a new fence on the north side of the footpath (Annexe 1 A to B). An omission on our part.

The proposal to erect a new security fence north of the proposed linking path (between the two arrows labelled D on the plan at Annexe 1.) and also partly within the SAC and SSSI, was however considered by Natural England and the impacts on habitats considered to be acceptable subject to a proper survey and detailed methodology at a future date.

It was <u>not</u> apparent that there was a proposal to install a 3.3m (August document) now 2m (Feb document) palisade security fence along the length of S3/70 within the SAC/SSSI (Annexe 1. A to B) without a consideration of alternatives, adequate survey, method statement or consideration of the long term effects on the desired SAC management. At present this pathway is open on both sides and the nature of wooden posted stock fencing proposed south of the footpath is temporary rather than the permanent palisade as is proposed.

The fencing <u>necessary</u> for the security of the ERF, (the subject of the application), is described in para 2.43 of Chapter 2 of the ES and this proposes fencing (2.4m) along the edge of the Port and adjacent but not in the designated sites. This proposal is within the application site boundary and is acceptable to Natural England.

The new security fencing (alongside S3/70) is **not** necessary to the planning application, does not fall within the application site and Natural England advise would be contrary to the Conservation Objectives of the SAC by fragmenting the area of habitat in a permanent manner. Further there are already one or two security fences down the slope within the SAC which are a functional barrier to public access to the port.

In addition to not being required as a part of the planning application, the fencing proposed is of a nature which is highly intrusive in the natural setting and significantly obscures views across the harbour and to the Jurassic Coastline/AONB beyond. The authority *should* require an assessment of the visual and landscape impacts prior to considering this proposal. No such assessment has been carried out in the ES, Chapter 9, para 9.135, assesses visual impacts prior to the proposal being tabled but also fails to consider the objectives of the SSSI/SAC to reduce the proportion of scrub in Unit 33.

Natural England notes that the documents (dSoCG and Access Path Strategy) make statements about ecological benefits of the proposals. However, for example at the SAM (E battery) area the clearance of scrub is a side effect of the historic environment requirements and not a matter Natural England would afford particular weight to. There are sufficient legislative mechanisms to secure appropriate management of the SAC and SSSI such that the authority should not afford planning weight to the statements within the *Access Path Strategy Paper Feb 2023 update2* document. With the exception of the additional grazing areas which might be facilitated, other proposals are generated by possible historic and access gains rather than as ecological priorities and may have ecological benefits only in the short term.

The applicant states at 3.13 (*Access Path Strategy Paper Feb 2023 update2)* that all fencing may be erected without any planning permission. The applicant appears unaware of the provisions of The Conservation of Habitats and Species Regulations 2017 (reg 75 to 77). Permitted development which is likely to have a relevant effect on a European designated site is subject to consultation with Natural England and where such an effect is identified the proposer may not commence the implementation of the project until the authority has carried out an Appropriate Assessment and confirmed in writing that the project can commence. With the information provided Natural England advise that the proposal does have relevant effects on the SAC which are harmful and that the authority has insufficient information to authorise the proposal and that it may reasonably reach a conclusion of an adverse effect on the integrity of the SAC.

The applicant has provided no compelling reasons setting out the need for fencing of the nature proposed or considering alternatives. Natural England and Historic England would welcome further engagement concerning sustainable management of Unit 33 and the SAM. It should be noted that neither Natural England nor Historic England (HE) are seeking fencing aimed at excluding local people from this area.

Natural England advise that the proposed security fencing is likely to have *relevant* and harmful effects both directly on the habitats but also in respect of fragmenting the management units of the SAC and preventing future more extensive grazing units rather than smaller areas.

Should the documents currently provided by the applicant be used to secure an authorisation for the palisade fencing as part of the planning application, then Natural England can advise the authority that the proposal would give rise to a likely significant effect on the Isle of Portland SAC and that the authority should carry out an Appropriate Assessment on this project. At this time Natural England advise that there is insufficient information (survey, methodology, working area, timing etc) including a consideration of the alternative solutions. Based on the available information Natural England can advise that the Council may reasonably reach a conclusion that this proposal would substantially compromise the recovery of Unit 33 of the SSSI, which is also SAC, giving rise to an adverse effect on the sites integrity.

Natural England does not follow the approach which is set out in the Access document, that the provision of a path linking two other existing paths provides any measure of mitigation of potential harm to the historic environment from the ERF whose footprint is on the port. The proposal to erect

new palisade security fencing, which is 2m high and which will be in its own right visually intrusive and effectively screen views across the port and coast, appears to further contradict objectives to mitigate visual effects. The permanence and mass of the fence it is its self an adverse impact on the views of the Jurassic Coast and Dorset AONB.

Proposed Viewing Platform (Plan 1081-02-38 (14)), this is detailed on the plan as a proposal however it is within the designated SAC and SSSI and without any further detail Natural England advise that this should be deleted from the plan as it does not fall within the application boundary and there is no certainty that any proposal here would be acceptable. See Annexe 1 (C). Once an adequate proposal is prepared this can be considered through the correct formal processes relating to the biodiversity sites and historic/cultural setting.

Unit 33/SAM management
Following discussions I can confirm that there have not been comprehensive discussions with the two bodies (Natural England/HE), the applicant or Port (landowner) about the management objectives of the area. Both of the designations are though in decline. The proposed palisade fencing is not necessary for the planning application to be determined. Its approval should be subject to a separate appropriate formal consultation, which will allow for alternative solutions to avoid harm and for the sustainable management of the features of both designations to be addressed. This would also include the avoidance of further adverse impacts on views to the nearby designated landscapes and cultural heritage site.

From the discussions with HE it is apparent that our objectives for the designated sites are closely aligned and that there is a high possibility that the applicant/land owner could secure agreement about the appropriate management regime required for both interests. This would inform any future proposal requiring authorisation by the bodies. A Conservation Management Plan for the SAM would be a recognised way of moving forward with agreed actions.

draft Statement of Common Ground (dSoCG)
Natural England has reviewed the above draft document dated January 2022. The document is not agreed by Natural England.

Para 7/8. The SoCG is non specific about the proposed security fencing in Unit 33 which is contrary to nature conservation objectives.

Para 11 – not agreed at this time

Para 15 this needs to be reworded.

The plans at pages 5- 9 need to be reviewed, they still show 3m high fencing and an unspecified viewing platform. Natural England does not support the potential future grazing unit plan.

The matters listed at point 14 (dSoCG) which are beyond the protection/avoidance of harm to the Isle of Portland and Chesil Beach SSSIs need to be addressed. Some modifications to the current wording (provided in Annexe 2) are provided below.

14. Potential projects identified for the receipt of funds from the ERF proposals are:

a) Creation of scrapes and monitoring of Least Owlet (a moth) within grassland between the A354 and the shore of Portland Harbour (Hamm Beach area)

b) Regular cutting and management of grassland on Hamm Beach

c) Shingle scrapes on the area adjacent to the A354 on Chesil Beach to reduce soil development and encourage early successional vegetation stages by restoring disturbance to the shingle communities

d) Contributions towards schemes to reintroduce grazing at sites on the Isle of Portland including if possible “Portland" breed sheep including grazing manager.

e) Contributions towards schemes for control of scrub (including native and introduced species eg cotoneaster) within the Isle of Portland SSSI.

f) Additional fencing costs referred to at para 9 above

These are currently proposed in the dSoCG but the applicant has not confirmed if the measures will be adequately resourced and hence they are unsecured. Natural England advise that the applicant should provide further information confirming/justifying a proposed annual sum to be made available to Dorset Council, annually for the duration of the operation of the plant available for measures in a defined area. This can then be the subject of a suitable planning condition of S106 agreement.

Additional matters which the authority will need to secure through planning conditions

Concerns have been raised about the transfer of Refuse Derived Fuel bales within the port and potential for plastic and other contaminated fuel material to escape into the marine environment. The authority should require a planning condition which ensures that materials are removed from the Portland Harbour and harbour foreshore on a regular at regular intervals eg bi monthly. This will reduce the harmful effects of plastic material on the marine environment as well as reducing the risk of contaminants affecting sensitive local biodiversity.

Natural England is concerned that the scale and nature of activities related to the ERF creates some long term risks for the marine environment. As detailed previously loss of Refuse Derived Fuel material is one risk. A second risk relates to the effective on site management and transportation of Incinerator Bottom Ash (IBA) away from the application site. This may be by either sea or road transport. Natural England advise that the risks to the marine and terrestrial environment from the handling of this waste are difficult to quantify because of the reliance on best industry standards. Therefore Natural England advise the authority that the applicant should be required through a planning condition to submit, prior to commencement, a Monitoring Strategy to allow the assessment of potential impacts on the marine environment in the port and a terrestrial survey of the adjoining parts of the SAC/SSSI at the port. It is advised that following a baseline survey these should be carried out on a 5 year cycle. These surveys will assist the Port and Natural England to meet their duties under the NERC Act 2006 insofar as the local natural environment is concerned.

Natural England is aware that in the case of fire on the site surface water will be prevented from directly running off into the marine habitats supported within the port area. The authority should seek clarification that sufficient contaminated water storage capacity is present according to agreed standards.

AONB
Natural England seeks confirmation or otherwise concerning the advice provided in our letter dated 1/12/2023:

> Opportunities for landscape compensatory and enhancement measures might be realised through the provision of an agreed AONB landscape enhancement fund which may be used to deliver landscape and biodiversity benefits within the zone of theoretical visibility of the scheme within the AONB. Any landscape fund should be agreed and administered by the Dorset AONB Team.

It is not clear if the applicant has made provision for any measures as outlined above or not, please can you confirm the current position?

I trust this advice will be of assistance to the Council.

Yours sincerely

Nick Squirrell
Conservation and Planning Lead Advisor
Dorset Team
Wessex Area Team
Natural England
Mob: [redacted]
Email [redacted]

Annexe1
Plan of the proposed path and fencing locations

6. Appendix A - Proposed New Access Route

Annexe 2
Extract from dSoCG

Allocation of funds to off-site projects within the local area.

12. A key principle of net gain is that the gains are additional to the conservation measures that would have occurred regardless to ensure good practice and avoid double-counting. Biodiversity net gain does not apply to sites of special scientific interest as the Government has already mandated to protect them.

13. A series of potential projects have been identified in the local area where funds could be used to implement projects that deliver measures specifically targeted at species or habitats that are beyond the scope of the measures identified by Natural England for the protection of the SSSI.

14. Potential projects identified for the receipt of funds from the ERF proposals are:

a) Creation of scrapes and monitoring of Least Owlet (a moth) within grassland between the A354 and the shore of Portland Harbour (Hamm Beach area)
b) Regular cutting and management of grassland on Hamm Beach
c) Contributions towards schemes to reintroduce grazing at sites on the Isle of Portland including if possible "Portland" breed sheep
d) Contributions towards schemes for control of scrub within the Isle of Portland SSSI
e) Additional fencing costs referred to at para 9 above
f) Add others to list

15. It is agreed by all parties that these projects (to the extent that they are in protected sites) are those that represent additional enhancement within protected sites. They do not represent the funding of standard management practices that are necessary for the protection of these sites.

3.137 In summary, the benefit of the proposed Portland ERF over the current residual waste management approaches for Dorset's waste is estimated to be around 7,200 tCO_2e per year, increasing to 15,000 tCO_2e per year in the maximum case with lower net calorific value (NCV) waste. It should also be noted that these calculations do not take account of the additional benefits that would be provided by shore power from the proposed Portland ERF, which would displace a further 4,500 to 5,500 tCO_2e per year, or the potential benefit of district heating, which would displace around a further 3,000 tCO_2e per year.

Future management of Dorset's waste

3.138 Once the Bridgwater ERF is operational, it is understood that the RDF from Canford Magna will be transported to Bridgwater rather than to Europe. Therefore, an alternative baseline has been considered for Dorset's waste where 80,000 tonnes per year of RDF is sent to the Bridgwater ERF rather than Europe. This future baseline is compared with the proposed development.

3.139 The benefit of the proposed Portland ERF over the future residual waste management approaches for Dorset's waste is estimated to be around 10,500 tCO_2e per year, increasing to 18,000 tCO_2e per year in the maximum case with lower NCV waste. Again, it should also be noted that these calculations do not take account of the additional benefits that would be provided by shore power from the proposed Portland ERF, which would displace a further 4,500 to 5,500 tCO_2e per year, or the potential benefit of district heating, which would displace around a further 3,000 tCO_2e per year.

Lifetime benefit

3.140 The lifetime benefit of the proposed ERF compared to the baseline of sending waste to landfill remains as originally assessed in paragraph 5.34 of the ES at around 62,000 tCO_2e based on an illustrative, conservative calculation. The lifetime benefit compared to the current baseline for Dorset's waste has also now been calculated and is estimated to be 157,548 tCO_2e, with a net benefit in each year. The original ES conclusion that the proposed development will have a significant beneficial effect as a result of reduced carbon emissions compared to the baseline therefore remains valid and unchanged.

3.141 The updated carbon assessment demonstrates that the Portland ERF has significant advantages in respect to its ability to deliver both shore power and district heating and that in carbon terms this option outperforms other allocated DWP sites, where such potential is more limited.

3.142 The carbon assessment fully supports the applicant's view that the Portland site has advantages over the allocated DWP sites and can fully comply with the requirements of DWP Policy 4 criterion a.

Carbon capture and storage (point 22)

3.143 The applicant has commissioned Fichtner Consulting Engineers Ltd to prepare a Portland ERF Pre-feasibility Assessment, to assess the feasibility of integrating a post combustion carbon capture (PCCC) plant into the proposed Portland ERF. It outlines the technical and commercial challenges of developing a PCCC plant alongside and connected to the proposed ERF. This is submitted to Dorset Council to set out the

Para Ref:	Appellant's Statement of Case	MVV's response
	advantages. This error is further compounded by the lack of certainty that other allocated sites would secure consents for a large scale ERF and that the envisaged co-locational benefits could be realised.	
The extent to which the Appeal Proposal would be an unsustainable form of waste management		
2.36	Dorset does not have sufficient capacity to manage its existing or future residual waste arisings and new infrastructure is urgently required to meet this need. The Canford MBT plant is an intermediate technology producing RDF that still requires final treatment by thermal treatment with energy recovery, or disposal to landfill. Additionally, there remains a need for capacity to manage RDF regionally and nationally, given that large volumes of RDF are still being exported out of the UK and large volumes of waste are still subject to landfill.	As highlighted in the response at Reason for Refusal No.1 (Waste Policy) IV, the Canford EfW CHP Facility located adjacent to the MBT facility at CRP consequently best placed to meet the residual waste capacity needs identified in the BCP and Dorset Waste Plan (2019).
2.37	The Appellant considers that DC has failed to apply the Proximity Principle correctly. The Appeal Proposal would provide one of the nearest installations for the treatment of Dorset's residual waste and thus significantly reduce the export of this	If the Appellant is targeting BCP and Dorset's residual waste, the Appeal Site is remote and poorly located to the main areas of waste arisings i.e., BCP, see Figure 1.2.

Developing a strategy for renewable and low carbon energy

How can local planning authorities develop a positive strategy to promote the delivery of renewable and low carbon energy?

The National Planning Policy Framework explains that all communities have a responsibility to help increase the use and supply of green energy, but this does not mean that the need for renewable energy automatically overrides environmental protections and the planning concerns of local communities. As with other types of development, it is important that the planning concerns of local communities are properly heard in matters that directly affect them.

Local and neighbourhood plans are the key to delivering development that has the backing of local communities. When drawing up a Local Plan local planning authorities should first consider what the local potential is for renewable and low carbon energy generation. In considering that potential, the matters local planning authorities should think about include:

- the range of technologies that could be accommodated and the policies needed to encourage their development in the right places;
- the costs of many renewable energy technologies are falling, potentially increasing their attractiveness and the number of proposals;
- different technologies have different impacts and impacts can vary by place;
- the UK has legal commitments to cut greenhouse gases and meet increased energy demand from renewable sources. Whilst local authorities should design their policies to maximise renewable and low carbon energy development, there is no quota which the Local Plan has to deliver.

There is information below on community-led renewable energy initiatives.

Paragraph: 003 Reference ID: 5-003-20140306

Revision date: 06 03 2014

ReLondon

The circular economy at work:

Jobs and skills for London's low carbon future

June 2022

Acknowledgements

The main body of this report was written by ReLondon and Valpak, with the analysis conducted by Valpak. Content was informed through a project board which included participation from the Greater London Authority and London Councils as well as participants of two stakeholder workshops, including the Ellen MacArthur Foundation.

Interviews with businesses were held to understand skills needs in the circular economy, including with the IoD, OLIO, thinkFOUND, LITTA, bio-bean, Thrift+, IKEA, SUEZ and H&M Group, among others. Meetings were also held with education providers, including with the University of Westminster, the University College London, Queen Mary University of London, CIWM, West London College and MidKent College, among others, to inform our wider research.

This report is a summary of a full technical research report and presents the key findings. For further information on the data, scenario details and wider insights that sit behind this summary please contact ReLondon.

ReLondon

ReLondon is a partnership of the Mayor of London and the London boroughs to improve waste and resource management and transform the city into a leading low carbon circular economy. ReLondon's mission is to make London a global leader in sustainable ways to live, work and prosper, by revolutionising our relationship with stuff and helping London waste less and reuse, repair, share and recycle more.

Valpak

Valpak, a Reconomy Group company, is a leading provider of environmental compliance, recycling and sustainability solutions since 1997. The Reconomy Group is an innovative, tech-led provider of circular economy-focused services, with the purpose of creating a truly sustainable world by conserving finite resources. Valpak operates in three main areas which are: compliance services; waste and recycling; and sustainability consulting.

Research date:

November 2021 – May 2022

Publication date:

June 2022

Project Board

The project board includes representatives from ReLondon, the Greater London Authority and London Councils who acted as the steering committee for this research[1]. Individuals involved include:

Wayne Hubbard – Chief Executive Officer, ReLondon

Kate Hand – Head of Climate Change, London Councils

Simon Gilby — Principal Policy and Projects Officer, London Councils

Andrew Dunwoody – Policy & Programmes Manager, Waste, Circular Economy & Sustainable Development, Greater London Authority

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Lucy Randle – Senior Researcher

Shannon Moxham – Senior Researcher

Dany Jammal - Researcher

In collaboration with

Valpak
a Reconomy Group company

Glossary of terms

Circular economy	ReLondon defines a circular economy as one in which stuff is kept in use for as long as possible, delivering the highest value it can, for as long as it can. So rather than making, using and then throwing stuff away (a linear system), a circular economy means looking at each of those stages for new ways of cycling materials and value back into the system – using materials and products again and again, in many different forms.
Circular job	A circular job is directly involved with or indirectly supports the objectives of a circular economy.
Circular skills	The knowledge, competencies, and abilities to carry out tasks that support all aspects of a circular economy, keeping products and materials circulating within the economy at their highest possible value for as long as possible. Circular skills will differ according to the sector (within core, enabling and indirect) and job in question.
Core circular jobs	Jobs in circular economy businesses that ensure materials cycles are closed, with materials being cycled for as long as possible at the highest possible value. This includes reuse and repair, renting and leasing of products, as well as recycling of materials and resources. In this research, all jobs within businesses whose core function is linked to circular activities are assumed to be 100% circular.
Enabling circular jobs	Jobs in the supply chain of core circular economy businesses. These jobs enable core circular economy businesses to accelerate growth and scale-up, such as businesses that develop digital technology or logistics services. In this research, the share of enabling circular jobs is assumed to be proportional to the monetary value of the goods and services supplied to the core circular sector.
Green economy	Activity that directly contributes to – or indirectly supports – the achievement of the UK's net zero emissions target and other environmental goals, such as nature restoration and mitigation against climate risks.[2]
Green jobs	Within the Central London Forward, Local London, South London Partnership and West London Alliance's *Green Jobs and Skills in London: cross-London report*[3], green jobs are defined as those jobs that facilitate meeting net zero and broader environmental goals.
Indirect circular jobs	Jobs in the supply chain of core circular businesses that indirectly support their activities, such as government and professional services. In this research, the share of indirect circular jobs is assumed to be proportional to the monetary value of the goods and services supplied to the enabling and core circular sectors.
Linear jobs	A linear job is not involved with or supportive of the objectives of a circular economy, such as jobs in mining, extraction, and fossil-based sectors. In this research, all jobs within businesses whose function is not linked in any way to the circular economy are assumed to be 0% circular.
Net job creation	Net job creation for the purposes of this report means gross jobs created less the number of jobs that disappear as a result of an expansion in the core circular economy. For example, with less waste created in a circular economy, there will be fewer jobs in the different waste management routes such as landfill or recycling.
Referable scheme	An application for planning permission of potential strategic importance by the Mayor of London Order 2008. Any application which meets one or more of the PSI Categories outlined in the Order (Categories 1-4) must be 'referred' to the Greater London Authority.[4]
Waste hierarchy	Defra's waste hierarchy guidance ranks waste management options according to what is best for the environment. For instance, preventing waste in the first place is of top priority. When waste is created, priority is given to preparing it for re-use, followed by recycling, recovery, and finally disposal (e.g. landfill).[5]

Contents

Figures and tables

Foreword

01

1. Foreword

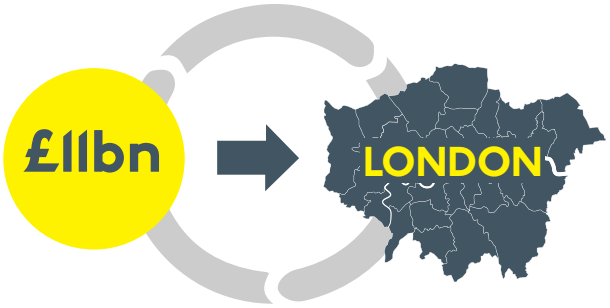
It is now widely accepted that a transition to a circular economy is urgently needed if we are to tackle consumption-based emissions and their significant role in the climate emergency[6]; there has however been less of a consensus to date on the contribution it can make to the jobs market and the wider economy.

While there has been some good research in this area, previous studies in London modelled how many jobs could be created in the circular economy but focused narrowly on the waste sector[7] and consequently significantly underestimated the contribution the wider circular economy transition can make.

But this new report reveals that we have been looking at this through the wrong lens, and with the wrong definitions. Previous analysis relied on a definition of circular jobs as being those associated with waste management and recycling, or closely associated specialisms such as refurbishment or repair; it also relied on a definition of circular economy as a stand-alone sector.

What follows is a powerful argument, built on a robust evidence base, that circular economy is not a 'sector' but rather a system, and therefore its impact on materials, food, products and services permeates the entire economy. Side-lining circular economy as a sector means that we ignore a whole raft of crucial activities and jobs that underpin it, and that its importance to London's low carbon goods and services sector is underplayed.

By more clearly defining what constitutes a circular job, we see them everywhere. They're not restricted to recycling managers, refuse collectors, reclamation yards or bike repair mechanics: they include app developers, strategy consultants, supply chain managers, educators, architects and builders, financial administrators, designers and marketers, customer service roles, manufacturing staff and many more. By looking not just at 'core' circular economy jobs, but also at those indirectly supporting and enabling circular businesses, the ripple effects and the benefits that investing in circularity can bring to a whole host of people across the entire city can be clearly seen.

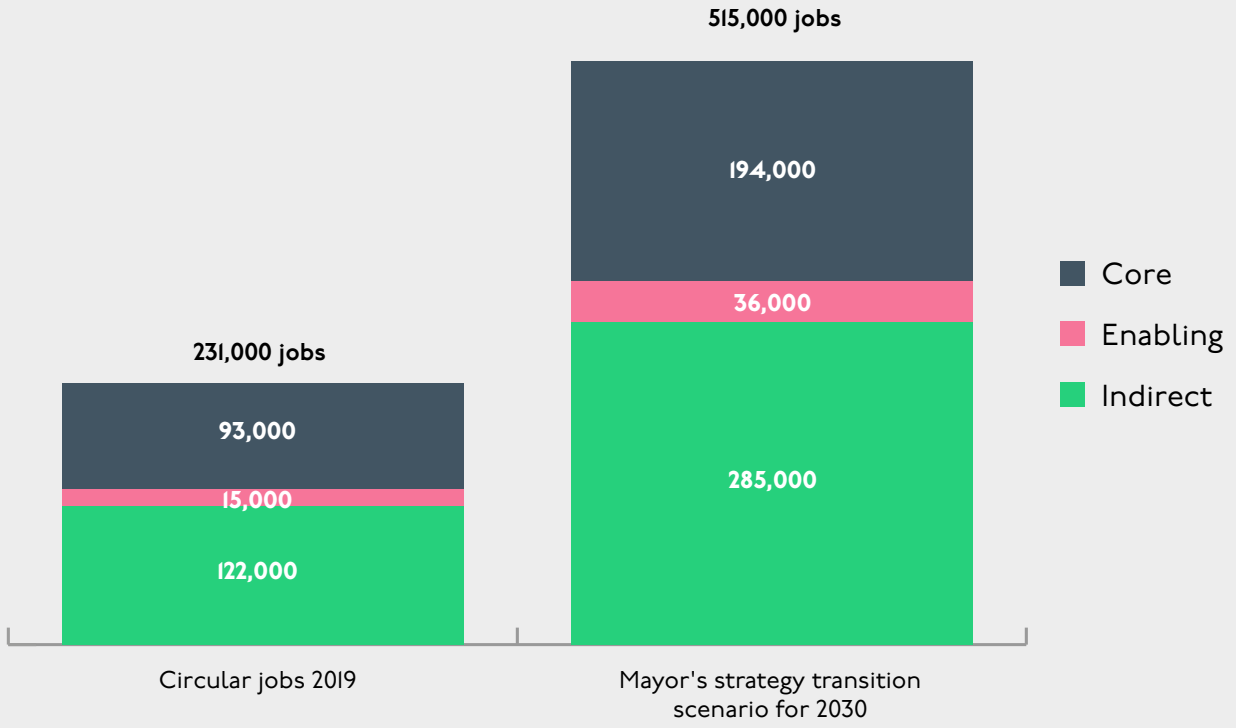


London's circular economy contributes around £11bn (or 2.5%) to London's economy. This could grow to a total of £24.2bn by 2030.

And the numbers are significant. On top of the substantial environmental gains that a circular economy can deliver, it also has the double dividend of contributing significantly to job creation and economic growth. A circular transition scenario has been modelled which relies on high citizen awareness and demand alongside significant increases in the supply of circular products and services. This scenario is described in section 6 below.

The scenario shows that, if the city meets the Mayor of London's waste and recycling targets set out in the London Environment Strategy, preventing 450 thousand tonnes of waste, increasing the municipal recycling rate to 65% and recirculating 1.1 million tonnes of stuff through sharing, donation, reuse and recycling, an impressive 284,000 additional new circular jobs could be created by 2030.

Figure 1. Potential circular economy jobs growth in London from 2019 to 2030 in the Mayor's strategy transition scenario[8]



Source: Valpak analysis based on ONS BRES data, 2019

London's Green New Deal[9] mission aims to create tens of thousands of jobs through doubling the size of the city's green economy by 2030. While the relationship between 'green' and 'circular' jobs needs closer analysis, a circular economy can clearly play a significant role in helping meet the ambitions of both the Mayor of London and London's boroughs to tackle consumption-based emissions while creating more, better jobs for Londoners.

It can provide a range of well-paid job opportunities across a diverse array of sectors and skills levels: wages in core circular jobs are on average £710 per week, which is substantially (183%) above the London Living Wage[10].

This growth could also create significant economic value for London, with the potential for circular economy businesses to contribute a total of £24.2bn to London's economy by 2030[11].

Transitioning to a low carbon circular economy will however require concerted action at all levels of society, including national and local government, regulators, consumers and businesses, as well as adequate support for innovation and collaboration across the supply chain. Rapid changes for businesses in transition means skills training will need to be responsive and adaptive to ensure efficient and equitable matching of skills between workers and jobs; and investment in retraining and upskilling will be required through a mix of formal training, qualifications and on-the-job skills development.

But in identifying the skills needs of employers in circular economy businesses, this report shows that there is currently a skills gap in London, both for existing circular businesses and for those transitioning to become more circular. To fill this skills gap, more targeted training provision will be needed at the school, college, university, and workplace levels.

ReLondon and its stakeholders recognise the powerful role that transitioning to a low carbon circular economy can play in London's green recovery, and this report shows for the first time the scale of the opportunity it presents for jobs – all sorts of jobs, at every level and in every part of our city's economy – and for Londoners. Collaboration between businesses, government, and the education sector will be crucial over the next decade to ensure the circular economy is well-positioned to grow and deliver the maximum number of inclusive job opportunities possible; but the prize has been defined – now we must work together to win it.

Wayne Hubbard

Chief Executive Officer of ReLondon

Context and aims of the research

2. Context and aims of the research

The Mayor of London and the majority of London boroughs declared a climate emergency in 2018. While this is a significant challenge in its own right, the capital is now also dealing with the impacts of the COVID-19 pandemic and rising costs of living.

2.1 Context

London's labour force has been particularly hard hit by the pandemic, resulting in higher rates of unemployment compared to the rest of the UK, particularly for young people aged 16-24 and certain minority ethnic groups.

Recognising the opportunity within these combined challenges, the Mayor of London has committed to making London a zero carbon city by 2030[12] and three-quarters of London's boroughs have set targets to reach net zero by 2030[13]. Alongside this, the Mayor of London invested £10 million in green projects in 2020 as part of the first phase of the Mayor of London and London's boroughs' Green New Deal, supporting around 1,000 green jobs to boost London's economic recovery.[14] The Green New Deal fund was launched in support of the London Recovery Board's[15] target to double London's green economy to £100 billion by 2030 in order to kick-start jobs growth over the next decade[16]. London Councils' Transport and Environment Committee (TEC) and the London Environment Directors' Network (LEDNet) have also committed to developing London's low carbon sector and greening London's broader economy by 2030.[17]

In support of London stakeholders' commitments on net zero, a significant amount of research has been done across London to define and analyse current and future green jobs as well as the skills needed to support green job growth as part of London's recovery.

However, there is limited research that assesses the role of the circular economy in future jobs, its impact on skills needs, and its contribution to London's green recovery.

