Rt. Hon. Secretary of State
Secretary of State for Energy Security and Net Zero
55 Whitehall
London
SW1A 2HP

SENT BY EMAIL ONLY

Our Ref: IP Reference-20053931

Your Ref: EN020028

Please Ask For: Steve Smth

Telephone: 01253 658435

Email: steve.smith@fylde.gov.uk

Date: 19 June 2026

Dear Rt. Hon. Secretary of State

Morgan and Morecambe Offshore Wind Farms Transmission Assets Development Consent Order
Response to SoS Consultation of 20 May 2026

Fylde Borough Council [FBC] is a statutory consultee and main impacted party for the proposed Morgan and Morecambe Offshore Wind Farms Transmission Cables proposal.

This cover letter is provided by FBC for submission at the Secretary of State [SoS] deadline of 22 June 2026. This cover letter is provided in duplicate for two submissions as follows:

- Submission 1: Comments on documents associated with the proposals and published on the National Infrastructure Project website dated between 17 April 2026 and 20 May 2026 (inclusive); and,
- Submission 2: Submission of an Alternative Route National and Local Economic Assessment.

FBC considers that separate submission is appropriate in order to assist the Examining Authority with organising the examination library. However, FBC also considers that both submissions should be considered alongside each other, as well as all previous submissions, in order to gain a full understanding of the Council's position at this deadline.

This submission is the work of the FBC officers and no part of it has been generated by AI.

Submission 2

On the 20th May 2026, the Department for Energy Security & Net Zero [DESNZ] wrote to FBC, Lancashire County Council and Wyre Council jointly, in response to a joint submission made relating to the Alternative Route National and Local Economic Assessment known also as the Green Book economic review of the alternative route and connection.

DESNZ have advised that comments cannot be made on the submitted economic review, on the basis that Ministers are limited by virtue of the role and responsibility of the Planning Inspectorate in determining the application.

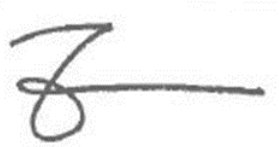
This clearly indicates that DESNZ consider it the responsibility of the Planning Inspectorate to consider the economic review as part of the determination of this application.

On this basis, FBC is formally submitting the economic review and requests confirmation as to how it will be considered. FBC wishes to comment on the intense public interest in this matter and considers it to be of utmost importance that it is made clear how this evidence will be treated, and that it is important to be able to demonstrate that responsibility for the matters raised in the assessment are not disregarded.

This is set out in the 3 attachments enclosed with this letter:

- Attachment 1 – Letter of 17 April 2026 to The Rt Hon Ed Miliband MP signed by Lancashire County Council, Wyre Council and Fylde Council
- Attachment 2 – Letter of 20 May 2026 in response from Michael Shanks MP
- Attachment 3 - Alternative route high level feasibility report by Genecon for the 3 local authorities dated April 2026

Yours sincerely,



Steve Smith
Service Director for Planning and Building Control
Fylde Borough Council

Lancashire County Council

The Rt Hon Ed Miliband MP
55 Whitehall
London
SW1A 2HP
United Kingdom

Phone: 01772 539669
Email: joshua.roberts@lancashire.gov.uk
Your ref:
Our ref: CCJR/SW
Date: 17 April 2026

Dear Secretary of State

Unlocking £520m of National Cost Savings and Up to £1.7bn GVA from Offshore Wind Transmission Decisions in Lancashire

We write on behalf of Lancashire County Council, Fylde Council and Wyre Council, regarding the proposed Morgan, Morecambe and Mooir Vannin Offshore Windfarm projects and their associated onshore transmission infrastructure.

Decisions taken on transmission infrastructure at this stage present a significant opportunity to deliver substantial national cost savings and long-term economic benefits. A light-touch, Green Book-compliant economic review commissioned by the three councils has identified that an alternative approach to onshore grid connection could deliver:

- Up to £520m in avoided national infrastructure costs, through a reduced length of underground cabling and more efficient use of existing assets.
- Approximately 1,100 additional jobs enabled at Hillhouse Enterprise Zone.
- Between £990m and £1.7bn in additional Gross Value Added (GVA) between 2030 and 2040.
- A potential 8.6% increase in the size of the Wyre economy.

Taken together, these outcomes represent an alignment of delivering value for money, energy security, and place based economic growth.

We support secure, affordable energy, but it must be delivered at the lowest possible cost to taxpayers. There is a strong local expectation that investment of this scale should also deliver clear economic benefits in the areas affected, including employment, skills and supply-chain opportunities.

The statutory planning process is focused on determining whether individual schemes are acceptable in planning terms. It provides limited scope to consider whether different

approaches to onshore connections could deliver greater economic benefit over the longer term. As a result, decisions may be taken that meet immediate project requirements but do not fully reflect wider economic considerations.

Through the Lancashire Combined County Authority, partners have agreed the Lancashire Growth Plan, which sets out how major infrastructure investment can support long term economic growth across the county and strengthen existing industrial and employment areas. The scale of offshore wind investment expected in the Irish Sea presents an opportunity in this context, particularly if decisions on onshore connections and related infrastructure are taken with a longer term, strategic view. This could support enabling infrastructure to unlock Hillhouse Enterprise Zone, an anchor Strategic Site within the Growth Plan for advance engineering and manufacturing.

Decisions taken now will have a bearing on how effectively future projects support economic growth and investment. This is particularly relevant given the likelihood of further offshore wind projects coming forward in the Irish Sea.

For this reason, the three councils commissioned a light-touch economic review, compliant with the Green Book, of the onshore cable connection options for the Morgan, Morecambe and Mooir Vannin projects focusing on the economic implications of different options. The Executive Summary of this review is attached for your consideration.

The review identified several significant matters that warrant further investigation:

- An assessment of the cost and infrastructure implications of an alternative route versus the proposed Development Consent Order (DCO) route for Morgan and Morecambe sets out potential cost savings in the order of £287m, rising to £520m if infrastructure upgrades are included to accommodate Mooir Vannin.

  These savings derive from landing Morgan & Morecambe and Mooir Vannin at Rossall and terminating at a new substation at Hillhouse Enterprise Zone adjacent to the existing Stanah substation. The new substation would be supported by upgrades to the overhead lines from Stanah-Hambleton-Penwortham to improve firm capacity to enable energy export back to Penwortham. The effect is a reduction in the kilometers of underground cable, with the Alternative Northern Route requiring around 5km, as opposed to 30km in the DCO route, for which there are significant expected cost savings.

- The failure of the Morgan project to secure a Contracts for Difference (CfD) allocation introduces a different viability dynamic, particularly in relation to the strike price required for financial viability. In a note to investors dated 15th January 2026 *EnBW stated:*

  “The primary reason for EnBW’s withdrawal is that the two projects did not receive government support through so-called ‘Contracts for Difference’ in the recently

completed allocation round of the UK Department of Energy Security and Net Zero. In combination with other factors beyond its control, this implies that the projects are no longer economically viable as per EnBW's standards and criteria. These include increasingly deteriorating conditions such as significant cost increases across the supply chain, higher interest rates and ongoing project implementation risks."

These comments in respect of economic viability and supply chain cost inflation are directly relevant. Reducing the onshore transmission infrastructure costs could reduce the strike price that would need to be achieved in a future allocation round, thereby improving viability. The project promoters note that they are capitalised with 50bn EUR to deploy across Europe and the UK by 2030 – improving the viability of the Morgan wind farm through reduced infrastructure costs could secure investment in UK energy generation as opposed to it being diverted overseas.

- A high-level ecological review has found no insurmountable environmental or ecological challenges. This contrasts with the assertions made by NESO in their recent correspondence with Fylde Council that this is a reason for not considering Stanah as the connection point. Any environmental and ecological constraints discovered have recommendations for further survey to ascertain the extent of the mitigations that are required, but it is believed that established techniques can mitigate any potential impacts effectively.

- An economic review undertaken into the constraints to economic development at Hillhouse enterprise zone shows that with a modest investment from the local transport authority and improved energy export potential as a result of a new substation and improved firm capacity on overhead lines, would enable the site to be more fully built out for both energy generating uses and industrial uses. The net additionality is some 1,100 additional jobs, and between £990m and £1.7bn in additional GVA over the decade from 2030 to 2040. These represent significant uplifts in jobs and local economic output, which would have the effect of increasing the size of the economy in Wyre by 8.6%.

This evidence highlights credible national cost avoidance benefits, the potential to reduce energy cost pressures on households through cheaper project delivery, improved prospects for offshore wind viability off the Fylde Coast, and substantial local economic benefits. These benefits would allow local communities to share in economic prosperity in exchange for the disruption associated with hosting nationally significant infrastructure.

We collectively have a duty to consider the broader context when assessing the likely impacts of a Development Consent Order. The above benefits should also be considered alongside the likely harm of consent for the Development Consent Order being granted, as set out through our submissions to the Planning Inspectorate and Secretary of State for that matter. The positive weight attributed to the likely economic and energy benefits only becomes more significant when weighed against the likely harm of the proposed scheme.

Lancashire County Council
PO Box 100, County Hall, Preston, PR1 0LD

Considering this evidence, we respectfully urge you to pause any decision on transmission assets to allow full and further investigation into these matters ensuring that strategic, economic and national value considerations are properly reflected alongside planning and technical requirements.

In addition, we would welcome the opportunity for you, or the relevant Minister(s), to visit Lancashire to see first-hand the proposed landing point, the Hillhouse Enterprise Zone, and the wider context in which these nationally significant decisions are being made. We believe a visit would provide valuable insight into both the scale of local impact and the opportunity to unlock substantial national cost savings and economic growth. If diary constraints mean that a visit is not possible, we would respectfully request a meeting in Parliament so that we can present the findings of the review and discuss how these issues might be considered further.

We look forward to hearing from you.

Yours sincerely,

Cllr Joshua Roberts
Cabinet Member for Rural Affairs, Environment & Communities
Lancashire County Council

Cllr Karen Buckley
Leader of Fylde Council

Cllr Michael Vincent
Leader of Wyre Council

Enclosure:
Economic Review of Offshore Wind Developments in Lancashire: Executive Summary

Lancashire County Council
PO Box 100, County Hall, Preston, PR1 0LD

1. Executive Summary

1.1 Purpose and Scope of Assessment

This report was commissioned in March 2026 by Lancashire County Council and its Fylde Coast local authority partners to investigate the economic merits of an alternative infrastructure route for the Morgan, Morecambe, and Mooir Vannin offshore windfarms.

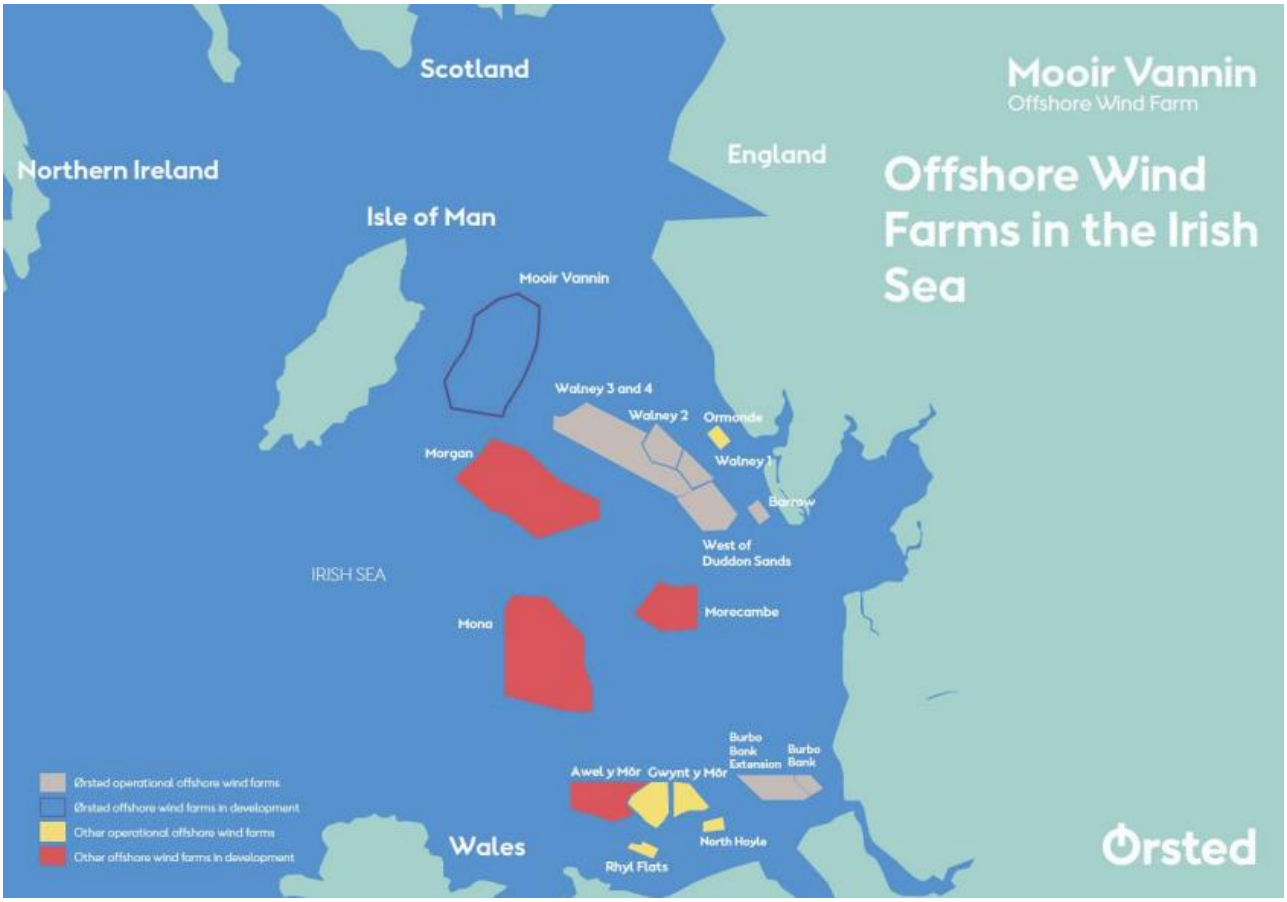


Figure 1: Location of Wind Farms in the Irish Sea

The study examines whether variations to the current proposed route (as per the Development Consent Order), involving a buried cable of approximately 30km to Penwortham, could better maximise local economic benefits and improve project viability.

