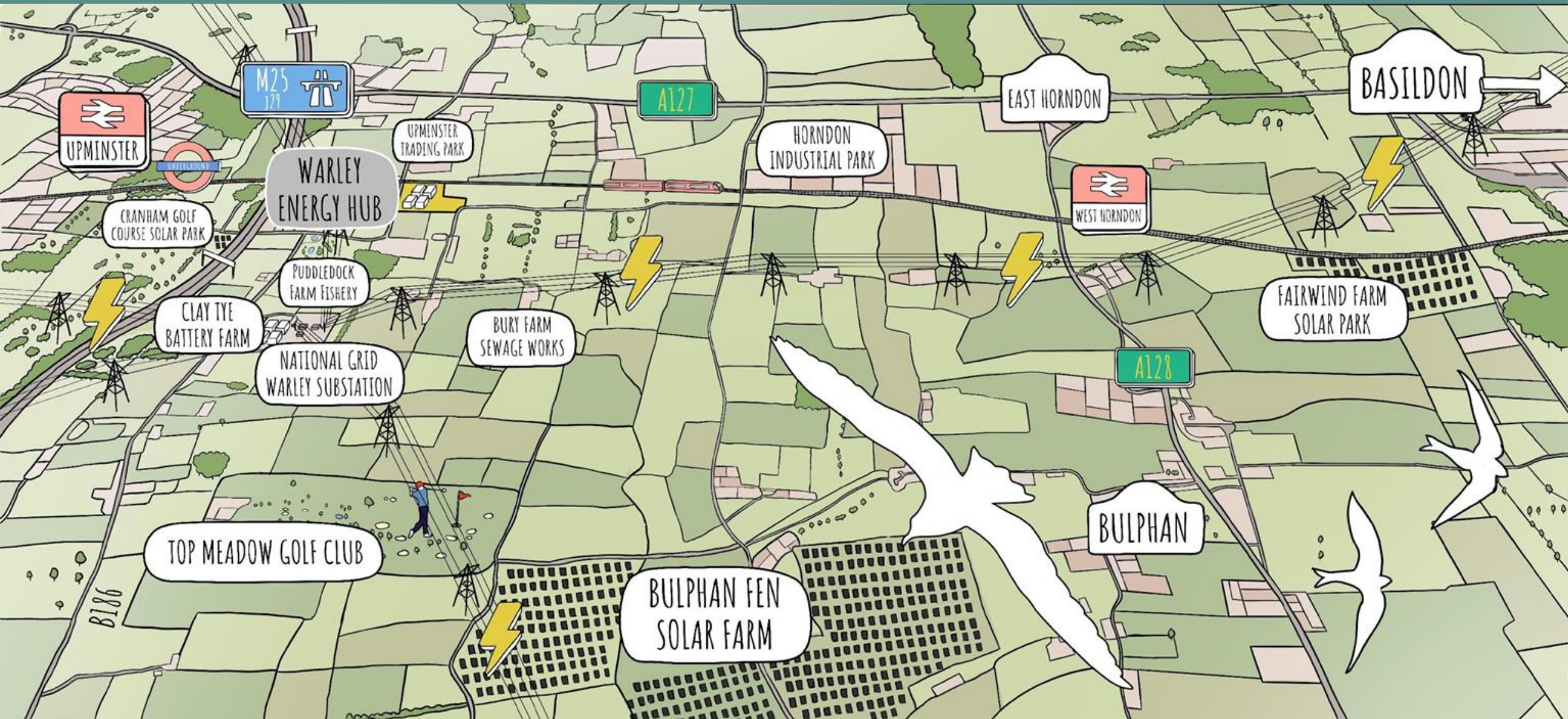
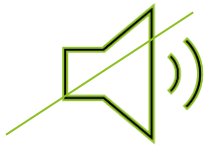
Warley Energy Hub

CLEARSTONE ENERGY



Welcome to the Warley Energy Hub webinar



Thank you for joining the Warley Energy Hub webinar.

We ask that you keep your microphones off during the presentation to avoid background noise and distractions

If you have any questions throughout, use the Q&A function at the top of your screens