In particular, when the circular economy is referenced within green jobs research, it tends to be referred to as a 'sector' and is often limited to jobs in the waste and recycling sectors. This misses out crucial activities and jobs that underpin the circular economy. For example, though the recently commissioned *Green Jobs and Skills in London: cross-London report*[18] includes a sector labelled 'Reduce, Reuse, Recycle - Waste management and Circular Economy', the scope of the report means that the circular economy is primarily limited to waste management, recycling and some elements of repair. This has the result of underplaying the importance of the circular economy to London's low carbon goods and services sector.[19]

The green recovery, and the associated role the circular economy can play through job creation and skills development, is central to ReLondon, the GLA and the London boroughs' priorities. As such, this research aims to incorporate all elements of the circular economy (i.e. more than waste management and recycling) within a circular economy job definition for London, highlighting the number of jobs that exist in the capital now and how many could be created through an expansion of circular economy activities by 2030. Current and future skills needs required to realise this growth potential are also assessed, along with a review of relevant qualifications and training provision.

2.2 Green versus circular economy

This research provides an opportunity to outline the differences between a green and a circular economy to enhance understanding. While the green economy and circular economy have common objectives and both target similar sectors to deliver reductions in environmental impacts, the green economy refers to activity that directly contributes to – or indirectly supports – the achievement of the UK's net zero emissions target and other environmental goals, such as nature restoration and mitigation against climate risks, while a circular economy is one in which stuff is kept in use for as long as possible, delivering the highest value it can, for as long as it can.

2.3 What is a circular economy?

In addition to the substantial environmental gains that a circular economy delivers, it also has the potential to contribute significantly to job creation and economic growth.

ReLondon defines a circular economy as one in which stuff is kept in use for as long as possible, delivering the highest value it can, for as long as it can. So rather than making, using and then throwing stuff away (a linear system), a circular economy means looking at each of those stages for new ways of cycling materials and value back into the system – using materials and products again and again, in many different forms.

Designing out waste is a critical part of the circular economy and ReLondon advocates for five circular business models.[20] These business models are 'using stuff wisely,' 'using stuff again', 'making things well', 'renting, not buying' and 'sharing'. This report demonstrates the relevance of the circular economy to sectors and businesses across the supply chain and provides an evidence base of the vital role it will play in transitioning London to a low carbon future.

Policy landscape

3. Policy landscape

There are a number of drivers in place to promote the transition to a circular economy and stimulate circular jobs growth in London.

3.1 Commitments to support the circular economy transition

Through the London Environment Strategy, 2018[21] the Mayor of London is positioning the city as a global leader in the transition to a low carbon circular economy through targets such as striving to send no biodegradable or recyclable waste to landfill by 2026 and aiming for a 65% municipal waste recycling rate by 2030.

The London Environment Strategy highlights the Mayor of London's role in the transition, which includes leading by example and creating market demand for circular goods and services directly through procurement and its strong policy framework, capturing a share of the market through the promotion of existing and future circular businesses, and enabling the transition by investing in infrastructure, citizens and workers. The London Plan 2021[22] (London's spatial development strategy) also includes circular economy objectives in a wide range of policy areas, including growing a good economy, and sets out specific policies requiring collaboration to promote a more circular economy. Further, it requires that referable schemes promote circular economy outcomes and submit a circular economy statement as part of the planning application process.

In addition to the policies and frameworks laid out in the London Environment Strategy and the London Plan, the Mayor of London launched London's Green New Deal fund[23] in November 2020, as part of the Mayor of London and London's boroughs' Green New Deal, to help develop the green industries that are essential in helping the capital meet its climate targets and recover from the economic and social impacts of the COVID-19 pandemic.

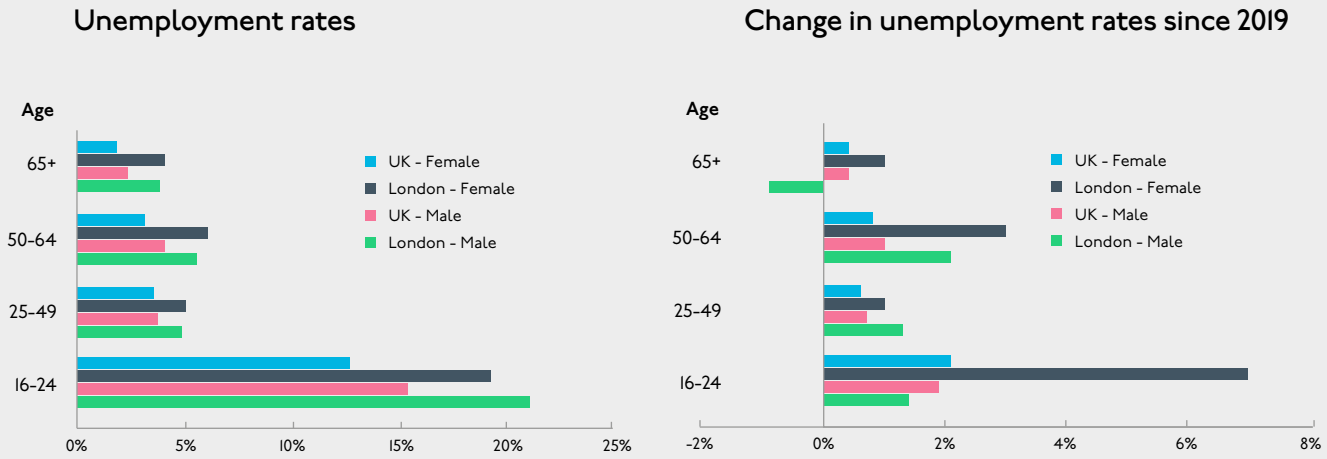
Finally, to help Londoners access good jobs, the Mayor of London also launched the Skills Roadmap for London[24] in January 2022. This roadmap outlines initiatives to ensure Londoners can retrain, upskill, and enhance their employability, and further highlights the green economy as a pathway to job creation. As part of this vision, the Mayor of London awarded funding to organisations to establish five Academy Hubs[25]. These hubs were designed to break down the silos between employers, education and training providers and sector bodies so they can collaboratively identify clear pathways into employment and ensure a coordinated approach to training, work experience, advice and guidance for Londoners. One of these Academy Hubs has a specific focus on the green economy, covering roles from waste management and recycling to construction.

These drivers have been put in place to help stimulate growth in the green and circular economy. By jointly prioritising jobs growth and environmental goals, there is clear and demonstrated value in the role that the circular economy can have in helping to build opportunities during London's transition to a net zero carbon city. Ensuring these policies and initiatives reflect the full breadth of the circular economy and related job opportunities will be key to reaching London's environmental targets.

3.2 Make-up of London's economy and a just transition

There were around 5 million economically active workers in London in 2019, with 4.7 million[26] of those in employment. Of this workforce, around 327,000 Londoners (6.5% of Londoners available for work) were unemployed. A further 1.3 million people were economically inactive due to studying, having retired or being sick, among other reasons.

Figure 2. Unemployment rates and change in unemployment rates by age and gender in London and the UK (Jan-20 to Sep-21)



Source: ONS Annual Population survey, 2019

London's labour force has been particularly hard hit by the COVID-19 pandemic compared to the rest of the UK. As Figure 2 shows, proportionally, more of London's young working population is unemployed (21% for men and 19% for women in London versus 15% and 13% in the UK). Figure 2 also shows that the unemployment rate for young women in London has increased substantially since 2019. This is also true when looking at the employment rate for young Londoners aged 16 to 19, whose employment rate (14%) is around half of their counterparts across the UK (29%)

The pandemic has also disproportionately impacted certain minority ethnic groups in London. For example, white Londoners saw job losses of around 1% during the pandemic (roughly 30,000 jobs lost) but around 10% of black Londoners lost their jobs (roughly 50,000 jobs lost).

A crucial element of the just transition to a circular economy is ensuring access to future circular jobs by young people as well as certain minority ethnic groups, making the circular economy as inclusive as possible. The circular economy is well positioned to address this due to the wide range of good quality, local jobs available across various sectors, locations and at a range of skills levels.

Approach

4. Approach

With the growing importance of addressing the climate emergency as part of London's COVID-19 economic recovery, it is important to ensure the circular economy and its contribution to the green recovery is fully recognised.

4.1 Defining a circular job: core, enabling and indirect

A circular jobs definition has been developed for ReLondon that incorporates all activities and jobs that either directly or indirectly support the objectives of a circular economy. This has been done by dividing circular activities into three groups: core, enabling and indirect. The definitions of each are included in Table 1.

Table 1. ReLondon definition of circular jobs including core, enabling and indirect categorisation

	Definition	Assumption
Circular jobs	A circular job is directly involved with or indirectly supports the objectives of a circular economy.	
Core circular jobs[27 28]	Jobs in circular economy businesses that ensure materials cycles are closed, with materials being cycled for as long as possible at the highest possible value. Examples include businesses involved in activities such as reuse and repair, renting and leasing of products, and recycling of materials and resources.	All jobs within businesses that engage in core circular activities are assumed to be 100% circular.
Enabling circular jobs	Jobs in the supply chain of circular economy businesses that enable core circular economy businesses to accelerate growth and scale-up. Examples include jobs in the supply chain of core circular businesses that develop and provide digital technology or logistics services.	The share of jobs that are enabling or indirectly circular are assumed to be proportional to the monetary value of the goods and services supplied to the core circular sector.
Indirectly circular jobs	Jobs in the supply chain of core circular businesses that indirectly support their activities. Examples include jobs within government and professional services.	

A handful of circular jobs definitions were identified through a literature review, including definitions used by the Green Alliance/ WRAP[29] and Circle Economy.[30] Given the aims of this research for London, Circle Economy's definition was considered to be the most comprehensive as it incorporates jobs that both directly and indirectly support a circular economy. Their approach uses a centralised definition and has been applied to cities across the world to categorise circular jobs as core, enabling or indirectly circular.

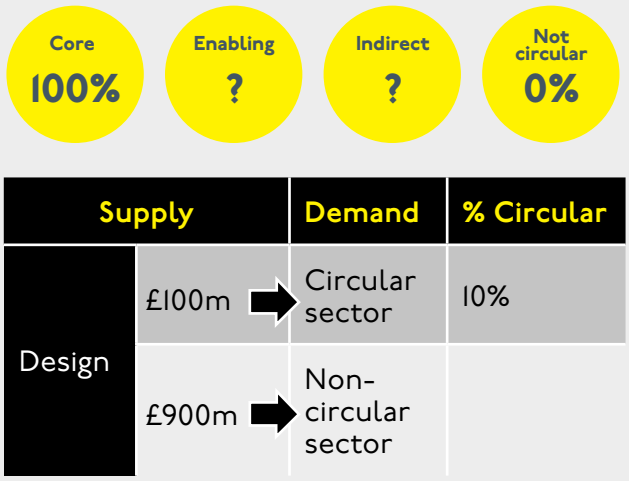
ReLondon's circular jobs definition builds on this existing work and adapts Circle Economy's approach (following feedback from two stakeholder workshops and the project board) by applying it to London and reconsidering how activities are allocated across the three differing categories. ReLondon's definition covers 85 sectors, each of which has several subsectors.

4.2 Mapping circular activities to core, enabling and indirect

The primary data source for ReLondon's definition is the UK Government's Office for National Statistics (ONS) Business Register Employment Survey (BRES), which maps official jobs estimates by Standard Industrial Classification (SIC) codes.[31] Drawing on Circle Economy's existing methodology, circular jobs in the different sectors are then allocated to core, enabling and indirect depending on how directly those activities link to the circular economy. Details of sectors within core, enabling and indirect can be found in Appendix A.

In circular sectors allocated to 'core', it is assumed that all jobs within businesses that engage in core circular activities are 100% circular. This is in contrast to sectors being defined as enabling and indirect (i.e. the supply chains providing goods and services to core circular businesses), where not all jobs are counted as circular. The extent to which jobs within enabling and indirect sectors are regarded as enabling circular or indirectly circular varies and is determined by the value of goods and services supplied to the core sectors (using input-output tables) as shown in Figure 3.[32]

Figure 3. Apportioning circular jobs in enabling and indirect sectors



Source: Valpak analysis

As an illustration, if a design business in London provides services worth £100 million to a core circular business in London, out of a total supply of £1 billion worth of design services (to all economic sectors) in London, then 10% of the jobs in the design business are counted as being enabling circular jobs.

Case study: OLIO, a core circular business

OLIO, founded in London in 2015, is a local sharing app that connects people with their neighbours, to give and get everyday things for free. OLIO's circular business model sits in ReLondon's definition of core circular jobs under reuse. The company also partners with businesses like Tesco and Iceland, to enable them to redistribute their surplus food to local communities via the app. Examples of the types of jobs at OLIO include software development, sales, account management and marketing, as well as roles developing brand impact analytics. All of those jobs are classified as core circular jobs.

Circular jobs baseline: 2019

05

5. Circular jobs baseline: 2019

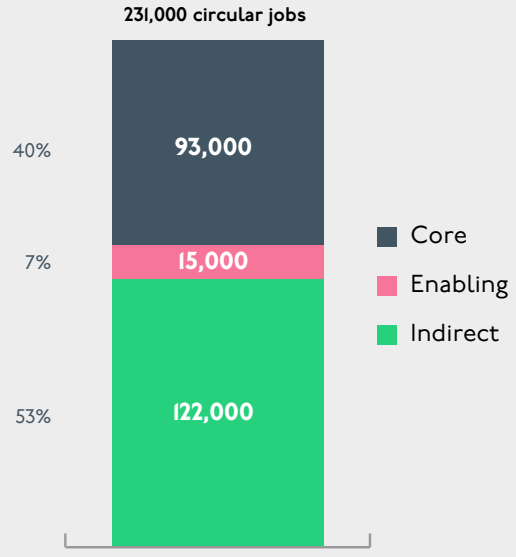
ReLondon's definition estimates that London's circular economy employed 231,000 people in 2019, representing 4.3% of London's total employment.

5.1 The number of jobs in London's circular economy in 2019

Breaking this down by core, enabling and indirect jobs, there were over 93,000 jobs in London's core circular economy, around 15,000 jobs in enabling sectors, and more than 122,000 jobs in indirectly circular sectors.

This highlights that 40% of all jobs in London's circular economy come from the core circular sector, with 7% from enabling circular and over half from indirectly circular sectors. This means that for every 100 core circular jobs (on average), there are 15 enabling circular jobs and 130 indirectly circular jobs employed in the supply chains of London's circular economy businesses.

Figure 4. Estimates of core circular, enabling circular and indirectly circular jobs in London, 2019



Source: Valpak analysis based on ONS BRES data, 2019

231,000
people employed

4.3%
of London's total employment

London's circular economy already employs around **231,000 people (4.3% of London's total employment) with just over 93,000 jobs** in core circular businesses as well as **15,000 enabling and 122,000 indirectly circular jobs** in the supply chain supporting these core businesses.

5.2 Core circular jobs

Section 4 set out ReLondon's definition of circular jobs, including the differences between core circular, enabling circular and indirectly circular jobs.

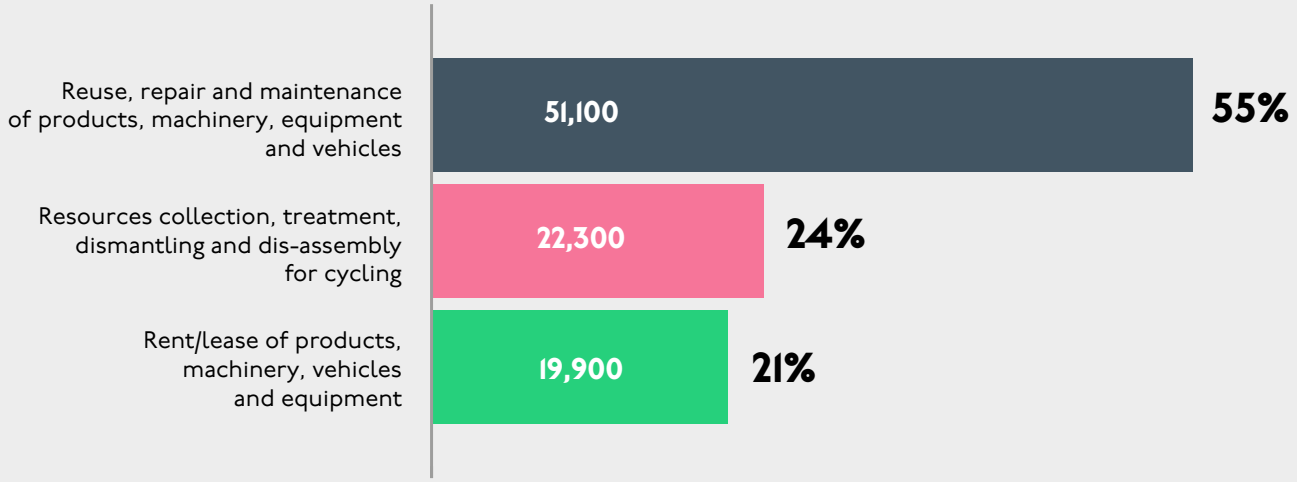
Core circular jobs include jobs in sectors such as reuse and repair, renting and leasing of products, as well as recycling of materials and resources, as shown in Figure 5 where all jobs within businesses and activities in these sectors are assumed (currently) to be 100% circular.

Average gross weekly pay in core circular jobs, ranges from £530 per week in repair of vehicles to £880 per week in repair of machinery and equipment[33].

Overall, average gross weekly pay in core circular jobs is £710 per week, substantially (183%) above the London Living Wage, with job opportunities dispersed widely across the capital.

As highlighted in Figure 5, London's core circular sectors employed over 93,000 people in 2019. Over half of the core circular jobs were in reuse, repair and maintenance of products, machinery, equipment and vehicles, compared to under a quarter in resource collection, treatment and dismantling. An example of a core circular job is a sales advisor in an electronic repair shop, facilitating the repair, reuse and recycling of electronic equipment.

Figure 5. Employment in core circular sectors in London, 2019 [34]



Source: Valpak analysis based on ONS BRES data, 2019

5.3 Enabling circular jobs

As noted in Section 4, ReLondon defines enabling circular jobs as jobs that enable core circular economy businesses to grow and scale-up and include (among others) jobs in businesses that develop digital technology or provide logistics services (see Table 2 for broad sub-sectors included and Appendix A for a more detailed breakout of each category). Currently, not all jobs in these enabling sectors are 100% circular.

London's enabling circular sectors employed around 15,000 people in 2019 (these are the circular jobs). Overall, average gross weekly pay in enabling circular business is roughly £865 per week, substantially (224%) above the London Living Wage[35]. Average gross week pay ranges from around £540 per week in employment agencies to just over £1,230 per week in information and communication services. The majority of the enabling circular jobs in 2019 were in networking, information and communication businesses, as well as digital technology and design businesses. An example of an enabling circular job is a third-party logistics driver delivering goods (such as second-hand clothing) to a reuse platform.

Table 2. Estimates of enabling circular jobs by enabling circular sub-sectors in London's circular economy, 2019[36]

Enabling circular sub-sectors	Number of jobs
Circular logistics	829
Design	2,047
Digital technology	2,226
Networking, information and communication	10,177
Total	**15,279**

Source: Valpak analysis based on ONS BRES data, 2019

5.4 Indirectly circular jobs

A third layer of employment is in businesses that provide services to businesses undertaking core circular activities, such as those in government services and professional services. These sectors have been allocated to indirectly circular sectors in ReLondon's definition as not all jobs within these sectors are assumed (currently) to be 100% circular. The difference between enabling circular and indirectly circular jobs is that indirectly circular jobs are further along the supply chains of core circular businesses.

As shown in Table 3, London's circular economy employed more than 122,000 people in indirectly circular jobs in 2019, with the majority (65%) of indirectly circular jobs being in healthcare, hospitality, wholesale and retail. Other examples of indirectly circular jobs include those in finance, professional, scientific and technical support services and education. An example of an indirectly circular job is an employee working in a healthcare company that supplies healthcare services to staff in core circular businesses, allowing them to function successfully.

Table 3. Estimates of indirectly circular jobs by indirectly circular sub-sectors in London's circular economy, 2019

Indirectly circular sub-sectors	Number of jobs
Manufacturing	3,414
Construction	2,969
Wholesale and retail trade	19,930
Transportation and storage	2,975
Hospitality	10,982
Information and communication	3,349
Financial and insurance services	2,588
Real estate activities	1,687
Professional, scientific and technical support	5,136
Administrative and support services	8,865
Public administration	3,783
Education	2,634
Healthcare	48,659
Arts, entertainment and recreation	3,130
Other service activities	2,182
Total	**122,283**

Source: Valpak analysis based on ONS BRES data, 2019

Circular transition scenario for London by 2030

06

6. Circular transition scenario for London by 2030

The Mayor of London has set targets for London to be a zero carbon city by 2030 and three-quarters of London's boroughs have set targets to reach net zero by 2030.[37]

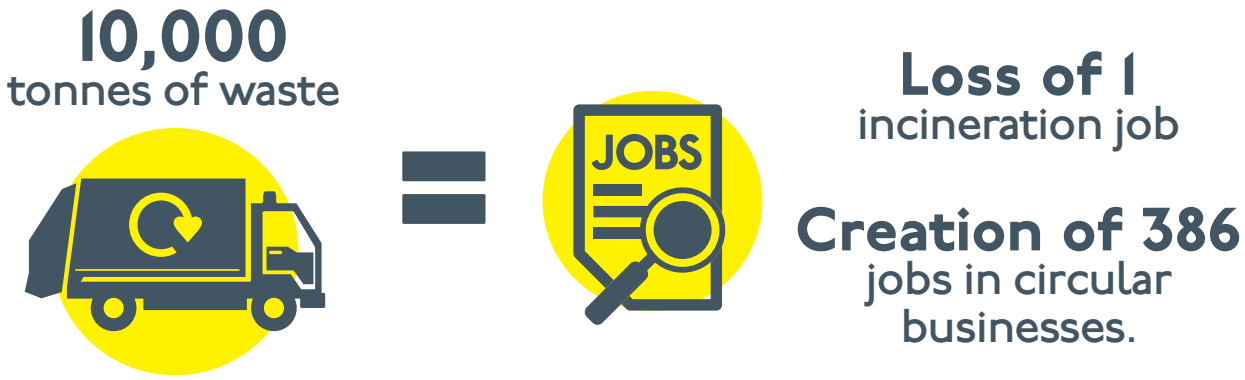
London's Green New Deal aims to support the creation of tens of thousands of jobs through doubling the size of the city's green economy by 2030. In this section of the report, a circular transition scenario has been developed to estimate the number of jobs there could be in a more circular London by 2030.

6.1 Methodology and assumptions behind the scenario

For the purposes of this report, net job creation means gross jobs created less the number of jobs that disappear.[38] The scenario below corresponds to the Mayor's targets as set out in the London Environment Strategy. Referred to as the 'Mayor's strategy transition' scenario, this scenario describes how many circular jobs in London can be created by 2030 by moving up the waste hierarchy using circular approaches instead of linear approaches.

The scenario is driven by preventing waste, using stuff wisely, renting not buying, making things well, sharing and using stuff again through a variety of circular business models.

It is likely that new jobs, for example in the emerging circular sectors (such as renting, sharing and reuse), will offer new opportunities (with the right training) as developments continue to evolve beyond 2030. How and where such changes in jobs occur as London's economy evolves beyond 2030 are not considered in the circular scenario in this report. However, the analysis clearly shows that an expansion of the circular economy and moving up the waste hierarchy results in more jobs for Londoners. For example, preventing 10,000 tonnes of waste means one job is lost in waste incineration compared to 386 jobs created in prevention and redistribution sectors.[39]



Preventing 10,000 tonnes of waste bound for incineration would lead to the **loss of 1 incineration job** and the **creation of 386 jobs** in circular businesses.

The scenario has been developed by identifying key waste streams to be handled by more circular approaches as London's circular economy expands. Currently, around 7 million tonnes of municipal waste are produced each year from London's homes, public buildings and businesses.[40] London's municipal waste stream is made up of a variety of materials, with the main components being food waste and green garden waste (22%) and common dry recyclables: paper, card, plastics, glass and metals (60%). The remaining 18% is made up of smaller quantities of materials including textiles, waste electricals (WEEE) and wood.[41] These are the key municipal waste streams that are used to develop the scenario.

To produce the scenario, the change in the projected 2030 tonnages of waste managed by the use of more circular methods (e.g. reuse, sharing etc.) was then linked to additional circular jobs using estimates of the number of jobs needed per tonne of waste. It is important to note that all baseline waste arisings data are aligned to the GLA's municipal waste arisings figures[42] and that the scenario does not take into account other changes in waste and recycling policies, such as consistency in collections and materials (dry recyclables) or Extended Producer Responsibility (EPR) for packaging.

ReLondon's circular jobs definition captures baseline jobs within the built environment sectors. However, the following scenario is specific to municipal waste and therefore the direct role of the built environment in the circular transition scenario (and the associated circular jobs) is not included. Whilst the Mayor of London's municipal recycling target of 65% by 2030 is met in this scenario, it is acknowledged that the target may be reviewed and changed as London transitions to a circular economy.[43]

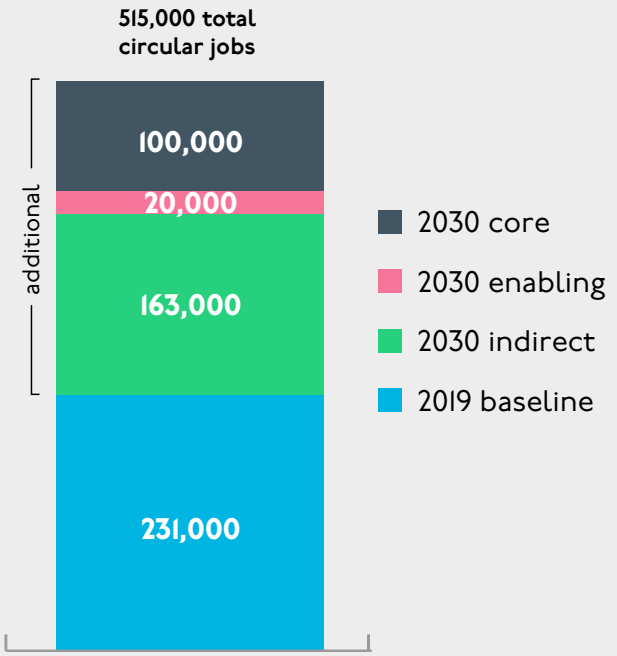
6.2 Mayor's strategy transition scenario: 284,000 additional circular jobs created

The assumptions behind the Mayor's strategy transition scenario are set out in Table 4. In addition to using official data to generate the baseline and assumptions, the scenario was developed following discussions with stakeholder working groups and members of the project board.

Table 4. Key findings according to assumptions that form the basis of the Mayor's strategy transition scenario for London by 2030

Circular transition scenario	Results
Mayor's strategy transition scenario	284,000 additional circular jobs created
	230 jobs lost in recycling and disposal
	450 thousand tonnes of waste prevented
	1.1 million tonnes of stuff shared, donated, reused and recycled
	Municipal recycling rate up to 65%
	Disposal reduced by 1.6 million tonnes (44%).

Figure 6. Circular jobs potential in London by 2030 in the Mayor's strategy transition scenario[44]



Valpak analysis based on ONS BRES data, 2019

In the Mayor's strategy transition scenario, the circular transition in London by 2030 sees more reuse and repair activity, with limited roll-out of new circular business models. The focus is more on increasing materials for recycling, notably from businesses (the Mayor's 65% municipal recycling target is met). Core activity is supported by design changes that enhance repairability and recyclability, which together with communications activity drives behaviour change and some waste prevention (mostly food waste). Some waste disposal jobs are no longer needed, and those job losses are absorbed by expanding circular sectors. This all results in the creation of 100,000 core circular jobs, 20,000 enabling circular jobs, and 163,000 indirectly circular jobs.

Building on the 2019 baseline of 231,000 circular jobs, the potential 284,000 additional circular jobs associated with the Mayor's strategy transition scenario would total to 515,000 circular jobs by 2030.

This analysis demonstrates that moving up the waste hierarchy is not only beneficial to the environment, but it is also more effective in creating jobs in a circular economy. It also highlights the potential contribution that the expansion of the circular economy could add to London's green recovery.

While the transition will see some minimal job losses in traditional sectors, growth across core and enabling circular sectors points to a wide range of opportunities to target up-skilling and retraining programmes to leverage existing skillsets and promote a just and accessible transition across sectors. A detailed breakdown of these potential job opportunities by sub-sector can be found in Appendix B.

Skills needed to support the transition to a circular economy

07

7. Skills needed to support the transition to a circular economy

London's circular economy already offers a wide variety of posts and career pathways. However, to ensure all Londoners have access to the jobs that could be created through the Mayor's strategy transition scenario by 2030, they will need to possess relevant skillsets and have access to adequate and adaptive education and training provision.

This section was informed through analysis of official data as well as conversations with a range of London-based businesses that are either fully circular or are in the process of transitioning to more circular practices.

As described in Section 3.1, the Mayor has awarded funding to establish five Skills Academy Hubs one of which has a specific focus on the green economy, covering roles from waste management and recycling to construction.

7.1 Scope: skills definition

As shown in Section 6, there are a wide range of sectors, and therefore jobs, that will be needed to support the expansion of the circular economy over the next decade. This range means that the skills needed to support circular jobs vary depending on the sector, the business, and the role. Skills needs are also subject to change as currently linear businesses transition to more circular practices. Given this variety, there is no consensus on a single fixed circular skills definition as a range of competencies across circular businesses will be needed. For the purposes of this report, the general scope of circular skills encompasses the knowledge and abilities to carry out tasks within circular businesses to deliver the objectives of a circular economy.

7.2 Background: skills levels and qualifications in London

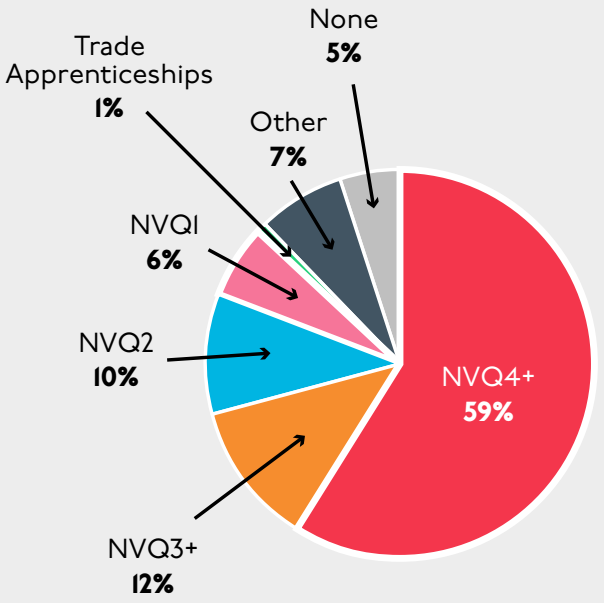
To gain an understanding of existing skills levels in London, qualifications are used in this section as a proxy for skills. As set out in Table 5, skills are identified at four skill category levels where level 4 (and above) is classified as a high skill level (for example National Vocational Qualifications (NVQ) at this level include, higher national diplomas, degree apprenticeships, university degrees and higher degrees). Skill level 1 is classified as a low skill level (example qualifications at this level are, GCSE grades 1– 3, level 1 diplomas and certificates).[45] A more detailed table is available in Appendix C.