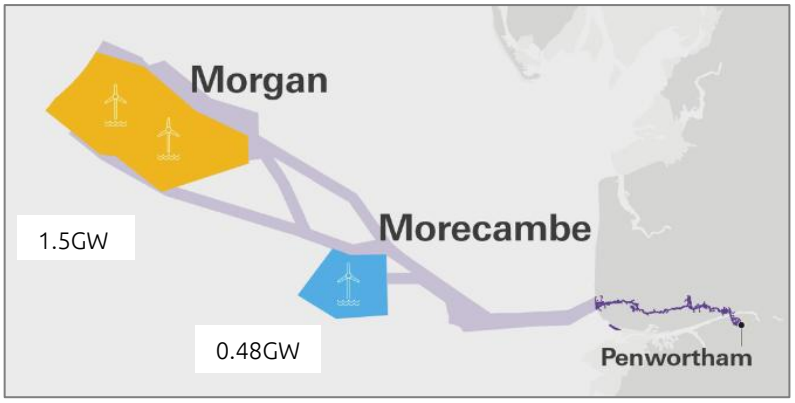


Figure 2: Morgan and Morecambe Proposed DCO route to Penwortham

The assessment was conducted by a multi-disciplinary team comprising Genecon (economics), Pell Frischmann (engineering and environmental), Blake Clough Consulting (electrical and grid), and DWD (planning). The scope included:

- An electrical and grid engineering assessment: Reviewing transmission network capacities at 400kV and 275kV levels, identifying bottlenecks at the Stanah substation, and evaluating reinforcement requirements for various connection strategies, and ultimately cost estimates for alternative infrastructure solutions.
- An environmental and ecological assessment: A desk-based review of landfall suitability at Rossall Beach and potential impacts on the Morecambe Bay Special Protection Area (SPA).
- An economic assessment of any benefits that could be realised through variations to the route, focusing on development opportunities on the Fylde Coast at Blackpool Airport Enterprise Zone, or Hillhouse Technology Enterprise Zone.

1.2 The Alternative Northern Route

Partners have assembled an alternative proposal whereby both Morgan and Morecambe land at an alternative beach at Rossall further north on the Fylde Coast, and proceed inland approximately 5km to the Hillhouse Technology Enterprise Zone, to terminate at either a new substation or at Stanah (which is adjacent to Hillhouse Technology Enterprise Zone). From the electrical and grid engineering assessment, a new substation at Hillhouse is a more viable proposition.

This route traces most of the route inland that has been suggested at pre-application stage by Mooir Vannin promoter Ørsted, but instead of continuing underground to Penwortham, terminating instead at a new substation at Hillhouse, before accessing the existing overhead lines from Stanah-Hambleton-Penwortham.

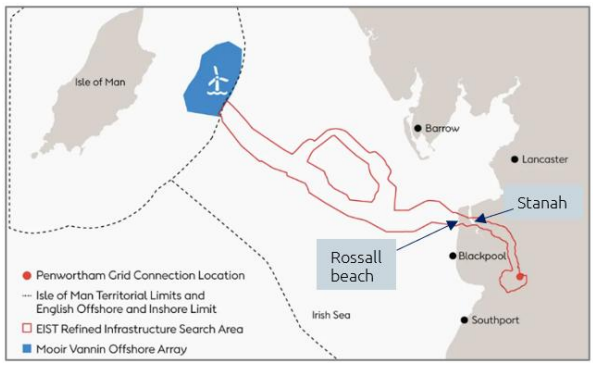


Figure 3: Mooir Vannin ("Isle of Man's first Offshore WF")

1.3 Addressing Constraints at Hillhouse Technology Enterprise Zone

The study specifically focused on the Hillhouse Technology Enterprise Zone, a 138-hectare brownfield site with a legacy of chemical manufacturing. Despite its Enterprise Zone status, and advantageous local development orders, the site faces severe, multi-faceted constraints that have limited job growth to just 75 additional roles since 2016.

Key barriers identified include:

- Energy Export Constraints: While the site has energy demand headroom, it is severely limited by the poor export capacity at the Stanah substation. This has acted as a "drag" on financial viability, preventing any meaningful energy-generating uses from materialising, despite proposals for Energy from Waste and Hydrogen storage.
- Transport Accessibility: The site is currently accessed through a predominantly residential area, which causes accessibility challenges for different types of industrial uses, thus hurting job growth at the site. The absence of a bridge or at-grade crossing over the disused railway line remains a core barrier to plots being absorbed for employment use, proposals are being developed to mitigate this, but the job growth trajectory means there is a lack of strategic imperative to act.
- Contamination and Assembly: As a former ICI site, it faces challenges related to land contamination and complex land ownership, which coupled with energy export and transport constraints means the site is quite unappetising for bringing forward private development.

1.4 Consideration of Blackpool Airport Enterprise Zone

The assessment also considered a southern route variation terminating at a new substation within the Blackpool Airport Enterprise Zone. The site has been quite successful locally and is largely built out with the exception of the former Wellington Bomber Factory, and any other plots which are as yet undeveloped have agreements or developed proposals. While this option does offer some cost savings and could accelerate the "Silicon Sands" data centre campus by approximately five years, it was found that stakeholders are already confident that power for this site will be delivered through other planned investments by 2035. Furthermore, this variation does not mitigate the environmental and community disruption associated with the long and buried cable route through the Fylde Coast.

1.5 Key Findings: Cost Savings and Project Viability

The findings of the study support assertions that there are significant financial cost savings through alterations to the infrastructure route that is proposed in the DCO -replacing the route with a Northern Route via Rossall and terminating to a new substation at Hillhouse Technology Enterprise Zone. This route would benefit from reduced underground cabling costs, lower disruption to communities, and would make use of the existing overhead infrastructure that exists between Stanah, Hambleton and Penwortham. The cost savings are estimated at £287 million for the Morgan and Morecambe wind farms, rising to over £500 million if coordinated with the forthcoming Mooir Vannin project.

Option	Cost	Versus BAU
Option A: Business as Usual, DCO Route		
Option A1: Morgan and Morecambe Only	£459.0m	-
Option A2: Morgan and Morecambe and Mooir Vannin	£869.7m	-
Option B: Connection to Hillhouse/Stanah		
Option B1: Morgan and Morecambe only	£218.1m	£240.9m
Option B2: Morgan and Morecambe and Mooir Vannin	£350.6m	£519.1m
Option C: Connection to Blackpool Airport EZ		
Option C1: Morgan and Morecambe only	£398.4m	£60.6m
Option C2: Morgan and Morecambe and Mooir Vannin	£663.1m	£206.6m

These savings materialise via:

- **Infrastructure Efficiency:** By landing cables at Rossall and utilising existing overhead transmission lines, the project can drastically reduce the volume of expensive underground cabling, reducing from circa 30km to 5km.
- **Improved Viability:** These savings are critical given the current investment climate. The report notes that developers EnBW have already withdrawn from the Morgan project due to lack of financial viability from failing to secure Contracts for Difference (CfDs) from the UK government, and from construction cost inflation. Reducing capital expenditure by half a billion pounds could significantly improve the overall viability and deliverability of the Morgan wind farm. This could potentially allow it to secure a CfD at a lower strike price than was previously required to make the project viable. EnBW are well capitalised, and have an estimated 50bn EUR to invest, without intervention it appears they are looking to deploy capital elsewhere in Europe where they are able to make the required viable return. This loss of this foreign direct investment could be a real missed opportunity for the UK given the Government's ambition for the UK to reach up to 50 GW of clean energy from offshore wind by 2030. At the end of 2024, the UK had an offshore wind capacity of just16 GW.

1.6 Unlocking Economic Growth

Establishing a new substation at Hillhouse has the potential to unlock considerable additional jobs and Gross Value Added (GVA) by transforming the site's underlying economic fundamentals, and improving the business case for transport investment to facilitate improved access to the site.

There are also benefits to an alternative solution with a substation at Blackpool Airport EZ, but there are potential technical constraints, lower (though significant) costs savings, and an economic benefit that is about acceleration rather than a change of trajectory.

For Hillhouse Technology Enterprise Zone, a change of infrastructure solution to develop a new substation on the site, with a tee-in to the existing Stanah-Hambleton-Penwortham overhead lines and associated upgrades is expected to yield the following benefits:

- Employment: The transition is expected to support 1,100 additional jobs compared to the current trajectory, driven by the arrival of energy-generating uses and subsequent energy-intensive industrial uses.
- GVA Uplift: The local economic benefit is projected to range between £99 million and £177 million per annum. The upper bound represents an 8.6% uplift in the total GVA of the Wyre borough. Over the 10-year period from 2030 to 2040 (when the wind farms were expected to become operational), this is a gross uplift of £999m to £1.77bn.
- Strategic Catalyst: Infrastructure improvements would strengthen the case for the £8m–£10m transport investment needed for a new site crossing, which would enable the build-out of 63 hectares of available development land, which has otherwise only seen development over the last decade of just 76 more jobs.

1.7 Environmental and Ecological Summary

A high level environmental and ecological assessment has been undertaken for the proposed alternative Northern Route from Rossall to Hillhouse. In correspondence with Council Leaders, NESO noted "onshore cable routeing options to Stanah would still need to pass through existing built development and environmentally sensitive areas, with these routes assessed as high adverse impact".

From the ecological and environmental review undertaken for this report, the findings were more balanced. The review notes that some sections of the route intersect natural habitats and will require ecological consideration, but that "the majority of the route follows main roads consisting of developed land and sealed surfaces with minimal ecological value".

The review recommends further investigation, but has the expectation that best practice construction methods could be followed to mitigate any potential impacts on priority habitats, watercourses and protected species. Standard mitigation methods are suggested to counteract any potential (but as yet unknown) adverse environmental and ecological impacts, but the overall conclusion is certainly not one of "high adverse impact". This suggests that pending further investigation, it is quite feasible that the route can be navigated without undue environmental and ecological harms.

1.8 Conclusion and Recommendation

The evidence gathered indicates that the alternative northern infrastructure route is technically feasible and offers vastly superior economic and financial outcomes compared to the current DCO proposal. Given the scale of potential savings and the opportunity to revitalise a major regional industrial asset, it is the conclusion of this report that the findings merit a pause in decision-making.

This would allow local partners and the Secretary of State to assemble further evidence and refine the feasibility of this alternative route to ensure the maximum benefit for both Lancashire and the UK's net-zero transition.

The expected outcomes are improved economic and employment prospects on the Fylde Coast, of the order of an additional £1bn of GVA over the decade to 2040, and an additional 1,100 jobs.

The alternative northern route would entail avoidance of disruptions to residents (in contrast to the proposed DCO route), and significant cost savings which may well be of a quantum to rescue the viability of the 1.5GW Morgan Wind Farm, noting that EnBW have pulled out of the scheme.

Reduced infrastructure costs may reduce the strike price the transmission owner needs to secure in order to make the project viable, which could prevent this capital being deployed overseas by EnBW, supporting the UK's energy security and energy generation, as well as bringing about local economic benefits to residents on the Fylde Coast through additional jobs and economic output.

Given that timescales have effectively moved out on the delivery of Morgan and Morecambe and that EnBW has withdrawn their investment given the failure to secure an acceptable CfD with the Government, this does suggest the need to explore alternative, more economic route options. Combining this with the opportunity to integrate the planning with Mooir Vannin, this would then deliver the £0.5bn of capital cost savings and therefore the opportunity for a more economic CfD agreement with Government.

Department for Energy Security & Net Zero

Michael Shanks MP
Department for Energy Security & Net Zero
55 Whitehall
London
SW1A 2HP

www.gov.uk

Our ref: MCB2026/06607
Your ref: CCJR/SW

20 May 2026

Cllr Joshua Roberts
Lancashire County Council

Cllr Karen Buckley
Fylde Council

Michael Vincent
Wyre Council

c/o Lancashire County Council
PO Box 100, County Hall
Preston
PR1 0LD

Dear Councillors,

Thank you for your letter of 17 April regarding the proposed Morgan, Morecambe and Mooir Vannin offshore windfarm projects and the associated onshore transmission infrastructure; and for setting out the findings of the economic review commissioned by your authorities.

I recognise the scale of local interest in these projects, and the importance you place on maximising value for money, supporting energy security, and realising economic opportunities for Lancashire and the Fylde Coast.

However, as set out in my previous correspondence in February 2026, decisions on transmission infrastructure associated with these projects are taken within a robust and independent statutory planning framework. The Secretary of State has a quasi-judicial role in determining applications that are, or may come to the Planning Inspectorate. This places clear limits on the extent to which Ministers can engage on, or comment on, the merits of specific proposals, alternative options, or evidence relating to live or prospective applications. For these reasons, I am unable to comment on the specific findings or conclusions of the economic review you reference, or on the relative merits of particular connection routes.

More broadly, I would reiterate that the National Energy System Operator's (NESO's) Strategic Network Planning processes require transmission options to be assessed against established criteria, including whether they are economic and efficient, deliverable and operable, and the impacts on communities and the environment. These principles underpin NESO's approach to holistic planning of the transmission network, including the Holistic Network Design, and will be taken forward through NESO's forthcoming Centralised Strategic Network Plan (CSNP).

The CSNP will provide a comprehensive, GB-wide view of future transmission needs out to 2050, building on existing strategic design work and offering greater clarity on network development over the longer term. Importantly, the CSNP will be subject to public consultation, ensuring that local authorities, communities and other stakeholders have the opportunity to engage and to provide views on strategic considerations as the plan is finalised.

The statutory planning process for individual Development Consent Order applications remains the appropriate mechanism for assessing project-specific impacts, including local environmental, community and economic considerations, within the scope set out in legislation. Strategic questions about the longer-term evolution of the transmission network are more appropriately considered through NESO's strategic planning functions.

I appreciate the strength of feeling expressed in your letter, and your ambition to secure positive local outcomes alongside the delivery of nationally significant infrastructure. I hope the above is helpful in clarifying the respective roles of Ministers, NESO and the planning system in this context.

Best wishes,

MICHAEL SHANKS MP
Minister of State for Energy

Attachment 3

genecon

Morecambe, Morgan and Mooir Vannin Wind Farms Alternative route high level feasibility

National and Local Economic assessment

Lancashire County Council, Fylde Borough Council,
Wyre Borough Council, Blackpool Council

April 2026

Contents

1. Introduction

1.1 Purpose of this document

GENECON was commissioned in February 2026 by Lancashire County and Fylde Coast local authority partners to undertake a high-level investigation into the potential economic merits of an alternative route for the proposed Morgan and Morecambe Windfarms, as well as consideration of the potential costs and infrastructure issues associated with deviating from the planned route.