There will be an opportunity to ask further questions at the end of the session

Introductions

Rob Garratt
Senior Development Manager
Clearstone Energy

Simon Rothwell
Head of Communications
Clearstone Energy

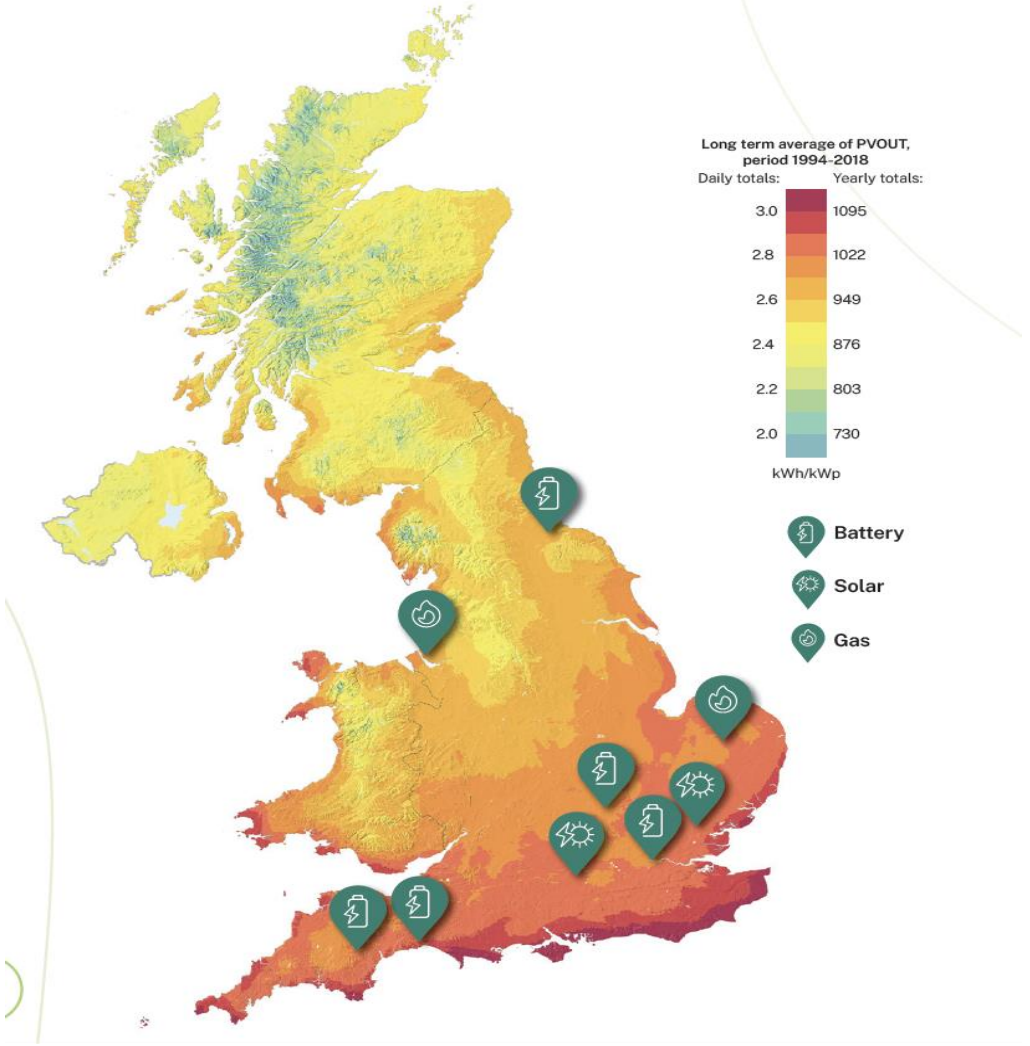
James Nicol
Head of Planning
Clearstone Energy

Joe Hassell
Fire Safety Consultant
Joe Hassell Command

Neil Osborn
Planning Consultant

Who are Clearstone Energy?

- Founded 2016
- Leading British renewable energy developer
- Long term partner of National Grid
- At the forefront of UK battery energy storage development
  - 12 projects under development
  - 4 approved and awaiting construction
- Committed to high quality and safe projects
- Contributor to the Local Community



Project Context

The UK Energy System is being transformed

Ukraine Puts Gas Supply Risks Back in Spotlight

Expectations that pipeline flows from Russia will continue past 2024 took a hit this week.

Pipes at one of Europe's largest interconnection gas hubs at Baumgarten an der March, Austria. *Photographer: JOE KLAMAR/AFP via Getty Images*

By Priscila Azevedo Rocha
26 April 2024 at 12:29 BST

Bloomberg NEWS

Tech

Fossil fuels 'becoming obsolete' as solar panel prices plummet

Solar costs down nearly 90 per cent over last decade in huge boost for renewable energy

Anthony Cuthbertson • Wednesday 27 September 2023 05:57 BST • 13 Comments

Related video: 'Significant bottlenecks': EU has same amount of solar panels stockpiled as installed, says report

The cost of solar power has dropped by nearly 90 per cent over the last decade, according to new research, taking it towards a key level that will make fossil fuel-generated power no longer economically viable.

Calculations by Berlin-based Mercator Research Institute on Global Commons and Climate Change (MCC) found that the plummeting price

The INDEPENDENT

Climate change made UK's soggy winter even wetter, study finds

The wetter weather is disrupting football matches, flooding farms and sewers and pushing up food prices, according to report author Dr Friederike Otto. She says the solutions to climate change will "make life cheaper".

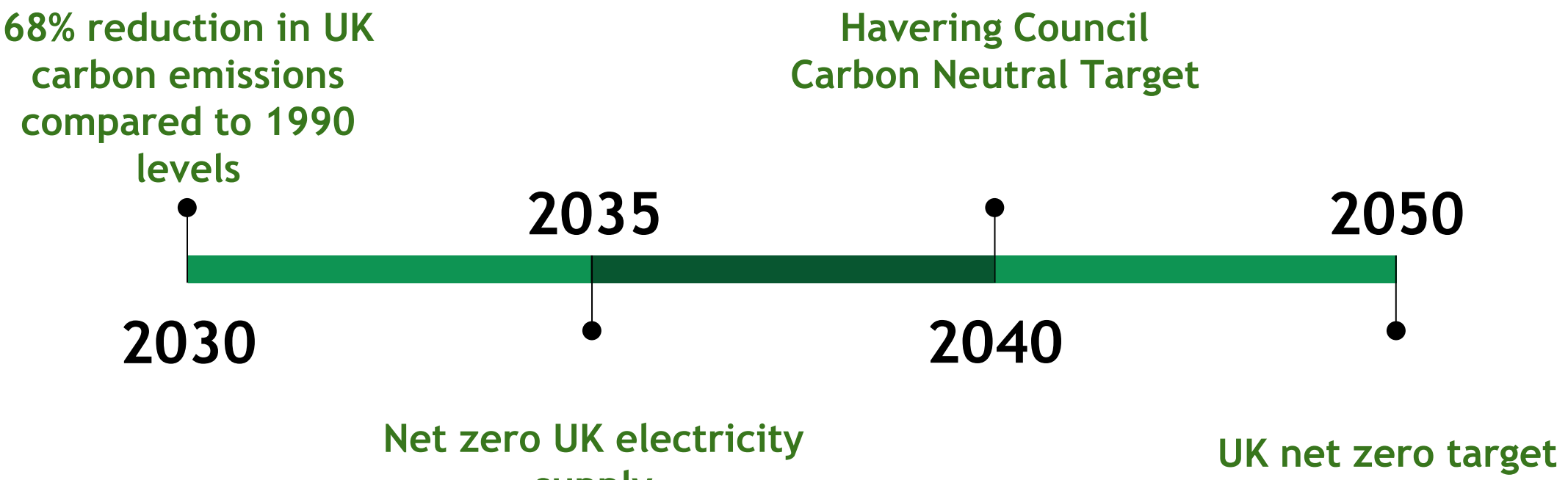
Victoria Seabrook
Climate reporter @SeabrookClimate