Table 5. Skills levels and example NVQ qualifications[46]

Major occupational group	Skill level	Example qualification
Managers, directors and senior officials Professional occupations	3,4+	Higher national diploma Degree apprenticeship Degree with honours Master of science (MSc) Doctorate (PhD or DPhil)
Associate professional and technical occupations Skilled trades occupations	3	A level Diploma Advanced apprenticeship Applied general AS level Level 3 award
Caring, leisure and other service occupations Sales and customer service occupations Process, plant and machine operatives Administrative and secretarial occupations	2	CSE - grade 1 GCSE - grades 7 – 9 Intermediate apprenticeship O level - grades A, B or C Level 2 award Level 2 certificate Level 2 diploma Level 2 national certificate Level 2 national diploma
Elementary occupations	1	GCSE - grades 1 - 3 Level 1 essential skills Level 1 functional skills Level 1 award Level 1 certificate

Source: ONS Standard Occupation Classification (SOC), 2010

Figure 7. Qualification/skills levels in London (%)



Source: ONS Annual Population Survey, 2020

London benefits from having a higher skilled working age population compared to the rest of the UK. Around 60% of London's residents held high skill level qualifications (NVQ4+) in 2020, compared to only 43% in the rest of the UK.[47]

However, while over half of London's working age population are highly skilled, there is still over a tenth of the population with low or no qualifications (around 690,000 Londoners) as seen in Figure 7. There are also comparatively fewer people with trade apprenticeships.

Since 2019, the numbers of Londoners in work with high skills has increased by 5% points (from 62% to 67%), however, those with skill levels below NVQ4+ have seen reductions in employment.[48]

To assess the current skills requirements of London's circular businesses, ReLondon's definition of circular economy jobs has been linked to the current skill levels required by employers in London's core and enabling sectors.

7.3 Current skills needs in core circular businesses

In 2019, London's core circular economy employed over 93,000 people, representing 1.7% of London's total employment. As Table 6 shows, core circular sectors currently employ around 47,400 people (over 50% of all core circular jobs) with skills at level 3 or above who are working as managers and directors, professionals or in technical and in skilled trades. There are a further 45,850 people employed in posts at skill levels 1 and 2 across a variety of occupations, from administrative and secretarial roles to sales and customer services jobs and machine operatives.[49]

Though there are relatively fewer jobs in core circular businesses requiring low skills (i.e. at level 1) overall, this does vary depending on the sector. For example, over a quarter of all employment opportunities in businesses in the resources management sector have low skill requirements, compared to only 8% of roles needing low skills within businesses in the renting and leasing sectors.[50]

7.4 Current skills needs in enabling circular businesses

There are currently around 15,000 enabling circular jobs in businesses across London. As can be seen in Table 6, the distribution of skills needed for these jobs is skewed towards higher skills, as 70% require skills at level 3 or above. These are jobs within information and communication, professional, scientific and technical, and education sectors.

On the other hand, only 4% of enabling circular jobs are in roles in need of skills at level 1, and around a quarter require skills at level 2.[51]

As a further example, Table 6 shows that while networking, information and communication businesses have high numbers of staff at skill levels 3 or above employed in professional, managerial, and technical positions, they have comparatively fewer positions needing staff at lower skill levels. This is similar for other sectors within London's enabling circular economy.

Table 6. Estimates of skills needs in core and enabling circular jobs in London's businesses, 2019

	Skill level 4	Skill level 4,3	Skill level 3	Skill level 2	Skill level 1	Total
Core						
Resources collection, treatment, dismantling and disassembly for re-cycling collection, treatment, dismantling and disassembly for re-cycling	2,128	2,248	3,080	8,443	5,701	21,600
Reuse, repair and maintenance of products, machinery, equipment and vehicles	4,114	6,403	19,626	17,306	4,350	51,799
Rent/lease of vehicles, machinery and equipment and household goods	1,520	3,727	4,552	8,541	1,509	19,849
Total	7,762	12,378	27,258	34,290	11,560	93,248
Enabling						
Circular logistics	36	73	86	523	110	828
Design	739	277	750	257	24	2,047
Digital technology	1,019	324	608	247	28	2,226
Networking, information and communication	3,326	811	2,657	2,902	481	10,177
Total	5,120	1,486	4,101	3,928	643	15,278

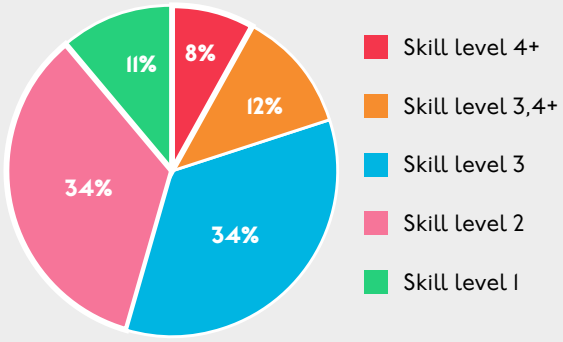
Source: Valpak analysis of ONS Annual Population Survey, 2019

7.5 Future skills needs in the circular economy

While it is important to note the wide range of skills and circular opportunities already available in London's core circular and enabling circular sectors, this section links potential future job creation in the Mayor's strategy transition scenario in Section 6, with the skills levels analysis to further understand the future skills requirements in London's circular economy.

Linking the Mayor's strategy transition scenario with occupation and skill levels shows (see Figure 8) that the expansion of London's core circular economy by 2030 will likely require a substantial number (69%) of Londoners with skills at levels 2 and 3, with only 11% of additional roles being required at skills level 1.[52]

Figure 8. Estimated additional core circular skills needed by 2030

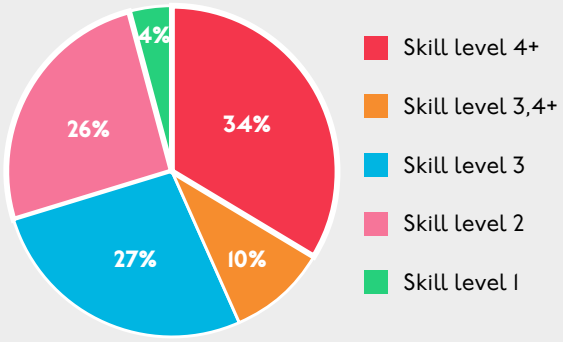


Source: Valpak analysis based on ONS Annual Population survey and BRES data, 2019

This compares to the 66% of skills required within current core circular roles at skill levels 2 and 3. This increased need for people with these skills levels over the next decade within the core circular economy points to the benefits that strategic upskilling programmes can provide, in core circular sectors such as repair and reuse.

The Mayor's strategy transition scenario would also require significant support from enabling sectors and collaboration across the supply chain to allow the circular economy to rapidly gain traction.

Figure 9. Estimated additional enabling circular skills needed by 2030



Source: Valpak analysis based on ONS Annual Population survey and BRES data, 2019

Across all enabling circular businesses, the distribution of skills needed to drive the expansion of London's circular economy are skewed toward higher skills, with 70% of the additional jobs needing skills at levels 3 and above, representing an additional 14,250 enabling circular jobs[53].

7.6 Skills gap

The above highlights the need for skills, particularly at skill levels 2 and above, to ensure London's circular economy is able to grow and develop at pace by 2030. The sections below summarise some of the insights shared by businesses in London that are either planning (or are in the early stages of) transitioning to circular business models and businesses that are already circular, on expected future skills requirements in the circular economy.

7.6.1 Businesses in the transition to circular

Through interviews with a handful of businesses transitioning to circular business models, the need for employees to have a baseline understanding of the circular economy and knowledge of how to build a business case for circular business models (i.e. making the case to board members) was emphasised, before being able to practically embed circular economy principles within their business. The importance of leadership skills is, therefore, crucial in influencing businesses and their employees to foster a supportive culture that continuously seeks opportunities to implement circular economy principles. Change management skills and the ability to coordinate across all departments in large transitioning businesses were referenced as being necessary to ensure a common understanding of circular economy and the direction of transformation.

From a more practical perspective, businesses also talked about a lack of repair skills available in the UK, resulting in the need to outsource. As London's repair and reuse sectors are expected to grow, this skills gap could pose a continued challenge for circular employers. The ability to transition roles in administration, accounting and customer services will require new knowledge on circular economy business models.[54]

7.6.2 Circular businesses

Currently circular businesses emphasised collaboration skills as key to their success, as many businesses often partner with other circular businesses or work closely with upstream or downstream businesses. The importance of skills in data analytics to enable businesses to measure environmental impacts and conduct carbon footprinting, including the need for business leaders to understand the theory of change, was also emphasised by businesses interviewed, as were technical digital design skills.[55]

Access to skills in interpreting government legislation and environmental policies were also deemed to be essential. As the circular economy develops, this will lead to more roles in public affairs to ensure businesses understand and anticipate how upcoming changes will impact on their businesses and how to inform change. Finally, the need for visioning was mentioned, requiring training to be able to reimagine materials and products, and develop innovative methods to incorporate secondary, pre-owned, or waste materials into products.

It's clear that a wide range of skills are needed across businesses either transitioning to become circular or which currently have circular business models. For the transition to a circular economy to be successful, hard skills, such as in design, digital and mechanical and chemical engineering, will be needed, in addition to skills to run business office functions in circular economy businesses. However, in contrast to the linear economy, a key theme from conversations (particularly in the transition phase) was the need for a collaborative approach, with systems thinking as a cornerstone. As a consequence, soft skills such as communication, networking, influencing and persuasion, leadership and problem-solving are likely to be more important for the development of the circular economy.

To successfully create the conditions needed to transition to the circular economy, the required skills identified by businesses indicate where training and reskilling actions could be immediately impactful. In particular, there will be a need for circular economy and behaviour change experts in the transition, to educate, support, and develop circular thinking skills for workers.

7.7 Training provision

To gain an understanding of whether the training provision available in London is sufficient to support the upskilling required for a successful transition to a more circular economy by 2030, several circular economy businesses located in London were consulted about training requirements in their businesses, a review of existing courses was undertaken and discussions were held with a handful of colleges, universities and London based training providers.

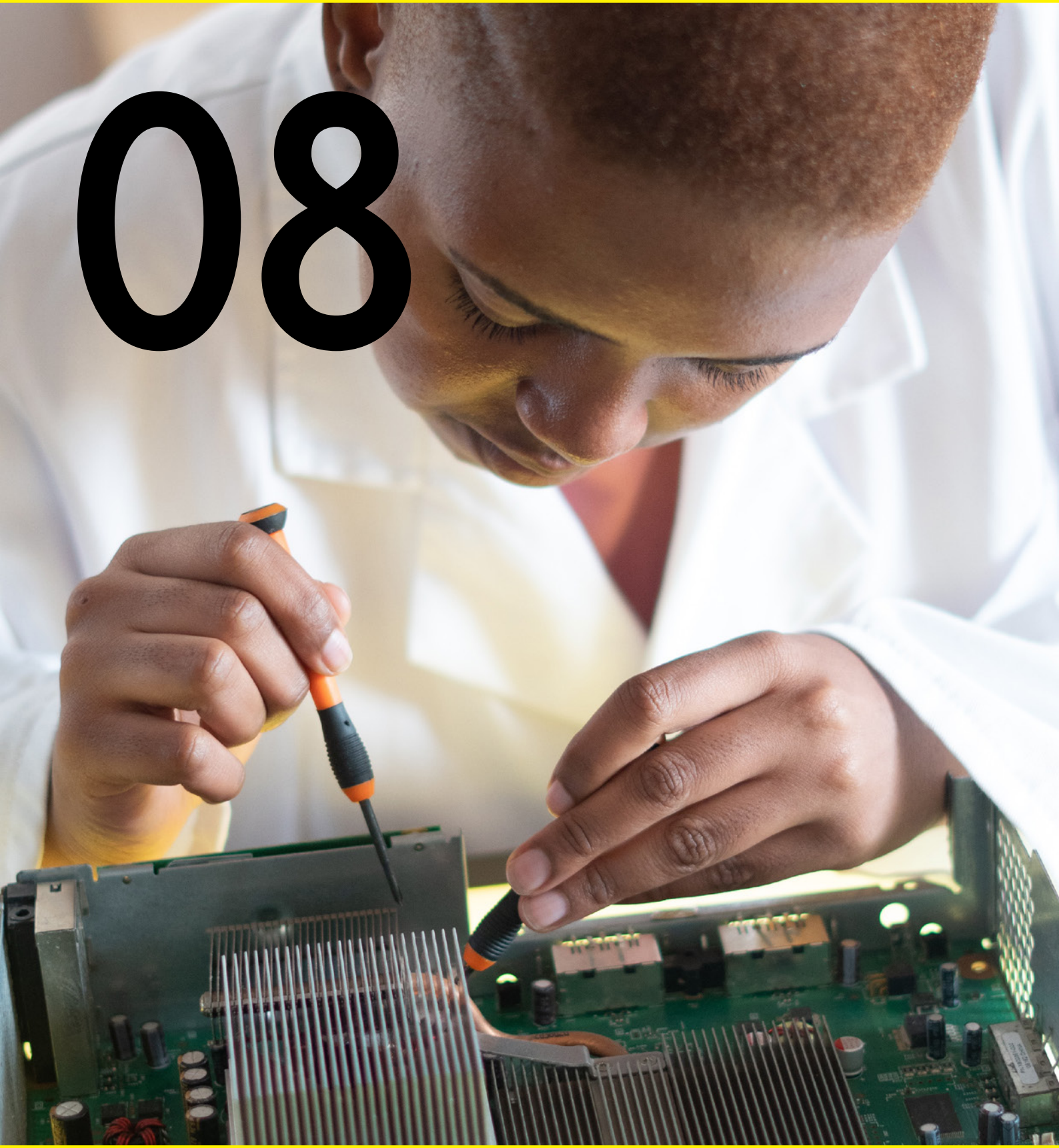
From these conversations[56] and a literature review of current provision, it was clearly identified that there are few options currently available for circular economy training to support London's transition to a more circular economy by 2030. Circular economy course content is limited to a few post-graduate courses and there is a general lack of relevant content within teaching in schools and colleges[57]. The GLA's Green Skills Adult Education provision in London report[58] outlines the need for more general awareness of the green economy and how, across all courses and training providers, there is a need to embed green examples in the curriculum and build awareness. This can also be applied to the circular economy to ensure Londoners are aware of the benefits of the circular economy and related job opportunities.

There is a clear opportunity related to the provision of education and training programmes on the circular economy, particularly as they can target growing sectors, such as repair and maintenance, in order to build competencies in circular economy knowledge and systems thinking. In addition to being woven into the school curriculum and across further/higher education, top-up or short refresher courses could provide opportunities to help build circular economy knowledge within businesses and avoid workers having to take time-out for training.

While it is crucial that training is targeted at young Londoners and other groups disproportionately affected by higher unemployment rates to ensure a just transition to a circular economy, it is also necessary to create upskilling programmes for those who are already working, including on-the-job opportunities. This is particularly important as there are high levels of skilled workers at NVQ 4+ across London, as shown in Section 5, who may be well-positioned to adopt or influence the uptake of circular principles within their organisations.

Conclusion

08



8. Conclusion

From this research, it is clear that on top of the substantial environmental gains that a circular economy can deliver, it also has the potential to contribute significantly to job creation and economic growth.

The estimates of jobs in London's circular economy show that on top of growth in core circular jobs by 2030, there are expected to be substantial numbers of both enabling and indirectly circular jobs in the supply chains supporting core circular businesses, leading to a potential 284,000 additional circular jobs by the end of the decade through the Mayor's strategy transition scenario. Building on the 2019 baseline of 231,000 circular jobs, the total circular job potential would be 515,000 circular jobs by 2030. On top of the environmental and jobs benefits, this expansion of the circular economy would also create economic value, with circular economy businesses contributing a total of £24.2bn in terms of Gross Value Added (GVA) to London's economy by 2030.

Transitioning to a low carbon circular economy will require action at all levels of society, including national, regional and local government, regulators, consumers and businesses, as well as adequate support for innovation and collaboration across the supply chain. Rapid changes for businesses in transition means skills training will need to be responsive and adaptive to ensure efficient and equitable matching of skills between workers and jobs. Investment in retraining and upskilling will also be required through a mix of formal training and qualifications and skills development; this can be delivered through on-the-job learning that can target both groups experiencing high levels of unemployment as well as staff within transitioning businesses.

Collaboration between businesses, government, and education systems will be crucial over the next decade to ensure the circular economy is well-positioned to grow and deliver the maximum number of jobs possible. With the right skills provision, and training support in place, the expansion of the circular economy in London can provide inclusive job opportunities to all Londoners.

ReLondon recognises the huge potential that transitioning to a low carbon circular economy can play in London's green recovery and through its activities and partnerships will continue to support the realisation of these. ReLondon's vision is of a future without waste, where the way we make, consume and dispose of stuff actively tackles the climate crisis and protects our planet. We will make London a global leader in sustainable ways to live, work and prosper, by revolutionising our relationship with stuff and helping Londoners waste less and reuse, repair, share and recycle more.

Appendices

Appendix A

Table 7. ReLondon's detailed jobs mapping

Circular Economy Activity Grouping		4-digit BRES	Description of circular activities within businesses
Reuse, repair and maintenance of products, machinery, equipment and vehicles	Core	3311	Repair of fabricated metal products
	Core	3312	Repair of machinery
	Core	3313	Repair of electronic and optical equipment
	Core	3314	Repair of electrical equipment
	Core	3315	Repair and maintenance of ships and boats
	Core	3316	Repair and maintenance of aircraft and spacecraft
	Core	3317	Repair and maintenance of transport equipment n.e.c.
	Core	3319	Repair of other equipment
	Core	4520	Maintenance and repair of motor vehicles
	Core	4540	Sale, maintenance and repair of motorcycles and related parts and accessories
	Core	9511	Repair of computers and peripheral equipment
	Core	9512	Repair of communication equipment
	Core	9521	Repair of consumer electronics
	Core	9522	Repair of household appliances and home and garden equipment
	Core	9523	Repair of footwear and leather goods
	Core	9524	Repair of furniture and home furnishings
	Core	9525	Repair of watches, clocks and jewellery
	Core	9529	Repair of other personal and household goods
	Core	9601	Washing and (dry-)cleaning of textile and fur products
	Core	4779	In-store retail sale of second-hand goods

Circular Economy Activity Grouping		4-digit BRES	Description of circular activities within businesses
Resources collection, treatment, dismantling and disassembly for re-cycling	Core	3600	Water collection, treatment and supply
	Core	3700	Sewerage
	Core	3811	Collection of non-hazardous resources
	Core	3812	Collection of hazardous resources
	Core	3821	Treatment and disposal of non-hazardous resources
	Core	3822	Treatment and disposal of hazardous resources
	Core	3832	Recovery of sorted materials
	Core	3900	Remediation activities and other resource management services
	Core	4311	Deconstruction in the built environment
	Core	4677	Wholesale of recovered resources
Rent/lease of vehicles, machinery and equipment and household goods	Core	7711	Renting and leasing of cars and light motor vehicles
	Core	7712	Renting and leasing of trucks
	Core	7721	Renting and leasing of recreational and sports goods
	Core	7722	Renting of video tapes and disks
	Core	7729	Renting and leasing of other personal and household goods
	Core	7731	Renting and leasing of agricultural machinery and equipment
	Core	7732	Renting and leasing of construction and civil engineering machinery and equipment
	Core	7733	Renting and leasing of office machinery and equipment (including computers)
	Core	7734	Renting and leasing of water transport equipment
	Core	7735	Renting and leasing of air transport equipment
	Core	7739	Renting and leasing of other machinery, equipment and tangible goods n.e.c.
Design	Enabling	7111	Architectural activities
	Enabling	7112	Engineering activities and related technical consultancy
	Enabling	7410	Specialised design activities

Circular Economy Activity Grouping		4-digit BRES	Description of circular activities within businesses
Degital technology	Enabling	5829	Other software publishing
	Enabling	6110	Wired telecommunications activities
	Enabling	6120	Wireless telecommunications activities
	Enabling	6130	Satellite telecommunications activities
	Enabling	6190	Other telecommunications activities
	Enabling	6201	Computer programming activities
	Enabling	6209	Other information technology and computer service activities
	Enabling	6311	Data processing, hosting and related activities
	Enabling	6312	Web portals
Circular logistics	Enabling	4920	Freight rail transport
	Enabling	4941	Freight transport by road
	Enabling	5020	Sea and coastal freight water transport
	Enabling	5040	Inland freight water transport
	Enabling	5221	Service activities incidental to land transportation
	Enabling	5222	Service activities incidental to water transportation
	Enabling	5224	Cargo handling
	Enabling	5229	Other transportation support activities

Circular Economy Activity Grouping		4-digit BRES	Description of circular activities within businesses
Networking, information and communication	Enabling	7810	Activities of employment placement agencies
	Enabling	8411	General public administration activities
	Enabling	8413	Regulation of and contribution to more efficient operation of businesses
	Enabling	9411	Activities of business and employers membership organisations
	Enabling	9412	Activities of professional membership organisations
	Enabling	9420	Activities of trade unions
	Enabling	1811	Printing of newspapers
	Enabling	1812	Other printing
	Enabling	5811	Book publishing
	Enabling	5812	Publishing of directories and mailing lists
	Enabling	5813	Publishing of newspapers
	Enabling	5819	Other publishing activities
	Enabling	7211	Research and experimental development on biotechnology
	Enabling	7219	Other research and experimental development on natural sciences and engineering
	Enabling	7220	Research and experimental development on social sciences and humanities
	Enabling	7311	Advertising agencies
	Enabling	7312	Media representation
	Enabling	7320	Market research and public opinion polling
	Enabling	8531	General secondary education
	Enabling	8532	Technical and vocational secondary education
	Enabling	8541	Post-secondary non-tertiary education
	Enabling	8542	Tertiary education
	Enabling	8559	Other education n.e.c.
	Enabling	8560	Educational support activities
	Indirect		Jobs within other businesses in the supply chain of core circular businesses that indirectly support their activities. Examples include jobs within public administration and professional/technical support services.

Source: ONS Standard Industrial Classification (SIC), 2007

Appendix B

Table 8 provides a breakdown of the job numbers by sector of circular jobs in 2019 and job potential by 2030 associated with the Mayor's strategy transition scenario. Please note that these numbers are unrounded.

Table 8. Job numbers by sector for core, enabling, and indirectly circular definitions and the Mayor's strategy transition scenario, 2030

Type	Description	Baseline 2019	Mayor's strategy transition scenario 2030
Core	Resources collection, treatment, dismantling and disassembly for re-cycling	21,600	35,521
Core	Reuse, repair and maintenance of products, machinery, equipment and vehicles	51,800	136,126
Core	Rent/lease of vehicles, machinery and equipment and household goods	19,850	22,209
Core	Total core circular jobs	93,250	193,855
Enabling	Circular logistics	829	1,932
Enabling	Design	2,047	4,771
Enabling	Digital technology	2,226	5,188
Enabling	Networking, information and communication	10,177	23,719
Enabling	Total enabling circular jobs	15,279	35,610
Indirect	Manufacturing	3,414	7,957
Indirect	Construction	2,969	6,920
Indirect	Wholesale and retail trade	19,930	46,450
Indirect	Transportation and storage	2,975	6,934
Indirect	Hospitality	10,982	25,595
Indirect	Information and communication	3,349	7,805
Indirect	Financial and insurance activities	2,588	6,032
Indirect	Real estate activities	1,687	3,932
Indirect	Professional, scientific and technical activities	5,136	11,970
Indirect	Administrative and support service activities	8,865	20,661
Indirect	Public administration	3,783	8,817
Indirect	Education	2,634	6,139
Indirect	Healthcare	48,659	113,407
Indirect	Arts, entertainment and recreation	3,130	7,295
Indirect	Other service activities	2,182	5,085
Indirect	Total indirectly circular jobs	122,283	284,999
	Total circular jobs	230,812	514,465

Appendix C

Table 9 shows the general nature of qualifications, training and experience that would typically be associated with posts in the major occupational groups identified in the ONS' Standard Occupation Classification (SOC2010). It also shows the NVQ skill level (4 being high skills and 1 being low skill), and examples of the types of qualifications that people working in these occupations could be expected to have gained. Qualification examples shown for skill level 4 and above are for a selection of level 5 to level 7 qualifications.

Table 9. Occupational groups, skills levels and example qualifications

Major occupational group	General nature of qualifications, training and experience for occupations by major group	Skills levels	Example qualifications
Managers, directors and senior officials	A significant amount of knowledge and experience of the production processes and service requirements associated with the efficient functioning of organisations and businesses.	4,3	Higher national diploma (HND) Degree apprenticeship Degree with honours - for example bachelor of the arts (BA) hons Bachelor of science (BSc) hons Master of science (MSc) Doctorate (PhD or DPhil) Higher apprenticeship Foundation degree Higher national diploma (HND)
Professional occupations	A degree or degree equivalent qualification, with some occupations requiring postgraduate qualifications and/or a formal period of experience-related training.	4	
Associate professional and technical occupations	An associated high-level vocational qualification, often involving a substantial period of full-time training or further study. Some additional task-related training is usually provided through a formal period of induction.	3	A level access to higher education Diploma Advanced apprenticeship Applied general AS level International Baccalaureate diploma Level 3 award
Administrative and secretarial occupations	A good standard of general education. Certain occupations will require further additional vocational training to a well-defined standard (e.g. office skills).	2	See below

Major occupational group	General nature of qualifications, training and experience for occupations by major group	Skills levels	Example qualifications
Skilled trades occupations	A substantial period of training, often provided by means of a work based training programme.	3	See above
Caring, leisure and other service occupations	A good standard of general education. Certain occupations will require further additional vocational training, often provided by means of a work-based training programme.	2	CSE - grade 1 GCSE - grades 9, 8, 7, Intermediate apprenticeship O level - grades A, B or C Level 2 award Level 2 certificate Level 2 diploma Level 2 ESOL Level 2 essential skills Level 2 functional skills Level 2 national certificate Level 2 national diploma
Sales and customer service occupations	A general education and a programme of work-based training related to sales procedures. Some occupations require additional specific technical knowledge but are included in this major group because the primary task involves selling.		
Process, plant and machine operatives	The knowledge and experience necessary to operate vehicles and other mobile and stationary machinery, to operate and monitor industrial plant and equipment, to assemble products from component parts according to strict rules and procedures and subject assembled parts to routine tests. Most occupations in this major group will specify a minimum standard of competence for associated tasks and will have a related period of formal training.		
Elementary occupations	Occupations classified at this level will usually require a minimum general level of education (that is, that which is acquired by the end of the period of compulsory education). Some occupations at this level will also have short periods of work-related training in areas such as health and safety, food hygiene, and customer service requirements.	1	GCSE - grades 3, 2, 1 Level 1 ESOL Level 1 essential skills Level 1 functional skills Level 1 award Level 1 certificate Level 1 diploma

Source: ONS Standard Occupational Classification (SOC), 2010

Endnotes

1. This project has been shaped by London's key stakeholders. The analysis and conclusions have been drafted by Valpak and ReLondon who are responsible for verification and checking.

2. Green Jobs Taskforce (2021). ***Green Jobs Taskforce report: Report to Government, Industry and the Skills Sector.*** Sourced from: GOV.UK website.

3. Central London Forward, Local London, South London Partnership and West London Alliance (2021). ***Green Jobs and Skills in London: cross-London report***. Sourced from: WPI Economics' website.

4. Greater London Authority (n.d.). ***Referral process for Local Planning Authorities.*** Sourced from: Greater London Authority website.

5. Department for Environment, Food and Rural Affairs (2011). ***Guidance on applying the Waste Hierarchy.*** Sourced from: Department for Environment, Food and Rural Affairs website.

6. Circular Online (November 2021). ***COP26: To fix the climate we must fix the economy. Here's why.*** Sourced from: Circular Online's website.

7. WRAP, London Sustainable Development Commission, London Waste and Recycling Board, and the Greater London Authority (2015). ***Employment and the circular economy: Job creation through resource efficiency in London.*** Sourced from: Greater London Authority website.

8. Please note that the figures may not sum due to rounding.

9. Greater London Authority (n.d.). ***Green New Deal.*** Sourced from: Greater London Authority website.

10. Office for National Statistics, Social Survey Division (2019). ***Annual Survey of Hours and Earnings.*** Sourced from: UK Data Service website.

11. For more information on the detailed analysis behind these scenarios please contact ReLondon.

12. Greater London Authority (2022). ***Analysis of a Net Zero 2030 Target for Greater London.*** Sourced from: Greater London Authority website.

13. London Councils (n.d.). ***Climate Change.*** Sourced from: London Councils' website.

14. The Green New Deal was launched in 2020. More information can be found at: Greater London Authority website.

15. The London Recovery Board is jointly chaired by the Mayor of London and the Chair of London Councils. The London Recovery Board has worked since 2020 to bring together leaders from across London's government, business and civil society, as well as the health and education sectors, trade unions and the police, to oversee the long-term recovery effort. Sourced from: London Recovery Board's website.

16. The Mayor of London noted in 2020 that the Green New Deal Fund supports the London Recovery Board's ambition to double the size of the green economy in London to £100 billion by 2030 to spur on job growth and tackle climate change. Sourced from: Greater London Authority website.

17. London Councils' Transport and Environment Committee and London Environment Directors' Network released a joint statement in 2022 that sets out their approach to addressing climate change within and between boroughs and commits to seven key programmes that will be delivered through meaningful collaboration between boroughs, partners, residents and business community. Sourced from: London Council's website.