The Morgan and Morecambe Windfarms with connection cabling are being planned to land on the south of the Fylde Coast at Blackpool, pass through Blackpool Airport Enterprise Zone and on over a distance of c.17km through Fylde eventually connecting into the National Grid at the Penwortham Substation on the outskirts of Preston.

The examination period for Morgan and Morecambe Offshore Wind Farms Transmission Assets closed on 29 October 2025. The Development Consent Order (DCO) application continues to progress, following submission of the Examining Authority's recommendation report to the Secretary of State on 29 January 2026. A decision on development consent for the Transmission Assets is expected in May 2026.

Whilst the decision process is at an advanced stage the County Council and Fylde, Wyre and Blackpool authorities remain keen to explore alternative route potential to maximise economic benefit, and remain confident that there is still an opportunity to make an economic case for a variation.

The purpose of this document is to provide a high level assessment of the costs and benefits (national and local to Lancashire and the Fylde Coast) of an alternative Northern route, and other DCO variations, compared to the counterfactual DCO Southern route.

1.2 Context

The UK Government's ambition around offshore wind capacity reflects a drive to decarbonise electricity, enhance energy security, and stimulate economic growth. To achieve these existing targets of up to 50GW by 2030, requires rapid deployment, grid upgrades, and investment, positioning offshore wind as the backbone of a clean power system.

The UK current capacity is just 16GW of offshore wind in operation, showing a clear need to ramp up investment.

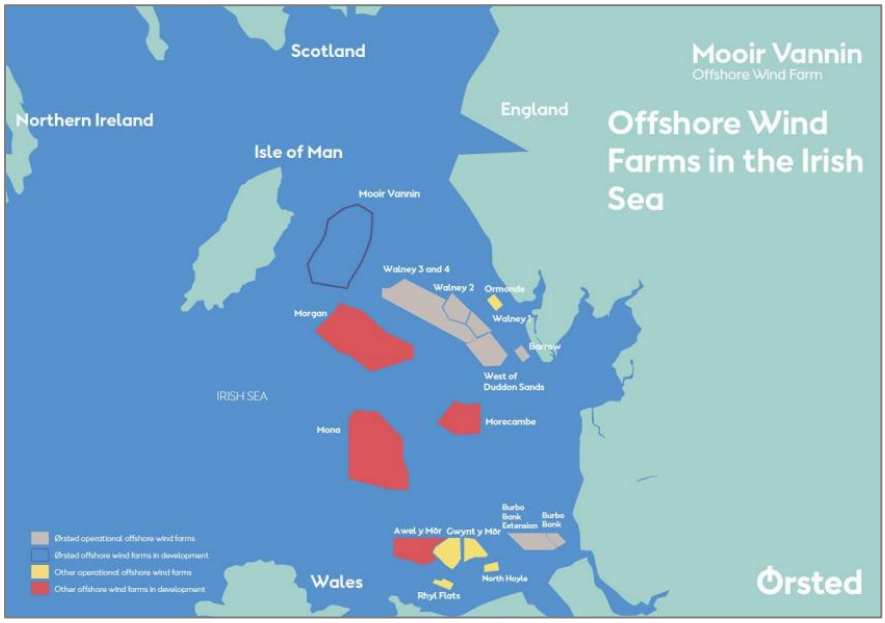


Figure 1.1: UK Irish Sea Offshore Windfarm locations

The Morgan and Morecambe Offshore Windfarms are two large scale renewable energy projects located in the Irish Sea, designed to generate up to around 2GW of electricity - enough to power approximately two million homes. Together, they form part of the UK's offshore wind expansion and are seeking consent through the proposed Development Consent Orders (DCOs), with separate applications for generation assets (turbines, offshore substations, and inter-array cables) and transmission assets. The transmission DCO covers the export of electricity to shore. Offshore export cables run from the windfarms to a landfall point on the Lancashire coast, likely between Blackpool and Lytham St Annes. From there, onshore underground cables pass through the Fylde area to two new substations near Kirkham, Newton and Freckleton, before continuing to the existing National Grid substation at Penwortham, which is the connection point.

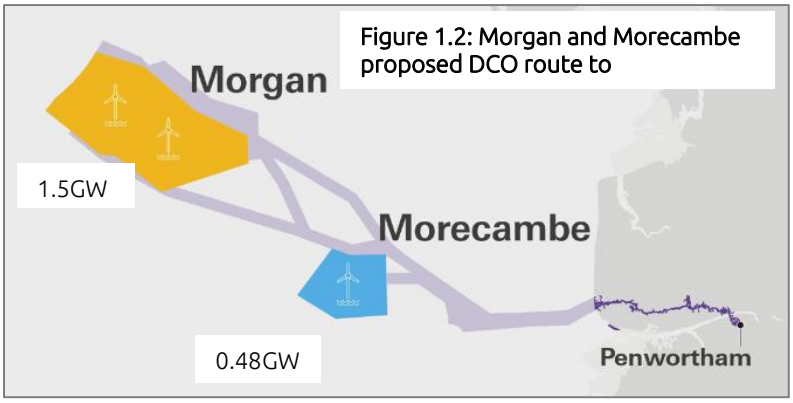


Figure 1.2: Morgan and Morecambe proposed DCO route to

Local stakeholders have questioned the merits of this route, and whether it would be more economically, socially and environmentally advantageous for Lancashire to consider alternative routes to landing and then distributing the power from the new wind farm upgrading existing distribution overhead line assets to Penwortham rather than cabling through miles of countryside, and the disruption to residents and businesses along the length of the underground route that will be caused.

Local concerns raised imply that alternative options could be considered for terminating elsewhere before the connection to Penwortham, such that the onshore distribution could also deliver some economic benefits to Lancashire's people and businesses, with the implications that the connections from the new windfarms is no doubt advantageous for UK PLC, but that there may be more economically efficient ways for Lancashire to share more directly in these benefits. Specifically, this relates to the two Enterprise Zones at Blackpool Airport where the proposed route bypasses and to the North at Hillhouse Technology Enterprise Zone which is adjacent to Stanah substation 2km from an alternative landfall location at Rossall beach (see Figure 1.3 below).

Part of the overall context is a third wind farm in the Irish sea. The Mooir Vannin Offshore Wind Farm, being proposed and developed by Ørsted (in partnership with the Isle of Man Government), is a proposed 1.4GW offshore windfarm project in the Irish Sea, capable of powering over 1 million homes. Electricity generated offshore would be gathered via subsea cables and exported to the UK through the East Irish Sea Transmission Project. The preferred route brings cables ashore near Fleetwood in favour of the previously proposed Southern landfall at Sefton, and then runs underground across Lancashire, crossing key rivers before connecting into the national grid at Penwortham Substation, ensuring integration into the UK transmission network.

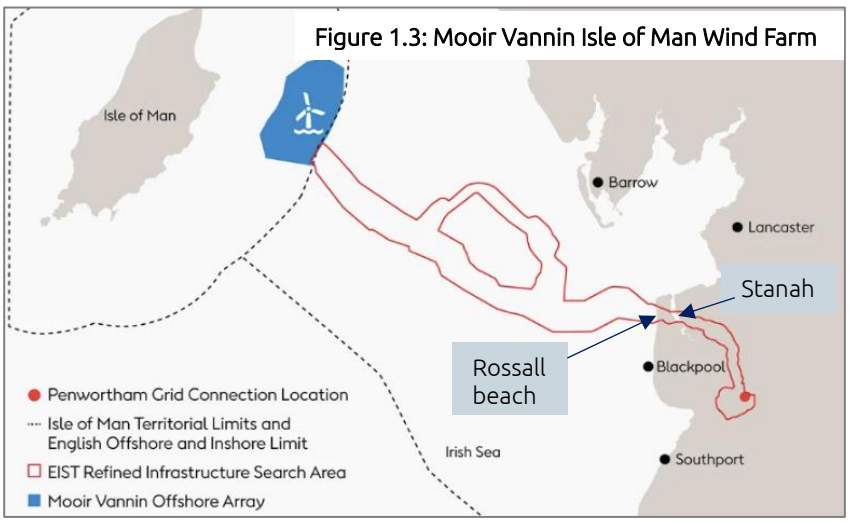


Figure 1.3: Mooir Vannin Isle of Man Wind Farm

Ørsted's National Grid connection point remains at Penwortham, as directed by the National Energy System Operator (NESO) following their assessment of suitable connection locations. A potential alternative

connection at Stanah substation is being explored by Ørsted; however, the final decision lies with NESO. Ørsted has also confirmed that the project will now proceed with an offshore booster station, meaning plans for an onshore booster station have been withdrawn. The windfarm is at the pre Development Consent Order stage, and the exact landfall point is yet to be determined. However, local stakeholders have raised whether there is also an opportunity to land at Rossall beach, alongside the Morgan and Morecambe windfarms.

The original plan for Morgan and Morecambe targeted first power by 2028–2029 in line with UK Government's 2030 net zero targets, but as the DCO process, coordination of transmission assets, and project detail evolved, timelines have shifted. The Ørsted Isle of Man scheme is a later stage windfarm project with first power targeted for around 2032 and 2033, reflecting its separate consenting regime and cross-border transmission complexity.

In January 2026, the developer behind Morgan pulled out after failing to secure UK Government support (specifically Contracts for Difference funding). The reason given was that the project was no longer economically viable in the current investment climate. The Morgan Offshore Wind Project was being developed as a joint venture between BP and EnBW. EnBW is a German owned electric utility company (Energie Baden-Wuerttemberg AG). In May 2025, EnBW announced plans to invest up to EUR 50 billion by 2030. With the failure of the CfD application, EnBW indicated it would switch its investment back to Germany.

Given this background, local partners believe there is an opportunity to review the DCO routing and explore whether there is a more economically advantageous route, bringing all three wind farm opportunities together. Given that timescales have moved out on the delivery of Morgan and Morecambe and that the developer for Morgan has withdrawn their investment given failure to secure an acceptable CfD with the Government, this does suggest the need to explore alternative, more economic route options that would then offer the opportunity for a more economic CfD agreement with Government.

Any alternative route could also be designed to offer the dual benefit of promoting local economic growth in key national growth sectors.

1.3 Scope of the assessment

The client team has asked for a high-level investigation to explore the potential economic merits of a different route, as well as a light touch consideration of the potential costs and infrastructure issues associated with deviating from the planned route.

The two proposed alternative terminations investigated for the offshore cable (once it lands onshore) are via Hillhouse Enterprise Zone or via Blackpool Airport Enterprise Zone.

The assessment approach has involved the following key tasks:

- Task 1: Alternative landfall and route scoping
- Task 2: Alternative route option cost analysis compared to the DCO option;
- Task 3: EZ option economic benefit analysis compared to the Business As Usual position (BAU, Genecon);
- Task 4: Planning and related constraints to an alternative route and
- Task 5: Findings and recommendations.

2. The DCO 'Southern' route and the Alternative Northern Option

2.1 Description of DCO route

The Development Consent Order (DCO) for the Morgan and Morecambe offshore windfarms covers both generation and transmission assets, with a coordinated grid connection strategy in northwest England. Together, the projects are expected to deliver almost 2GW of capacity—with Morgan up to ~1.5GW and Morecambe around 480 MW - making them nationally significant renewable energy schemes.

Electricity will be generated offshore and collected via inter-array cables to offshore substations, where voltage is stepped up before export to shore. Each project includes offshore substation platforms, with power transmitted via subsea export cables to a landfall on the Lancashire coast.

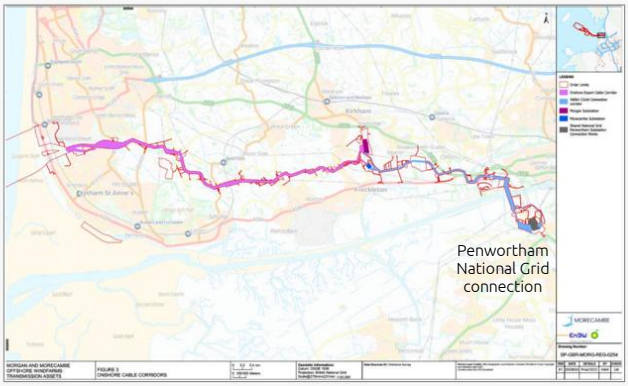
The confirmed landfall is located on the Fylde coast between Blackpool and Lytham St Annes, immediately adjacent to Blackpool Airport, near Starr Gate beach. This location was selected as part of the High Level Network Design (HLND) process to avoid environmentally sensitive areas, most notably the Ribble and Alt Estuaries SPA. Penwortham was selected under the High Level Network Design as the optimal grid connection due to available capacity and ability to coordinate multiple projects efficiently. Landfall at Starr Gate beach, close to Blackpool Airport, avoids the environmentally sensitive Ribble and Alt Estuaries SPA while enabling a direct, constructible onshore cable route.

From landfall, the proposed DCO route comprises an onshore export cable corridor of roughly 25–35 km, with cables buried underground along most of the route. Up to 18 underground cables may be installed within a corridor typically 70–80 m wide (wider at constraints such as rail crossings). The scheme includes proposals for two new onshore substations - one for each windfarm - located within defined search areas. These substations transform and condition the electricity before connection to the transmission network.

The point of connection is the existing National Grid infrastructure at Penwortham (275kV and 400kV substations) in Lancashire on the edge of Preston. Power is then distributed via the wider grid, which includes existing overhead line networks, although the project itself primarily uses underground cables onshore. Overall, the proposed DCO route emphasises underground cabling onshore, offshore export via subsea cables, and integration into existing high-voltage infrastructure at Penwortham.