Wednesday 22 May 2024 12:25, UK

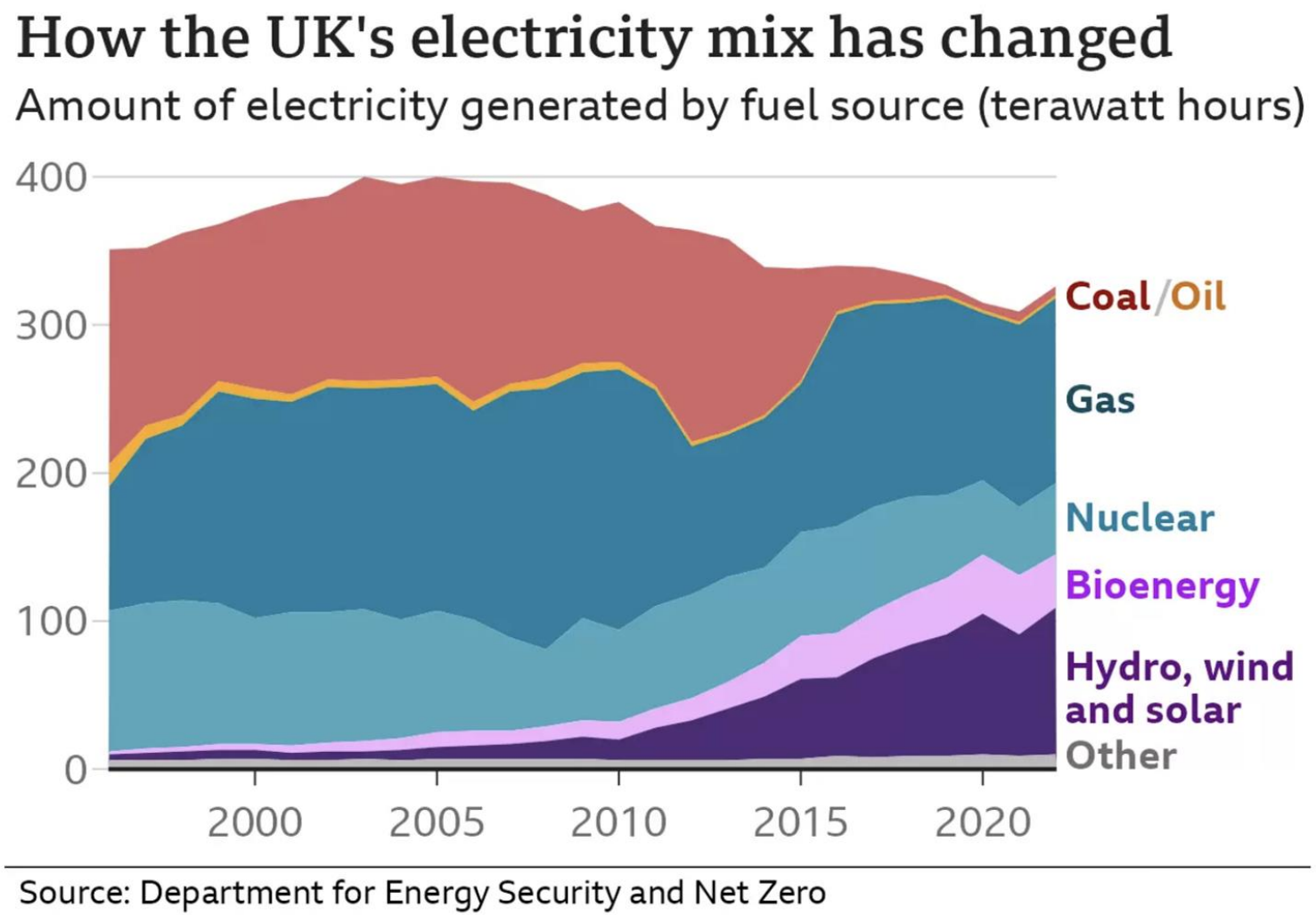
UK growers of green winter vegetables faced some of the worst winter conditions in recent memory due to wet weather. Pic: PA

sky news

Key dates


68% reduction in UK carbon emissions compared to 1990 levels
Havering Council Carbon Neutral Target
2030
2035
2040
2050
Net zero UK electricity supply
No new gas boiler installations
Petrol / diesel car sales end
UK net zero target