18. Central London Forward, Local London, South London Partnership, West London Alliance, WPI Economics, and Institute for Employment Studies (2021). ***Green Jobs and Skills in London: cross-London report.*** Sourced from: WPI Economics' website.

19. Please note that due to the narrow definition of the circular economy within the report, there will only be overlaps with ReLondon's report within 'core' circular jobs (i.e. waste management or recycling sectors).

20. ReLondon (n.d.). ***Circular economy explained.*** Sourced from: ReLondon's website.

21. Greater London Authority (2018). ***London Environment Strategy.*** Sourced from: Greater London Authority website.

22. Greater London Authority (2021). ***The London Plan.*** Sourced from: Greater London Authority website.

23. The Mayor of London launched London's Green New Deal fund in November 2020. Sourced from: Greater London Authority website.

24. Greater London Authority (2022). ***The Mayor of London's Skills Roadmap for London.*** Sourced from: Greater London Authority website.

25. The Mayor has awarded funding to organisations to lead the establishment and delivery of hubs which support Londoners into good work in the green economy, creative industries, digital, health and hospitality sectors. Sourced from: Greater London Authority website.

26. Office for National Statistics, Social Survey Division (2022). ***Annual Population Survey, October 2020–September 2021.*** Sourced from: UK Data Service website.

27. Remanufacturing would be considered as a core circular economy sector, however, due to limitations of official data this has not been included in this definition. Elements of remanufacturing may be included within maintenance and repair.

28. Vertical farming and agriculture would be considered as part of the circular economy, however, due to limitations of official data this has not been included in this definition.

29. Green Alliance and WRAP (2015). ***Employment and the circular economy: job creation in a more resource efficient Britain.*** Sourced from: Green Alliance website.

30. Circle Economy (2021). ***Circular jobs monitor***. Sourced from: Circle Economy website.

31. Office for National Statistics (2021). ***Business Register and Employment Survey.*** Sourced from: Office for National Statistics website.

32. The methodology builds on GLA Economics' analysis of input-output tables for London. It is important to note that jobs in the supply chains of core circular businesses are of equal importance as they are inter-related with and cross-support core circular business activities. Circular jobs in core circular sectors are not intended to be represented as being more important than supply chain jobs that are enabling circular or indirectly circular, as these are also needed for the system as a whole to work effectively.

33. Office for National Statistics (2021). ***Business Register and Employment Survey.*** Sourced from: Office for National Statistics website.

34. Please note that the figures may not sum due to rounding.

35. Office for National Statistics (2021). ***Business Register and Employment Survey.*** Sourced from: Office for National Statistics website.

36. It is acknowledged that food design, food systems and their role in biodiversity and regeneration are an important part of a circular economy. However, it was not possible to identify circular jobs in these activities or make plausible estimates due to limitations within official data sets.

37. London Councils (n.d.). ***Climate Change.*** Sourced from: London Councils website.

38. Net job creation refers to core circular jobs. For circular jobs growth in total, while it is acknowledged that posts created by growth in circular economy may be filled by inward migration, it is assumed likely given the scale of the jobs numbers in these scenarios that many posts will be filled by people switching jobs from existing posts, but that some posts may be filled by people moving out of unemployment or periods of inactivity.

39. For more information on the detailed analysis behind these scenarios please contact ReLondon.

40. Greater London Authority (2018). ***London Environment Strategy.*** Sourced from: Greater London Authority website.

41. For more information on the detailed analysis behind these scenarios please contact ReLondon. Note that municipal waste excludes non household-like waste in commercial and industrial (C&I) and construction, demolition and excavation (CDE) sectors.

42. To determine a 2019 baseline, an average is taken from the 2016 and 2020 tonnage estimates in the GLA's waste projection published in the Mayor of London's Environment Strategy. Greater London Authority (2018). ***London Environment Strategy.*** Sourced from: the Greater London Authority website.

43. The ***London Environment Strategy*** notes that the Mayor of London will keep his recycling targets under review, based on the progress of London's transition to a circular economy. This will encourage materials to be used at their highest value for as long as possible and avoid incentivising recycling over and above the more desirable options of reduction and reuse.

44. Please note that the figures may not sum due to rounding.

45. However, whilst this is used for analytical purposes, this is not to say that age, time spent in employment, soft skills and life skills are not also factors that impact on employability, but rather that this is the best data source available to act as a proxy. Not having any qualifications doesn't mean that people have no skills but people without qualifications are less likely to have favourable prospects in terms of gaining employment, switching jobs, or re-entering the workforce.

46. This figure shows the general nature of qualifications, training and experience that would typically be associated with posts in the major occupational groups identified in the ONS' Standard Occupation Classification (SOC, 2010).

47. Office for National Statistics (2021). ***Annual Population Survey, Oct 2020-Sep 2021.*** Sourced from: Office for National Statistics website.

48. Office for National Statistics (2021). **Annual Population Survey, Oct 2020-Sep 2021.** Sourced from: Office for National Statistics website.

49–54. For more information on the detailed analysis behind these scenarios please contact ReLondon.

55. Please note that only a handful of businesses were interviewed, and this is a summary of key points from those conversations. There will likely be more skills required across other sectors of the circular economy not mentioned here.

56. For more information on the detailed analysis behind these scenarios please contact ReLondon.

57. Ellen MacArthur Foundation (2021). ***The Circular Economy in higher education: Insights from course offerings in London and New York.*** Sourced from: Ellen MacArthur Foundation website.

58. Greater London Authority (2022). ***Green Skills Adult Education provision in London.*** Sourced from: Greater London Authority website.

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small. At the **national level**, the effect is assessed at **'negligible'** (based on a low sensitivity to expenditure impacts across UK business/organisations and a negligible magnitude effect). If a very specific business were to be singled out, on the basis of it having won a new contract to assist with the plant's operation, then the relative magnitude and sensitivity of this specific operator would likely result in a much more significant effect.

1.5.2.2 Impact of Operation on Employment

The ERF is conservatively expected to create some 30 directly employed FTE permanent jobs. Among these, the following breakdown of occupation types is anticipated:

- Managers and directors, 3;
- Professional occupations, 3;
- Skilled trades, 8;
- Process, plant and machine operatives, 12; and
- Administrative and secretarial, 4.

Other occupation types (namely associate professional and technical; personal service; sales and customer service; elementary; and other) are not expected to be required directly in the operation of the plant.

Salaries will be competitive, with senior positions likely to be remunerated in the range of £70k and mid-level positions paid in the region of £40k per annum. Process, operative and administrative roles are likely to be pitched at around £25k pa.

We consider below the effect of leakage, displacement and multiplier impacts on the above direct employment estimates.

Leakage

We have already noted (see Section 1.4.1) that local recruitment will be prioritised where the skill mix allows this. We have also seen from the baseline research (see Table 1.1 in the Economic Baseline, Appendix F1) that of the list of professions to be recruited in the bullet points above, people in the first three groups are over-represented in Weymouth and Portland relative to regional and England averages, people in process, plant and machine operating roles are represented in accordance with national and regional levels, while administrative and secretarial skills tend to be underrepresented.

Following discussions with the Office of National Statistics and also NOMIS (a specific part of ONS charged with providing access to the most detailed and up-to-date UK labour market statistics from official sources), we have confirmed that no recent data are available showing in and out-commuting of either of the areas we are principally interested in – the Level 1 and Level 2 areas. Therefore, the most up to date source of data is the 2011 census, a data source already explored in respect of commuting in Appendix F1. The available data are far from perfect, firstly due to their age and secondly due to expectations that the post-Covid 19 epidemic period is likely to increase workers' likelihoods of working from home or more locally in future. Nonetheless, using the data as a proxy for commuting now can give us an indication of the likely patterns of travel in the labour market, allowing us to make some assumptions about employment leakage.

Table 1.8 gives information showing the pattern of residency amongst those who worked in the areas in Column 1 in 2011. So, of those who worked in the Level 1 Area (Weymouth and Portland) in 2011, 78% also lived there, whereas 17% in–commuted from one of the other local LAs in the Level 2 Area where they lived (Dorset, Bournemouth, Christchurch and Poole) and only around 1% lived further away than that, whilst still being located in the South West Region. About 6% worked in Weymouth and Portland and lived beyond the South West - in Wales or in another English region (note data showing those who worked in Scotland or elsewhere in the world is not available).

Contents

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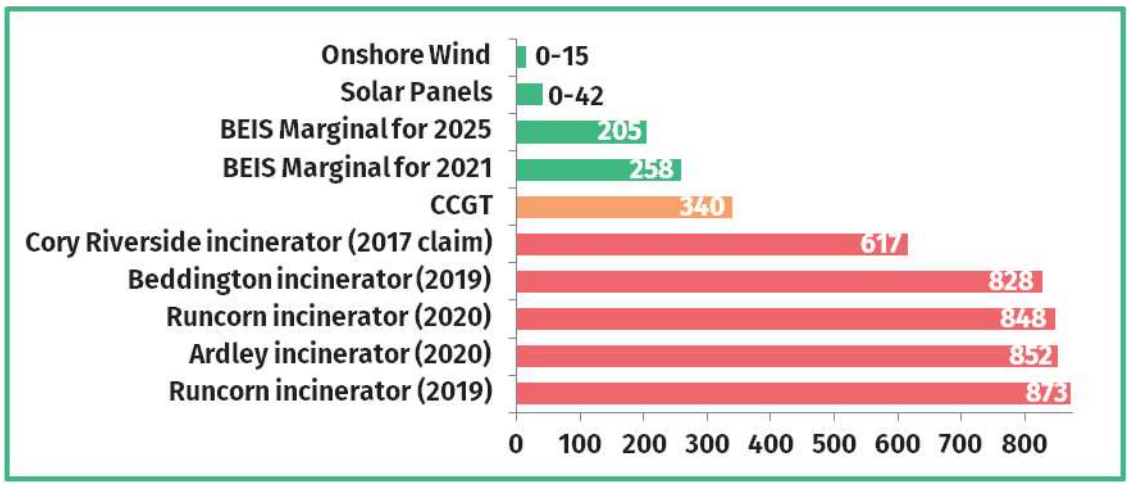
3. Environmental impact

(Relevant to paragraph 11 of the Regulations.)

Carbon dioxide emissions estimate for UK generation mix, by fuel [footnote 1]

Energy Source	g/kWh
Coal	945
Natural Gas	371
Nuclear	0
Renewables	0
Other	795
Overall average	186

COMPARISON OF FOSSIL CARBON INTENSITY OF ENERGY EXPORTED TO THE GRID FROM DIFFERENT ELECTRICITY GENERATION METHODS (GCO_2E /KWH)



SUMMARY OF THE FOSSIL CARBON INTENSITY OF INCINERATION COMPARED TO ALTERNATIVE ENERGY GENERATION METHODS

Type	Fossil carbon intensity (gCO_2e/kWh)	Source	Comparison to conventional use of fossil fuels
Onshore Wind	0-15	IPCC[115] (upper end of range includes construction CO_2e)	Lower carbon
Solar Panels	0-42		
BEIS Grid Averages (2019, 2021, 2025)	133, 105, 96	BEIS[116] (see above)	
BEIS Long-run Marginals (2019, 2021, 2025)	281, 258, 205		
CCGT (Central Grid Displacement Factor)	340	BEIS[117]	Same
Cory Riverside incinerator	617	Derived from Cory Riverside Energy claims[118] (see above)	Higher carbon
Runcorn, Ardley and Beddington incinerators	828-873	Derived from operator returns to the Environment Agency Pollution Inventory based on measurements (see above)	

[115] https://www.ipcc.ch/pdf/assessment-report/ar5/wg3/ipcc_wg3_ar5_annexiii.pdf

[116] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/793632/data-tables-1-19.xlsx

[117] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/794738/background-documentation-guidance-on-valuation-of-energy-use-and-greenhouse-gas-emissions.pdf

[118] https://www.ice.org.uk/ICEDevelopmentWebPortal/media/Events/Conferences/Cory-Carbon-Report.pdf

nationalgrid

Delivering for 2035:

Upgrading the grid for a secure, clean and affordable energy future

Executive summary

The UK stands at a critical juncture. Significant progress has already been made towards transforming our power system, with a huge expansion in clean energy and substantial investment in our electricity networks.

But the scale and pace of the transformation needed over the next decade and beyond is a fundamentally different challenge to what has been done to date. We need a far greater level of investment over a much shorter timeframe. This new infrastructure must also be delivered in a way that supports and empowers communities and consumers.

If we can get this right, the prize is significant. We will collectively be able to deliver greater energy security and lower bills for Britons, as well as generate jobs and economic growth in all parts of the UK.

Contents

Fully decarbonising the power sector by 2035 will require decisive action from industry, government and Ofgem. This document sets out proposals to ensure that electricity networks can fully play their part in this transformation. It is structured across **five priority areas** where action is required:

Five priority areas	Key actions
01 **Reform the planning system, centred around a strategic clean energy vision**	• As an immediate step, finalise the National Policy Statements by the summer, ensuring they provide clarity and certainty to support urgent delivery of net zero infrastructure. • Streamline the current consenting process for major energy projects, including through shortened decision timescales and alignment with the regulatory regime. • Establish a 'Strategic Spatial Energy Plan' by 2025 that sets out what needs to be built, where, and when.
02 **Ensure the regulatory and governance framework is set up for delivery**	• Review the current suite of regulators' objectives and duties and clarify roles and responsibilities across the institutions accountable for the energy transition. • Fully embed anticipatory investment and resilience into the regulatory framework, ensuring it attracts the private capital to deliver the scale of network investment required. • Maintain pace in introducing a competitive market for major transmission network capacity.
03 **Transform how clean energy connects to the grid, accelerating net zero projects**	• Shift from a 'first come, first served' to 'connect or move' connections process. • Develop strategic 'capacity hubs', enabling a more coordinated and innovative approach to connections. • Create a fast-track connection route for critical net zero projects, prioritising those areas where the economic value could be greatest.
04 **Put communities and consumers at the forefront of the transition**	• Deliver a consistent community benefits framework that ensures local people secure real value for hosting critical net zero infrastructure. • Progress the development of new Regional System Planners to unlock local net zero infrastructure. • Drive forward demand flexibility through retail market reform, while ensuring vulnerable households are protected through the development of a social tariff.
05 **Develop supply chain capacity and a skills pipeline across the country**	• Enable a shift towards a more collaborative and flexible approach to securing supply chain capacity needed to deliver clean energy projects. • Deliver a targeted package of incentives to attract potential clean energy manufacturers and training providers to locate and expand sites in the UK. • Publish an annual net zero energy workforce report and ensure the educational and training system is equipped to inspire a pipeline of future talent.

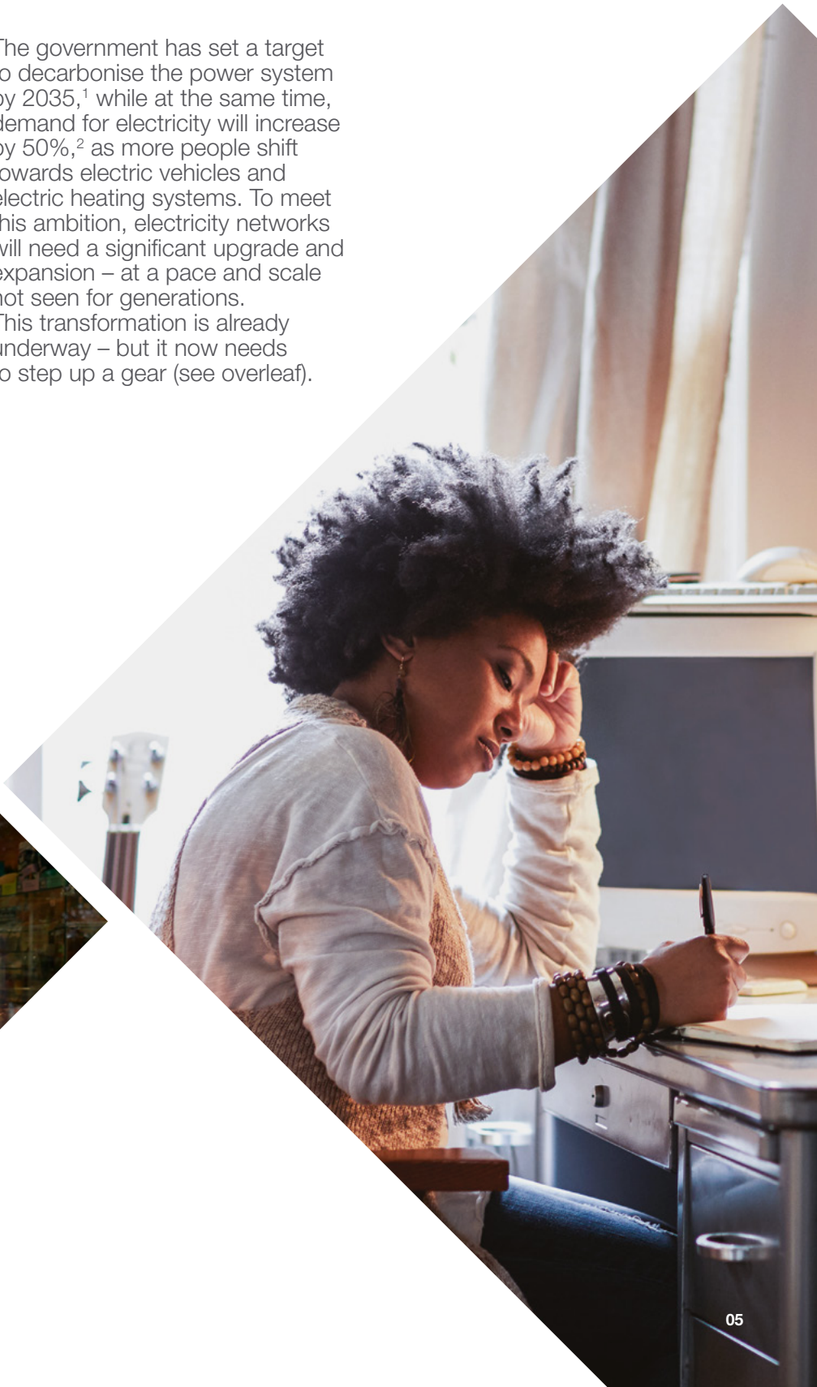
The government has set a target to decarbonise the power system by 2035,[1] while at the same time, demand for electricity will increase by 50%.[2]

2035 challenges and opportunities

Delivering a zero carbon power system will require a fundamental upgrade of our electricity grid.

The UK has already made extraordinary progress in the shift to clean power. But the events of the last year – notably the war in Ukraine and the global gas crisis – have shown that we need to move faster, and push further, if we are to realise our goal of having a resilient, secure and affordable zero carbon power system.

The government has set a target to decarbonise the power system by 2035,[1] while at the same time, demand for electricity will increase by 50%,[2] as more people shift towards electric vehicles and electric heating systems. To meet this ambition, electricity networks will need a significant upgrade and expansion – at a pace and scale not seen for generations. This transformation is already underway – but it now needs to step up a gear (see overleaf).



The future electricity network

To achieve the UK's 2035 power sector decarbonisation target, the amount of electricity generation connected to GB's electricity network will need to treble.[3] Significant growth is expected in:[4]

Offshore wind

4.5 to 6 times
growth in capacity

Solar

2.5 to 5 times
growth in capacity

Interconnectors

2.5 to 3 times
growth in capacity

Battery storage

4.5 to 10 times
growth in capacity

At the same time cross sector electrification is expected to increase total electricity demand by around 50%.[5]

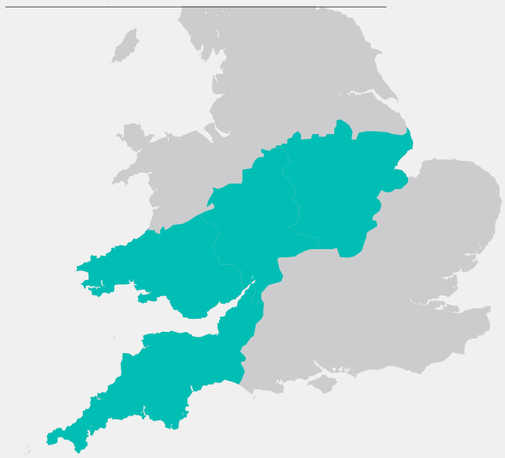
Delivery of these changes requires significant upgrades and extensions to National Grid Electricity Transmission's networks. **By 2030,** this is expected to include:[6]

Building over
5 times more
transmission overhead or underground lines than we have built in the last 30 years.

Building around
4 times more
transmission marine cables than our current offshore network.

NGED Footprint

National Grid Electricity Distribution owns and operates electricity distribution networks in the Midlands, the South West and Wales. In these regions by 2035 we expect to see the following growth:[7]



Solar and onshore wind

4 times
growth in capacity

Storage

10 times
growth in capacity

Electric vehicles

23 times
growth in numbers

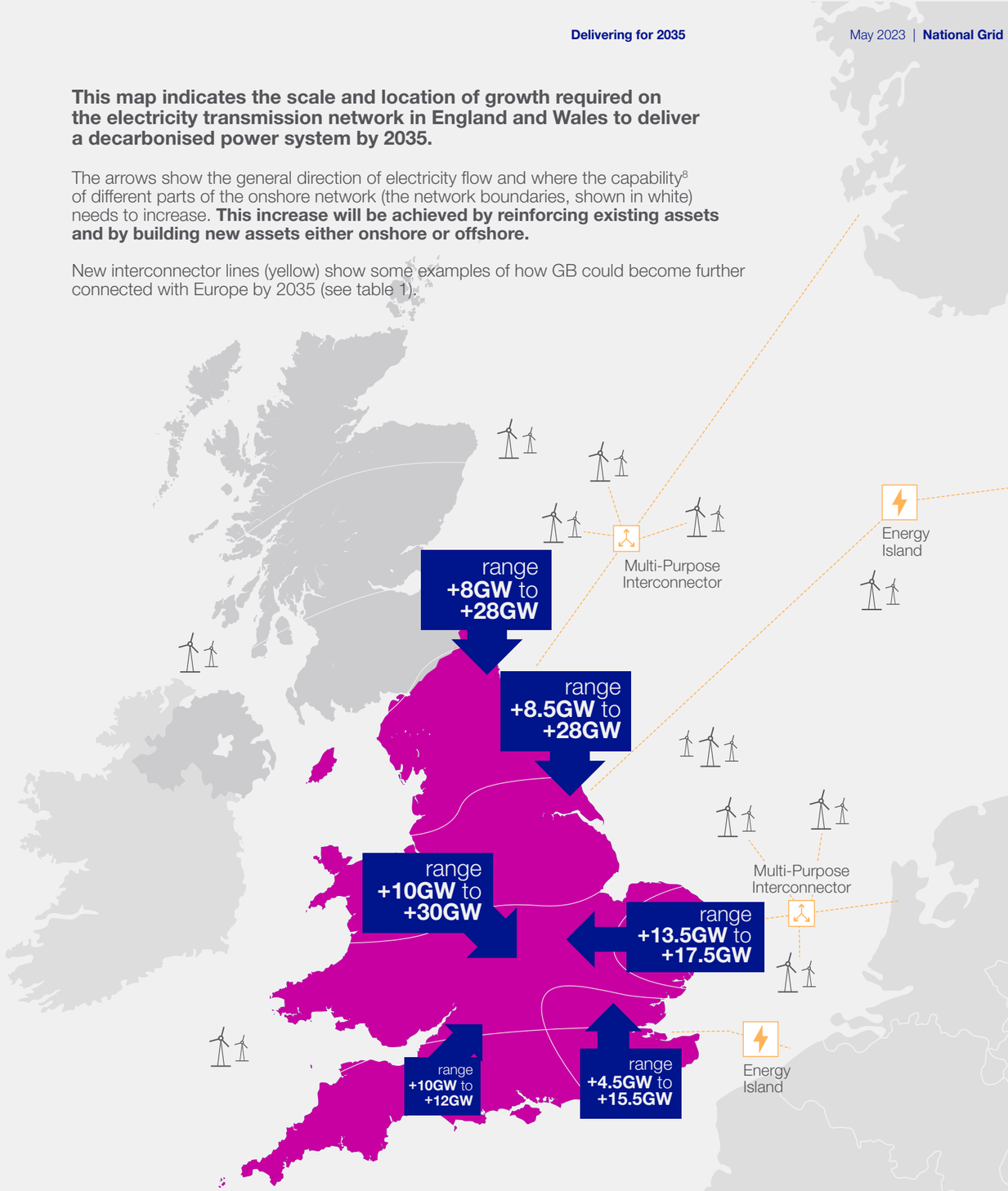
Heat pumps

13 times
growth in numbers

This map indicates the scale and location of growth required on the electricity transmission network in England and Wales to deliver a decarbonised power system by 2035.

The arrows show the general direction of electricity flow and where the capability[8] of different parts of the onshore network (the network boundaries, shown in white) needs to increase. **This increase will be achieved by reinforcing existing assets and by building new assets either onshore or offshore.**

New interconnector lines (yellow) show some examples of how GB could become further connected with Europe by 2035 (see table 1).



Notes

For simplicity only selected boundaries with significant need for a growth in capability are shown.

The arrow size is relative to the GW increase in network capability (from a 2022 baseline) required at that point on the network (the boundary).

Numbers presented show the range in network capability requirements from ETYS 2022 (as available in May 2023) assessment of the 2022 Future Energy Scenarios Leading The Way scenario and the Climate Change Committee 2023 Central scenario.

Key

- Examples of potential new National Grid Interconnectors from / to GB
- Increase in network capability required at points on the network, and direction of electricity flow. The range indicates the change associated with the 2 scenarios considered to the nearest 0.5GW
- Network boundary
- National Grid Electricity Transmission footprint

The right approach will unlock huge economic, social and environmental benefits

Reducing our reliance on global commodities will help to insulate households and businesses from future price shocks. Investment in our electricity networks could help up to 12.5m households move away from fossil fuel heating by 2035, saving them money and improving air quality.[9]

Connecting home-grown, clean energy sources will also reduce our reliance on imported gas and improve our energy security. Furthermore, greater interconnection with Europe will mean Britain's electricity exports could increase ten-fold by 2035,[10] supporting the government's ambition to be a net energy exporter.

And building a network fit for the future will turbo-charge our economy. Investments in Great Britain's electricity networks will contribute an average of £18.4bn to GDP and support over 220,000 jobs each year between 2024 and 2035.[11]

To achieve this vision, we need a step-change in delivery

Transformation at this scale and pace will require everyone – industry, government and the regulator – to think and act differently.

While the UK has the talent and ambition, we are held back by several challenges. We have complex and outdated planning and regulatory structures. We lack capacity – both in skills and supply chain – to deliver at the pace and scale required. And, collectively, we need to better communicate the benefits and trade-offs of the clean energy transition with consumers and communities.

Critically, there is no time to waste. The UK is not alone in the clean energy race, with the Inflation Reduction Act driving action in the US, and the EU's Net Zero Industry Act having a similar effect. While the UK does not need to compete in a drive to provide scarce public resources to fund major infrastructure, it should look to maintain its competitive advantage in designing and implementing policy and regulatory frameworks that attract and galvanise the private investment needed to deliver at an unprecedented scale and pace.

Much has already been done, including the government's recent Powering Up Britain strategy, as well as establishing a Networks Commissioner to accelerate grid investment. Achieving the 2035 target will require going beyond incremental improvements – we need a transformative change in approach.

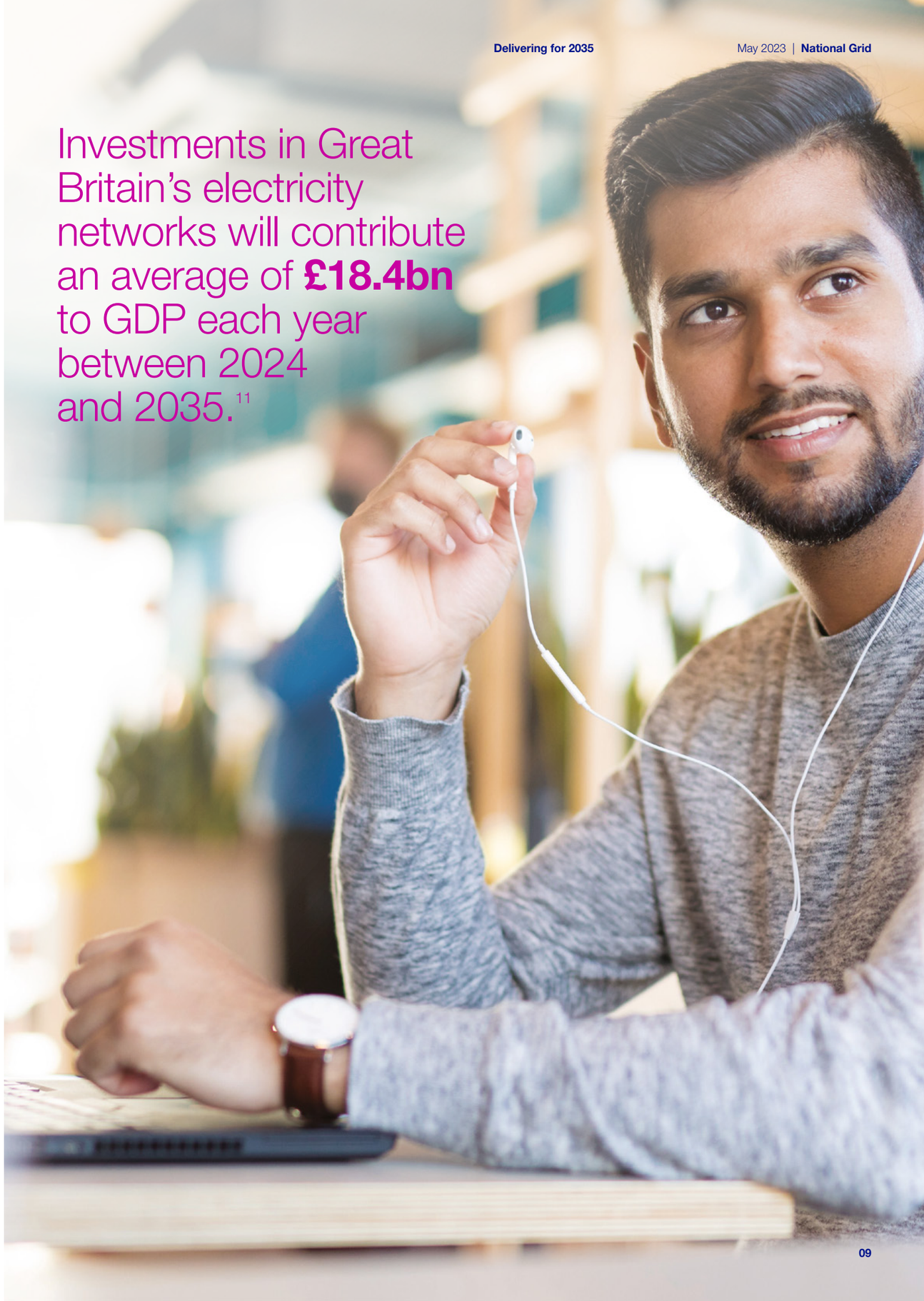
The following sections set out the **five priority areas** where action is needed to transform the grid.