Figure 2.1: DCO route - Land fall

Figure 2.2: DCO route – Blackpool to Penwortham



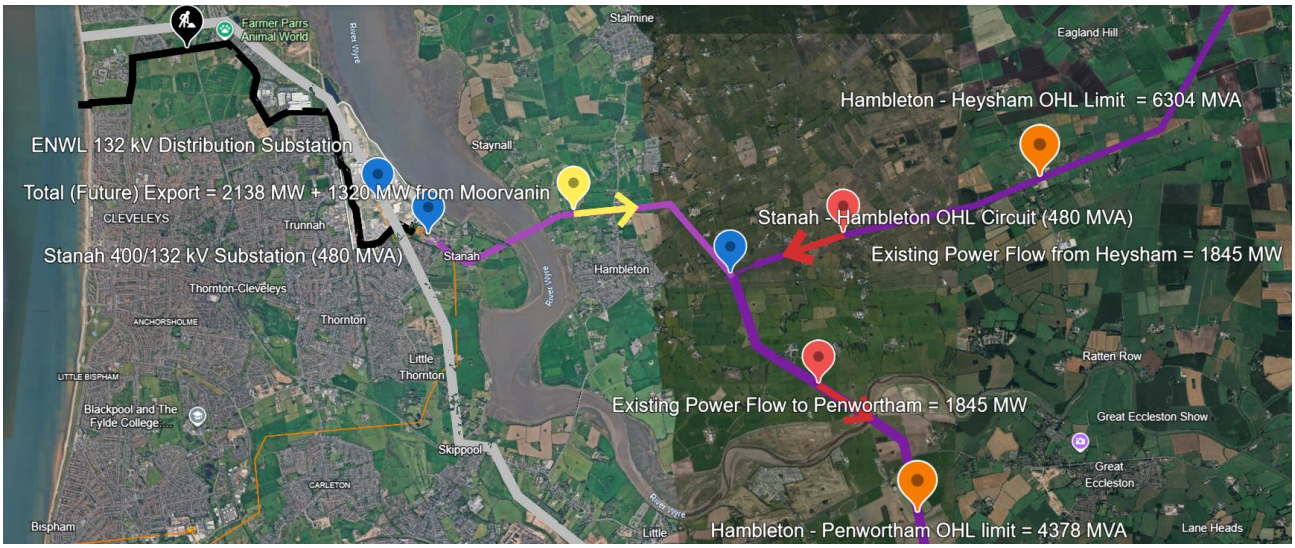
2.2 Description of the Alternative Northern Route

During the DCO examination, an alternative northern onshore route was put forward by stakeholders as a potential option to avoid landfall at Blackpool Airport and reduce disruption in the Starr Gate area. This alternative generally proposed bringing cables ashore further to the north of the Blackpool/Fylde peninsula, near Fleetwood or the Wyre estuary, before routing inland through Wyre and ultimately connecting south into the Penwortham Substation (as the proposed DCO route).

The Lancashire Association of Local Councils, Fylde Area Committee Energy Working Group (EWG) position is that there has been a failure to assess the Obvious Material Alternative route. This alternative option proposes connecting consumers through Stanah, Hillhouse Technology Enterprise Zone, and the National Grid using the 400kV Heysham Ring by upgrading existing infrastructure. Adopting this route would in the view of the EWG be faster, more efficient, and less expensive than the combined proposals from the Morgan, Morecambe, and Ørsted's Mooir Vannin projects. This nationally significant saving represents the net benefit of a coordinated approach across these projects.

Partners have assembled an alternative proposal whereby both Morgan and Morecambe land at an alternative beach at Rossall further north along the Fylde Coast, and proceed inland approximately 5km to the Hillhouse Technology Enterprise Zone, to terminate at either a new substation or at the existing Stanah substation (which is adjacent to Hillhouse Technology Enterprise Zone). From the electrical and grid engineering assessment, a new substation at Hillhouse is a more viable proposition.

Figure 2.3: Notional Diagram showing indicative route



This route traces most of the route inland that has been suggested at pre-application stage by Mooir Vannin promoter Ørsted, but instead of continuing underground to Penwortham, terminating instead at a new substation at Hillhouse, before accessing the existing overhead lines from Stanah-Hambleton-Penwortham.

This proposed alternative northern route has been subjected to a high-level review by Pell Frischmann, Blake Clough and DWD. This review has identified a technically feasible route exists, notably:

- Identification of an alternative landing area for the Northern Route at Rossall (this is understood to be the preferred landfall location for the Ørsted Mooir Vannin windfarm);
- Pell has assessed Rossall's suitability for accommodating both the Morgain and Morecambe cables and the Mooir Vannin cable (i.e. all 3 cables);
- Pell's high-level assessment indicates that there is no engineering barrier to 2 or 3 cables landing at Rossall; and

- Whilst more detailed investigation of the route and planning issues would be necessary (in particular, if all windfarms proceed sequentially) there is no insurmountable engineering challenge posed by landing 3 cables at Rossall.

2.3 Summary

The alternative Northern Route outlined above is referred to as Option B, with the BAU route Option A. The relative cost and local economic impact of these two options is considered in the rest of this report.

In addition, an Option C is also presented based on a variation of Option A (BAU). This has been included to examine the relative merits of a Southern Route variation with a substation at Blackpool Airport EZ, rather than just a route through the Airport site as current proposed by the DCO. This is reviewed further in section 3.

3. Engineering assessment – Route Options (Civils and electrical)

3.1 Introduction

Blake Clough were commissioned to provide an independent assessment of an Alternative Northern onshore cable route, the surrounding grid connection infrastructure, and the indicative connection costs for Morgan and Morecambe Offshore Wind Farm ("M&M"). The assessment has also considered the merits of coordination with the future Mooir Vannin Offshore Wind Farm (Ørsted) – "M&M&V" and a Southern DCO route variation to provide a substation at Blackpool Airport.

The assessment has considered the capability of the nearby Grid infrastructure to accommodate this level of generation (c. 4.5GW combined), identifies the key network constraints that arise, and evaluates the reinforcement requirements and associated cost implications across a range of potential connection options.

Blake Clough have recommended connection strategies for the three distinct connection Options A, B, and C, reflecting alternative approaches to landfall location and integration into the existing transmission network. Each option is assessed with a focus on network constraints, required reinforcements (if necessary), and the associated cost implications, providing an in depth understanding of the connection options available for this project:

- Option A DCO route (BAU)
- Option B Alternative Northern Route
- Option C Alternative Southern Route

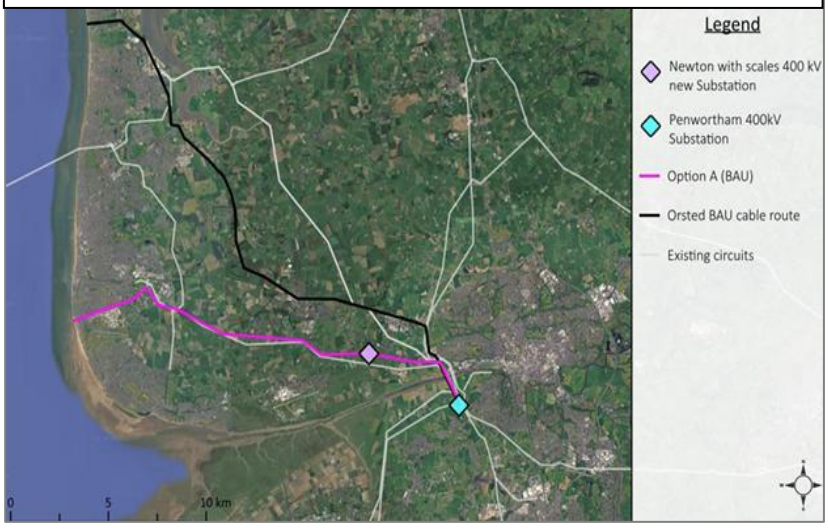
Annex A contains the Blake Clough report in full.

3.2 Option technical descriptions

3.2.1 Option A - DCO route (BAU)

The Business-as-Usual (BAU) option follows the currently proposed DCO route. In this configuration, the export cables make landfall at Starr Beach and are routed underground through the Blackpool Airport Enterprise Zone to Newton-le-Scales, where a new substation (assumed to be an Offshore Transmission Owner (OFTO) substation) would be constructed. From there, the cables continue underground to Penwortham.

Figure 3.1: Option A - DCO Onshore Cable Route and Surrounding Network



For the Morgan and Morecambe projects, this would involve two export cables installed within a single corridor but in separate trenches along the route to Penwortham (shown by the pink line in Figure 3.1). Given Morgan's developer EnBW have withdrawn, it is unclear how the delivery of this underground corridor (trench route planning,

land acquisition/leasing rights, trenching and laying of the cables will be delivered. It is understood the principle is that the cabling for Morgan and Morecambe are independent of each other, but it is not clear how this would be managed / delivered in practice).

Ørsted's proposal for connecting Mooir Vannin is also shown (depicted as the black line in Figure 3.1), with cables landing at Rossall and following a more northerly underground route that bypasses Hillhouse and Stanah before continuing underground to Penwortham.

Figure 3.1 above provides an overview of the onshore cabling route and the surrounding network infrastructure. The diagram highlights the 400kV Transmission overhead line (OHL) route, the 275kV Transmission OHL route and the 132kV Transmission OHL routes in grey, the development consent order (DCO) approximate onshore cable route in purple as well as the Mooir Vannin (Ørsted) cable route in black.

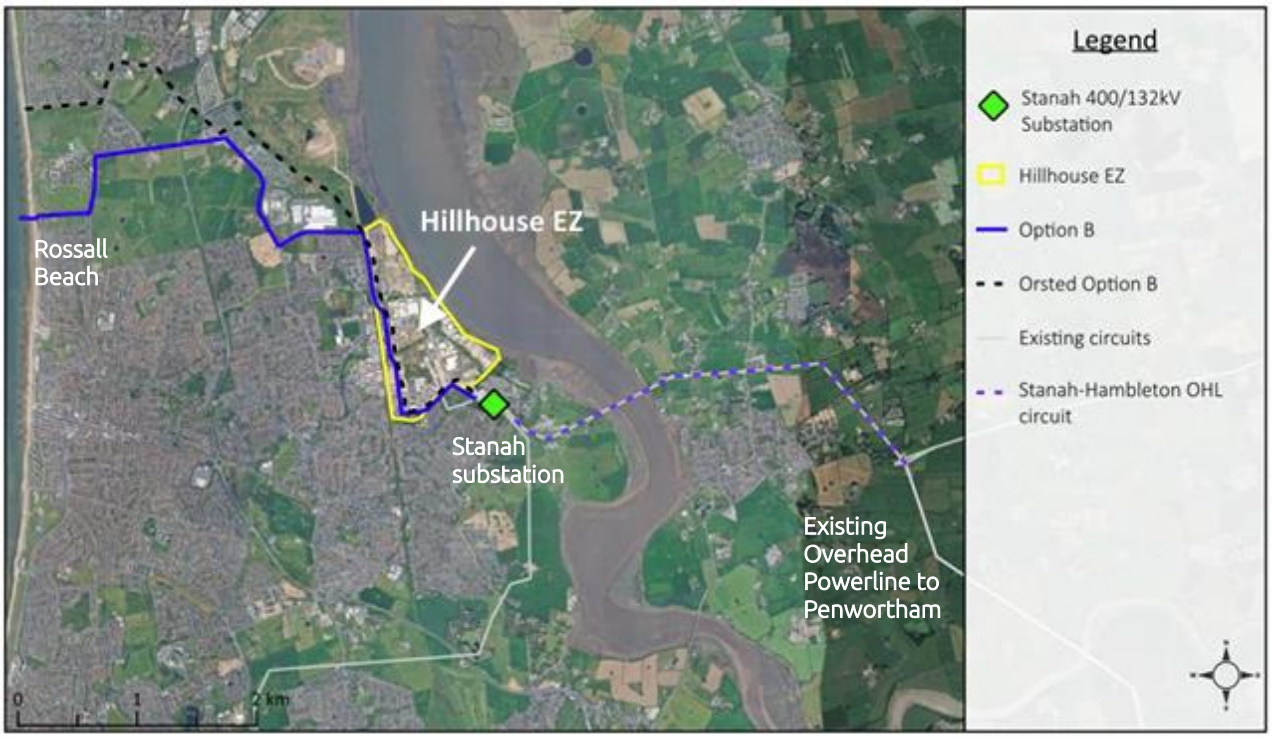
3.2.2 Option B Alternative Northern Route

Under this option, the export cables from all three wind farms (M&M&MV) would land at Rossall Beach and would be routed underground through the local road network or road verges, including a crossing beneath the railway line toward either:

- Option B1 - a reinforced Stanah substation (Option B1); or
- Option B2 - a new substation on the adjacent Hillhouse Technology Enterprise Zone (Option B2).

It should be noted that direct connection to Stanah is not possible due to the voltage level mismatch i.e. 275kV cable against the 132kV at Stanah LV side as well as the low thermal capacity at 480 MVA. Therefore, to connect at Stanah substation directly (or indirectly), the substation has to be reinforced with higher thermal capacity as well as adding new bays for 275kV connections from Morgan + Morecambe and Mooir Vannin.

Figure 3.2: Option B Rossall Landing with Hillhouse/Stanah Onshore Cable Route and Surrounding Network



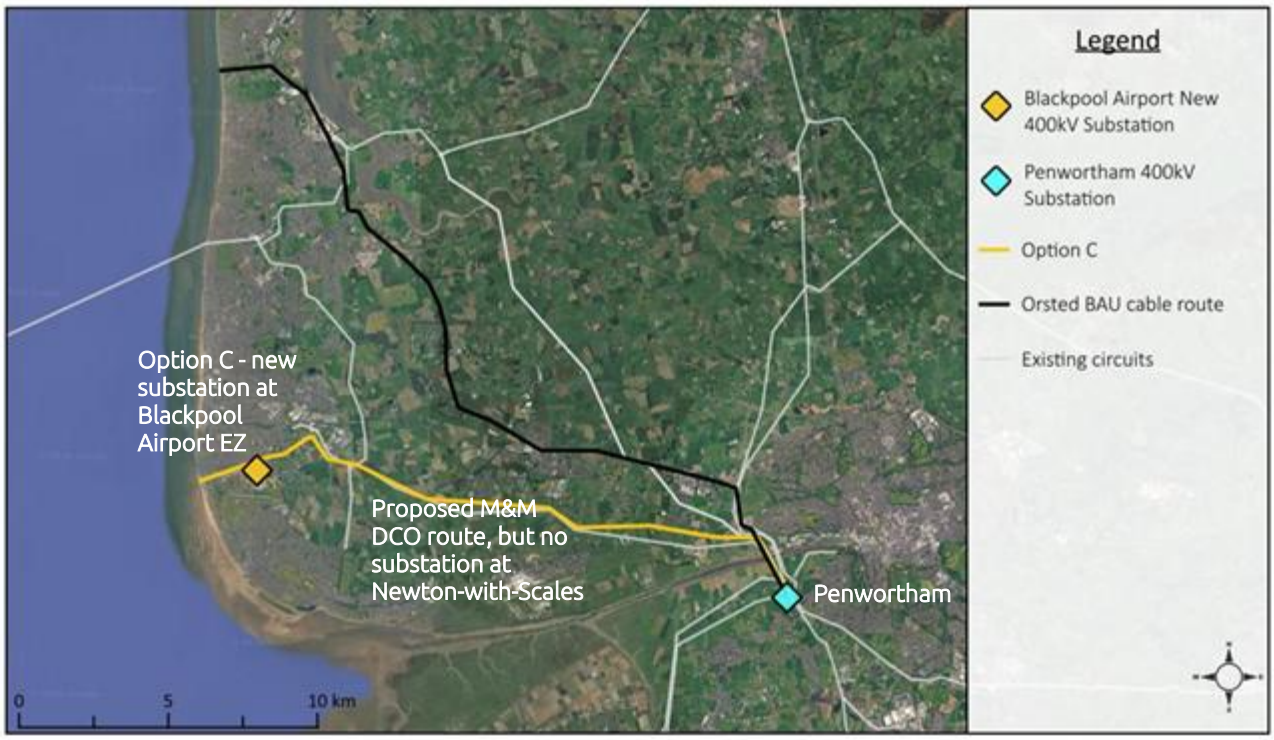
The alternative Northern route is shown in 3.3 as the blue line. From this point, the upstream connection at HV side of Stanah to Penwortham would make use of the existing substation and overhead transmission lines rather than requiring new underground cables along the full route to Penwortham, which is currently proposed by Ørsted. A key issue for this option (which needs further detailed study) is whether the northern corridor via Hillhouse or Stanah could accommodate an additional export cable from Ørsted (shown as the Black dotted line in Figure 3.2).