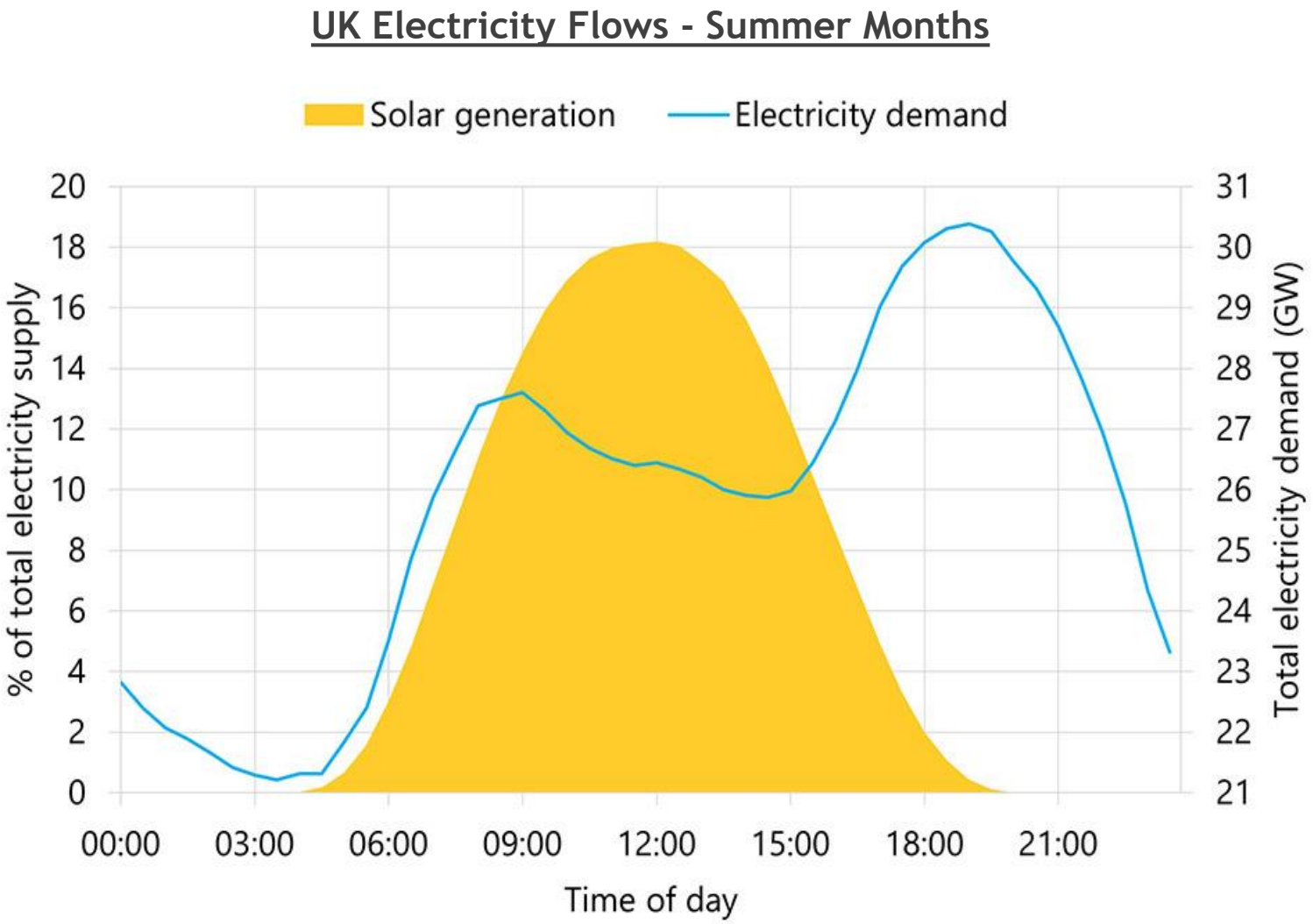
UK electricity is increasingly from renewables



43%
Of UK electricity supply in 2023 came from renewables

80%
2035 target for electricity contribution by renewables

Batteries mean we can rely on renewables



Solar and wind generation is weather dependent

Demand is working day dependent

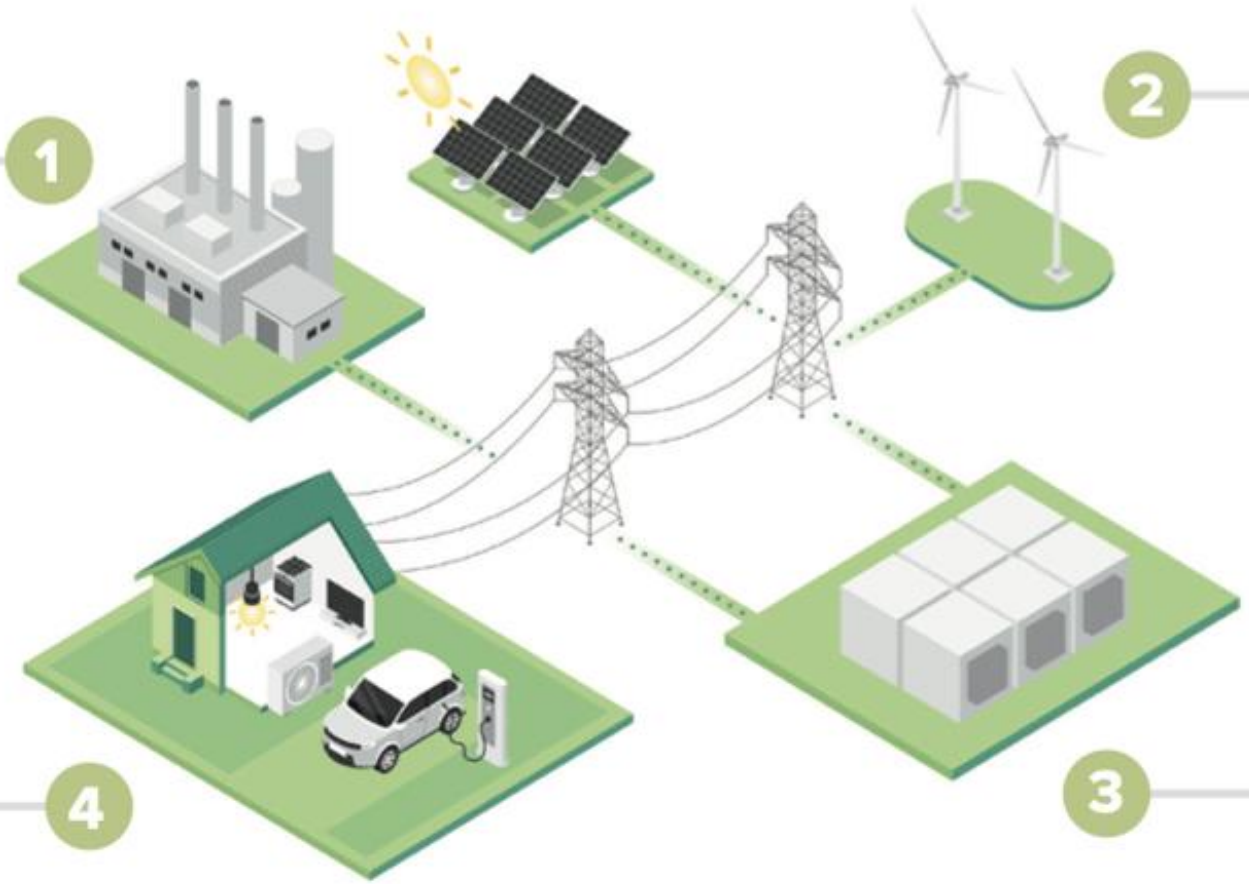
Gas fired power plants and European interconnectors are currently used to match supply and demand

Solar generation data from the National Grid ESO data portal and system demand data from Elexon BMRS

How does battery energy storage work?