Table 1

Action in progress: Maximising the North Sea opportunity through Multi-Purpose Interconnectors

In addition to owning and operating electricity interconnectors between Great Britain and mainland Europe, National Grid Ventures is working with partners to deliver a new generation of Multi-Purpose Interconnectors which could link offshore wind farms via interconnectors between the UK and Belgium (Nautilus)[12] and the Netherlands (Lionlink).[13] This coordinated approach maximises the benefits of offshore wind and interconnection for UK consumers.

To build complex offshore infrastructure requires compatible regulation, cooperation on maritime spatial planning and the enabling of cross-border projects. We therefore welcome government's support for effective collaboration with European partners through the UK's Memorandum Of Understanding with the North Seas Energy Cooperation platform,[14] and the UK's signature of the Ostend declaration at the North Sea Summit.[15]



01

Reform the planning system, centred around a strategic clean energy vision

Securing planning permission is currently a major blocker to accelerating our clean energy transition. While action is already being taken to speed up planning decisions on major infrastructure projects, this needs to go further.

Crucially, the planning framework must take a more strategic and holistic approach in order to balance the urgency with which investment is needed with the voice and interests of local communities.

Key actions needed:

1. As an immediate step, finalise the National Policy Statements by the summer, ensuring they provide clarity and certainty to support urgent delivery of net zero infrastructure

Whilst we welcome the recent government consultation on the redraft of the National Policy Statements (NPS), a clearer, sharper approach is needed to deliver an effective suite of NPS. The NPS must provide greater clarity and authority on the need, pace and urgency of energy related Nationally Significant Infrastructure Projects (NSIPs). This must include explicit recognition of the critical urgency of enhancing, reinforcing, and extending the transmission network to connect new generation with a presumption in favour of the need for projects that enable the delivery of net zero targets. The NPS must also be clear on the tests which will be applied to individual projects, and must ensure that the consenting process is proportionate by removing unnecessary complexity.

2. Streamline the current consenting process for major energy projects, including through shortened decision timescales and alignment with the regulatory regime

The current Development Consent Order (DCO) process for NSIPs provides a robust route to approve major projects, however there are some opportunities for streamlining in the near-term. For example, the DCO examination, reporting and decision timescales could be shortened by providing guidance to focus examinations on pertinent issues and the intention for the preliminary meeting to start around three months following acceptance.

To support greater efficiency in approvals, opportunities also exist to align the regulatory and planning regime, which could include introducing Ofgem as an active consultee to the planning and consents process. There is also scope for more consents to be 'wrapped up' into a single DCO to save applying for them separately. In addition, an increase in resource and capability is required in planning bodies and statutory consultees, including through appointing specialist advisers, to improve the examination process.

3. Establish a 'Strategic Spatial Energy Plan' by 2025 that sets out what needs to be built, where, and when

While short-term improvements to the consenting process will be helpful, ultimately we need to move towards a much more strategic and holistic approach towards deciding what energy infrastructure the country needs, and embedding this within the planning framework.

Recent changes to plan network capacity in a more strategic way are welcome, notably the publication in July 2022 of a network 'blueprint' in the form of a Holistic Network Design (HND)[16] followed by Ofgem's approval in December 2022 of 17 of the projects within the HND as part of its Accelerated Strategic Transmission Investment (ASTI) programme.[17] It is critical that these projects are 'locked in' and progressed at pace.

However, a key limitation of the HND is that it has no formal role in the planning and consenting framework, and is relatively narrow in scope, focused on the network projects to support the government's ambition to deliver 50GW of offshore wind by 2030. Looking towards the 2035 decarbonisation target and beyond, we need to evolve this approach through the creation of a 'Strategic Spatial Energy Plan', which provides an authoritative evidence base for the key clean energy projects – both networks and beyond (for example the location of hydrogen and offshore wind) – that are needed to deliver our 2035 and 2050 targets.

A 'Strategic Spatial Energy Plan' would ultimately be owned by the government (with a Future System Operator[18] leading the technical work), have full weight in planning law, and be endorsed in national and local planning policy. As such, it should be established through a collaborative and consultative process, including formalised input from industry and local and regional authorities through alignment with new Regional System Plans and Local Area Energy Plans (see section 4). Work should start now by agreeing scope, creating national consensus and building capabilities in key organisations to ensure the first plan can be in place by 2025.

By 2030 we need to build **over 5 times more** new transmission lines (overhead or underground) than we've built in the **last 30 years.**[6]

02

Ensure the regulatory and governance framework is set up for delivery

The way in which our energy system is governed and regulated was designed for a world of stability – where the main objective was to maintain our existing networks – not for a world in which such fundamental change is required.

Ofgem and government have made a welcome move towards a more strategic approach to the governance and regulation of our energy networks, which we now need to build upon, looking at wider reform that will deliver the pace and scale required to hit net zero whilst creating and maintaining resilience for the long-term.

Key actions needed:

1. Review the current suite of regulators' objectives and duties and clarify roles and responsibilities across the institutions accountable for the energy transition

Introducing a new, independent Future System Operator to deliver a strategic planning function across the energy system is a welcome step, and represents an opportunity to ensure objectives, roles and responsibilities are clear – for individual institutions and how they should interact – and reflect the priority of delivering net zero.

Government has made an important commitment to reviewing regulators' duties and to publishing a Strategy and Policy Statement (SPS) for Ofgem and the Future System Operator. It is important that the SPS ensures alignment between the regulatory and strategic planning framework and government's overall policy direction, including the delivery of the net zero transition whilst creating and maintaining resilience. Strengthening Ofgem's statutory duties to explicitly support the delivery of net zero and resilience would also help ensure that it gives full consideration to the need to serve both current and future consumers. In addition, given the increasing interfaces and co-dependencies between regulated and Critical National Infrastructure (CNI) sectors there is a growing need for cross-regulator collaboration, especially in the utilities sector, and consideration should be given to how this could best be achieved.

2. Fully embed anticipatory investment and resilience into the regulatory framework, ensuring it attracts the private capital to deliver the scale of network investment required

The current approach to network regulation, which has focused on short-term costs and progressing investment only once a firm need is identified in periodic price control decisions, means delivery of network infrastructure trails behind connection requests. A new approach is needed where Ofgem approves the need for investment on a rolling basis and in an agile way so networks can begin upgrading the system. This will ensure network capacity does not become an obstacle to timely connection of new generation and demand, minimising the cost to consumers from network constraints. In addition, the new regulatory framework needs to ensure investment can be made not just to meet immediate firm needs, but to support what we know will be needed in the future, where demand is expected to increase and the energy system must withstand the new extremes that climate change delivers. Ofgem's ASTI model (as noted above), which approved future-looking network expansion outside of the existing regulatory cycle, provides a good basis for developing these approaches in both transmission and distribution networks. Moreover, the framework will also need the right combination of risk and return to attract the unprecedented level of investment required and ensure that strategic projects can be approved and funded in a programmatic way, allowing earlier supply chain engagement and commitment.

3. Maintain pace in introducing a competitive market for major transmission network capacity

Given the significant levels of investment required in the UK's electricity network infrastructure in the coming decade and beyond, there is a real opportunity to broaden the approach for delivering these new projects. The introduction of network competition through the Energy Bill is welcome and, where applied appropriately, can deliver real consumer benefits by driving innovation and downward pressure on costs. The government and Ofgem must continue to maintain pace in establishing the framework for competition in order to support the delivery of projects out to 2035 and beyond.

Importantly, once the need for a project has been established, providing early clarity on which projects or programmes will go out to competition will be critical to ensuring timely delivery and securing maximum consumer benefit, by enabling both early supply chain engagement and design innovation opportunities.

03

Transform how clean energy connects to the grid, accelerating net zero projects

Connecting clean energy to the grid is critical to the net zero transition. However, due to the outdated connections framework and unprecedented growth in demand, the pipeline of future connections is heavily oversubscribed and the backlog is increasing.

Change is already underway. The Electricity System Operator (ESO) recently published a five-point plan for reform,[19] the Energy Networks Association has produced a connections action plan[20] and National Grid is taking action to improve the processes at a national and local level (see Table 2 and Table 3). But more fundamental reform is needed to deliver a quicker and more coordinated approach to connecting clean energy to the grid.

Key actions needed:

1. Shift from a 'first come, first served' to 'connect or move' connections process

Low barriers to entry, coupled with a 'first come, first served' process, mean there are incentives for projects to secure their place in the connections pipeline regardless of the maturity of their project – potentially delaying more viable projects from connecting at an earlier date. As we look towards an enduring regime for connecting to the grid, this could be addressed through creating tighter thresholds for those applying for connections, and ensuring that where a project cannot connect, they move out of the pipeline, so as not to block or delay other projects.

2. Develop strategic 'capacity hubs', enabling a more coordinated and innovative approach to connections

Currently, the connections process is demand-led, meaning clean energy projects choose their connection location, while the regulatory framework ensures that the associated works to reinforce the grid only start when a specific customer need is contracted. However, there is an opportunity to take a more strategic approach, whereby capacity needs are identified through a spatial plan (as noted above) and new projects are required to connect in line with the available capacity within these zones, with infrastructure designed and delivered ahead of this need. Capacity hubs should also recognise the collective needs of communities and customers, and allow these to be met with innovation and emerging products, business models or partnerships, rather than being limited by rules or codes.

3. Create a fast-track connection route for critical net zero projects, prioritising those areas where the economic value could be greatest

A new connections framework should also recognise that some projects are strategically important to meeting net zero, or deliver broader economic value. A fast-track route should therefore be developed to ensure these can connect to the grid in a timely manner in order to maximise these benefits. This would require clear and transparent criteria, potentially aligned with the government's sector deals, for projects to qualify.

Table 2

Action in progress: Transmission connection reform National Grid Electricity Transmission is delivering two major connection reforms with Ofgem and the ESO:
1. **Transmission Entry Capacity (TEC) Amnesty** encourages generation customers to retract their application to connect by reducing penalties they would typically receive.
2. **Two-stage offer** gives NGET the window of opportunity to optimise the pipeline and tackle wider reform. It manages additional connection requests in a new way to avoid them being layered on top of a largely speculative pipeline of contracted connections.

In addition, we are developing a new **'plug and play' product**. This involves the development of a connection socket of the future that can be built in advance, added with less outage time, and flexibly used for developers seeking to connect.

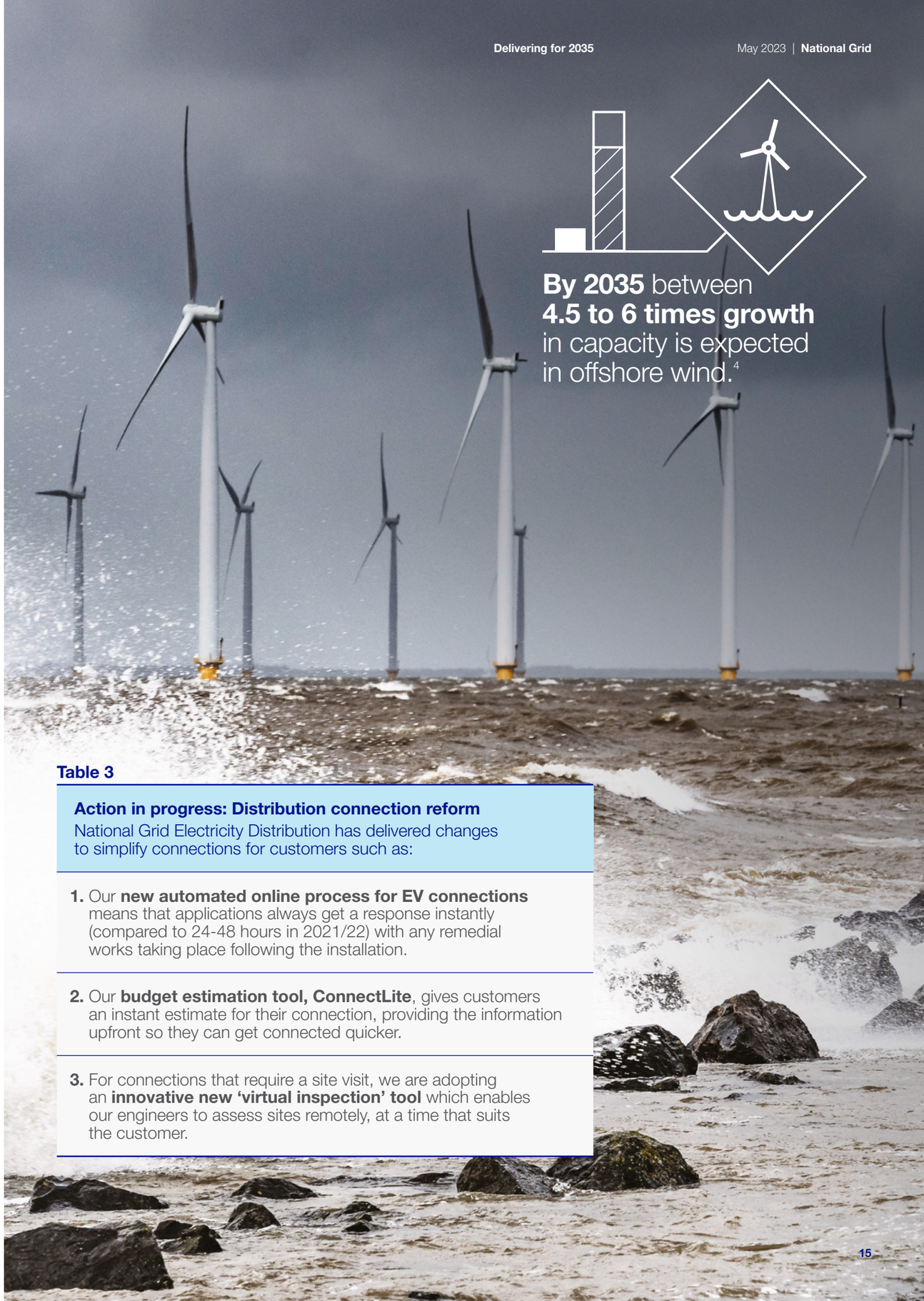


Table 3

Action in progress: Distribution connection reform National Grid Electricity Distribution has delivered changes to simplify connections for customers such as:
1. Our **new automated online process for EV connections** means that applications always get a response instantly (compared to 24-48 hours in 2021/22) with any remedial works taking place following the installation.
2. Our **budget estimation tool, ConnectLite**, gives customers an instant estimate for their connection, providing the information upfront so they can get connected quicker.
3. For connections that require a site visit, we are adopting an **innovative new 'virtual inspection' tool** which enables our engineers to assess sites remotely, at a time that suits the customer.

04

Put communities and consumers at the forefront of the transition

To maintain popular support for the net zero transition, and drive towards affordability over the longer-term, it is critical that consumers and communities understand the rationale for change, can engage in the process and see its benefits. At the same time, it is essential that the most vulnerable in society are protected.

National Grid Electricity Distribution is **working with 121 local authorities** to support the development of their Local Area Energy Plans.

Key actions needed:

1. Deliver a consistent community benefits framework that ensures local people secure real value for hosting critical net zero infrastructure

There is a need to establish an ambitious community benefit framework which is embedded into policy and regulation to bring greater clarity and consistency and ensure that communities can see the tangible benefit that infrastructure can bring. The government's consultation on community benefit packages is a welcome step.

It is important to ensure the framework provides flexibility and helps facilitate local decision making, ensuring community benefit offerings can be tailored and adapted to local need. It should allow developers to work in consultation with local communities and regional stakeholders to deliver enduring benefits, such as environmental enhancements, skills development initiatives or support for local projects.

2. Progress the development of new Regional System Planners to unlock local net zero infrastructure

Local authorities play a crucial role in the planning and delivery of low carbon infrastructure that serves local communities, such as EV charging, heat networks and grid reinforcement. We need to ensure that local areas have the right resources and expert guidance available to help them define and deliver their Local Area Energy Plans (see Table 4 on how National Grid is supporting LAEPs).

We support the development of Regional System Planners (RSPs) which have an important role in the creation of a whole system energy plan. We think this should be achieved through a federated model with strong, well-resourced locally based RSPs sitting within the FSO. The RSPs should be able to develop regional plans across energy vectors through a collaborative and consultative process, including formalised input from industry and local and regional authorities. These plans should then form the basis of the local and regional investment plans underlining network price controls.

Table 4

Action in progress: National Grid's support for Local Area Energy Planning
With a network that spans 25% of the UK, National Grid Electricity Distribution is working with 121 local authorities across diverse rural and urban areas, providing bespoke support and guidance to regional stakeholder groups in the development of their Local Area Energy Plans (LAEP). Our approach incorporates forecasting and planning as well as local investment workshops, offering regional face-to-face surgeries for local authorities to discuss their plans in detail with the teams responsible for the planning, decision-making and delivery of our investment.

3. Drive forward demand flexibility through retail market reform, while ensuring vulnerable households are protected through the development of a social tariff

Demand flexibility is a cheaper alternative to network reinforcement, helping to reduce costs and improve energy security at a system-wide level, while also supporting cost savings for individual households. Given its importance in a 2035 system (alongside other flexibility options), government should accelerate and prioritise retail market reforms to unlock this opportunity, including the building blocks underpinning this: such as completing the smart meter rollout and setting a backstop date for all suppliers to opt-in to half hourly settlement.

In addition, as government considers its long-term approach to the affordability of energy, it should ensure that the most vulnerable in society are protected. A social tariff is a sensible option to provide this targeted support, and should be developed at pace ahead of the coming winter.

By 2035 we expect to see **23 times more electric vehicles** and **13 times more heat pumps** on our distribution network than we have today.[21]

05

Develop supply chain capacity and a skills pipeline across the country

Demand and competition for net zero products and services – including the cables and transformers needed to expand the grid – has grown rapidly as countries push to meet their respective decarbonisation targets. This has intensified further with the introduction of the Inflation Reduction Act in the US and Net Zero Industry Act in the EU.

This comes at the same time as the sector faces a significant skills challenge, with increasing demand, a loss of existing talent, competition with other sectors, a lack of diversity and a diminishing pipeline of people taking up STEM subjects. We now need to do things differently, creating a new approach to capturing more of the value of the clean energy transition domestically, and delivering a jobs and skills revolution up and down the country.

Key actions needed:

1. Enable a shift towards a more collaborative and flexible approach to securing supply chain capacity needed to deliver clean energy projects

Accelerating delivery of infrastructure requires a different approach to supply chain development and engagement, including a need to collaborate, cooperate and create greater standardisation to drive efficiency. Therefore, supply chain issues should form part of the North Seas Energy Co-operation platform[22] and procurement and technical standards should be standardised across UK and European networks (e.g. through inclusion of the UK in the InterOPERA project to define future interoperability standards for offshore electricity grids).

Flexibility is also needed within the UK procurement framework to ensure that it enables delivery at pace while driving value for money. We support the government's overarching procurement principles, however the current Utility Contract Regulations and proposals included in the Procurement Bill create additional and unnecessary bureaucracy for utilities that risk reducing both the value to energy bill payers and speed at which we are able to deliver much-needed network infrastructure. As such, action should be taken to ensure that network companies have the ability, where it involves net zero energy infrastructure and where they can demonstrate public interest, to directly award contracts outside of the procurement framework.

Investments in Great Britain's electricity networks will support an average of over **220,000 jobs each year between 2024 and 2035**[11].

2. Deliver a targeted package of incentives to attract potential clean energy manufacturers and training providers to locate and expand sites in the UK

Given the volume of build needed in networks alone, there is a significant opportunity to develop some of the associated manufacturing capability in the UK. While the key factor in determining this will be long-term order book commitments, action could be taken to ensure the UK is an attractive place to invest.

Aligned to the Investment Zone programme announced in the Spring Budget, and building on the approach government has already taken with Special Economic Zones like Freeports and Development Corporation Areas, targeted measures such as Business Rates relief, Enhanced Capital Allowances, Enhanced Structures and Building Allowance, streamlined permitting and enhancements to permitted development rights would be a significant incentive for manufacturers and innovators to invest. Similar fiscal incentives could also apply to technical training centres equivalent to an Ofsted grade 1 or 2, to encourage quality providers to expand their facilities commercially, in support of greater cross-industry training for future needs.

3. Publish an annual net zero energy workforce report and ensure the educational and training system is equipped to inspire a pipeline of future talent

Inspiring talent from a diverse range of backgrounds will be critical to ensuring we will have the people power required to deliver the clean energy transition into the future, and National Grid is committed to playing its part (see Table 5).

In order to identify the most effective interventions in pursuit of creating green jobs, the joint-ministerial Green Jobs Delivery Group[23] should be tasked with producing an annual report into the state of the net zero energy workforce, which should include clear and transparent data on UK demand for and supply of energy roles, as well as skills gaps. This report should build on the mapping work of Local Skills Improvement Plans (LSIPs), which have a mandate to consider climate and environmental targets, and should support the Delivery Group's promised Net Zero and Nature Workforce Plan, by helping to identify areas for action that need to be taken by government, businesses, and education/training providers, both nationally and locally.

Alongside this, the Department for Education should conduct an in-depth review of the curriculum to ensure net zero is embedded across relevant subjects at all ages, as well as taking action to upskill the teaching workforce through targeted Continual Professional Development (CPD) and grant funding for teachers, with a focus on net zero and STEM subjects.

Table 5

Action in progress: Grid for Good

National Grid plays a vital role in training the engineers and technicians that will be on the front line of delivering the net zero infrastructure the UK requires.

Our Responsible Business Charter includes a commitment to developing skills for the future, with a focus on lower income communities, by providing access to skills development for 45,000 people by 2030 and achieving 500,000 employee volunteering hours by 2030.

To support this commitment, we established Grid for Good,[24] an energy industry community programme led by National Grid to support young people aged 16-25. The programme, which includes 12-week career mentoring, two weeks work experience, access to apprenticeships and internships at National Grid, work readiness training, networking and industry taster sessions, has already supported over 4,200 people.

About National Grid

National Grid is an energy company operating in the UK and US. We deliver electricity and gas safely, reliably and efficiently to the customers and communities we serve.

National Grid Group's operations in the UK include: National Grid Electricity Transmission (NGET), which owns the high voltage transmission system in England and Wales; National Grid Electricity Distribution (formerly Western Power Distribution), which owns and operates electricity distribution networks in the Midlands, the South West and Wales; National Grid Ventures (NGV), which owns and operates energy businesses in competitive markets, including sub-sea electricity interconnectors; and National Grid Electricity System Operator (NGESO), a legally separate business within National Grid Group which balances the supply and demand of electricity in real time across Great Britain.

References and sources

[1] As outlined in Net Zero Strategy: Build Back Greener, October 2021, government committed to "fully decarbonise our power system by 2035, subject to security of supply"

[2] Climate Change Committee CCC's Balanced Pathway for the Sixth Carbon Budget

[3] 2022 Future Energy Scenarios Leading The Way scenario; Total capacity connected

[4] Numbers presented show the range in connected capacity from the 2022 Future Energy Scenarios Leading The Way scenario and the Climate Change Committee 2023 Central scenario

[5] Climate Change Committee CCC's Balanced Pathway for the Sixth Carbon Budget

[6] National Grid analysis based on an assessment of likely transmission asset installation required to deliver the projects in England and Wales identified in the Holistic Network Design under the Accelerated Strategic Transmission Investment (ASTI) framework

[7] Best view' scenario from DFES – Dataset – National Grid's Connected Data Portal

[8] Boundary capability: the maximum flow that can be transferred across a boundary while maintaining compliance with the National Electricity Transmission System Security and Quality of Supply Standard

[9] National Grid analysis, Market Analytics Net Zero Scenario. The Market Analytics Net Zero scenario assumes economy wide carbon neutrality by 2050, and power sector decarbonisation by 2035. A hybrid approach to electricity and hydrogen is assumed, with a variety of solutions being advanced simultaneously.

[10] National Grid analysis, Market Analytics Net Zero Scenario.

[11] Oxford Economics, GB Networks Investment Impact Analysis, May 2023

[12] About Nautilus | National Grid Group https://www.nationalgrid.com/national-grid-ventures/interconnectors-connecting-cleaner-future/nautilus-interconnector

[13] LionLink | National Grid Group https://www.nationalgrid.com/national-grid-ventures/future-developments/lionlink

[14] NSEC-UK Memorandum of Understanding (europa.eu), December 2022 https://energy.ec.europa.eu/publications/nsec-uk-memorandum-understanding_en

[15] North Sea Summit, April 2023 ostend-declaration-energy-ministers-north-seas-europes-green-power-plant.pdf (bmwk.de)

[16] The Holistic Network Design provides a recommended onshore and offshore design for a 2030 network that can facilitate the UK government ambition for 50GW of offshore wind in Great Britain by 2030. The Pathway to 2030 Holistic Network Design | ESO (nationalgrideso.com), July 2022

[17] Decision on accelerating onshore electricity transmission investment | Ofgem

[18] The current Energy Bill, which is before Parliament, sets out proposals for the Electricity System Operator, which is currently a legally separate entity owned by National Grid plc., to form the basis of an Independent System Operator and Planner or 'Future System Operator', which will involve a divestment process. Energy Bill - Parliamentary Bills - UK Parliament.

[19] Connections challenges: what are we doing now? | ESO (nationalgrideso.com)

[20] Improving and accelerating customer connections – Energy Networks Association (ENA)

[21] Best view' scenario from DFES – Dataset – National Grid's Connected Data Portal

[22] The North Seas Energy Cooperation (europa.eu) and NSEC-UK Memorandum of Understanding (europa.eu)

[23] Green jobs delivery steps up a gear - GOV.UK (www.gov.uk)

[24] Grid for Good

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Registered in England and Wales No. 4031152

nationalgrid.com

May 2023. Simplify/DH/NQ

Foreword from the Prime Minister

The natural environment of these islands has shaped who we are. It is the soil from which our country grew, it provides the food, clean air, and clean water that sustains us, and it remains a constant source of pride, joy and solace for millions. Protecting that environment is an unequivocal moral good, but it is also fundamental to our health and prosperity.

This government is committed to leaving the environment in a better state than we found it. Five years ago my predecessor the Rt Hon Theresa May MP published the 25 Year Environment Plan to improve the health of the natural world. Since then, we have made huge progress, and we are going further and faster now that control of important areas of environment policy has returned to the UK.

We have created or restored wildlife habitats the size of Dorset and established marine protected areas across 35,000 square miles of English waters. We have passed the Environment Act through which we set world leading, long-term targets to restore nature, clean up our waters and tackle pollution. We have replaced the EU's bureaucratic Common Agricultural Policy with a new system to reward farmers for their stewardship of our countryside. This includes new incentives to manage hedgerows for wildlife, plant nectar-rich wildflowers and manage pests without the use of insecticides. As Chancellor I was proud to launch the Nature for Climate Fund, putting £750 million towards tree planting and peatland restoration, and the £1bn Net Zero Innovation Fund and launching sovereign green savings bonds.

We have also driven action on the international stage. At COP26 in Glasgow, more than 140 countries which are home to over 90 per cent of the world's forests made a historic promise to halt and reverse forest loss and land degradation by the end of this decade. And we played a leading role in striking a new global deal for nature at the UN Nature Summit, COP15, in December last year, making the case that restoring the natural world is vital in achieving net zero.

This new Environmental Improvement Plan sets out how we will drive this work forward with renewed ambition. It is a blueprint not just to halt the decline of nature in our country, but to reverse it – changing the trajectory that the country has been on ever since the industrial revolution.

pklaentschi@outlook.com

From: Atkins, Steve <steve.atkins@sse.com>
Sent: 01 December 2021 14:48
To: Paula Klaentschi
Cc: Lundi, Ruth; Arnold, Richard
Subject: RE: [EXTERNAL] Dorset Constraints on electricity network

Hi Paula,

Yes I'm aware of the report – I put Dorset LEP in touch with Regen on the basis of work they have carried out for us in the past.

Dorset does have a number of grid constraints that will need to be addressed to support new generation and an increase in low carbon technologies. Under the existing regulatory price control structure networks have been unable to address these constraints ahead of need because of the risk of spending customer money on what could become stranded assets. Reinforcements are only undertaken once a customer triggers them through applying for a new connection. Having said that, when we make improvements to the network we do forecast future load growth and ensure we take the opportunity to cater for that as part of the reinforcement. The work that Regen carries out for us is key to informing those decisions.

In the next price control (ED2 – 2023/28) the regulatory approach is changing to accommodate strategic investment and we have recently published our ED2 Business Plan which details our plans to spend almost £4bn in that period on improving the network to facilitate net zero - Home - SSENFuture.

The flexibility that low carbon technologies offer will play a critical role in helping balance growing electrical demand (EVs, Heat Pumps, Electrolysis etc.) and intermittent generation peaks ensuring we only reinforce the network when absolutely necessary.

Once you have had a chance to view the plan if you have any questions please contact our dedicated RIIO-ED2 stakeholder team directly by emailing YourED2Plan@sse.com . Any queries may well come back through to myself but it ensures we direct it to the correct person and we record it as part of our formal input.

Regards

Steve Atkins
DSO Transition Manager (Future Networks)
Scottish and Southern Electricity Networks
M: 0750 091 2637
T: 0173 834 0972
ssen.co.uk/SmarterElectricity/
@ssen_fn

Scottish & Southern Electricity Networks

PRINCIPAL PARTNER SSE
UN CLIMATE CHANGE CONFERENCE UK 2021
IN PARTNERSHIP WITH ITALY

From: Paula Klaentschi <paula@klaentschi.co.uk>
Sent: 30 November 2021 14:47
To: Atkins, Steve <steve.atkins@sse.com>
Subject: [EXTERNAL] Dorset Constraints on electricity network

WARNING: this email has originated from outside of the SSE Group. Please treat any links or attachments with caution.