This would then avoid the need for further underground cabling all the way to Penwortham, and save considerable disruption and cost.

3.2.3 Option C Alternative Southern Route

The third option investigated in this study largely follows the DCO route (Option A) but proposes terminating the export cables at a new substation located within the Blackpool Airport Enterprise Zone rather than at Newton with Scales. In this configuration, the cables would again land at Starr Beach and be routed underground through the Blackpool Airport area via tunnels to the new substation, which could consist of an OFTO substation and potentially a primary substation. From there, the cables would continue underground along the same corridor proposed in the DCO route toward Penwortham. Under this option, Ørsted's cables are landed at Rossall and follow the northern underground route toward Penwortham, bypassing Hillhouse (as per Option A).

Figure 3.3: Option C – Blackpool Airport Enterprise Zone Substation with Onshore Cable Route and Surrounding Network



3.3 Technical system constraints

Blake Clough have reviewed the transmission network near the proposed DCO route and the alternative project route options.

This review has examined Points of Connection, network asset capacities, current generation connections and anticipated future generation connections. In addition to this, the review has assessed the Transmission network in the area to determine the circuit capacity at 400kV levels upstream from the point of connection into the National Grid at Penwortham.

Below is summary of Blake Clough's findings in relation to network technical constraints.

3.3.1 Option A DCO BAU

Given the available transfer capability, supported by planned reinforcements, constraints outwards from Penwortham Grid Supply Point (GSP) are not expected to be limiting. As such, a detailed headroom assessment at this stage has not been undertaken (it would need to be checked in a more detailed study). Nonetheless, the summary of existing Total Outbound Circuit Thermal Headroom Estimation is shown in Table 3.1 below.

3.3.2 Option B Alternative Northern Route

Figure 3.4: Stanah to Hambleton

The existing substation at Stanah and the immediate circuit from Stanah – Hambleton (before heading south to Penwortham) is identified as the main bottleneck, with 480 MVA of non-firm capacity (240 MVA firm).

For any offshore connection combinations of Morgan & Morecambe and/or Mooir Vannin (Ørsted), the existing substation at Stanah must be uprated (load flow analysis has been undertaken as part of Blake Clough's review), as this option is critical in terms of assessing the available thermal headroom (note 'thermal headroom' represents unused current-carrying capacity that can accommodate increased load without exceeding safety limits).

Under Option B, where export is taken directly from Stanah, the substation constraint becomes the most limiting factor, as all power must pass through it. As such, this option is expected to require the most significant reinforcement at Stanah, if it were to be uprated.

However, if a new substation is developed by the Offshore Transmission Owner (OFTO) at Hillhouse Technology EZ, a direct tee-off connection onto the Hambleton – Penwortham circuit could be considered. This would bypass the constraint at Stanah – Hambleton circuit, but would likely require reinforcement of the Hambleton – Penwortham circuit, as well as any upgrades at Penwortham GSP if required.

In this case, the developer would be exposed to reinforcement liabilities (secured upfront), with costs allocated through mechanisms such as Strategic Investment Factor (SIF, the proportion of the reinforcement investment that is attributed to the connecting project) and Local Asset Reuse Factor (LARF, this reflects how much of the asset could still be reused if the project cancels - the liability is reduced by the reusable proportion), meaning these are not wholly direct or upfront construction costs borne solely by the project.

Nonetheless, if an agreement with National Grid Electricity Transmission plc (NGET) can be reached to uprate the wider Stanah substation to facilitate a direct connection at Stanah (as a MITS node), along with reinforcement of the Stanah– Hambleton circuit as part of the transmission system, these works may initially

be delivered by NGET and subsequently recovered over time through the applicable charging mechanisms. In this scenario, the OFTO's role would be limited to delivering the connection infrastructure (e.g. new substation/interface assets), with the project exposed primarily to associated liabilities and securities, rather than directly funding the transmission reinforcement works themselves. This is the basis of the assumption adopted within this report.

In this feasibility assessment, only the indicative costs associated with the development of a new 400kV substation at the Hillhouse Technology EZ and the uprating of the Stanah – Hambleton – Penwortham (will be described as Hambleton-Penwortham circuit for the sake of brevity) 400kV circuit are considered which will be described in a later section. The thermal headroom has been assessed for Case 1, comprising Morgan and Morecambe offshore export only, and Case 2, comprising Morgan, Morecambe, and Mooir Vannin (Ørsted) combined export, and Case 3 for Mooir Vannin (Ørsted) only.

The results in Table 3.1 indicate that the Hambleton – Penwortham circuit requires varying levels of uprating depending on the generation scenario, with the most significant reinforcement needed when multiple offshore projects are combined.

Table 3.1: Circuit Thermal Capacity limits (Firm and Non-Firm)

Cases		Circuit Thermal Capacity [MW]	New Circuit Thermal Capacity [MW]	Difference (%)
1. M&M only	Firm	2189	2453	+ 12.1%
	Non-Firm	4378	4906	+ 12.1%
2. M&M&MV	Firm	2189	2862	+ 30.7%
	Non-Firm	4378	5724	+ 30.7%
3. MV only	Firm	2189	2248	+ 2.7%
	Non-Firm	4378	4496	+ 2.7%

Note: 'Firm' capacity refers to electricity supply that is guaranteed to be available when needed, regardless of conditions. 'Non-firm' capacity is variable and depends on external factors like wind. Wind farms typically provide non-firm capacity, as their output fluctuates, creating additional, less predictable loads on the grid system.

In summary, the review indicates:

- Case 1 (Morgan + Morecambe): Requires a moderate uprating of approximately 12%, increasing firm capacity from 2189 MW to ~2453 MW.
- Case 2 (Morgan + Morecambe + Ørsted): Requires a substantial uprating of approximately 31%, with firm capacity increasing to ~2862 MW, representing the most demanding scenario.
- Case 3 (Ørsted only): Requires only a minor uprating of ~3%, indicating that this scenario is closest to being accommodated within existing limits.

Overall, this demonstrates that incremental connections may be feasible with limited reinforcement, whereas coordinated large-scale offshore integration would drive reinforcement in required network capacity on the Hambleton – Penwortham corridor.

3.3.3 Option C (substation at Blackpool Airport EZ instead of substation at Newton-with-Scales)

Options A and C are broadly similar in terms of thermal headroom assessment, as both ultimately export onto the Penwortham interface via comparable routes. As such, the conclusions drawn for Option A are considered applicable to Option C, and Option A has therefore not been taken forward for further consideration, as previously highlighted. The primary distinction between these options lies in the cost implications, which are discussed in subsequent sections.

3.4 Summary

Stanah substation's export capacity is currently constrained, which has limited progress with energy-generating uses at Hillhouse, while the Stanah–Hambleton overhead line is restricted by firm capacity. Although some non-firm capacity exists and could accommodate projects like Morgan and Morecambe, developers typically require firm capacity. Under the (N-1) principle, around 50% of total capacity is treated as firm to maintain supply if one circuit fails, otherwise significant curtailment risks arise.

The addition of Morgan and Morecambe (~2GW) and Mooir Vannin (1.5GW) represents a substantial increase in load, likely requiring overhead line upgrades to increase firm capacity. Mooir Vannin alone would push the Hambleton–Penwortham circuit to about 103% of firm capacity, Morgan and Morecambe to ~112%, and all three combined to ~130%, clearly necessitating reinforcement. At Stanah, with current capacity around 480 MW (240 MW firm), any scenario would require upgrades—ranging from modest reinforcement for a single project to a major expansion exceeding 3.5GW for all three, with costs ultimately borne by consumers.

Based on the technical assessments Table 3.2 below provides a summary of the findings.

Table 3.2: Network findings and observations

Network	Key findings and observations
Landing area	• In terms of the possibility of three cables landing at Rossall, there is in no insurmountable engineering constraint here, the main constraint is likely to be planning and permitting given the existing infrastructure around it and any environmental constraints. • Landing all three cables at Rossall is possible.
Substations	• In Blake Clough's view, substation upgrades are more likely to mean a new substation on Hillhouse Technology EZ, rather than an upgrade to Stanah. • It is however constrained by export capacity from Stanah (through the Stanah-Hambleton-Penwortham route), which is highly likely to be the primary reason why electricity generating uses have not yet come forward on the Hillhouse site (there have been proposals for both gas and waste incineration energy generation uses which have not moved beyond planning). • A new substation at Hillhouse is likely to have a land-take of somewhere between 6 and 9 hectares, the same would be true for a new substation at Blackpool Airport EZ.
Energy infrastructure	• The constraints in terms of energy infrastructure are from Stanah to Hambleton and then down from Hambleton to Penwortham. To accommodate Morgan and Morecambe, significant investment would be needed to upgrade and reinforce the overhead lines to ensure that there is adequate 'Firm' capacity. • Blake Clough's analysis is that this provides the ability for a comparison of option costs against the proposed DCO route.

These technical findings on landfall, substation upgrades and system load implications have informed the option cost analysis set out in the next section.

4. Cost assessment – Route Options

Blake Clough have provided estimated costs, including for cable supply, trenching, jointing, installation, substation upgrade works, and traffic management.

Their costs analysis exclude costs related to development, design, project management, and property/legal fees. For each option, cost estimates have been provided for both Morgan and Morecambe, as well as for a scenario that includes the Ørsted costs. This is shown in the tables below for each of the tested options.

4.1 Option A – BAU DCO route

This option includes two separate cable routes, with both the M&M and Mooir Vannin projects connecting to the transmission network at Penwortham 400kV Substation.

The two routes are – 1) The current DCO application, offshore cables coming on shore at Starr Beach, through Blackpool Airport EZ and underground to Newton with Scales, then onto Penwortham; and 2) the Mooir Vannin cables coming onshore at Rossall Beach, bypassing Stanah substation and then underground through Wyre all the way to Penwortham.

Costs for the DCO route do not appear to have been published. Blake Clough have therefore made their own cost estimation to facilitate comparison against the alternative routes proposed in this report. Black Clough's costs are based on specification assumptions set out in their report. As a summary, their estimated costs include cable supply, trenching, jointing, installation, substation upgrade works, and traffic management. They have excluded costs related to development, design, project management, and property/legal fees. This latter point is important, as it could well be that the costs of land compensation for the underground DCO route could result in additional cost when compared with the alternative northern route linking into existing National Grid overhead cable infrastructure explored at Options B1 and B2 below.

Table 4.1: Estimated Infrastructure costs for Option A

Category	Option A1: Morgan & Morecambe Cost	Option A2: Morgan & Morecambe & Mooir Vannin Cost
Cable Supply	£168,250,000	£303,275,000
Trenching	£42,800,000	£120,200,000
Jointing	£1,108,000	£2,478,000
Installation	£191,076,500	£349,428,250
Substation Cost	£40,000,000	£70,000,000
Total (excluding Securities)	**£443,234,500**	**£845,381,250**

4.2 Option B1 - a reinforced Stanah substation

Land the offshore cable at Rossall Beach, through to Stanah, and then into existing but upgraded Overhead Lines to Penwortham. This option is divided into two separate cost components, reflecting differences in securities requirements (i.e. financial guarantees) depending on the chosen connection point.

If projects are able to connect at Stanah 400kV substation, they will only be required to provide securities for reinforcement works at Stanah. As this is a MITS node, they are not liable for any securities associated with the wider network beyond Stanah.

Conversely, if a connection at Stanah is not feasible due to substation expansion constraints, projects may connect via a tee-off to the 400kV overhead line circuits downstream of Stanah. In this scenario, projects would be expected to provide securities for both:

- The new 400kV circuit connecting to the existing transmission network (typically fully funded by the generator; however, as this asset will serve multiple generators, it is treated as shared infrastructure), and
- Reinforcement works on the existing transmission circuits up to and including the nearest Main Interconnected Transmission System (MITS nodes — Heysham, Stanah, and Penwortham. MITS represents the core, high-voltage onshore transmission network.

Table 4.3: Estimated Infrastructure costs for Option B

Category	Option B1: Morgan & Morecambe Cost	Option B2: Morgan & Morecambe & Mooir Vannin Cost
Cable Supply	£59,575,000	£102,687,500
Trenching	£26,600,000	£47,700,000
Jointing	£590,000	£1,032,000
Installation	£66,259,250	£115,087,667
Substation Cost	£40,000,000	£60,000,000
Reinforcement Securities	***£55,920,000***	***£92,190,000***
Total (excluding Securities)	**£193,024,250**	**£326,507,167**

4.3 Option B2 – new substation on adjacent Hillhouse Technology Enterprise Zone

This option includes one cable route running from Rossall to Hillhouse. The projects will connect to the transmission network via a newly built 400/275kV OFTO substation in Hillhouse EZ, then through new 400kV circuits to a tee-in at Hambleton.

Blake Clough have suggested Hambleton as the tee-in location as it already has different circuit routes connecting there. However, if a tee-in point closer to the OFTO substation is feasible, this could reduce overall costs. Whilst it may require uprating a longer section of the existing 400kV circuit, this would generally be more cost-effective than installing a new 400kV cable, which tends to be significantly more expensive.

4.4 Option C - (substation at Blackpool Airport EZ instead of the substation at Newton-with-Scales)

This is essentially the same as the DCO Route but terminates at a new substation at Blackpool Airport EZ (instead of Newton with Scales), and then onto Penwortham via the same underground route as the proposed DCO.