1. Currently, gas power plants are turned on to supplement wind and solar energy supply and meet peak electricity demand between 7 and 9am and 6 and 8pm

2. Weather dependent wind and solar energy farms often produce more energy than is needed to meet electricity demand overnight and at off peak times during the day

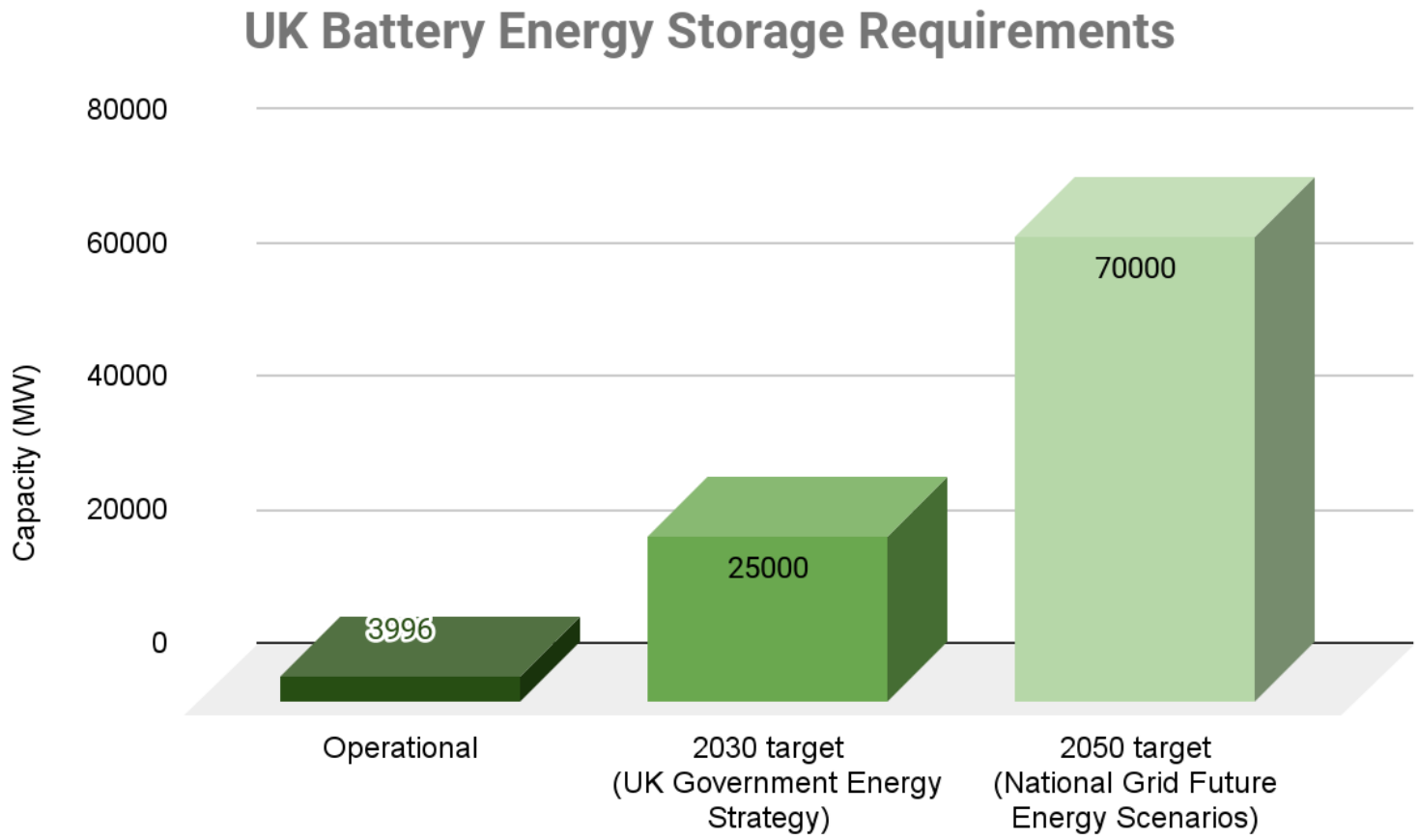


3. With both supply and demand fluctuating across the day, batteries store energy when there's more than needed to meet demand and discarge it when there's less than needed

4. Batteries maximise the amount of renewable energy we can use at home and reduce the number of times we need to turn on a gas fired power plant to meet peak demand. Saving money and reducing GHG emissions

Delivering battery storage

Delivering a clean electricity supply by 2035 requires the rapid roll out of battery storage



A lack of energy storage is increasing energy bills

In 2022, a lack of storage resulted in

3.4 TWh

of electricity from wind turbines lost due to a lack of storage on the electricity grid

5 days power

for the whole of the UK

£210 million

of payments to wind turbine operators for lost revenue

£590 million

of payments to gas-fired power plants to generate electricity equivalent to that lost from wind turbines