Hi Steve

I have been cc'ing you in to my search for information thus far.

Today I was provided with the document that was referred to in the Dorset Council Place and Resources Committee – pg 1: "The key challenge for the LEP and councils will be to help develop the right infrastructure to support the area's energy potential. Dorset currently faces almost universal electrical network constraints which need to be addressed urgently to avoid impacting both the speed of decarbonisation and associated green growth economy."

The opposite is projected by Ofgem to the public - **What are flexibility services? Be more beaver - from Energy Networks Association** https://www.youtube.com/watch?v=vqTq-eC4mEQ&t=1s

Is this true and what will change moving forward? As the person at the top can you please direct me to the answers please?

Kind regards

Paula Klaentschi

39 Old Castle Road
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07729312156

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Scottish and Southern Electricity Networks is a trading name of: Scottish and Southern Energy Power Distribution

EXECUTIVE SUMMARY

POWERING COMMUNITIES TO NET ZERO

Our Business Plan for RIIO-ED2 2023-2028

Scottish & Southern Electricity Networks

PRINCIPAL PARTNER SSE
UN CLIMATE CHANGE CONFERENCE UK 2021
IN PARTNERSHIP WITH ITALY

ABOUT US

We are the electricity Distribution Network Operator (DNO) responsible for delivering power to 3.8 million homes and businesses across central southern England and the north of Scotland. We serve some of the most diverse and unique geographies across the UK, and keep customers and communities connected whilst developing the flexible electricity network vital to achieving net zero.

Our network serves some of the UK's most remote communities and also some of the most densely populated. Our two networks cover the greatest land mass of any of the UK's DNOs, covering 72 local authority areas and 75,000km^2 of extremely diverse terrain.

Our 130,000km of overhead lines and underground cables, and 106,000 substations, are managed by more than 3,700 direct employees including skilled engineers, customer service teams and future energy experts, many of whom live and work in the communities they serve.

By enabling a smarter, more resilient electricity network, we're ensuring local communities from west London to Aberdeen continue to receive the reliable power they need. The five years from 2023 will be transformative for the UK's energy sector, and we're committing to an ambitious work programme that will deliver real and valued benefits during and beyond RIIO-ED2.

Over 3.8 million homes and businesses served by our networks

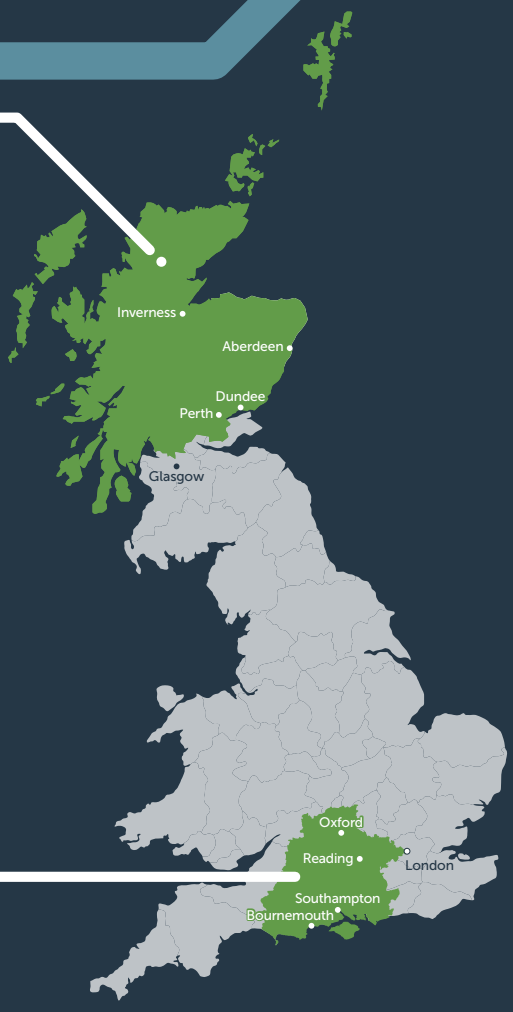
Over 3,700 employees across the country

More than 770,000 customers on our Priority Services Register

130,000km of overhead lines and underground cables

106,000 substations

100+ subsea cables powering island communities



Scottish Hydro Electric Power Distribution (SHEPD)

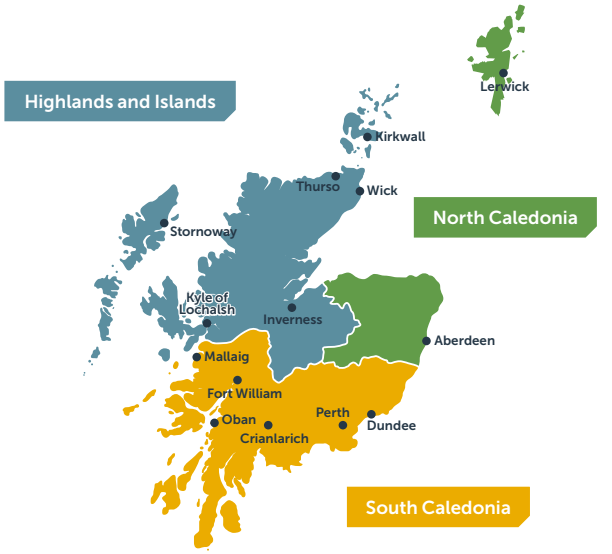
The electricity distribution network in the north of Scotland covers a quarter of the UK landmass, powering over 780,000 homes and businesses across 13 local authority areas.

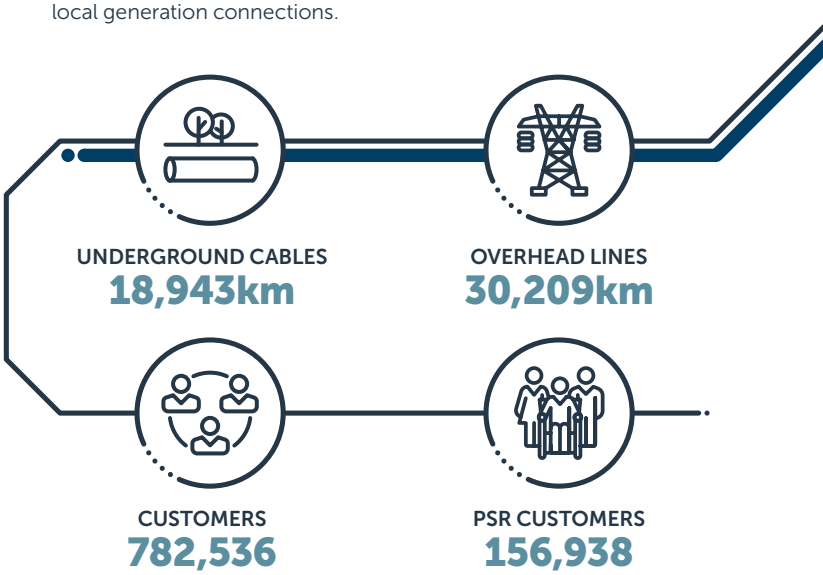
The licence area stretches northwards from Loch Lomond and Dundee up to Orkney and the Shetland Islands. It is a unique region, containing the farthest western and northern mainland points in Great Britain.

Across this region we power towns and cities including Aberdeen, Dundee, Inverness and Perth alongside remote and rural locations spanning the length and breadth of northern Scotland. The rural areas we serve see our teams working in some of the most challenging terrains and conditions in the UK.

Many of our customers and communities are affected by fuel poverty, with 28.3% considered to be fuel poor. Collaborative partnerships with Citizens Advice Scotland, Home Energy Scotland, Warmworks and local charities help us to find new ways to support our customers affected by this issue.

As our communities strive to meet their net zero ambitions, we're also preparing our network to accommodate the uptake of low carbon technologies across the region and significant increase in local generation connections.





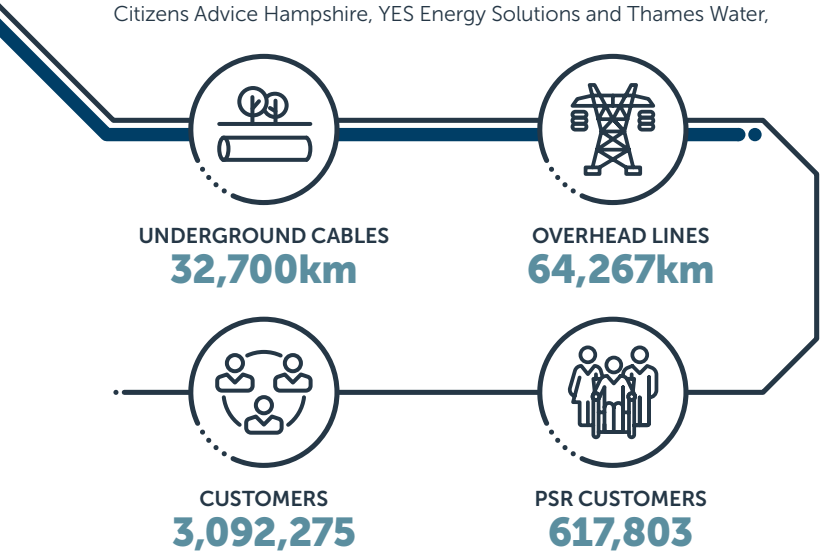
Southern Electric Power Distribution (SEPD)

The central southern England electricity distribution licence area covers cities including Oxford, Swindon and Southampton, as well as national parks and rural areas, such as the South Downs, New Forest, Chiltern Hills and parts of the Cotswolds.

Over 7 million people live and work in our southern distribution network area, which serves 3.1m homes and businesses, across 67 local authority areas. This region has the most significant tree cover per km of any DNO region and as a result, a focus on tree management and maintenance is critical to ensure security of supply to our communities.

SEPD is a culturally diverse area with over 150 different languages spoken. We proactively collaborate with third parties such as Citizens Advice Hampshire, YES Energy Solutions and Thames Water, to ensure that our customers have access to free energy advice and support and ensure that our 617,000 Priority Service Register customers have extra help and tailored assistance.

Low carbon technology adoption is already underway and increasing rapidly across the region, so we're preparing our network, flexibility strategy and customer service approach to support a significant increase in electric vehicles and heat pump installations.



AN AMBITIOUS AND BALANCED PLAN TO POWER COMMUNITIES TO NET ZERO

A MESSAGE FROM OUR MANAGING DIRECTOR

The RIIO-ED2 price control comes at a critical juncture for our sector and for society, as the way we use, manage and even think about energy evolves and adapts.

Action to address the climate emergency is increasing in priority and pace, from the high-profile negotiations in Glasgow for COP26, to the recent publication of the UK Government's Net Zero Strategy, which provided non-negotiable timescales on the delivery of decarbonisation. With aggressive pathways now set to deliver a net zero energy system by 2035, we must prepare for a rapid acceleration of renewable and distributed energy solutions, millions of new electric vehicles on our roads, a revolution in the way we heat our homes and a radical transformation in customer behaviour.

This accelerated transition will place additional requirements on our energy systems, particularly at a local level. Distribution network operators (DNOs), like SSEN, are taking on new system operation roles to facilitate the new technologies and emerging markets that best utilise our infrastructure, all while electricity demand grows rapidly. In addition, these changes will create new customer challenges and vulnerabilities that need to be both understood and addressed. We are already at the leading edge of this system change and are determined, as the pace accelerates, to ensure that our networks are an enabler for a smart, equitable transition to net zero, rather than a constraint.

Our five-year RIIO-ED2 business plan reconciles this need for network investment to power communities to net zero while ensuring efficiency and affordability for all. In planning our flexibility and network investment to meet generation and demand needs, we have proposed baseline funding consistent with a net zero trajectory in the first two years of the price control, taking a more conservative approach in the final three years, supplemented with uncertainty mechanisms in place to adjust spend as system demand becomes clearer. We believe this approach, led by our stakeholders, is both appropriate and responsible, giving confidence to our customers and allowing our supply chain and business to efficiently prepare, while not foreclosing future changes in trajectory.

Crucially, our plan also proposes enhancements to our core services, so that we retain our clear focus on reliability and customer service while we accelerate to net zero, protecting those most vulnerable.

A strong voice for our customers and stakeholders

Over the past two years, our plan has been shaped by those who matter most; our customers and stakeholders. We have listened to over 25,000 diverse voices, seeking their views on every aspect of our plans and proposals, shaping 64 outputs, and engaging at a scale and depth far beyond anything we have conducted before.

Our plan is far richer for this engagement; from the co-design of our strategic outcomes, to exploring new trends, understanding views on future requirements, and managing the impact of Covid-19, rising energy costs, and other drivers – engagement is intrinsic within our business and has changed how we plan our network and serve our customers.

Since our draft plan, we have engaged even further, testing our proposals and inviting rigorous critique from our customers and stakeholders to ensure that our plan is both robust and ambitious in equal measure. This has added even more value and helped us be more tailored and specific in our plans with clear justification.

I'd like to extend my thanks to our Customer Engagement Group (CEG) for their role in this process. The CEG's expert scrutiny has provided real challenge and oversight to the development of our plan, often acting as a critical friend, and I look forward to their continuing role in RIIO-ED2 as we look to exceed our customers' expectations.

Six stakeholder-led goals, delivering positive impact

Our plan demonstrates our commitment to deliver better services and greater value for our customers and communities than ever before. Our six clear goals, built around our strategic outcomes and shaped by our extensive engagement, provide stretching targets across each part of our business that we will deliver by 2028.

They are consistent with our core purpose, ***powering communities to thrive today and create a net zero tomorrow***, and will be delivered through our ambitious vision – ***to power change with every connection***.

All our stakeholder-led goals, and the outputs that flow from them, are clearly set out and evidenced in our plan so that customers and stakeholders know and understand how we will deliver on their needs and, crucially, are able to track their delivery.

I am proud of the level of ambition shown in our plan, from demonstrating leadership on sustainability by becoming the first DNO to be accredited on a 1.5°C science-based target pathway, now recognised as essential in response to the climate crisis, to the extensive work to develop five Consumer Value Propositions (CVPs) that will deliver significant benefit to our society. Focused on sustainability, vulnerability, energy efficiency and whole system support, our innovative and collaborative CVPs demonstrate the areas where our customers and stakeholders have said we should go above and beyond.

An efficient and affordable plan

We recognise that to deliver the real step change required for a net zero energy system, an increase in investment is inevitable, but it is vital this expenditure is measured, timely and appropriate. Our plan proposes a total RIIO-ED2 base expenditure of £3.99bn, reduced from £4.14bn in our draft plan, and represents a 32% increase over an equivalent timeframe in RIIO-ED1. This reflects the additional requirements we must deliver for customers over the five years to 2028.

We are acutely aware that our investments are funded through consumers' bills and that it is our responsibility to always provide excellent value for money. That is why we will deliver more output for our customers and communities for less money, with no proposed increases in the distribution costs on customer bills as part of our plan[1].

This will be delivered through embedded efficiency and a proposed 0.7% year-on-year efficiency gain in RIIO-ED2, alongside changes to financial parameters that will extend the cost recovery period for assets and reduce the return available to our shareholders.

While we are confident our base plan will provide the improved network, enhanced service and progress to net zero our customers expect, we know that uncertainties remain in terms of timing and scale of demand change in the later years of the plan. We have therefore proposed nine regulatory uncertainty mechanisms to help protect customers and provide the necessary flexibility, both upwards and downwards, as positions and policy evolves.

Supporting a just and fair transition

We fully understand the challenge ahead, but success in reaching net zero will only be truly achieved if we make it a reality for all our customers. Enabling net zero only for the few, for the early adopters, for the socially mobile and for big business is not an acceptable outcome.

Our plan therefore includes significant actions to actively promote inclusive service provision across our networks and protect our most vulnerable customers, particularly important at a time of rising energy prices. We want our plan to support sustainable growth of the economy, help consumers participate in the energy transition and create opportunities for people from all communities.

This includes building and developing the workforce required for the challenge ahead. At SSEN, we have always been proud of our role as a responsible employer and our RIIO-ED2 plan will create over 850 skilled roles, attracting people from across our regions, including those reskilling from other industries, to join a purpose-led company in a growing sector.

I am excited to present our final RIIO-ED2 business plan for the five-year period from 2023-2028, and I'm confident that, through our enhanced engagement programme, we have focused our plan on the right priorities and have appropriately balanced the need to tackle the climate emergency with the urgency it requires, while delivering an efficient value proposition for our customers.

Our mandate to power communities to net zero has never been clearer and we look forward to continued collaboration with the customers and communities we serve, as we plot the best course to make our shared vision a reality.

CHRIS BURCHELL
Managing Director
SSEN Distribution

[1] Calculated using industry standard 8-year RIIO-ED1 average and 5-year RIIO-ED2 average.

CHARACTERISTICS OF OUR PLAN

Decarbonisation will change how energy is used at a societal and individual level. This will sometimes be within our control, and in many cases it will not. Evolution in policy, regulation and consumer behaviour will impact how we invest in our network and support our communities. This includes changes in the role that we and others have in enabling new markets, facilitating connections to our network and providing flexible products and tariffs.

Our plan includes a commitment to continually engage with our customers and communities, as well as engaging with government, regulator and other interested parties across the energy system. Our business needs to be agile to respond to future developments, but we must also provide certainty to our customers, supply chain and employees. Our plan is carefully calibrated to strike this balance.

We have worked with stakeholders and customers to identify the key external drivers – economic, social, environmental and technological – that must be addressed as we develop our network, manage our organisation and serve our customers. In this final version of our plan, we have ensured that the characteristics that matter most to our customers and communities are present throughout all our investments and planned actions. The table below provides the eight characteristics that describe how customers' needs and preferences have been realised in our RIIO-ED2 business plan.

STAKEHOLDER-LED

All aspects of our plan embody the extensive engagement with our customers, communities and local and national policy makers across our regions, with ongoing collaboration key to our approach.

NET ZERO-READY

The UK and Scottish governments have committed to reaching net zero by 2050 and 2045 respectively, with the energy system targeted for earlier decarbonisation by 2035.

Our plan is built upon a core pathway to net zero, enabling us to respond to the climate emergency by connecting low carbon technologies as they are needed, and optimising utilisation of our network through flexibility services.

FLEXIBLE AND ADAPTABLE

The communities we serve are diverse and each face different challenges. Our plan provides flexibility to adapt our proposals and activities to meet local needs.

Our plan also combines credible and robust growth scenarios with flexible uncertainty mechanisms, so as to not foreclose options to further accelerate decarbonisation.

CUSTOMER-FOCUSED

Our plan commits us to measurable and stretching outputs and performance levels that our customers value, with transparency so we can be held to account for delivery.

Our plans for digitalisation will deliver a deeper understanding of our network and our customers. This means we can provide tailored services, including options for self-service, as well as improved customer experience across all contact points.

SAFE AND RESILIENT

Climate change is normalising previously exceptional weather events that test network resilience. Cybercrime is growing and our increasingly digitally-enabled assets must be protected. Our plan provides investment to ensure our customers benefit from improved levels of resilience that are critical as electricity plays an increasingly important role in transport and heating. We will deliver all this while ensuring our network remains safe for our customers and employees.

EFFICIENT AND AFFORDABLE

We recognise there are existing and future pressures on affordability and we cannot deliver net zero at any cost. Through continued innovation, efficiency, balanced decision-making and stakeholder support, our plans keep bills affordable, while implementing the scale of change and investment required for net zero.

Our plan is fully costed following a robust and rigorous cost assessment with stretching efficiency targets, delivering no expected increase on consumer bills.[2]

FAIR AND INCLUSIVE

Our plan proposes tailored investment to meet the needs of communities, with a core focus on supporting those most vulnerable through a just and equitable transition to net zero.

The social and economic impact of the Covid-19 pandemic is expected to be felt into RIIO-ED2. We will continue to plan and respond appropriately, particularly in our services for the most vulnerable, and by ensuring we continue to support a green recovery.

FINANCEABLE AND DELIVERABLE

Our plan is financially sustainable in the short and long-term, protecting the interests of current and future customers.

Our plans deliver a transformation within our business to 'work smarter' by building and enhancing new workforce capabilities and technology while improving our carbon footprint and the sustainability of our supply chain.

[2] Calculated using industry standard 8-year RIIO-ED1 average and 5-year RIIO-ED2 average.

EXECUTIVE SUMMARY

1 NETWORKS IN A NET ZERO WORLD

The climate crisis is driving unprecedented levels of change which requires an unprecedented pace and scale of response. Meaningful actions across the energy system are urgently needed to mitigate the impacts of climate change and make net zero a reality for our communities.

Climate change is a global challenge that requires local solutions, and our role as an energy network must be to enable local, tailored solutions for customers and communities that combine to deliver meaningful outcomes for the energy system and society. As a provider of critical national infrastructure, we play a stewardship role in accelerating the transition to a net zero world at a national and local level. We understand the responsibility we hold and are committed to being at the forefront of driving change.

The journey to net zero will involve a rapid acceleration in the deployment of distributed energy resources bringing millions of new electric vehicles onto our roads and a transformation in the way we heat our homes. Networks must deliver substantially greater volumes of electricity in a resilient way whilst enabling customers and communities to choose their net zero journey. It's our role to ensure customers have access to solutions that lower the energy costs for electric vehicles. We must also ensure they have the opportunity to utilise their own and community assets to decarbonise their heating and benefit financially from new markets and products.

As we look ahead towards the new 2035 target for a net zero energy system, we are now seeing an exponential rise in the uptake of new technology, the scale of new markets and in the ambition within government policy, particularly around the electrification of transport and heat.

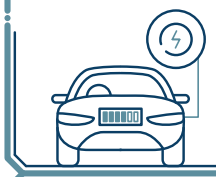
The pathway to 2035 is already accelerating at pace, as is demonstrated by policy changes since draft plan submission:

NET ZERO POLICY

The UK Government **Net Zero Strategy** sets an accelerated target to **decarbonise the electricity sector by 2035**, and align pathways to the **6th Carbon Budget** recommendations.

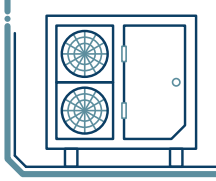
RENEWABLES AND FLEXIBILITY

Smart systems and flexibility plans called for 13GW of flexibility on the system by 2030. Scottish Government accelerating **local renewables** and plan for **six net zero islands by 2040**.



TRANSPORT

UK Government announced a further **£620m of support for EV charge point rollout** and mandated charge point installations at **all new properties from 2022**.



HEAT

Heat and Building Strategies from the UK and Scottish Governments set **accelerated targets for heat pump deployment** including consumer grant schemes and funding to reduce costs.

Realising this vision requires us to take a greater role in coordinating and optimising energy use, attracting and connecting low carbon solutions and educating and empowering customers, communities and local authorities. Utilising innovation that accelerates decarbonisation at the lowest cost and digitalising our energy system to improve collaboration, participation and understanding is central to this. We have proactively invested in our ability to deliver this promise and have planned to sustain this investment to underpin continuous improvement and efficiency. We will also ensure our networks are responsive and resilient to the challenges that the energy transition and climate change brings.

All communities face unique challenges and opportunities, and these vary enormously across and within our north of Scotland and central southern England regions. As we move towards net zero, we have an essential role in supporting and enabling the same opportunities for all customers, especially those who may experience aspects of vulnerability. This includes those who are vulnerable today, but also those who may experience new or existing characteristics of vulnerability in the future.

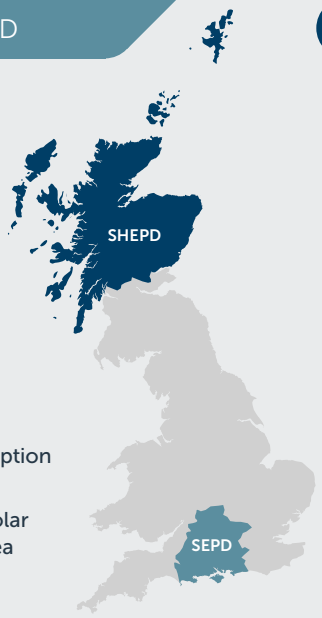
In our **north of Scotland** region, we are a key part of the UK's renewable economy. Our network is part of the critical infrastructure enabling environmental and economic benefits to Scotland, our customers and across the UK. The north of Scotland has some of the most remote communities and vulnerable customers with some of the highest levels of fuel poverty in the UK. For these customers, the resilience and cost-efficiency of our network is vital to them and their communities. It's for these reasons our investment over the RIIO-ED2 period must ensure that the decarbonisation of heating and transport in Scotland progresses at a pace similar to anywhere else in the UK. We must also enable communities in the north of Scotland to maximise and preserve the enormous natural capital of the region, without burdening them with unsustainable energy bills.

Our **central southern England** region has the highest concentration of headquarters of global companies outside of London. It's one of the most culturally diverse areas in the UK with over 150 languages spoken and considerable population growth is predicted over the next 15 years. Our modelling forecasts the second highest deployment of district heating, electric vehicles and heat pumps of any region by 2035, changing what our customers require from the network to connect and realise the benefits of these technologies. It is critical that our network and the services we provide evolve at a rate to enable and not hinder the net zero journey in this vital region for our economy.

OUR COMMUNITIES IN 2035

2035 IN CENTRAL SOUTHERN ENGLAND

- **c.318,000** new houses and **8.3 million square metres** of non-domestic floor space that will need heating
- Over **665 MW** of electricity demand from known new data centre sites coming online by the mid 2020s
- Between **1.4m and 3.8m** electric vehicles will be on the road
- **c.1.2m** domestic properties and **c.91,000** non-domestic properties operating a type of heat pump
- Energy efficiency measures in homes and businesses reduce baseload electricity consumption by **c.23%**
- Collectively, distribution network connected solar and wind generation capacity in the licence area increases by over **122%** from c.2.4 GW in 2019 to **c.5.3 GW in 2035**



2035 IN NORTH OF SCOTLAND REGION

- **c.63,000** new houses and **10.3 million square metres** of non-domestic floor space will need heating
- The capacity of hydrogen electrolysers connected to the distribution network reaches **43 MW**
- Between **259,000 and 711,000** electric vehicles will be on the road
- **c.438,000** domestic and **c.39,000** non-domestic properties installing heat pumps
- Energy efficiency measures in homes and businesses reduces electricity consumption by **c.22%** mitigating the increased demand from electric vehicles and heat pumps
- Collectively distribution network connected solar, wind, hydro and marine generation in the licence area increases by **116%** from over 3.0 GW in 2019 to **c.6.5 GW in 2035**

As we deliver for each region individually, we strive to be a force for good in the communities we serve.

We are an active contributor to the local economies where we are a major employer in our two regions. This contribution will continue as we plan to grow our business by a further 850 jobs by 2028 and create sustainable opportunities across our supply chain.

We are committed to making a societal impact beyond simply providing power to our communities, extending ourselves to restoring habitats, increasing biodiversity and designing our business so that it is sustainable, all while helping make net zero a reality.

We're powering change with every connection

Our plan has been developed with our customers and communities to reflect and deliver their ambitions and provide them with the broadest set of options for realising their net zero future. It reflects the different requirements of our two distribution networks, while being responsive to the uncertainties and opportunities that will emerge. Our plan is centred around key consumer-led strategic outcomes, which have driven and influenced the direction of our wider business strategy, recognising the need for alignment and integration between our RIIO-ED2 business plan and the way we develop and transform our current business to deliver it. Having received feedback that our former outlook was too insular and lacked customer focus, we undertook an extensive co-creation programme with our customers, stakeholders and colleagues on our strategic approach, and subsequently redefined our company purpose and vision.

Our new purpose – **we power communities to thrive today and create a net zero tomorrow** – sets out our dual aim to support the communities we serve, beyond keeping the lights on, and work collaboratively with them to reach their net zero carbon goals.

Our new action-led vision – **powering change with every connection** – places the importance of service and engagement right at the heart of our business and makes clear that every connection we make, be it an infrastructure asset or connection with a customer, stakeholder or colleague, matters.

Our new purpose and vision will be delivered through four clear priorities directly linked to our strategic RIIO-ED2 outcomes. This means our short- and long-term decision-making is focused on the requirements of our RIIO-ED2 plan and what needs to be achieved for our customers.

OUR PURPOSE

We power communities to **thrive today** and create a **net zero tomorrow**

OUR VISION

We're **powering change** with **every connection**

OUR FOUR PRIORITIES

- **Delivering a safe, resilient and responsive network**
- **Providing a valued and trusted service for customers and communities**
- **Accelerating progress towards a net zero world**
- **Making a positive impact on society**

Deliver a safe and resilient network that meets our customers' needs and that supports the greater electrification of heat and transport by investing in the infrastructure and technology that provides a platform for the future. We recognise that consumer energy use will change in different ways, over different timescales across different regions. Our plans are based on a requirement that our network be responsive to this variety and uncertainty. We will reduce the frequency and duration of customer interruptions and will invest in ensuring our network is resilient to climate change and ageing assets.

Provide a high quality, value-creating and trusted service for our customers and communities that evolves with their needs and expectations. We will empower our customers with intelligent, self-service digital solutions designed to be inclusive and offer tailored support. We will make sure that net zero is available for all, whether communities want to support tourism through deployment of public rapid EV charging, individuals want to decarbonise their heating or if new businesses or local authorities require bespoke energy solutions. We will provide high quality customer experiences that enable their ambitions and deepen trust, and expand our services, reducing the impacts of fuel poverty and improving energy efficiency for customers in vulnerable situations.

Accelerate the progress toward, and enable all customers to participate in, a net zero world. It is essential that we demonstrate that markets and the role of flexibility will mean different things in different communities. However, they must be operated in a fair and transparent way that benefit consumers. We will do this by applying whole system thinking in a highly collaborative way to create and enable smart, flexible, local energy networks. This includes acting as a neutral market facilitator with the highest levels of transparency.

We will make a positive impact on society by doing even more for our communities and environment. We will expand and increase the diversity of our workforce to not just deliver the scale of activity we need to undertake, but also create economic and wider societal benefits in the communities within which we operate. We will increase our workforce by 20% adding over 850 jobs within SSEN and many more through our supply chain. This will be delivered by increasing our use of apprenticeships, graduate schemes, and trainee engineer programmes.

What this means for our customers and communities

Our plan delivers value to the communities we serve, and society as a whole. It reflects a wide range of customers' and stakeholders' views of what is important now and in the future. It also recognises the key role we have to play in helping all of our customers and communities reach net zero and realise the benefits of doing so.