Table 4.3: Estimated Infrastructure costs for Option C

Category	Option C1: Morgan & Morecambe Cost	Option C2: Morgan & Morecambe & Mooir Vannin Cost
Cable Supply	£150,125,000	£237,000,000
Trenching	£35,000,000	£80,000,000
Jointing	£1,210,000	£2,040,000
Installation	£156,262,417	£249,629,667
Substation Cost	£40,000,000	£70,000,000
Total (excluding Securities)	**£382,597,417**	**£638,669,667**

4.5 Cost analysis summary

Overall, the lowest-cost connection option is Option B1, which connects into the network in the vicinity of Stanah 400kV substation. The exact connection arrangement would need to be agreed with NESO and NGET, as the substation may not have the physical capacity for extension, and a tee-in solution may be required. However, it is expected that any feasible connection configuration at this location will remain more cost-effective than the alternative options.

Option C, which locates the OFTO substations closer to shore, is slightly more cost-effective than Option A, where the OFTO substations are located at Newton with Scales. Although Option C involves longer 400kV cable routes (which are more expensive than 275kV circuits), fewer 400kV circuits are required compared to 275kV circuits. This reduces the overall volume of infrastructure and installation needed, resulting in a lower total cost despite the increased route length.

Table 4.4 provides summary compared against Option A BAU.

Table 4.4: Estimated Infrastructure costs – all options compared against Option A BAU

Option	Cost	Versus BAU
Option A: Business as Usual, DCO Route		
Option A1: Morgan and Morecambe Only	£443.2m	-
Option A2: Morgan and Morecambe and Mooir Vannin	£845.4m	-
Option B: Connection to Hillhouse/Stanah		
Option B1: Morgan and Morecambe only	£156.1m - £193.0m	£250.2m - £287.1m
Option B2: Morgan and Morecambe and Mooir Vannin	£271.2 - £326.5m	£518.9m - £574.2m
Option C: Connection to Blackpool Airport EZ		
Option C1: Morgan and Morecambe only	£382.6m	£60.6m
Option C2: Morgan and Morecambe and Mooir Vannin	£638.7m	£206.7m

Note: Options B1 and B2 ranges reflect either Stanah upgrade or new substation at Hillhouse (higher cost).

Key findings from the cost analysis include:

- Option B2 is the most cost effective when considering both Morgan & Morecambe and Mooir Vannin, with more than £500m of possible cost savings compared to the Business as Usual (DCO) route;
- Considering Morgan & Morecambe in isolation, Option B1 is the most cost effective, with a saving of between £250m and £287m;
- There are cost savings from connecting to a new substation at Blackpool Airport EZ also, ~£60m for Morgan & Morecambe only (Option C1); and
- Option C2 considers Morgan & Morecambe and Mooir Vannin and shows a new substation at both Blackpool Airport EZ (GSP) and at Hillhouse EZ (OFTO).

Key Considerations:

- **Queue Position Risk:** A key risk relates to how changes in connection design could affect a project's position in the grid connection queue. Options A and C remain broadly aligned with the original DCO-based approach and are therefore more likely to be treated as minor variations, preserving queue position. In contrast, Option B represents a fundamentally different routing and electrical strategy, meaning it could be classified as a new or significantly modified application. This introduces a heightened risk of queue deferral, potentially delaying delivery timelines and, in the worst case, impacting overall project viability despite any technical or cost advantages.

  On the other hand, as indicated earlier, the developer / promoter for the Morgan scheme, EnBW have withdrawn, this is therefore likely to mitigate this delay risk, given that a new developer/promoter needs to come forward for the Morgan scheme, and therefore the potential to lower overall cost must be beneficial for this.

- Power Flow Risk: The Stanah–Hambleton–Penwortham corridor presents a significant technical constraint due to existing high utilisation. Additional offshore generation is likely to push power flows beyond firm capacity limits, necessitating reinforcement, although the exact scale remains uncertain (further study would be required).

  This uncertainty is driven by the complexity of the meshed network, where power flows are not easily predicted using simplified models. While initial DC load flow analysis provides directional insight, more detailed AC studies are required to fully understand system impacts, particularly as increased offshore generation may displace existing northern generation (from Heysham) rather than simply add to corridor loading. A further consideration is the interaction with existing generation at Heysham, where increased offshore export at Stanah is likely to displace output from Heysham Power Station rather than simply add to flows on the corridor, partially mitigating net loading but introducing operational and dispatch uncertainties within the wider system.

5. Economic Benefits – Route Options

5.1 Summary of Approach

Two levels of benefits:

1. National level cost avoidance (economic cost saving)
2. Subregional economic benefit (Fylde Coast employment and GVA)

A headline indication of cost savings has been established, such that for the three wind farms considered, there could be cost savings in the order of £500m which provides local infrastructure upgrades and reduces the length of cabling which must be buried across the Green Belt of the Fylde Coast.

We also consider the potential economic upsides which could spillover from a reconfiguration of the connection arrangements for Morgan & Morecambe and from Mooir Vannin.

An assessment of the enterprise zones affected by the alternative route options has been undertaken in the context of their levels of development, available employment land, proposals for development and site constraints. Economic benefits have been assessed in the form of additional jobs and additional Gross Value Added (GVA) at each of the enterprise zones that we consider.

5.2 Fylde Coast Enterprise Zones

On the Fylde Coast there are three Enterprise Zones, Warton Enterprise Zone on the South of the Fylde coast, Blackpool Airport Enterprise Zone, and Hillhouse Technology Enterprise Zone to the North of the Fylde Coast. For this assessment of potential economic benefits both Blackpool Airport Enterprise Zone (EZ) and Hillhouse Technology EZ are considered – with Warton EZ currently well patronised by BAE, and including the University of Lancashire's Altitude Drone Incubator.

Blackpool Airport EZ and Hillhouse Technology EZ are at differing levels of development, with Blackpool considered to have higher levels of occupancy, and developments in the pipeline such as Silicon Sands where there are reasonably limited barriers to coming forward (subject to market demand). Hillhouse and Blackpool Airport both face constraints to development, but Hillhouse's constraints are more severe and multi-faceted.

5.2.1 Hillhouse Enterprise Zone

Hillhouse Technology Enterprise Zone however is a brownfield site at the northern end of the Fylde peninsula. It is formerly a massive ICI chemical site (closed end of 1990s), and has become home to around 40 businesses, built around businesses that have developed out of former ICI-divisions (for example polymer businesses Victrex plc and AGC, and others e.g. Addison Engineering). The site however has significant areas of surplus development land which has not been built out as hoped since gaining Enterprise Zone status in 2016. For context, despite a surplus of available land and enterprise zone status, the enterprise zone supports just 75 more jobs today than it did in 2016.

Hillhouse has long been envisaged as an enterprise zone capable of supporting more than 3,000 jobs - a manufacturing focussed enterprise zone to house energy, chemicals and polymers activity. Whilst there is still chemicals and polymer activity, despite several proposals, no meaningful energy generating uses have been forthcoming. There is an existing DCO for gas storage in Halite Caverns around the site, and a consented proposal for an energy from waste plant, there have been numerous other energy related propositions including Carbon Capture and Storage, Solar Power, Hydrogen Production and Battery Storage – none of which have materialised. Energy Generating uses at Hillhouse are constrained by poor export capacity at the Stanah substation.

Theoretically, Hillhouse Energy Generating uses could service businesses on the enterprise zone via private wire connections, but there has been limited success in build out of industrial uses due to poor transport accessibility of the site. The site is currently accessed through a residential area with limited accessibility, and the revised masterplan indicates that the absence of a bridge or at-grade crossing over the disused railway line has been a core barrier to plots being absorbed for employment use. Lack of growth in industrial use in turn means there is a limited local market for energy which has been generated on site, which at present due to export capacity is otherwise the only viable market. The lack of local demand and poor export capacity acts as a drag on financial viability of these developments and thus a barrier to energy generating uses coming forward.

5.2.2 Blackpool Airport Enterprise Zone

Since its designation in 2016, Blackpool Airport Enterprise Zone (EZ) has established itself as one of the Fylde Coast's most successful economic growth locations. In total it covers approximately 144 hectares (although part of this includes the airport). The EZ was created support high-value sectors including aerospace, digital, advanced manufacturing, aviation and energy.

The site is estimated to currently support around 4,000 jobs, and broadly on track for its long term target of 5,000 jobs, reflecting good take-up of available plots. Blackpool Council has supported the EZ with significant capital investment in upfront infrastructure to unlock plots, and most of what is currently available has strong enquiries.

Perhaps the most significant achievement to date, however, is the successful positioning and early delivery momentum of the Silicon Sands proposition for a green digital campus anchored around renewable-powered, liquid-cooled data centres, designed to serve AI, high-performance computing and digital industries.

In infrastructure terms, the EZ has also secured important progress on power provision, with a new Electricity North West Primary Substation in the pipeline for development, there will be adequate access to power to bring forward the first two phases of data centres. There is currently an expectation that to build Silicon Sands out to full capacity would require additional access to power (over and above the new substation), but that local stakeholders are confident that this will be forthcoming within the next decade irrespective of any interventions that could take place around the wind farm infrastructure. Beyond this, many of the development plots which are proposed for employment uses are under offer, with the only real meaningfully sized development plot available for future development (beyond Silicon Sands area) is the former Vickers-Armstrongs Wellington Bomber factory at the airport EZ (now in the ownership of the EG Group).

5.3 Economic Optioneering (Route Options)

In line with the infrastructure options presented (Option A, B and C) in the cost assessment, we have undertaken an examination of feasible economic benefits which could arise from alternative infrastructure solutions. We treat the DCO route (Option A) as the counterfactual against which we juxtapose economic benefits.

5.3.1 Option A (Business as Usual – DCO route)

The M&M DCO proposals see the route through Fylde to Penwortham essentially simply as a land corridor, whereby there is little to no economic benefit, beyond developer s106 type contributions, and capital receipts arising from land take / easements. Without co-ordination there will likely be considerable localised disruption which will impact rural communities, businesses and residents located along the route to Penwortham, as well as environmental harms.

The DCO route as proposed does nothing to facilitate economic development or enable either Hillhouse Technology EZ, or Blackpool Airport EZ beyond their current levels or their projected trajectories. On balance, the connection is likely to do economic harm to the Fylde coast economy through disruption, possibly even closures of some businesses along the length of the route - whilst providing no clear measurable upside economic potential.

5.3.2 Option B (Connection to Hillhouse EZ)

From a cost effectiveness perspective, options to connect near Hillhouse and utilise the existing overhead cables to Penwortham could save between £240m for Morgan & Morecambe alone and more than £500m including Mooir Vannin. Both of the two sub-options (B1 and B2) would offer a very real opportunity to activate the Hillhouse Technology Enterprise Zone for energy generating uses due to improved firm capacity on the overhead lines between Stanah-Hambleton-Penwortham, and improved export capacity at a new Hillhouse Substation (or upgraded Stanah).

The infrastructure solution is likely to necessitate a new substation on the Hillhouse Enterprise Zone and a tee into the overhead lines to Penwortham, which could take between 9 - 12ha of land. Given the limited success over the past decade plus in improving employment on the site, this land would not be expected to come forward for employment use any time soon, and thus the trade-off is considered economically worthwhile for it to enable energy generating uses and wider industrial uses at the site.

Improved conditions for energy generating uses (with the strengthened export infrastructure) enabling export back to the Grid are expected to boost the viability of such uses and mean these uses are more likely to come forward. Significant investments have been made in two energy generating propositions over the last decade, neither of which have come forward. Infrastructure improvements are expected to give rise to a range of benefits through increased employment in energy generating uses, bringing land into more productive use, and through increased industrial demand for land at Hillhouse.

In order for increased industrial uses at Hillhouse to materialise, it will still likely need to be facilitated by improved road accessibility into the site, for which there are existing proposals. It is expected that improvements to energy infrastructure and energy generating uses at Hillhouse will strengthen both the Strategic and Economic case for transport interventions, and that there will be a stronger business case to be made for local partners to provide funding for a bridge or at-grade crossing into Hillhouse crossing the existing dis-used railway line. This improved accessibility will mean the site can have a dedicated industrial/commercial access, rather than the existing historic site access which is now through a predominantly residential area following significant residential development over the past decade. This is thought to be deterring potential further commercial interest in the site.

The combination of improved energy infrastructure and improved transport accessibility are expected to yield an increase in employment locally on the Hillhouse Technology Enterprise Zone. There are approximately 63 hectares of available development land at Hillhouse, which at the current trajectory of take-up (noting 76 additional jobs in 10 years) is likely to see very few jobs come forward without intervention.

For prudence, we have assumed that 10% of available development land will come forward for employment uses, and at existing site employment density this would be the equivalent of 200 jobs. The counterfactual assumes energy infrastructure is located elsewhere, which provides no uplifted viability for energy generating uses and thus no strengthened local case for improved transport accessibility to the site, implying no improvement in development land uptake.

With 12 hectares of the 63 reserved for energy infrastructure (new substation) at Hillhouse, the remaining development land could support new employment of between 1,300 (with energy generating use) and 1,600 jobs (all employment, no energy generating uses).

The most likely scenario is that 1,300 jobs could be supported by the provision of an energy generating plant, likely energy from waste, of around 8 hectares (noting the lower employment density of these kinds of uses), and the remainder from industrial uses. These industrial uses will be catalysed by both the improved potential for private wire connections to energy generators at Hillhouse, and from improved transport accessibility.

The net effect is an expected 1,100 additional jobs at Hillhouse compared to the most likely counterfactual. The local economic benefit in expressed in Gross Value Added (GVA) is expected to range between £99m and £177m per annum based on Lancashire's Manufacturing sector productivity and Chemical/Pharmaceutical Manufacturing productivity respectively.

5.3.3 Option C (Connection to Blackpool Airport EZ)

Provision of substation infrastructure at Blackpool Airport EZ does entail smaller but significant cost savings compared to the DCO route, saving £60m for Morgan and Morecambe, increasing to a total of £206million with Mooir Vannin included.

There are still likely considerable environmental harms through following the proposed DCO route back to Penwortham via underground cables (or perhaps replacement with overhead lines, but it would increase power availability at Blackpool Airport EZ. Mooir Vannin would be enabled through the provision of an OFTO substation at Hillhouse, this would move the infrastructure to brownfield land at the expense of land which otherwise may not come forward for productive use on Hillhouse. Importantly, the OFTO substation would not enable the site at Hillhouse, it would simply provide a means to step up to grid level voltage for transmission via overhead lines to Penwortham (effectively avoiding lots of cost of buried cable).