1.3 million tonnes of CO2

emissions from gas-fired power plants due to a lack of storage

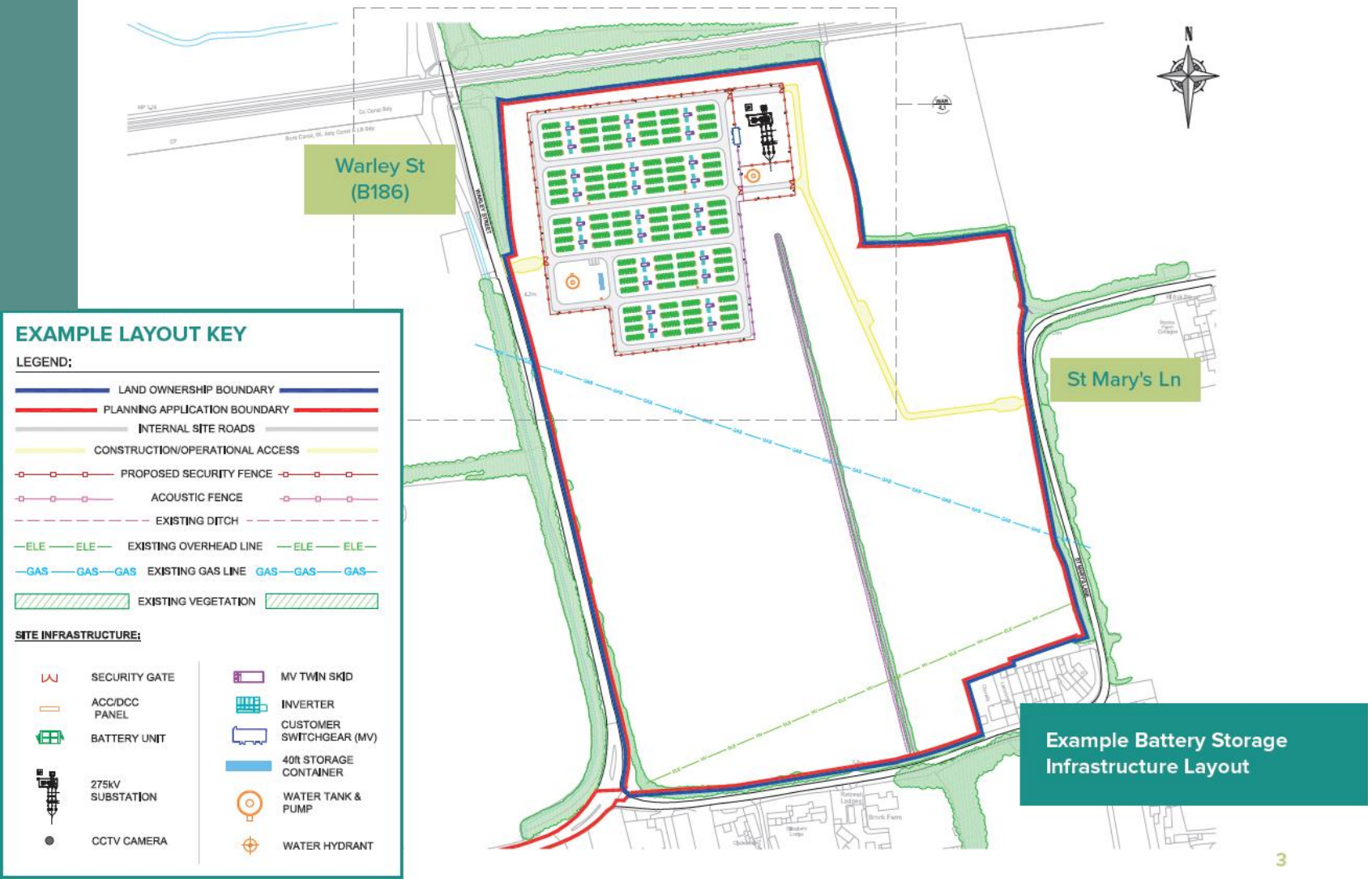
CARBON TRACKER DATA (2022)

Project Overview

Site location

- Located to south of railway line and east of Warley Street
- Connected by underground cable to Warley substation
- Warley substation plays a key role in ensuring electricity supply to Havering & Thurrock
- Adding battery storage will increase availability of renewable energy and security of supply

The site



- 3 metre maximum height of batteries and associated equipment
- 10 metre maximum height of on-site substation cable supports
- Construction access from Warley Street, operational access from St Marys Lane
- Temporary 40 year use with restoration to agriculture following

Energy impact

800 MWh
Energy storage capacity

4 hours power
For all the homes in Havering and Thurrock

108,000 tonnes of CO_2
From gas fired power stations displaced each year

5 million trees
Equivalent carbon dioxide reduction

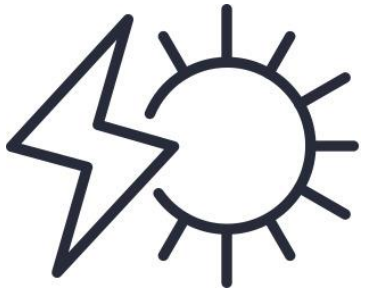
Warley Energy Hub

Ensuring Local Community benefit

Targeted package of funding

£50,000 per annum across the 40 year project lifetime (index-linked), more than £2 million

Low carbon retrofits for community buildings



Energy efficiency support for low income households

Support for community projects

Addressing concerns

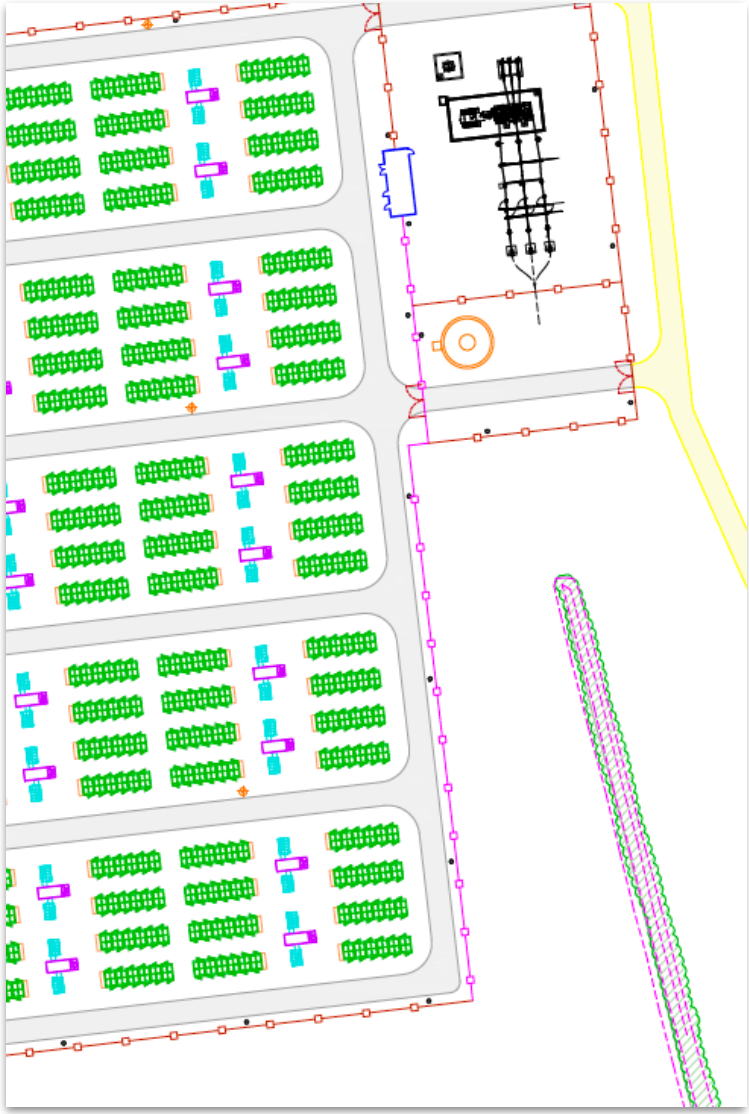
Minimising visual impact, increasing biodiversity