We are committed to delivering a positive impact and our will plan will ensure that:

All of our customers can choose their path to net zero and connect low carbon technologies whenever and wherever	
We will provide simple self-service opportunities	We will take an inclusive approach to local area energy planning
Customers and communities have access to enhanced services, with extra support to those most vulnerable	
We will increase the reliability of our network	We will provide targeted support for those in fuel poverty
Our services are tailored to specific local needs, and enabling new business models and markets, and that benefit our customers and communities	
We will create new community flexibility markets	We will enable the renewable ambitions of individual communities
Our actions will drive long-term employment opportunities and sustainable economic growth in the regions we operate	
We are creating over 850 sustainable career opportunities	We are enhancing our community funding and partnerships

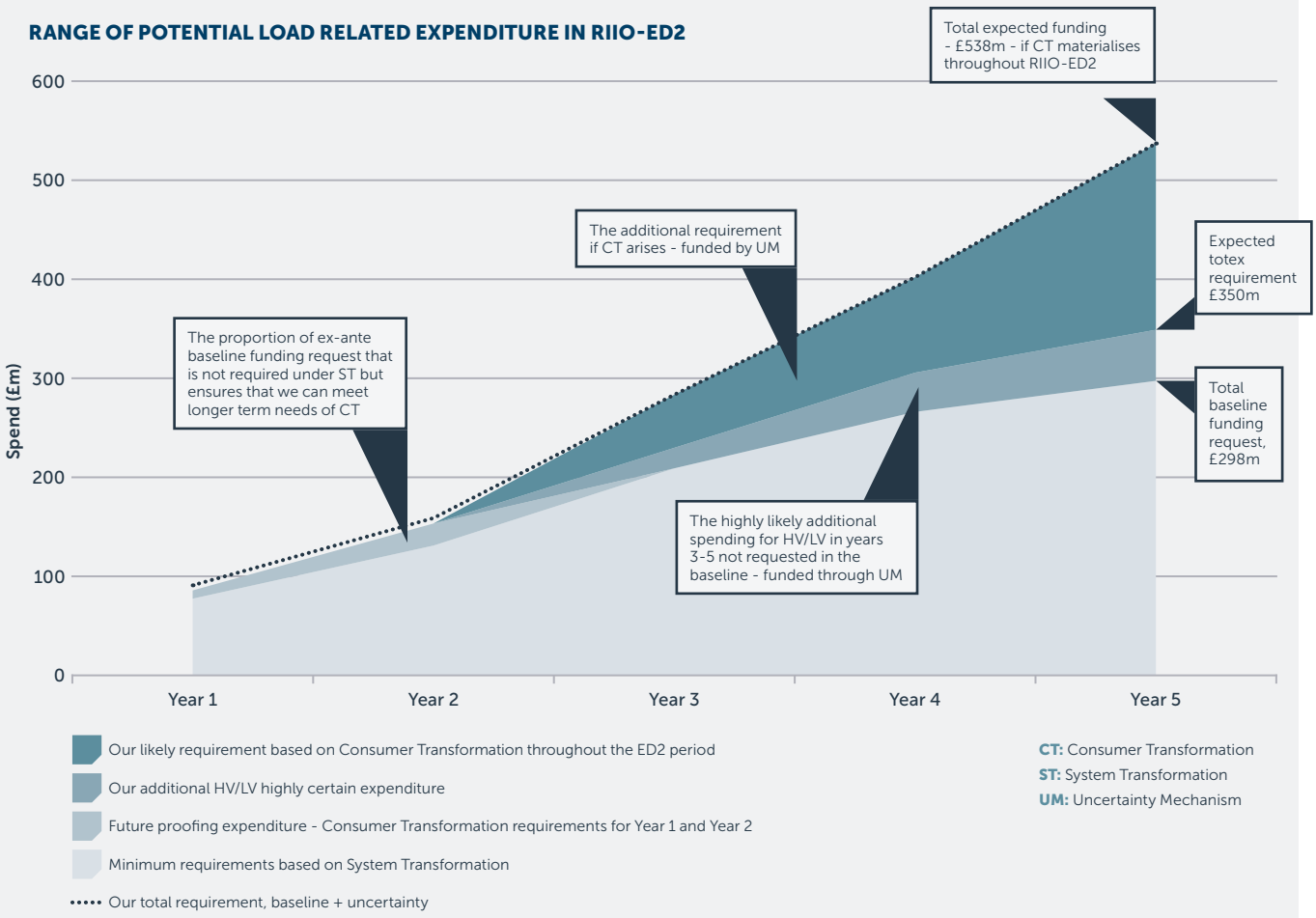
A fair and flexible transition to net zero

There are a range of pathways to net zero, and our plan keeps all options open. We explored a range of potential future scenarios specific to our regions with stakeholders, including both national Governments, National Grid ESO, over 70 local authorities and 200 community groups. This work identified what is common and what is different across these pathways and the steps needed to ensure we do not foreclose options.

These pathways identify where we must make firm decisions on the level of investment to meet load growth and changes in demand profiles, and where we must proactively manage risk to keep options open. They inform where we need to invest to deliver a more responsive network, and provide requirements of how we must mature our ability to take on the role of Distribution System Operation (DSO). These decisions must be made while recognising that there is an immediate and future cost to consumers that must be considered and managed.

Our central planning scenario is based on a System Transformation pathway combined with future proofing investment based on the first two years of Consumer Transformation pathway. Combined, this defines the core of our baseline revenue request.

Based on our research and engagement, we believe Consumer Transformation is the likely outcome, but suitable protections for customers are required alongside reflecting the ambition and delivery commitment, consistent with our stakeholders' and communities' expectations.



Our approach is in line with Ofgem's minimum requirements and steer that DNOs should maximise the use of uncertainty mechanisms in order to protect customers from forecasting uncertainties.

We are confident that our plan strikes the right balance between the baseline funding and the use of uncertainty mechanisms, and serves to protect customers from an unnecessarily high baseline plan in a number of areas where there is significant uncertainty that is out of our control. Our baseline plan is based on robust evidence and designed to ensure that we, together with our supply chain, are able to plan and scale activity in the most efficient manner for the customer.

Importantly, our load baseline plan is specifically designed to ensure we do not foreclose any outcomes, in line with Ofgem's business plan guidance, but delivers the strategic investment that is essential in order to ensure we are capable of meeting expected demand growth in RIIO-ED2 and future price control periods.

We consulted extensively with our customers and other stakeholders to seek their views on what basis we should develop our RIIO-ED2 plan. They were very clear that we must enable net zero in a safe, reliable and resilient way, whilst also effectively managing future uncertainties. This includes changes in consumer electric vehicle behaviour and also uncertainty over approaches to decarbonise heating. Our stakeholders want us to actively enable decarbonisation, but they were also clear that our plan must be affordable and support the most vulnerable.

Our plan asks for £3.99bn to invest in our two regions for the five-year RIIO-ED2 period. Our plan is adaptable to multiple pathways but is affordable, recognising the challenges our customers face with increasing energy costs. Uncertainty mechanisms enable us to accommodate load growth above our baseline assumption, providing the right investment at the right time if it's needed. We will also enhance our workforce skills and enabling technology, so that we are 'working smarter' to deliver a responsive network to meet more uncertain aspects of future load growth.

An integral part is the ongoing investment to expand our DSO role to make sure we are continually increasing our options to defer or avoid traditional network reinforcement. This allows us to make greater use of funding through uncertainty mechanisms as the combination of available flexibility increases alongside our maturing DSO capabilities. At the same time, we've rigorously challenged ourselves on cost efficiency and to find cost efficiencies that underpin our plan. This has reduced our funding ask by £269m.

Together, this provides our business and customers greater certainty on what we will invest in our network and supporting capabilities, in a way that balances the priorities of our customers today and tomorrow.

2 ENSURING A STRONG VOICE FOR OUR CUSTOMERS AND STAKEHOLDERS

The voice of our customers and stakeholders has been at the very heart of our plan. Our approach to enhanced engagement has evolved significantly through RIIO-ED1 and again through our RIIO-ED2 business plan process, driven by improvements to our strategy and processes, and our response to the challenging circumstances our customers and stakeholders experienced as a result of Covid-19.

We have adapted our approach to include online methods to be as accessible as possible recognising that local restrictions and personal preferences are a potential barrier to engagement. Wherever possible, we have adopted a co-creation approach, an advanced form of interaction with stakeholders which goes beyond traditional transactional approach and co-designing solutions. We have also been careful to fully recognise the differences between our two licence areas, tailoring our approach to address regional specific issues.

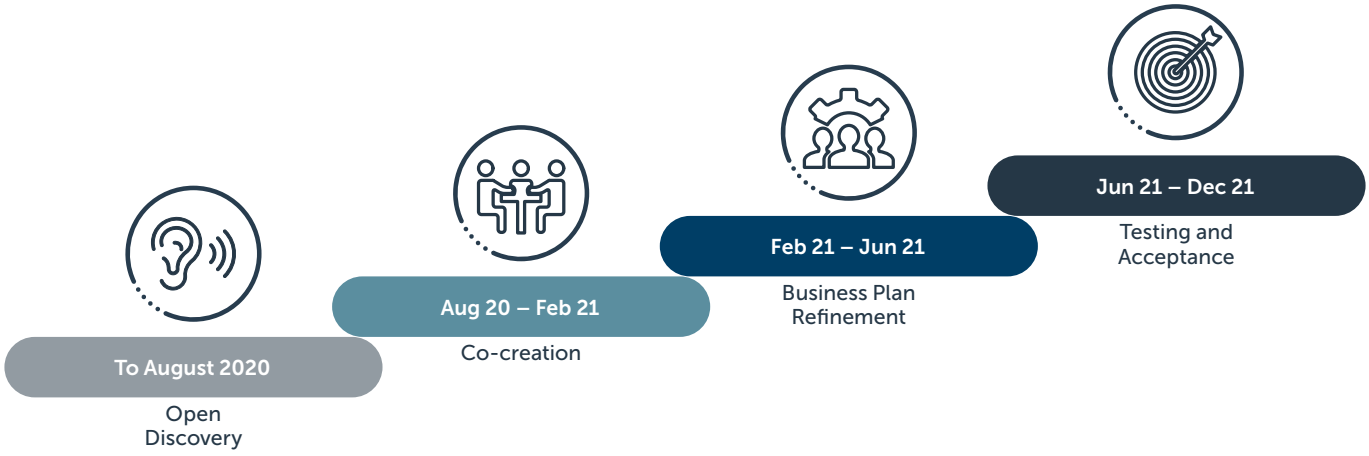
A further innovation was thematic consumer research on topics identified as important to our stakeholders, including a deep dive into how we better support 'worst served' customers and a joint design process of a new connections journey. Addressing areas of importance and interest, we held a Citizens' Jury that gave consumers a role in shaping our final proposals for our innovation and sustainability plans through deliberative workshops and inputs.

ENGAGEMENT AT A GLANCE

Stakeholders engaged	Engagement events	Synthesised stakeholder evidence points	Methods used
25,181	**150**	**4,719**	**18**
Total	including over 30 regional events	Total	Total

Our final plan demonstrates how stakeholder and consumer insights have driven our business more than ever before, not only in the number and breadth of stakeholders engaged but through direct impact on our business plan strategies and outputs. Each of our strategies and outputs has a 'golden thread', mapping these to actionable insights gained from enhanced engagement and triangulated by senior leaders.

Our enhanced engagement programme has included four phases, with the testing and acceptance phase driving further refinements between submission of our draft business plan and this final version. In the last phase of the programme we had a significant focus on the cost of our plans, with each of our engagements in this phase displaying both the granular cost of our proposals alongside what this means in terms of pounds and pence on customers' bills. This included a targeted consultation and series of stakeholder events on our draft business plan outputs and costs.



Over 4,700 distinct feedback points were synthesised and built into the development of our draft plan and, through a two-stage triangulation process, 51 key refinements were made to strategies and proposals to better meet stakeholder needs. This included developing five new business plan outputs and refining the ambition for a further two outputs following the Phase 4 programme of events.

The strength and focus of our plan, and our engagement programme, has been improved by our Customer Engagement Group (CEG), established in 2019 as part of enhanced engagement requirements for RIIO-ED2. The group, chaired by Tracey Matthews and supported by ten members with expertise from across sectors and segments, has been a valuable critical friend providing scrutiny and challenge to all aspects of our plan and approach. Through 21 formal meetings, the group has been given regular access to the RIIO-ED2 project team and senior leaders, as well as three formal opportunities for engagement with our Board. This constructive dialogue has made our business plan even more reflective of stakeholder and consumer needs and a stronger and improved plan as a result.

It's our intention that the CEG will have an enduring role in our strategy for continued enhanced engagement during the RIIO-ED2 period, which is detailed in ***Future Stakeholder Engagement Strategy (Annex 3.2)***. This strategy captures the improvements we will make in the next price control to further understand the needs of our stakeholder and customer base and conduct meaningful and innovative engagement. Key to our approach is to apply the learnings of the RIIO-ED2 business plan engagement process and ensure our engagement is built around delivery of our business plan outputs, while remaining responsive to changing stakeholder needs.

ACCEPTABILITY TESTING

We tested our final plan with consumers through a two-stage acceptability testing programme, using both qualitative and quantitative methods. For the qualitative phase in September 2021, we identified fuel poor customers, vulnerable customers, and future customers, as well as business customers, as we particularly wanted to understand the views of seldom heard groups.

Based on their feedback, we made 21 refinements and enhancements to our final plan.

A large quantitative survey of customers and business was conducted in October 2021, showing high acceptability of our final plan expenditure and outputs of 78% with a small minority of 4% saying it was unacceptable. Of respondents who told us the plan was neither acceptable nor unacceptable, we identified that concern about their electricity bills in the context of rising prices was likely driving this result with 77% telling us it impacted their response. This is also reflected in an overall affordability score of 77%. However, when respondents considered the plan without reference to their own circumstances, over 86% rated the plan as value for money.

3 OUR RIIO-ED1 JOURNEY

Our plan for RIIO-ED1 set ambitious targets to deliver improvements in customer service and safety performance, to reduce service interruptions and our business carbon footprint (BCF), and to connect more customers to our networks, more efficiently and with increased customer satisfaction.

There have been a number of challenges and opportunities across the RIIO-ED1 period – the Covid-19 pandemic, Brexit, the increasing impact of climate change, advances in battery technology, cybersecurity threats and a growing ability to process and manage 'big data'. Many of these were unimaginable when we developed our RIIO-ED1 plan back in 2013/14. As a business, we have risen to, and adapted to, these challenges which have in some cases led to us choosing to invest more of our shareholders money in order to deliver on our priorities, deliver high class customer service and start to lay the foundations for delivering net zero.

We have performed well against our outputs and delivered significant improvement levels for customers. Our achievements include:

- Improved customer satisfaction scores by 6% since 2015/16. Both our networks outperformed Ofgem's complaints related targets.
- We have increased customer satisfaction for connections by 9% while managing a surge of connection requests (particularly in the south) and broadly meeting Ofgem's Time to Connect targets.
- Became the first DNO to commit to a 1.5°C Science based Target.
- Continue to have a strong safety record, building on our previous strong performance.
- Reduced average customer interruptions (CI) by 17% and average customer minutes lost (CML) by 25% since 2012/13 for unplanned interruptions.
- Made significant advances in our approach to supporting vulnerable customers. We have supported 7,500 customers with fuel poverty measures since 2016/17. This scaling up of activities was recognised through the Stakeholder Engagement and Customer Vulnerability incentive where we were the second place DNO in 2020/21 for the customer vulnerability element.
- On track to deliver £89m in customer benefit through innovation and flexibility, maintaining our leadership position.

Delivering this level of performance, while managing some of the unforeseen challenges in RIIO-ED1, such as a requirement to replace strategic subsea cables, means that, at the time of publication, we are forecast to overspend our allowances by 3.4%. This additional investment has helped us deliver our outputs in RIIO-ED1 and has also seen enhancements in IT, systems and people which are helping to set us up for the start of RIIO-ED2.

4.1 A Valued and Trusted Service for Our Customers and Communities

We have ambitious stakeholder-led proposals to build a customer centric and digitally-enabled organisation, improving our core service offering and targeting support where and when our customers need it.

We will provide enhanced support to consumers in vulnerable situations and help reduce fuel poverty through our vulnerability strategy. We also recognise we have a role to play in ensuring all our customers are able to benefit from the energy system transition, including through a self-financed £500,000 annual 'Powering Communities to Net Zero' fund.

We are broadening our focus on vulnerability to recognise how businesses can also become vulnerable as economic or social circumstances change around them.

We are investing in new technology to enable the activities that are key to delivering net zero for our customers and communities. Digitalisation and technology investments across our network and back office operations will enable many of the outputs across our plan and will provide a direct benefit of £175m.

	Planned investment 2023-28
Chapters in this section	**Capex (£m)**
Chapter 4: A Valued and Trusted Service for our Customers and Communities	£38.4m
Chapter 5: IT and Digitalisation	£264.1m
Totex	**£359.0m***

*Chapters only show direct investment required to deliver key deliverables and outputs, not CVPs.

DELIVERING OUR GOALS

We have clearly demonstrated where our proposals are a result of **meeting expected standards, including regulatory and legislative requirements**, and where we have sought to respond to the needs of our customers and stakeholders by **delivering on shared ambition or going above and beyond expectations**.

- Achieve customer satisfaction of at least 9.2 in every contact area
- Support 200,000 customers in fuel poverty with targeted support and energy efficiency measures, alongside benefit to a further 1 million customers and community members through resilience support and a shareholder-financed community fund
- **CVP** – introduce Personal Resilience Plans to proactively support consumers in vulnerable situations in power cuts and emergencies

WHAT STAKEHOLDERS WANT

- Targeted improvements in customer satisfaction with a focus on reducing complaints, and improved response to unplanned power cuts
- Do more to address vulnerability ensuring no one is left behind in the energy transition, and recognise and support vulnerable business customers
- We should leverage our scale to improve support for customer and community action on net zero
- We should employ smart tech to enhance our service but not leave 'generation landline' behind
- Keep pace with other sectors in digitalisation and data, responsibly investing in the future smart system and ensuring data remains safe and secure
- Data and cutting-edge digital tools used to improve asset and infrastructure visibility and ultimately help SSEN in the transition to DSO and net zero

DELIVERING IMPROVED OUTCOMES FOR ALL

- Improve customer satisfaction across both licences and all contact categories achieving **a score of 9.2 or above and 9.3 for digital satisfaction**
- Over **1 million Priority Services Register (PSR) customers** reached by 2028 and PSR customer satisfaction scores at 9.4
- Introduce a new **Business Support Register**, providing tailored support to critical and essential customers during power cuts
- We will introduce a shareholder-financed **£500,000 annual 'Powering Communities to Net Zero' fund** to support LCT accessibility initiatives for those in vulnerable situations, and community-led environmental and resilience schemes
- **Customers able to self-serve** and we will provide support to those unsure of the switch to digital, whilst **maintaining all traditional contact channels**
- A **holistic digitalisation plan** that will **transform our digital and data capability to support a net zero system**
- Communities empowered to **participate in flexibility markets**, benefiting from the energy system transition

4.2 A Safe, Resilient and Responsive Network

A robust, resilient and reliable network is the bedrock of our plan to deliver the necessary improvements for net zero, in particular in the context of climate change and increased reliance on electricity.

We are realising customer benefits by prioritising investment to create the network our customers need today and, in the future, meeting compliance and legislative requirements and improving network and public safety.

Our two licence areas are dramatically different; climate, population density, infrastructure and the natural environment all factor in how we maintain service for customers. Our plan works as hard for some of the UK's most remote communities as it does for customers living in the more populated south.

	Planned investment 2023-28
Chapters in this section	**Capex (£m)**
Chapter 6: Safety and Compliance	£408.2m
Chapter 7: Maintaining a Resilient Network	£1,174.6m
Chapter 8: Supporting the Scottish Islands	£329.2m
Totex	**£2,212m***

*Chapters only show direct investment required to deliver key deliverables and outputs, not CVPs.

DELIVERING OUR GOALS

We have clearly demonstrated where our proposals are a result of **meeting expected standards, including regulatory and legislative requirement**, and where we have sought to respond to the needs of our customers and stakeholders by **delivering on shared ambition or going above and beyond expectations**.

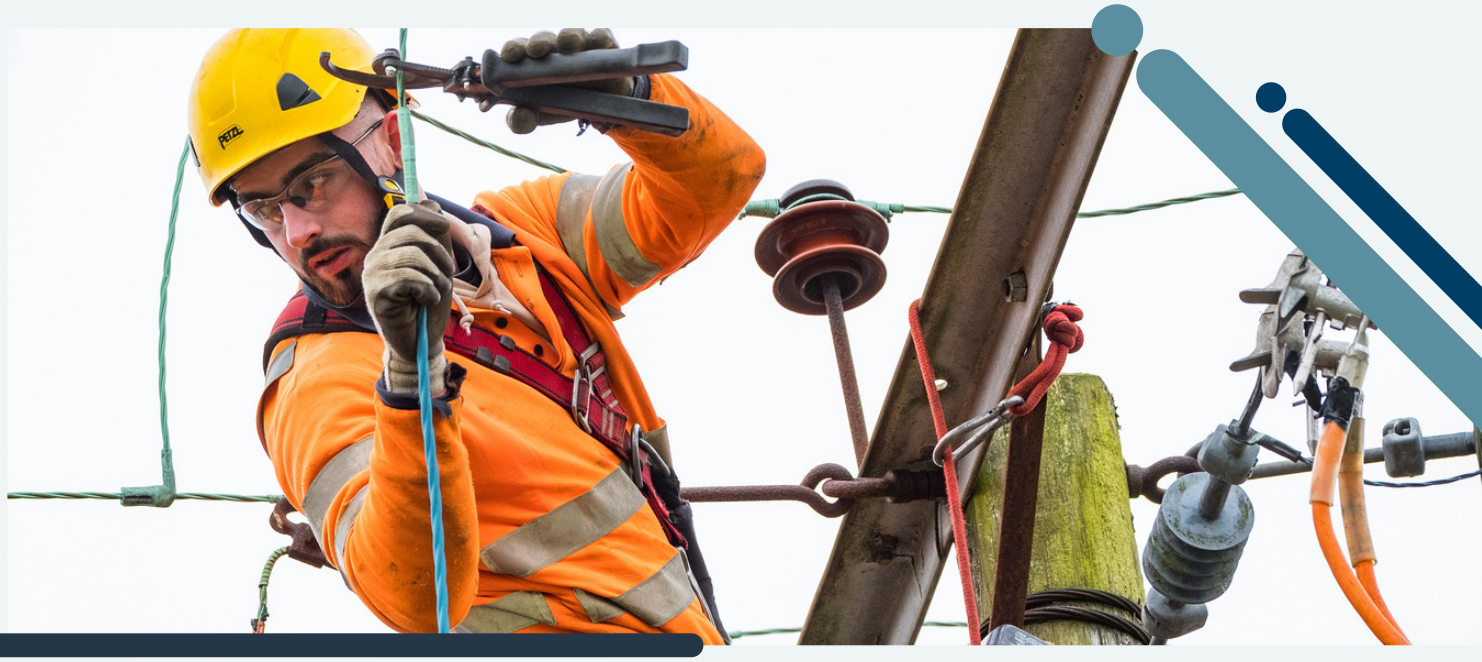
- Create a net **zero foundation** by investing **£1bn in strategic resilience**
- **Invest £296.2m in keeping the public safe**, in line with our obligations

WHAT STAKEHOLDERS WANT

- Customers want a safe network, resilient to threats and ready for net zero
- Reliability is more important than ever as work/life patterns change in response to Covid-19, and heat and transport become electrified. But customers and communities have mixed views – it shouldn't come at any cost
- We should invest now to replace assets and avoid loading costs onto future consumers, prioritising assets with high likelihood of failure
- Network reliability is vital for our remote islands communities: stakeholders urged prioritisation of subsea cable replacement and want a low carbon whole system solution to ensure reliability in our transition to net zero

DELIVERING IMPROVED OUTCOMES FOR ALL

- We will **reduce the average duration of unplanned power cuts by 20%**, for example through automation to over 620 circuits, also lowering long-term costs
- **Over 250,000 fewer customers experiencing a power cut in RIIO-ED2**
- **We will reduce customers classified as 'worst served' by 75%**, focusing our investments where it will have the highest impact, and using consumer vulnerability as a criteria for prioritisation
- Our core asset **heath and reliability investments of £683.7m will improve strategic resilience**
- Target investment of **£329m to reduce faults and improve reliability for island communities**, including on 18 subsea cables and all seven island-based power stations
- **Keep the public safe**, deploying new technology to better **target key activities** such as tree-cutting and overhead line clearances
- Build on our extensive RIIO-ED1 safety engagement programme, **reaching 50,000 partners and members of our communities by 2028**



4.3 Accelerated Progress to Net Zero

We have worked alongside stakeholders to design and calibrate our plan for future changes in system operation and the pathway for net zero. We have built in the necessary flexibility to ensure we are future-proofed for changes but without imposing unnecessary costs on today's or future customers.

We will achieve this by investing over £500m on out network, taking a flexibility first approach to defer up to £46m and £417m of traditional investment through flexibility and flexible connections. Our plan is fully aligned to a 1.5°C Science Based Target (SBT) and will deliver at least a 35% reduction in our business carbon footprint (BCF) by 2028 from a 2020 base. Expected growth in flexible connections will offset a further 1.8 $mtCO_2$ by 2028.

We are stepping up to address our impact on the natural environment by delivering a £26.4m biodiversity net gain programme through local afforestation and programmes and solutions that will reduce our impact.

	Planned investment 2023-28
Chapters in this section	**Capex (£m)**
Chapter 9: Our Forecasting and Future Energy Scenarios	N/A
Chapter 10: Our Network as a Net Zero Enabler	£510.2m
Chapter 11: Distribution System Operation	£73.1m
Chapter 12: Whole Systems	N/A
Chapter 13: Environmentally Sustainable Network	£172.3m
Totex	**£1,039m***

*Chapters only show direct investment required to deliver key deliverables and outputs, not CVPs.

DELIVERING OUR GOALS

We have clearly demonstrated where our proposals are a result of **meeting expected standards, including regulatory and legislative requirement**, and where we have sought to respond to the needs of our customers and stakeholders by **delivering on shared ambition or going above and beyond expectations**.

- **CVPs** – our whole systems CVPs will provide dedicated in-house support to empower local communities in net zero, and lead the way in infrastructure sharing to enable our most remote communities to benefit from digitalisation
- **CVPs** – our DSO CVPs will facilitate broad and diverse flexibility market participation, and accelerate the use of energy efficiency as a tool to reduce network constraints and customer bills

WHAT STAKEHOLDERS WANT

- We should support the substantial growth in electric vehicles and heat pumps with no delays and simple connections processes
- Be an enabler for the net zero transition, working with local partners and across the 'whole system' to ensure pace and efficiency
- Prioritise early investment in the network for long term benefit using robust data and stakeholder insights
- Lead by example and reduce our carbon footprint aligned with recognised climate targets
- Work with communities to ensure that local renewables, flexibility and energy efficiency potential can be realised
- Develop DSO services that are transparent, data-driven and will deliver flexibility at scale

DELIVERING IMPROVED OUTCOMES FOR ALL

- We will invest at least **£350m to support network capacity growth over RIIO-ED2**, with further funding to be provided through an agile and stakeholder led approach to uncertainty
- We will provide **dedicated support to develop Local Area Energy Plans for local authorities and key groups**, and set up an Information, Advisory and Whole Systems Liaison Service to support local authorities achieve their net zero ambitions
- We will introduce a self-serve process for domestic LCT and minor connections customers, **improving the customer experience and facilitating the significant increase in connections**
- Through our DSO strategy we will act as a neutral market facilitator, strengthening our approach to governance in RIIO-ED2. We will use flexibility services to deliver benefits across our plan
- **At least 35% reduction in our Business Carbon Footprint (BCF) by 2028 in line with 1.5°C science-based target**, and reduced reliance on diesel generation

4.4 Delivering an Efficient, Innovative and Financeable Plan

Our plan is ambitious, and at every stage we have considered its deliverability; to understand the implications for our workforce, skills base, infrastructure and cost.

We have taken a balanced approach towards innovation, conducting research on new technologies and thinking to shape the networks of the future, alongside practical trials that will have timely application into business as usual, delivering benefits for customers now.

Stakeholders have urged us to improve transparency around procurement and our supply chain, and our RIIO-ED2 Commercial and Deliverability Strategy approach focuses less on simple unit cost reductions to explore wider efficiencies available during the whole purchasing process. This will drive efficiencies through our contracting strategies and strategic relationships with our supply chain partners.

Understanding where we have opportunities to improve our efficiency as we approach the end of RIIO-ED1 allows us to target further improvement over the final years of this price control and into RIIO-ED2. In total, we have identified £269m of additional bottom-up efficiency savings which we have embedded into our baseline plan. In addition, we have committed an 0.7% annual efficiency ambition, which will reduce costs by a further £141m over RIIO-ED2.

We have also embedded and enhanced competition within our regulated activities and have introduced new mechanisms that will further enable innovation, flexibility and cost efficiency. We have not proposed any projects that meet Ofgem's threshold for late or early competition. In many instances, projects have been consolidated to enable the use of native competition to drive efficiency.

Deliverability of our plan is underpinned by a robust workforce resilience strategy. Stakeholders recognise that our people strategy will need to evolve so we can deliver the outputs they have asked for. We're forecasting a 20% growth to our direct workforce and will improve diversity by proactively targeting the segments of the UK workforce who do not traditionally apply to work in our sector and will extend our mental health and wellbeing initiatives to help support employee confidence.

Proposed expenditure in RIIO-ED2

Our business plan proposes a total base RIIO-ED2 investment of £3.99bn, to deliver a resilient network for the future and a service that customers and consumers can continue to depend on today. This is our current view of the most efficient costs necessary to meet the expectations of our customers and Ofgem and deliver our plan.

Across most of our network activities, we forecast expenditure will continue at levels equivalent to the current price control, securing existing high levels of service. In key areas, we will invest more to ensure safe network operations, address specific areas of environmental and reliability risk, and provide a network capable of connecting the volumes of low-carbon technology that a net zero future requires.