The benefit to Blackpool Airport EZ of a new relocated substation (i.e. from Newton with Scales to the Airport site) is likely to be one of acceleration rather than enabling the Silicon Sands data centre propositions, given that there is an existing commitment from Electricity North West to build a new primary substation at the EZ, which would enable the first two phases of Silicon Sands to access adequate power for data centre uses. The provision of the substation at Blackpool Airport EZ would therefore simply accelerate data centre phases beyond phase 2, facilitating the full build out of Silicon Sands up to 400MVA of power that it would need to draw upon. Local stakeholders expect that by 2035 there is a good chance that this level of power will come forward anyway to facilitate full build out.

Depending on the pace at which the offshore wind farms come forward, it may be that there is a marginal benefit of say 5 years of acceleration. Over the last couple of years, there has been a previous unsuccessful joint bid with Hillhouse for development of an AI Growth Zone across the area. Provision of additional energy infrastructure here to facilitate full build out of Silicon Sands more quickly could change the prospect of the success of a future bid if another strategic opportunity arises.

Land take for the new substation would be similar in extent at Blackpool Airport EZ to a new substation at Hillhouse (i.e. 9-12ha), but this could be located on the south side of the Airport EZ which is not previously developed land (Green Belt) and will not otherwise come forward for employment uses. There will therefore be no trade-off between employment land and power – however there are considerations as to the technical feasibility of a substation here next to live airport infrastructure and any interference the substation might cause. This would need to be investigated further.

The net effect, at best, is a possible acceleration of Silicon Sands full build out to 400MVA by approximately 5 years, but the additionality is in the 5 years, rather than any lasting persistence. Given data centre demand is expected to be strong in the coming years, the likelihood of the additional power supply coming forward without infrastructure intervention is thought to be very likely, therefore limiting the additionality. Hillhouse Technology EZ is therefore considered to be the more economically advantageous option for the Fylde coast economy, given that a new substation and Grid connection here could unlock the power and then access constraint which has been holding back site's attractiveness as an investment location.

6. Cost Benefit Analysis Summary

6.1 Table of costs avoided and benefits

Table 7.1 presented below illustrates option by option, with columns for cost avoidance compared against the BAU (£m) DCO route. The economic benefit analysis is shown for Option B alternative northern route via Hillhouse, and the estimated acceleration for delivering Silicon Sands at Blackpool Airport EZ (number of years of acceleration).

The cost savings are estimated at £250-£287 million for the Morgan and Morecambe wind farms, rising to over £500 million if coordinated with the forthcoming Mooir Vannin project.

Establishing a new substation at Hillhouse has the potential to unlock considerable additional jobs and Gross Value Added (GVA) by transforming the site's underlying economic fundamentals, and improving the business case for transport investment to facilitate improved access to the site.

There are also benefits to an alternative solution (if there is reluctance to move away from the proposed DCO route) with a more minor variation which would include a substation at Blackpool Airport EZ. There would be some potential technical constraints to overcome, but it would still offer the potential for between £60m and £200m of costs savings, and economic benefits around the delivery of the Silicon Sands masterplan opportunity that is about acceleration rather than a change of trajectory.

However, a full switch to the Northern Route alternative can potentially unlock very significant local economic benefits. For Hillhouse Technology Enterprise Zone, a change of infrastructure solution to develop a new substation on the site, with a tee-in to the existing Stanah-Hambleton-Penwortham overhead lines and associated upgrades would be expected to yield the following benefits:

Table 6.1: Summary of National Cost saving and Local Economic Benefits assessment

Options	Cost avoidance v BAU £m	Jobs v BAU	GVA v BAU
Option B: Connection at Hillhouse / Stanah			
Option B1: Morgan & Morecambe only	£250.2m - £287.1m	1,100	£1 to £1.77bn (2030-2040)
Option B2: Morgan & Morecambe & Mooir Vannin	£518.9m - £574.2m	1,100	£1 to £1.77bn (2030-2040)
Option C: Connection at new substation at Blackpool Airport EZ			
Option C1: Morgan & Morecambe only	£60.6m	Silicon Sands accelerated by 5 years	-
Option C2: Morgan & Morecambe & Mooir Vannin	£206.7m	Silicon Sands accelerated by 5 years	-

6.2 Qualitative considerations

Scheme Viability/Deliverability: EnBW have withdrawn from the Morgan Offshore Wind Farm primarily because they did not secure contracts for difference in a recently completed allocation round from Department of Energy Security and Net Zero. In an investor notice they cited the project was no longer financially viable, and cited this along with cost increases across the supply chain.

EnBW Energie Baden-Württemberg's 2025 strategy and investment announcements indicate that the company has outlined plans to invest **up to €50 billion by 2030** in what it describes as its largest-ever programme, focused on renewables, grids, and wider energy transition infrastructure. This capital is being deployed primarily across Europe (with a strong focus on Germany), including **offshore wind, onshore renewables, networks, and hydrogen**, positioning EnBW as a major investor in the continent's decarbonisation and energy security agenda.

EnBW to invest up to EUR 50bn in energy transition projects by 2030

May 9, 2025, 3:47:38 PM | Article by Tanya Ivanova

German electric utility EnBW Energie Baden-Wuerttemberg AG (ETR:EBK) plans to invest up to EUR 50 billion (USD 56.4bn) in the transformation of the energy system through 2030, CEO Georg Stamatelopoulos said during the annual general meeting on Thursday.

EnBW's site at the Karlsruhe Rhine port

The utility has committed EUR 40 billion for the period between 2024 and 2030. However, additional investment needs have been identified, which could bring the total amount to about EUR 50 billion. The amount is touted as the largest investment programme in the company's history.

The focus will be on expanding transmission and distribution networks and building new wind and solar power plants, including the planned hydrogen core network. EnBW has

The UK runs a significant risk of missing out on this important strategic investment. **Looking at the potential of a lower cost alternative onshore connection and link into the National Grid would seem to offer the opportunity to lower overall cost, and as a consequence presumably the strike price in any re-run of the CfD process to revive the delivery of the Morgan wind farm.**

Planning and Environmental considerations: Correspondence from NESO confirms that Penwortham remains the preferred connection point, and that it was chosen because it is an established site and had the best balance of technical performance and lower environmental impact for cable routing - their argument is

that routing cables to Stanah would be highly disruptive to built-up areas and environmentally sensitive zones.

A high-level assessment of a proposed Northern Route which lands at Rossall has been undertaken by the consultant team as part of this report preparation. This desk based review reveals no significant ecological issues which could not be overcome or mitigated and that the route can largely follow existing hard surface roads and corridors. The review shows the biggest potential impact could be disturbance of birds associated with the Morecambe Bay SPA which may use the fields around and adjacent to the first leg of the route for high-tide roosting and foraging. Even if these birds are present in large numbers, a simple mitigation would be to conduct cable installation works between April and September, when they would not be disturbed. Other habitats on the route appear to be largely of low value, and any impacts would be temporary during construction works. A potential presence of protected species such as Great Crested Newts, Reptiles or Badgers (which would be revealed following detailed surveys) would still experience only temporary impacts and could be mitigated using standard approaches and methods.

DCO: Any proposal to shift the windfarm connection to an alternative northern route would likely require a new Development Consent Order. The Technical Note prepared by DWD explains that a material route change would not fall within this consent, though significant reforms introduced through the Planning and Infrastructure Act 2025 should make this process less onerous.

The reforms collectively are designed to shorten timelines, reduce procedural burden, and provide greater flexibility for applicants. This could mean that although a new DCO would be required for an alternative northern route, the reformed process is expected to be more efficient and more adaptable than the system under which the current consent was submitted.

7. Synopsis and key findings

7.1 Key Findings: Cost Savings and Project Viability

The findings of the study support assertions that there are potential significant financial cost savings to be had by switching from the proposed DCO route to a Northern Route via Rossall, terminating to a new substation at Hillhouse Technology Enterprise Zone, linking into the existing overhead transmission cabling with reinforcement on the route cabling down to Penwortham.

This route would benefit from reduced underground cabling costs, lower disruption to communities, and would make use of the existing overhead infrastructure that exists between Stanah, Hambleton and Penwortham. The cost savings are estimated at between £250m and £287m for the Morgan and Morecambe wind farms, rising to over £500 million if coordinated with the proposed Mooir Vannin project.

Blake Clough's key cost comparison table from section 4 is reproduced here:

Option	Cost	Versus BAU
Option A: Business as Usual, DCO Route		
Option A1: Morgan and Morecambe Only	£443.2m	-
Option A2: Morgan and Morecambe and Mooir Vannin	£845.4m	-
Option B: Connection to Hillhouse/Stanah		
Option B1: Morgan and Morecambe only	£156.1m - £193.0m	£250.2m - £287.1m
Option B2: Morgan and Morecambe and Mooir Vannin	£271.2 - £326.5m	£518.9m - £574.2m
Option C: Connection to Blackpool Airport EZ		
Option C1: Morgan and Morecambe only	£382.6m	£60.6m
Option C2: Morgan and Morecambe and Mooir Vannin	£638.7m	£206.7m

Note: Options B1 and B2 ranges reflect either Stanah upgrade or new substation at Hillhouse (higher cost).

These potential savings materialise via:

- **Infrastructure Efficiency:** By landing cables at Rossall and utilising existing overhead transmission lines, the project can drastically reduce the volume of expensive underground cabling, reducing from circa 30km to 5km; and
- **Improved Viability:** These savings are critical given the current investment climate. The report notes that developers EnBW have already withdrawn from the Morgan project due to lack of financial viability from failing to secure the critical Contracts for Difference (CfD) from the UK Government, and from construction cost inflation.

  Reducing capital infrastructure expenditure by half a billion pounds could significantly improve the overall viability and deliverability both the Morgan and Mooir Vannin wind farms (note Morgan wind farm is three times the scale of the Morecambe wind farm so securing Morgan is critical for delivery)

The £0.5bn saving could potentially enable both Morgan and Mooir Vannin to secure a CfD at a lower strike price than would previously have been required to make the projects viable. For Morgan, EnBW are well capitalised, and have publicly announced that they have an estimated 50bn EUR to invest. Without intervention it appears they are looking to deploy this investment elsewhere in Europe where they are able to make the required viable return. This loss of this foreign direct investment could be a real missed opportunity for the UK given the Government's ambition for the UK to reach up to 50GW of clean energy from offshore wind by 2030. At the end of 2024, the UK had achieved an offshore wind capacity of just16GW, so there seems to be significant scope and priority to re-secure the Morgan windfarm and follow through with the opportunity from Mooir Vannin.

Note: the northern route alternative could also offer the chance for cost savings on the Mooir Vannin wind farm which offers a similar level of investment and generation capacity as Morgan, and therefore its viability could be improved as well.

7.2 Unlocking Economic Growth

Establishing a new substation at Hillhouse has the potential to unlock considerable additional jobs and Gross Value Added (GVA) by transforming the site's underlying economic fundamentals, and improving the business case for transport investment to facilitate improved access to the site.

There are also benefits to an alternative solution (if there is reluctance to move away from the proposed DCO route) with a more minor variation which would include a substation at Blackpool Airport EZ. There would be some potential technical constraints to overcome, but it would still offer the potential for between £60m and £200m of costs savings, and economic benefits around the delivery of the Silicon Sands masterplan opportunity that is about acceleration rather than a change of trajectory.

However, a full switch to the Northern Route alternative can potentially unlock very significant local economic benefits. For Hillhouse Technology Enterprise Zone, a change of infrastructure solution to develop a new substation on the site, with a tee-in to the existing Stanah-Hambleton-Penwortham overhead lines and associated upgrades would be expected to yield the following benefits:

- Employment: The transition is expected to support 1,100 additional jobs compared to the current trajectory, driven by the arrival of energy-generating uses and subsequent energy-intensive industrial uses;
- GVA Uplift: The local economic benefit is projected to range between £99 million and £177 million per annum. The upper bound would represent an 8.6% uplift in the total annual GVA output of the Wyre borough economy. Over the 10-year period from 2030 to 2040 (when the wind farms were expected to become operational), this would aggregate up to a gross uplift of between £999m and £1.77bn; and
- Strategic Catalyst: Infrastructure improvements would strengthen the case for the £8m–£10m transport investment that is estimated as needed for a new site crossing, which would then enable the build-out of the 63 hectares of available development land on the Hillhouse Technology EZ, which has otherwise only seen somewhat limited development over the last decade of just 76 additional jobs (the site's access considered the principal constraint holding back the site's attractiveness).

7.3 Environmental and Ecological Summary

A high level environmental and ecological assessment has been undertaken for the proposed alternative Northern Route from Rossall to Hillhouse. In correspondence with Council Leaders, NESO noted "*onshore cable routing options to Stanah would still need to pass through existing built development and environmentally sensitive areas, with these routes assessed as high adverse impact*".

From the ecological and environmental review undertaken for this report, the findings have been much more balanced. The review notes that some sections of the route intersect natural habitats and will require

ecological consideration, but that "*the majority of the route follows main roads consisting of developed land and sealed surfaces with minimal ecological value*".

The review recommends further investigation, but has the expectation that best practice construction methods could be followed to mitigate any potential impacts on priority habitats, watercourses and protected species. Standard mitigation methods are suggested to counteract any potential (but as yet unknown) adverse environmental and ecological impacts, but the overall conclusion is certainly not one of "high adverse impact". This suggests that pending further investigation, it is quite feasible that the route can be navigated without undue environmental and ecological harms, and therefore the potential to challenge the comments NESO have made to the Council leaders.

7.4 Conclusion and Recommendation

The evidence gathered indicates that the alternative northern infrastructure route is technically feasible and offers vastly superior economic and financial outcomes compared to the current DCO route proposal. Given the scale of potential savings and the opportunity to revitalise and unlock a major regional industrial asset, it is the conclusion of this report that the findings merit a pause in decision-making.

This would allow local partners and the Secretary of State to assemble further evidence and refine the feasibility of this alternative route to ensure the maximum benefit for both Lancashire and the UK's net-zero transition.

The expected outcomes are improved economic and employment prospects on the Fylde Coast, of the order of an additional £1bn of GVA over the decade to 2040, and an additional 1,100 jobs, alongside more certain delivery of the offshore wind farms by lower onshore infrastructure costs.

The alternative northern route would also entail avoidance of disruptions to residents (in contrast to the proposed DCO route), and significant cost savings which may well be of a quantum to turn around the viability of the 1.5GW Morgan Wind Farm, noting that EnBW have pulled out of the scheme.

Reduced infrastructure costs may reduce the strike price the transmission owner needs to secure in order to make the project viable, which could prevent this capital being deployed overseas by EnBW, supporting the UK's energy security and energy generation, as well as bringing about local economic benefits to residents on the Fylde Coast through additional jobs and economic output.