- New shrub and tree planting to screen views of the site from homes on St Mary's Lane
- Public right of way retained with planted screening and new meadow area

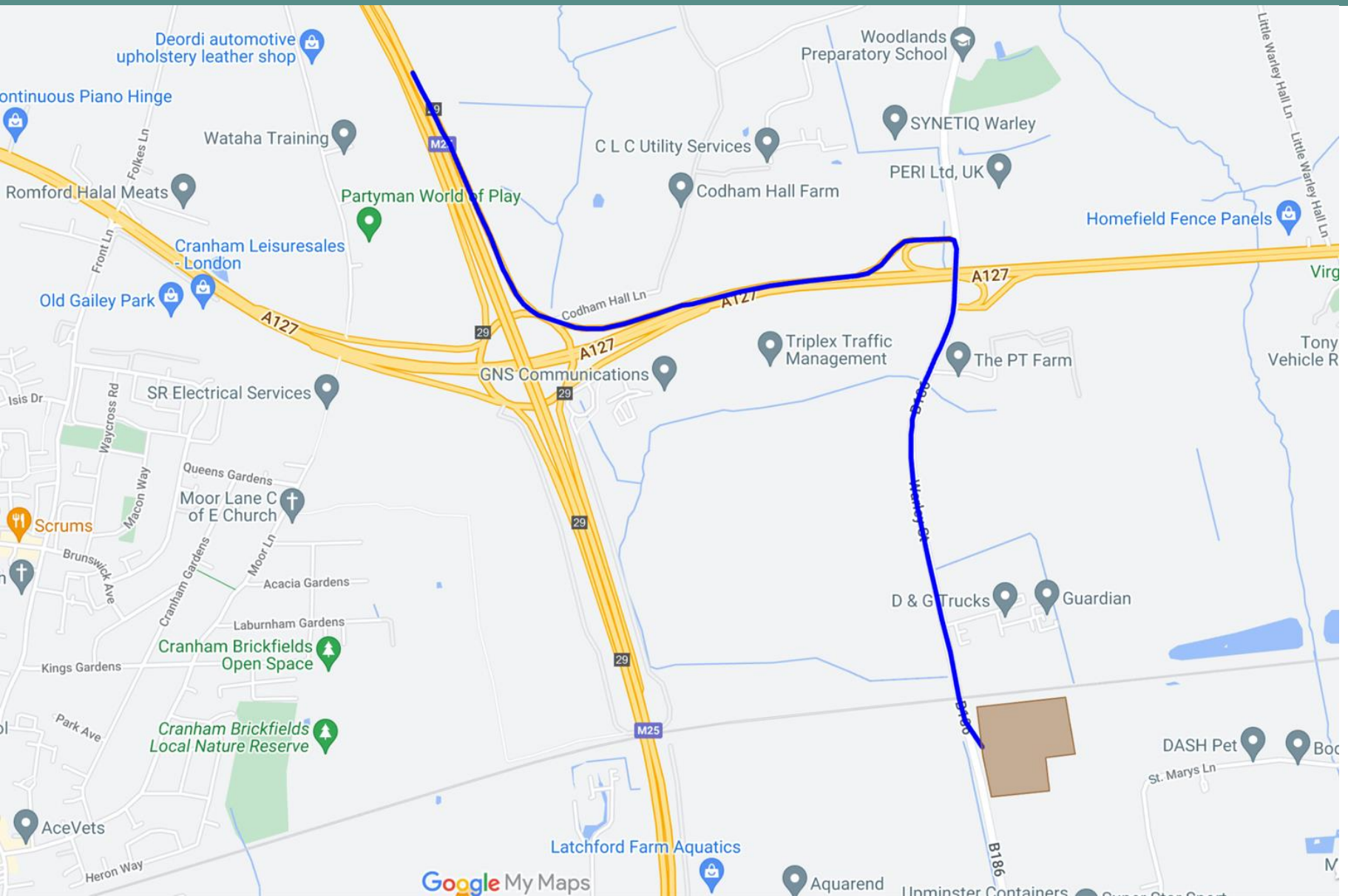
- Retaining and enhancing existing hedgerows and wildlife habitats
- Linking isolated hedgerows with new creates wildlife corridors
- Naturalising drainage with ponds creates new habitats
- Project will deliver more than 10% biodiversity net gain

Ensuring no increase in background noise

- The equipment on site requires cooling, these systems generate noise
- Noise impact assessment conducted for the proposal by 3rd party noise specialists
- An acoustic fence will be installed along the eastern edge of the site to ensure no increase in background noise
- This modelling is based on technology available today. The industry is continually evolving to reduce cooling requirements



Minimising construction traffic impact



- Short route from M25 via A127 and Warley Street
- Minimises impact on local residents
- 9 month construction period
- Average of 2 HGV deliveries in construction