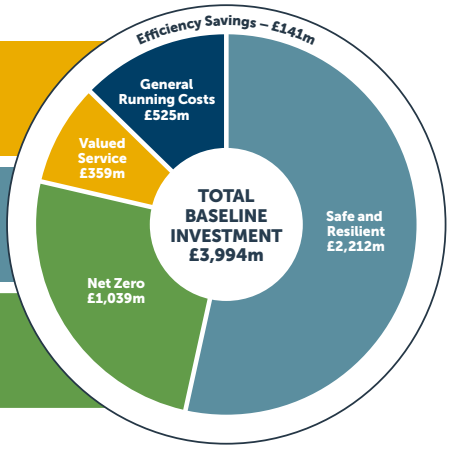
This targeted investment increases expenditure by £0.96bn on an equivalent five-year period in RIIO-ED1. Details of our £3.99bn investment proposals are fully outlined in each chapter and our supporting documents.

Our individual investments create benefits for stakeholders across a wide range of areas aligned around our three strategic outcomes.

Valued and trusted service: investing in our IT and telephony capability to give customers the choice over when and how they want to interact with us and enable us to meet their needs first time.

Safe and resilient network: continued core expenditure to ensure safety of our customers and staff as well as maintaining network resilience and reliability. Targeted investment to address areas of increasing faults and strategic importance of our network to communities.

Accelerated progress to net zero: developing Distribution System Operator capabilities to manage a step change in network capacity and complexity, enabling benefits from flexible solutions including quicker connections at lower cost.



In addition, we need the support of a skilled and professional workforce to deliver these strategic outcomes. General running costs are the cost of our back office functions and other general expenditure which do not easily align with one of our three strategic outcomes, but which benefit them all.

Totex by Plan section and Ofgem categories	Valued and trusted service	Safe and resilient network	Accelerated progress to net zero	Our RIIO-ED2 Plan
Load Related	0	0	528	528
Non-Load Capex	0	1,096	211	1,308
Non-Op Capex	0	42	42	83
IT/OT	199	0	53	252
Network Op Costs	0	735	0	735
Capitalised	160	339	206	705
Subtotal	359	2,212	1,039	3,611
			+ General running costs	525
			- less efficiency	-141
			RIIO-ED2 totex	3,994

Breakdown of our RIIO-ED2 investment plans (£m, 20/21 price base)

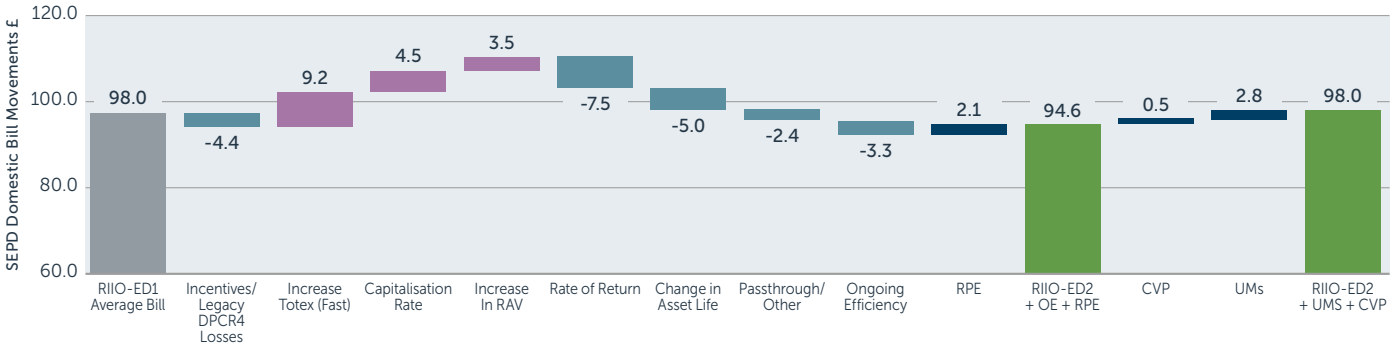
Impact on consumer bills

We recover our allowed revenue from customers through distribution use of system (DUoS) charges, with tariffs calculated using industry standard charging methodologies. The average domestic DUoS charges for the eight years of RIIO-ED1 are £98 for SEPD (our central southern England network) and £160 for SHEPD (our north of Scotland network). DUoS charges are just one part of the overall electricity bill paid by homes and businesses. The electricity bill comprises wholesale, network, environmental, operating and other costs and is typically around £575 for an average home of which 16% is DUoS.

Delivering this step change in customer and net zero outcomes and associated increase in baseline investment, does not, result in higher costs for our consumers in the RIIO-ED2 period.

In the same five-year period, using Ofgem's financial parameters set out in its guidance and taking account of our base cost proposals, average bills would fall by £9.70 and £3.30 per annum for SEPD and SHEPD respectively.

This is due to a combination of factors within our control – including increased efficiency and innovation – coupled with changes made by the regulator to the underlying financial framework, including an extension to asset lives in the treatment of capital depreciation and proposed changes to cost of capital. A combination of all these factors leads to this forecast reduction in the average domestic bill in RIIO-ED2 compared to RIIO-ED1 even allowing for significantly higher investment[3]. A breakdown of these factors, for our SEPD region, is displayed below.



SEPD Domestic bill movements (£ in 2020/21 prices)

Uncertainty mechanisms which allow for extra costs to be added to base costs in a range of circumstances, such as rapid load growth associated with decarbonisation, mean that the final bill reductions are likely to be smaller than these base numbers. In our central southern England licence area, even in the unlikely event of all the uncertainty mechanisms triggering to their full extent, the distribution element of bills will still remain at RIIO-ED1 levels. In our north of Scotland licence area, only in the most extreme circumstances relating to unavoidable subsea expenditure, do we see bills rise, with a high probability that the distribution element of bills will remain flat over the period. A detailed breakdown of bills can be found in ***Chapter 19, Finance and Financeability***.

Managing risk and uncertainty in the round

Our baseline funding requirement is proposed using a forecast of the latest robust and credible evidence available today. It meets Ofgem minimum requirements on needs case certainty and is inclusive of our ambitious efficiency savings. RIIO-ED2 will, however, be unprecedented as we deliver net zero against the backdrop of economic uncertainty. We must be balanced, yet agile in managing plan delivery and navigating changes which cause us to shift course.

Fundamentally we are required to manage both diversifiable and non-diversifiable risks and uncertainties. Non-diversifiable risks are correlated with the wider economy. They are managed through agreeing an efficient cost of capital, specifically setting the asset beta. Section F includes our proposals for financing parameters.

Diversifiable risks and uncertainties are specific to SSEN or our sector and our starting point is always that we should not seek to diversify all risks and uncertainties we face. We draw an important distinction between internal risks and external uncertainties. Internal risks need to be managed and mitigated by DNOs, such as supply chain delays due to Covid-19 and this will be managed in our approach to deliverability of our plan, detailed in ***Ensuring Deliverability and a Resilient Workforce (Chapter 16)***. Internal risks matter because they encourage innovation and further efficiencies which can benefit consumers as savings are shared as defined in the price control.

Uncertainty Mechanisms proposed in our plan
Strategic investment
Distributed generation monitoring
Shetland
Subsea cables
Hebrides and Orkney whole systems
Ash dieback removal
Wayleaves and diversions
Polychlorinated Biphenyls
Opex adjustor

External uncertainties are 'known unknowns' outside our direct control, which drive a significant change in investment scale. These uncertainties are dependent on policy, market, or stakeholder needs evolving. An example is decisions on net zero, which will lead to increased electric vehicle uptake. We manage external uncertainties through Uncertainty Mechanisms (UMs) which adjust specific investment areas (both up and down) triggered by distinct external shifts. In ***Uncertainty Mechanisms (Chapter 17)***, we set out our proposals for nine additional UMs, building on the confirmed common UMs Ofgem will apply across the sector. Our UMs retain optionality and agility to deliver net zero and stakeholders' evolving expectations. They are targeted at areas where need has a high probability of changing and the variance is significant. They are not designed to be a disincentive to finding efficiencies or managing risks we should otherwise absorb as internal risks – rather they protect customers from having to pay in advance for something that is not yet certain.

However, with UMs there remains a 'regulatory process and administration agility risk' with their use. It is important Ofgem supports the speed our stakeholders drive us to deliver net zero. This means Ofgem must prioritise resources to administer UMs and they need efficient approval processes. In ***Uncertainty Mechanisms (Annex 17.1)*** we outline further details of changes required.

[3] Calculated using industry standard 8-year RIIO-ED1 average and 5-year RIIO-ED2 average.

5 OUTPUTS AND CONSUMER VALUE PROPOSITIONS (CVP)

Our plan contains 64 outputs including five Consumer Value Propositions (CVPs), distributed across the chapters in Sections B to E of our plan.

5.1 Outputs

Alongside our business plan goals, our outputs represent the ambition we share with our communities and have co-created with our stakeholders, responding to the opportunities and challenges driven by external factors including net zero and the climate emergency. They are aligned to the requirements of the regulatory framework and the obligations we hold under our licence.

The outputs are listed at the beginning of each chapter where they apply. In each case, we have identified the output category, cost of delivery, and what we will achieve for consumers and customers.

All of our outputs and our level of ambition will continue to be tested via our extensive and ongoing enhanced engagement programme.

We have applied the DNO joint social value framework and associated Social Return on Investment (SROI) model to quantify the consumer benefits of our five CVPs and 14 additional outputs. Our assessments have been independently measured and verified, providing assurance and confidence that the values presented are conservative, comparable and consistent with the industry standard approach.

5.2 Consumer Value Propositions

The current pandemic, climate crisis and outcome of COP26 have reinforced the urgent need to act. Our holistic package of CVPs is designed to bridge the gap between words and action, by going the extra mile to deliver value to consumers and wider society before it's too late.

These proposals have been developed and tested with our stakeholders and customers and are collectively designed to drive complementary value across different parts of our plan. We have established why, as a DNO, we are best placed to undertake these activities and how consumers will benefit.

Overall, our package of proposals will deliver over £50m in net consumer benefits and wider public value, from enabling those in vulnerable situations to better prepare and cope with unforeseen events, through to restoring ancient seagrass beds and biodiversity under the seas, and delivering a truly whole systems solution to bridging the digital divide.

Our proposals align with Ofgem's CVP categories of vulnerability, DSO, whole systems and environment. All of our CVPs meet Ofgem's requirements to deliver at least £3m in net consumer value, as outlined in the table below.

Further information on our proposals is available in relevant chapters and in our CVP annex, which also details our extensive stakeholder engagement and robust Social Return on Investment analysis.

Consumer Value Proposition	Chapter	Proposition	Aspiration	Costs £m	Gross Consumer Value, PV £m	Net Consumer Value, PV £m
Embedded whole systems support services for local authorities	Whole Systems	Providing embedded support and resource to enable 72 Local Authorities and up to 200 Community Groups to optimise their use of the electricity network and plan whole system opportunities to facilitate the net zero transition.	Deliver net zero capabilities at pace, helping build capabilities beyond SSEN and embed skills for societal benefit. Enable more efficient siting of infrastructure, such as Electric Vehicle charging hubs and heat pump trials, reducing long-term costs.	12.3	22.9	11.2
Energy efficiency accelerator for smarter networks and local and community flexibility market stimulation (combined)	DSO	Partnering to deliver energy efficiency at targeted points on our network supporting a reduction in bills and providing direct energy efficiency improvements to 112,000 households. Facilitate up to 7,000 LCT installations as part of Market Flex Stimulation, supporting 50 Constraint Managed Zones across RIIO-ED2.	Reduce costs to customers by partnering to deploy energy efficiency measures where these are likely to have the most significant benefit on alleviation of network constraints, prioritising areas with high levels of vulnerability or fuel poverty. Ensure all customers are able to access and benefit from the future energy system, including participating in flexibility markets, and benefiting from them.	36.8	40.9	7.1
Protecting marine biodiversity: life below water	EAP	Plant up to 17 hectares of seagrass meadows during RIIO-ED2, aiding biodiversity recovery, supporting climate adaptation pathways, and provide carbon sequestration as an alternative to offsetting.	Contribute to a 1.5°C Science Based Target pathway and recognise our role in supporting biodiversity and delivering wider societal benefits. Encourage other DNOs and large corporations in the UK to look at our waters as key environmental protection zones.	2.6	5.8	3.4
Supporting broadband to island communities through our assets	Whole System	Support the delivery of broadband services to 14 remote communities through a whole systems solution to utilise the fibre in our subsea cables, creating significant wider societal benefits.	Challenge typical limitations and look for lowest whole systems solutions, using our asset base for public good. Encourage wider customer benefits through using the fibre network to share data and enable systems, such as future flexibility markets. Empower customers to participate in the energy transition and make more informed decisions as the future market opportunities develop.	8.0	34.5	27.0
Personal Resilience Plans	Vulnerability	Targeted, personalised and proactive personal resilience support to a total of 420,000 new and existing PSR customers, providing up to 21,000 battery packs to new and existing PSR1+ customers.	Aspiration for all PSR customers to have a PRP. We want to help all customers with personalised advice relevant to them about what to do if there is an interruption or emergency situation. New base level PSR offering in RIIO-ED3.	7.3	10.7	3.9
TOTAL				**67.0**	**114.7**	**52.6**

Overview of our CVP package (net benefits)

6 KEY CHANGES SINCE DRAFT AND OUR UNDERLYING ASSUMPTIONS

Our draft plan has continued to evolve in response to feedback from our stakeholders and the further refinement of our analysis and evidence-base. We provide an overview of changes since our draft plan in the remainder of this section and outline the key assumptions which underpin our proposals.

Overarching Plan Changes	
Overall reduction in our baseline ask	• By refining our analysis, we have reduced our baseline ask by overall £151m. While in some areas we have increased our ask, for example in relation to PCBs, we have identified further savings and efficiencies elsewhere. • As part of this, we have also considered the balance of costs funded through our baseline vs uncertainty mechanisms. In line with regulatory engagement, we have identified further discrete spend which can be funded through uncertainty mechanisms.
Efficiencies	• While we consider a 0.5% p.a. ongoing efficiency target to be appropriate for the sector for the reason outlined in our draft business plan, we recognise that our current efficiency performance requires improvement. As such, we are proposing a more aggressive stretch ongoing efficiency assumption of 0.7% p.a., equating to £141m. • We have developed an efficiency trace showing the detailed breakdown of efficiencies mapped to cost categories, which also shows cost avoidance and Closely Associated Indirect relationships. This totals £269m of cost reductions.
CVPs	• We have further developed and refined our CVP proposals, in collaboration with our stakeholders. Our business plan now includes a fully-costed package of CVPs, supported by robust analysis on Social Return on Investment (SROI).
Incentives	• Ofgem has yet to define key incentives such as the Strategy Delivery Incentives (SDIs). Recognising that final incentive design will need to be consulted on at the very latest as part of draft determinations, we have proposed our own detailed design for these incentives in our business plan.

Section B: A Valued and Trusted Service for Our Customers and Communities

	Key changes since draft plan	Business plan assumptions
Vulnerability	• We have increased our ambition in this space and provided more detail on key activities to support fuel poor customers and those in vulnerable situations as we transition to net zero.	• Our business plan assumes a growing role for DNOs in supporting their communities as we transition to net zero, in line with Ofgem's Business Plan Guidance.
Digitalisation	• Our IT, OT and digitalisation activities are central to delivering key outputs and consumer benefits across our plan. We have therefore clarified how our digital investments support our strategic outcomes and the outputs and activities we have co-created and/or tested through our enhanced engagement processes.	• Our business plan is designed to ensure that we place digitalisation at the heart of our activities, from how we manage our assets to the services we provide to our customers.

Section C: A Safe, Resilient and Responsive Network

	Key changes since draft plan	Business plan assumptions
Deliverability assessment and efficiencies	• We have reduced specific work volumes based on a more detailed deliverability assessment and applied efficiencies of £184m in areas where we recognise there is more we can do to drive down cost.	• n/a
Investment justification	• We have improved the justification for our baseline investments based on feedback from our stakeholders, and provided greater transparency on how activities compare to RIIO-ED1.	• n/a
Supporting the Scottish Islands	• We have refined our strategy to ensure a reliable and sustainable service to the islands with a strong focus on identifying whole systems solutions.	• Our business plan includes projects in the baseline, as it is vital we are able to upgrade our fleet of subsea cables in a timely manner where a whole systems solution cannot be identified, therefore ensuring customers and communities continue to receive a high-level of service.
Improving reliability	• We have carried out a detailed assessment of the activities required to improve reliability for our customers and meet our Interruptions Incentive Scheme (IIS) targets. Our plan includes targeted investment supported by robust cost-benefit-analysis (CBA).	• Incentive targets should always be set in such a way that drives efficient behaviour. The cost of meeting targets should not exceed the value to consumers. We have based our choice of investments in our plan on this principle.

Section D: Accelerated Progress Towards a Net Zero World

	Key changes since draft plan	Business plan assumptions
Enabling net zero	• Our evidence demonstrates that Consumer Transformation is the most credible scenario. Our approach to funding interventions (including reinforcement and flexibility) is based on ensuring that we do not foreclose credible net zero pathways, while ensuring customers are protected from unnecessary bill increases. • We have moved an additional £52m of investments at HV and LV levels into uncertainty mechanisms. This is because the exact location of the required interventions is not yet known, and the shorter lead times at HV and LV levels mean that deliverability is not impacted. • This will also enable us to work closely with our stakeholders to identify where interventions on our network are required at a local level, to be funded through uncertainty mechanisms.	• Our business plan is net zero compliant and assumes that a sufficiently agile uncertainty mechanism will be available in RIIO-ED2 to fund the activities required to deliver on our communities' net zero ambition. We have proposed an uncertainty mechanism which we consider strikes the right balance between agility and protecting customers. • Delivering net zero will require a shift in mindset from all parties, and greater collaboration to allow DNOs to act as true enablers to net zero. • Our business plan is in line with Ofgem's minimum requirements relating to Access SCR and considers the impacts of Ofgem's 'minded-to' consultation in June 2021. Any significant departure from this position may have additional impacts on our business plan which we will not have been able to account for.
Investment justification and deliverability	• We have improved the justification for our baseline investments based on feedback from our stakeholders. • We have rephased our investment to take into account our deliverability assessment, and ensured we will be ready to ramp up activity as required.	• n/a
DSO	• We have provided additional information on how we will manage potential conflicts of interest throughout RIIO-ED2, based on the successful functional separation currently in place in RIIO-ED1.	• Our business plan is based on current governance arrangements. Any changes to governance arrangements must be subject to consultation and be supported by robust evidence of genuine consumer benefit.

Section E: Innovation, Deliverability and Cost Efficiency

	Key changes since draft plan	Business plan assumptions
Uncertainty mechanisms	• We have further refined our proposals for uncertainty mechanisms, including removing a number of proposals and adding two new mechanisms: (i) a whole systems mechanism for the Scottish islands, and (ii) an opex adjustor (see below).	• We have considered the suite of uncertainty mechanisms in its entirety when assessing potential impact on bills, noting that it is unlikely all uncertainty mechanisms will be triggered to their full amount, and some uncertainty mechanisms may be used to return unspent allowances to customers. • While we have included the uncertainty mechanisms introduced by Ofgem in addition to our own proposals in our analysis, some of Ofgem's mechanism relate to significant policy changes which we cannot quantify at this stage.
Deliverability	• We have refined the phasing of work in our RIIO-ED2 plan to ensure we are able to deliver on the net zero challenge. As part of this, we have revisited our work programme in RIIO-ED1 to ensure we are taking every opportunity to set up our organisation for the enhanced volume of work we expect in the RIIO-ED2 period. • We have identified synergies across our plan, achieving over £5 million in saving and releasing 1,180 MVA of capacity by aligning core load and non-load activities.	• The deliverability of our overall strategic outcomes assumes that we will receive the required funding to deliver key outputs and that the uncertainty mechanisms framework will enable an agile approach to funding, in particular for strategic investment.
Closely Associated Indirects	• We have challenged ourselves to increase efficiencies within our closely associated indirect costs of £38m. • We have also introduced a new opex adjustor uncertainty mechanism, with up to £131m of potential additional expenditure to support strategic load investment and environment-related uncertainty mechanisms.	• n/a

7 BOARD ASSURANCE STATEMENT

Overview from Board

As Board Directors, we have taken an active role in the oversight and development of the RIIO-ED2 business plan. Our two Non-Executive independent Directors have played a visible and active role in oversight and challenge of our plan.

Our plan has been the subject of extensive review by our customers, independent experts, our Customer Engagement Group (CEG), who have attended several Boards, and our Group Executive Boards. Recognising our responsibility to deliver a clear, transparent, and accurate plan, we, as a Board, have maintained focus on the requirements set out by Ofgem in the delivery of our plan, including adherence to the Data Assurance Guidance, direct executive accountability and review over each plan section, and an independent assurance process, to ensure we are collectively confident in our submission.

We have taken a risk-based approach to our assurance framework based on best practice, adopting a 'three-lines of defence model'. This model provides a flexible and iterative view that allows us to adapt as our business plan develops.

We, as a Board, have considered the financeability of our RIIO-ED2 plan and are satisfied that the licencee is technically financeable on both a notional and actual capital structure, and that all applicable measures to aid financeability have been considered, including supporting evidence and justification, in support of this submission of our final plan. We do however see adverse impacts on credit financeability in RIIO-ED2 as a result of Ofgem's proposed Cost of Equity, which should be addressed in Ofgem's Determinations.

Governance arrangements for developing our plan

Good governance and dedicated resource have been a cornerstone of our plan development. A RIIO-ED2 Executive Sub-committee comprised of our executive directors, each of whom has direct accountability for individual plan components, was established early in the process. This committee oversees the strategic direction, progress, management of risk, and assurance of our business plan. Reporting into this board is a team of experienced senior staff who have been dedicated to the development of our plan since early 2020, working in partnership with colleagues across the business to maintain a clear focus on accurate and robust proposals, a smooth transition from RIIO-ED1 into an ambitious RIIO-ED2 period, and to ensure our proposals are deliverable and meet the needs of consumers.

In addition to the RIIO-ED2 Sub-committee, our RIIO-ED2 leadership team has maintained regular engagement throughout the development of the plan with our Chief Executive in a dedicated RIIO-ED2 executive forum, as well as regular engagements with our PLC Board and Executive Committee. These additional governance forums have carried out deep-dive reviews on our plan alongside key areas of strategy, customer feedback, bill impact and financeability.

Our approach to assurance

We recognise the importance of a robust assurance process to drive confidence that our plan is accurate, efficient, and one that shows ambition in meeting the needs of our stakeholders. Our business has a clear internal controls framework that was augmented for our business plan in an industry recognised 'three lines of defence approach'. We, as a Board, have maintained oversight of the assurance process, from its development for RIIO-ED2 through to its application for our draft and final submission. We also recognise the input of our Customer Engagement Group in their review, challenge and input into our assurance process.

Independent assurance and specialist insight in our plan has been an essential ingredient in producing an accurate, efficient plan that meets the needs of stakeholders. We have engaged independent assurance reviews in these key areas to provide a robust assessment in how we have addressed stakeholder feedback, provide assurance on the clarity, transparency and robustness of our investment proposals and accompanying justifications, assurance that our IT portfolio is based on a fair and reasonable cost profile, and assurance that our governance and controls are appropriate and in compliance with the requirements of Ofgem's Data Assurance Guidance (DAG).

Board assurance of our business plan

We, as a Board, have maintained clear and regular oversight in the development, assurance and submission of our RIIO-ED2 business plan. The RIIO-ED2 team provided a detailed overview of the content of the final RIIO-ED2 business plan submission at a series of meetings in October and November 2021.

Members of the Board acknowledged and confirmed that the plan properly set out the level of assurance that has been provided by the directors, in terms of being satisfied that the associated costs have been tested for accuracy, ambition and efficiency, all in compliance with the Ofgem Business Plan Guidance for this submission of the RIIO-ED2 business plan.

The Board also acknowledged and confirmed that the Directors are satisfied that the licencee is technically financeable, but consider that Ofgem's proposed Cost of Equity shows an adverse impact on credit financeability. Members of the Board recognise that to ensure credit financeabiity over the short and long term will need to be addressed as part of Ofgem's Determinations, in order to support the significant investment needed to transition to net zero.

The Board acknowledged and confirmed that they were satisfied that the directors had provided the level of assurance required by and in compliance with the terms of the Ofgem Business Plan Guidance, and were satisfied that the accuracy and quality assurance processes in place ensures that the Board has had the opportunity for oversight and input throughout the development of the RIIO-ED2 business plan and that it is in the best interests of existing and future consumers.

"Our ongoing engagement with the RIIO-ED2 project team provides me with confidence that our ambitious business plan has been built to deliver on the needs of our customers and stakeholders and allows us to take a leading role in delivering a sustainable net zero carbon future. I am confident we have produced a strong, financeable plan that our management team will successfully deliver in the years to come."

DAVID RUTHERFORD
Senior Independent Director, SSEPD Board

"The plan is founded on a robust governance framework with a comprehensive assurance programme around its accuracy, ambition and efficiency. As a Board, we have had close engagement with the RIIO-ED2 project team and are satisfied that the plan has been extensively challenged and reviewed. I particularly welcomed the input of the Customer Engagement Group and their regular interactions with the Board."

GARY STEEL
Senior Independent Director, SSEPD Board

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Scottish & Southern Electricity Networks

pklaentschi@outlook.com

From: Warner, Lisa <Lisa.Z.Warner@sse.com>
Sent: 24 November 2021 16:24
To: 'Paula Klaentschi'; Lundi, Ruth
Cc: Atkins, Steve
Subject: RE: [EXTERNAL] Chickerell GSP BSP

Flag Status: Flagged

Hi Paula

Apologies, my phone is currently faulty and awaiting a replacement so I haven't received your voicemail.

The Account Manager that covers this area is Ruth Lundi who can help with your queries, however I should be able to cover off most of those you have raised below.

- A Grid Supply Point (GSP) is a substation within which electricity is delivered from the Transmission System (National Grid) at 400kV and transformed down to 132kV through to the Distribution System (SSEN or whichever DNO relates to the area you are looking at).
- A Bulk Supply Point (BSP) is a substation where 132kV electricity is transformed down to 66kV or 33kV
- Primary substations transform electricity from 66/33kV to 11kV
- Local Substations transform this 11kV electricity down to 440V or 240V which then delivers electricity out to homes etc
- The Project_670 shown here is where a customer had submitted an application to connect 15.2MVA of generation on to our 33kV network, and subsequently accepted this connection offer. The particulars about this project I am unable to share. The project could be ready to connect or may have some time before completion. This level of information can't be ascertained by the map I'm afraid so I'm unable to tell you when this particular project is due to complete.
- With regards to the constraints, the screenshots below show the upstream constraint is likely to be the National Grid constraints detailed under "Transmission Works" within the GSP information. These are ongoing works that more often than not require certain curtailments for a project until the Transmission works are complete, rather than delaying the connection itself.

I hope this has helped somewhat, I understand often a phone call is generally much easier! If you have any further questions please feel free to contact Ruth who can look into them for you.

Bets wishes

Lisa

Lisa Warner
Account Manager (SEPD)
Scottish and Southern Electricity Networks
Walton Park, Walton Road, Cosham, PO6 1UJ

M: not available at this time
Normal Working Hours: Tuesday 0830-1530 | Wednesday 0800-1700

stoppwi@gmail.com

From: Delegation of United Kingdom/Délégation du Royaume-Uni <dl.united-kingdom@unesco-delegations.org>
Sent: 02 October 2023 12:54
To: stoppwi@gmail.com
Subject: RE: Developers Appeals to higher authority seeking permission for a waste incinerator in Portland Harbour

Flag Status: Flagged

Thank you for your correspondence regarding the Dorset and East Devon Coast (Jurassic Coast) World Heritage Site.

Historic England, the UK Government's statutory advisers on World Heritage Sites, continue to monitor the application for the proposed waste incinerator and to engage with the Local Authority.

The Jurassic Coast Trust's view that the proposals would negatively impact the World Heritage Site as a result of this proposed development within its setting is shared by Historic England and DCMS.

Many thanks once again for your interest and passion in protecting our nation's heritage.

United Kingdom
Delegation to UNESCO

Permanent Delegation of the United Kingdom of Great Britain and Northern Ireland to UNESCO

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From: stoppwi@gmail.com <stoppwi@gmail.com>
Sent: 23 September 2023 17:55
To: Delegation of United Kingdom/Délégation du Royaume-Uni <dl.united-kingdom@unesco-delegations.org>
Cc: Eloundou Assomo, Lazare <L.Eloundou-Assomo@unesco.org>
Subject: FW: Developers Appeals to higher authority seeking permission for a waste incinerator in Portland Harbour
Importance: High

Department for Culture, Media & Sport

Ministerial Support Team
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Ms Paula Klaentschi
Co-ordinator, Stop Portland Waste Incinerator Campaign
stoppwi@gmail.com

23 October 2023

Our Ref:
TO2023/09931/RS

Dear Ms Klaentschi,

Thank you for your correspondence of 2 October to the Secretary of State for Culture, Media and Sport, the Rt Hon Lucy Frazer KC MP, regarding the proposed Energy Recovery Facility at Portland Port, and the Jurassic Coast World Heritage Site. I am responding as a member of the Ministerial Support Team.

As England's only World Heritage Site inscribed for natural criteria, it is vital that the site remains protected from a wide range of threats, such as climate change and harmful planning and infrastructure developments. As you highlight in your letter, the area also has an important sporting legacy, the significance of which should be recognised and appreciated.

I understand that since your last letter to the department, and the previous response from the then Heritage Minister Nigel Huddleston MP, the application for the proposed waste incinerator was refused by the Local Planning Authority and the applicant has now lodged an appeal against this decision. This department's position remains the same: we concur with the views of Historic England as well as the Jurassic Coast Trust and others, that the development would negatively impact the World Heritage Site.

Although the Department for Culture, Media and Sport does not have a statutory role in the planning process, we are aware that Historic England, the UK government's expert advisers on World Heritage Sites, will be offering a statement to the Planning Inspectorate regarding the impact of the proposals on the outstanding universal value of the World Heritage Site, as will the Jurassic Coast Trust, to ensure that this is fully considered under the appeal process.

We will continue to monitor this case closely. I would encourage you to continue to engage with the planning and appeals process via the Planning Inspectorate.

I hope this information is helpful.

Yours sincerely,

Rhiannon.
Ministerial Support Team


STOP
PORTLAND
WASTE
INCINERATOR