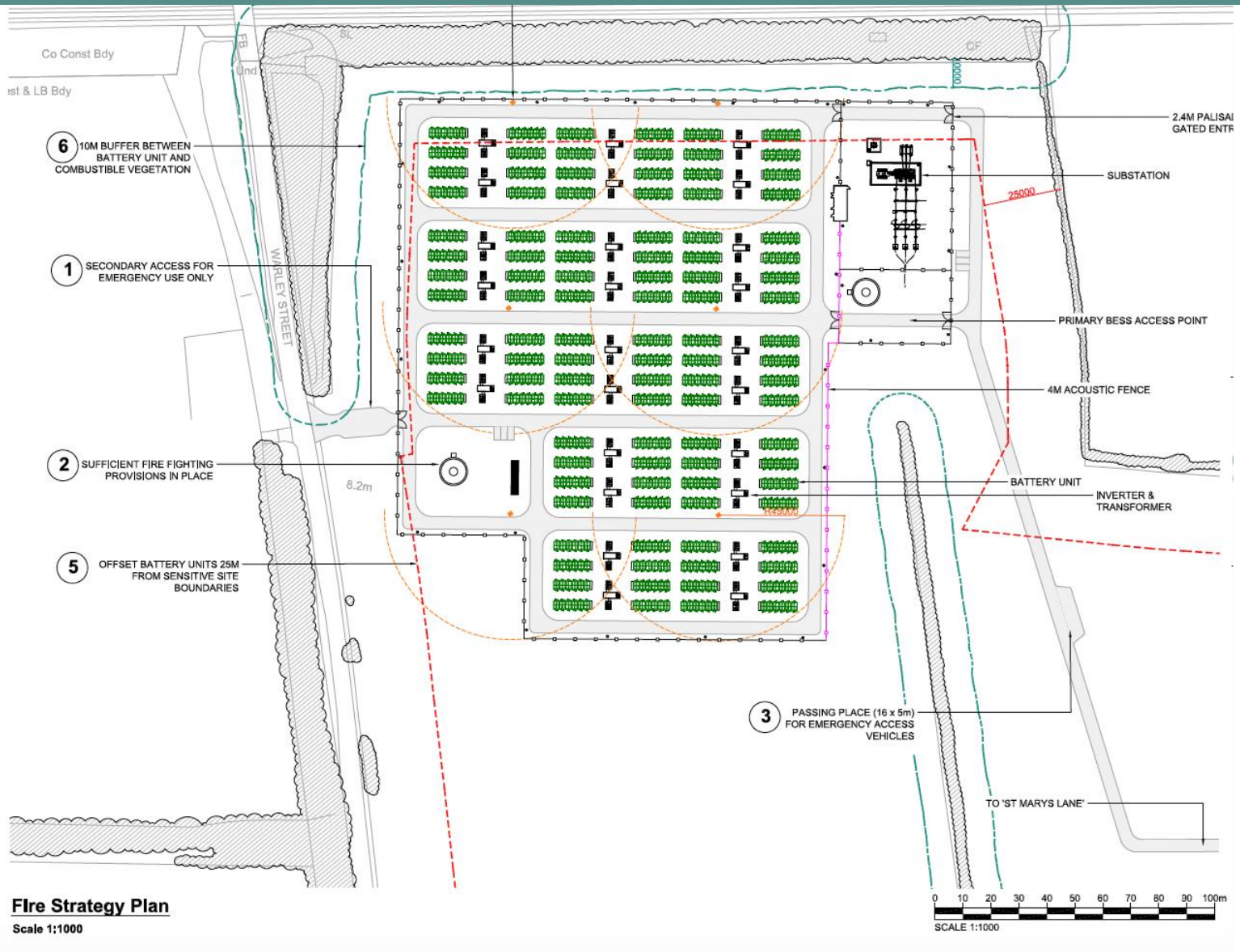
Minimising cable route traffic impact

- We will require consent from the council to undertake any work on the highways
- We will work to reduce the impact and consolidate any works undertaken
- This will form part of our planning application
- Roadworks on St Marys Lane and Clay Tye Road will need lane closures
- Expected 4 -6 weeks of work, at time of least disruption

Providing reassurance on safety

- The risk of a battery energy storage system fire is very low
- The fire risks are now well understood and managed through improved technology and site design
- We only work with tier one battery storage manufacturers who are investing in fire safety research and development and have conducted full scale fire tests to prove safety claims.
- We are working with the London Fire Brigade to put emergency response plans in place that ensure that - in the unlikely event that there is a fire - it can safely managed without putting fire fighters, the community or the environment at risk

Fire strategy plan



- Designed in consultation with London Fire Brigade to enable effective response to an incident
- We have conducted smoke and plume modelling studies to reassure communities that there are no health and safety risks in the unlikely event of a fire.
- The drainage system is designed to contain any water used to tackle a fire for removal and treatment

Project timeline

Consultation & Design Development	Planning Application	Detailed Design	Construction	Operation
July - August 2024	**September 2024**	**2026 - 2028**	**October 2028 - 2029**	**October 2029**
Consultation with local community, key stakeholders, and Havering Council	Following consultation we will respond to feedback and submit a full planning application to Havering Council for their approval	Following receipt of planning approval, detailed technical design work will be undertaken to reflect latest technologies and discharge any planning conditions stipulated by the council	Construction, including the cable, is anticipated to take 9-12 months prior to the connection date provided by National Grid	This is the connection date provided by National Grid, at which point the project will become operational

Tell us what you think

We are particularly interested in your views on:

- Our ecological enhancement plans for the site
- The types of community benefit you would like to see supported by the Community Benefit Fund
- The visual screening requirements for the site

Visit the project website – www.clearstoneenergy.com/project/warleyenergyhub

Email the project team – warley@clearstoneenergy.com

Or call us on 0800 699 0081

Post your feedback form to Freepost Clearstone Energy

The closing date for feedback is Friday 16th August

Thank you for listening

Q&A

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