Given that timescales have effectively moved out on the delivery of Morgan and Morecambe and that EnBW has withdrawn their investment given the failure to secure an acceptable CfD with the Government, this does suggest the need to explore alternative, more economic route options. Combining this with the opportunity to integrate the planning with Mooir Vannin, this would then deliver the £0.5bn of capital cost savings and therefore the opportunity for a more economic CfD agreement with Government.

Appendix A Enterprise Zone Economic Impact Analysis

Economic Impact analysis – Blackpool Airport EZ

The Blackpool Airport Enterprise Zone covers 144 hectares of land around Blackpool Airport and surrounding commercial areas, established in 2016 to attract business and investment, create up to 5,000 jobs and unlock ~£300 million of growth. It offers serviced land, industrial units, and advanced infrastructure for sectors including aerospace, manufacturing, digital and energy. A key development is Silicon Sands, a green digital campus centred on renewable-powered, liquid-cooled data centres with ultra-low latency connectivity via subsea cables, aimed at supporting high-performance computing, AI, and digital industries, with initial data centre construction expected to begin this decade.

The EZ is performing well, and is on course to contribute a cumulative £2bn of GVA over its lifetime. At present there are an estimated 4,000 jobs supported by the EZ, compared to a target of 5,000 by 2041.

The Eastern Gateway at the EZ has a fixed, detailed technical masterplan for relocation of airport infrastructure and Silicon Sands which is set to be finalised by the end of quarter 4 of 2026. The combined masterplan for the whole site will be subject to public consultation before being presented for formal adoption. The emerging masterplan retains the flexibility to respond to new opportunities for the site as they arise, particularly from the data, energy and aviation sectors.

The biggest future prospect of the site is that of Silicon Sands (data centre campus), with the full potential once fully built to generate between £6bn-£14bn GVA added over its lifetime. Adequate land exists at the EZ to deliver the full 400MVA vision for Silicon Sands, and there is enough power to deliver the first two phases that either already exists or is in the pipeline (i.e. a planned new Electricity North West substation). The availability of headroom to power the first two phases could disappear if connection requests are made in the interim, and the third phase of Silicon Sands will be constrained without strategic investment in local network headroom, though local stakeholders are confident that there will be adequate provision to enable full build out by 2035.

A new substation at Blackpool Airport EZ could accelerate the build out of Silicon Sands to its full 400MVA capacity, and save money in the process, which will ultimately otherwise be socialised into energy bills, or threaten viability of wind farm development. The site might be more technically constrained than Hillhouse EZ due to its airport usage, one which is envisaged to continue by Fylde Borough Council as the local planning authority for that part of the enterprise zone.

The impact on Blackpool Airport EZ – Option by Option Analysis

A high level assessment of the potential economic impacts in the context of local employment and GVA have been undertaken in line with the three options presented as potential infrastructure solutions. The most direct option with measurable economic benefit for Blackpool EZ is Option C, whereby a substation is developed on the EZ itself as opposed to at Newton with Scales. Options A and B have little economic benefit for employment and GVA prospects at the EZ:

Option A (Business as Usual)

There is no expected benefit to Blackpool Airport EZ from the proposed DCO route, it would simply involve land take, for which there would be a capital receipt for the airport EZ. It would do nothing to enable or accelerate the build out of Silicon Sands. Though this option does involve land take, it is land that is likely to otherwise be undeveloped, but it is Green belt land and so the counterfactual is that it remains undeveloped anyway.

Option B (Connection to Hillhouse EZ)

Development of a substation at Hillhouse or an upgrade of Stanah is of no obvious or immediate benefit to Blackpool Airport EZ's development prospects. Potentially there is a speculative opportunity for an improved AI Growth Zone proposition utilising increased power availability and land availability at Hillhouse to make a more compelling joint proposition, but whether there is a future opportunity to do this is unclear at present. Irrespective, Silicon Sands Phases 1 and 2 likely to come forward in the meantime, and local stakeholders are confident there will be adequate power available to fully build out the data centre campus by 2035 irrespective.

Option C (Connection to Blackpool Airport EZ)

The development of a new substation at Blackpool airport would likely have the effect of accelerating full build out of Silicon Sands beyond what could be comfortably done today, we estimate by approximately 5 years. A substation here could also reduce the likelihood that the demand capacity that would enable earlier phases is taken by other projects beforehand, though the existing planned ENWL primary substation will also provide some security around demand headroom. A faster buildout of Silicon Sands could speed up district heat network ambitions in Blackpool, which could have wide-reaching positive effects especially in the context of the extent of fuel poverty that exists in Blackpool.

Another positive consideration is that the land that would be drawn down for a new substation is not for employment use anyway, and so there is little employment land trade-off as is the case at Hillhouse EZ, though there are concerns about technical feasibility due to the proximity of a new substation to existing airport infrastructure and any interference this could cause.

However, Option C does not fully mitigate the environmental and social concerns which exist in the community around the DCO route, given it would otherwise follow the same route back to Penwortham. The main alleviation is bringing the substation onto land which is already mostly employment land.

Economic Impact Analysis – Hillhouse EZ

The Hillhouse Technology Enterprise Zone is a 138-hectare industrial and employment site on the Wyre Coast, established on the former ICI chemical plant at Thornton-Cleveleys and designated as an Enterprise Zone in 2016 (see Figure 3). It hosts more than 40 companies, including global chemical and polymer manufacturers, supported by high-capacity utilities, logistics links, and simplified planning incentives. The zone offers serviced plots, design-and-build opportunities, and enhanced infrastructure for industrial, manufacturing, and energy sectors, with strong connectivity to major roads and regional markets. Its strategic location aims to attract investment, jobs and support cluster growth in chemicals and advanced manufacturing industry.

The original masterplan for the site set a target of supporting 3,700 jobs by 2041, which on current trajectory is very unlikely to be met. Currently there are an estimated 1,700 jobs supported by the site, which is locally significant, though employment at the site has increased by just 76 jobs since 2016.

The current majority landowner NPL (who are in the process of selling their land at the EZ) had a consented DCO for Gas Storage, and had proposals for future hydrogen production and storage (100MW on old gas works site) at the site, which have not materialised. The site is currently for sale, and there are challenges around land ownership and assembly which could threaten a cohesive approach to developing out the site. A draft masterplan revision will need to be tested and agreed (with WSP developing a more pragmatic strategy).

The site does have some constraints, though theoretically there is already power available (c70MW) for industrial use, so the main constraint is access to the site, which is currently through a residential area.

Proposals are being developed for a bridge or at grade crossing over a dis-used railway line, with high level costs in the region of £8m+VAT for a bridge to improve accessibility.

Hillhouse was included within the Blackpool Airport EZ Silicon Sands proposal for designation as an AI Growth Zone, which would require 500MW of Power availability and ~40 Hectares of development land – this was ultimately unsuccessful.

Hillhouse has long been envisioned as a site capable of supporting energy generating uses, but for this a major constraint has been the nearby Stanah substation, and the overhead infrastructure back to Penwortham where there is little spare firm capacity to enable energy export. If a new substation were to be housed on the enterprise Zone at Hillhouse, research indicates this could have a total land take in the region of 12 hectares.

The site has current planning approval for a new Energy from Waste facility (120,000 Tonnes per annum), the likelihood of this materialising could be dependent on export capacity at the Stanah substation and associated overhead lines between Stanah, Hambleton and Penwortham.

The impact on Hillhouse EZ – Option by Option Analysis

A high level assessment of the potential economic impacts in the context of local employment and GVA have been undertaken in line with the three options presented as potential infrastructure solutions. The most direct option with measurable economic benefit for Hillhouse EZ is Option C, whereby a substation is developed on the EZ itself as opposed to at Newton with Scales. Options A and C have little economic benefit for employment and GVA prospects at the EZ:

Option A (Business as Usual)

There is no expected benefit to Hillhouse EZ from the proposed DCO route or the mooted underground route for Mooir Vannin which bypasses the EZ. Neither of these would do anything to change the underlying prospects for bringing forward employment land uses or energy generating uses at Hillhouse, as neither tackle the accessibility challenges or the energy export constraints. The site would be expected to remain underutilised, with limited prospects for growth in employment or economic output in the coming years. With employment density per hectare at Hillhouse at the moment, there is a land supply capable of supporting almost 2,000 jobs, we expect only a small proportion of this (~200 jobs) would be forthcoming in future years based on the trajectory of the last decade (75 more jobs today than in 2016).

Option B (Connection to Hillhouse EZ)

Option B develops a new substation at Hillhouse (this is most likely, though an upgrade of Stanah with some land take at Hillhouse could be feasible), this has the effect of activating Hillhouse for energy generating uses through improved firm capacity on the overhead lines and export capacity at the new substation. These energy generating uses are more likely to come forward because export to grid is viable, and a second round effect could see improved attractiveness of the site to industrial occupiers.

The increased demand for industrial occupation is likely to remain constrained by accessibility challenges (with Hillhouse currently accessed through a predominantly residential area) but provision of an at-grade crossing or a bridge over the disused railway line could mitigate this as per the developing masterplan. It is anticipated that increased demand for and the bringing forward of energy generating uses will breathe life into Hillhouse as a growing employment site, boosting the strategic and economic case for investment by the local transport authority into securing a new entrance crossing into Hillhouse – this is expected to be a modest investment of somewhere in the region of £8-10m per the masterplan.

If a new substation and at-grade crossing/bridge can be secured, energy intensive industrial uses could come forward and be serviced by increased availability of power, and also provide a local market for energy generating at Hillhouse enabled by substation improvements – this would be the ideal scenario. Modelling suggests that with a new substation (which would take land) and a crossing, the bringing forward of a less

employment dense energy generating use would catalyse the bringing forward of other industrial uses to the tune of some 1,300 jobs on the site.

The net effect is an expected 1,100 additional jobs at Hillhouse compared to the most likely counterfactual. The local economic benefit in expressed in Gross Value Added (GVA) is expected to range between £99m and £177m per annum based on Lancashire's Manufacturing sector productivity and Chemical/Pharmaceutical Manufacturing productivity respectively. This would be a significant uplift in local economic output, with the upper bound representing an 8.6% uplift on Wyre's most recent GVA output (£2.063bn in 2023).

Option C (Connection to Blackpool Airport EZ)

Option C is of little obvious or immediate benefit to Hillhouse, with the exception of possibly improving prospects of AI Growth Zone success for a joint bid with Blackpool Airport EZ – it is not known whether another such opportunity will be forthcoming in the future. Option C2 (where Mooir Vannin is enabled with an OFTO substation) simply draws down Hillhouse land without enabling it, as this simply steps up the wind power to grid voltage, providing no increased export capacity at the Stanah substation. Arguably this would actually use and occupy some land that otherwise seems less likely to come forward productively, but the benefit to this would be to private land owner via a capital receipt rather than create any meaningful employment locally. This solution does little to enable Hillhouse as a growing employment site, it does not solve the energy export constraints at the site, and thus the underlying economic fundamentals of the site are unchanged, and unlikely to incentivise local investment in improved transport accessibility.

Appendix B Blake Clough Technical Feasibility

Blake Clough
CONSULTING

BCC11872

Lancashire Offshore Wind Farm

Grid Connection Feasibility Asses

Document Control

Revision	Status	Prepared By	Checked By	Approved By	Date
R0	First Issue	AZ/AHW	LM/AC	LM	31/03/2026
R0	Second Issue	AZ	AZ	AZ	21/04/2026

Project Title:	Lancashire Offshore Wind Farm Grid Connection Feasibility Assessment
Project Reference:	BCC11872

Website:	www.blakeclough.com
Contact Email:	asad.zakaria@blakeclough.com
Contact Number:	+44 (0)7857 5513 31

This report has been prepared exclusively for the purposes of the Project and Client set out above. It is intended solely for the use of the Client in relation to this Project. No third party may rely upon or derive any rights from the content, analysis or conclusions of this report. The author accepts no responsibility or liability to any person or entity for the use or reliance on this report, either in whole or in part.

Any reproduction, distribution, or use of the report, in any form, without the prior written consent of the author [or the Client], is strictly prohibited. Copyright © [Blake Clough Consulting Ltd] [2026]

Contents

1. Introduction

The purpose of this report is to provide an independent assessment of the onshore cable route, the surrounding grid connection infrastructure, and the indicative connection costs for Morgan and Morecambe Offshore Wind Farm as well as the oncoming Mooir Vannin Offshore Wind Farm (Orsted). This report has been prepared to support assessing the feasibility of connecting the combined export from the Morgan and Morecambe Offshore Wind Farms (~1,980 MW) and the Mooir Vannin (Orsted) project (~1,320 MW) via a 275 kV cable route, representing a total of approximately 3,300 MW. The 275 kV cables are then stepped by an Offshore Transmission Owner (OFTO) 400/275 kV transformer into the existing transmission network in the North West. The assessment considers the capability of the nearby grid infrastructure to accommodate this level of generation, identifies the key network constraints that arise, and evaluates the reinforcement requirements and associated cost implications across a range of potential connection options.

The report will draw on publicly available data provided by the National Energy System Operator (NESO) and the Transmission Operator (TO, National Grid Electricity Transmission, NGET) to assess the local grid infrastructure.

Recommended connection strategies of three distinct connection Options A, B, and C, reflecting alternative approaches to landfall location and integration into the existing transmission network are presented. Each option is assessed with a focus on network constraints, required reinforcements (if necessary), and associated cost implications, , allowing the consultant team to have an in depth understanding of the connection options available for this project.

Option A – BAU (Current DCO Route)

The Business-as-Usual (BAU) option follows the currently proposed DCO route. In this configuration, the export cables make landfall at Starr Beach and are routed underground through the Blackpool Airport Enterprise Zone to Newton-le-Scales, where a new substation (assumed to be an Offshore Transmission Owner (OFTO) substation) would be constructed. From there, the cables continue underground to Penwortham. For the Morgan and Morecambe projects, this would involve two export cables installed within a single corridor but in separate trenches along the route to Penwortham (shown as black line in Figure 1-1). Orsted's proposal (depicted as Grey line in Figure 1-1), with cables landing at Rossall and following a more northerly underground route that bypasses Hillhouse and Stanah before continuing underground to Penwortham as shown in Figure 1-1.

Figure 1-1 provides an overview of the onshore cabling route and the surrounding network infrastructure. The diagram highlights the 400kV Transmission overhead line (OHL) route, the 275 kV Transmission OHL route and the 132kV Transmission OHL routes in grey, the development consent order (DCO) approximate onshore cable route in purple as well as the Mooir Vannin (Ørsted) cable route in black.

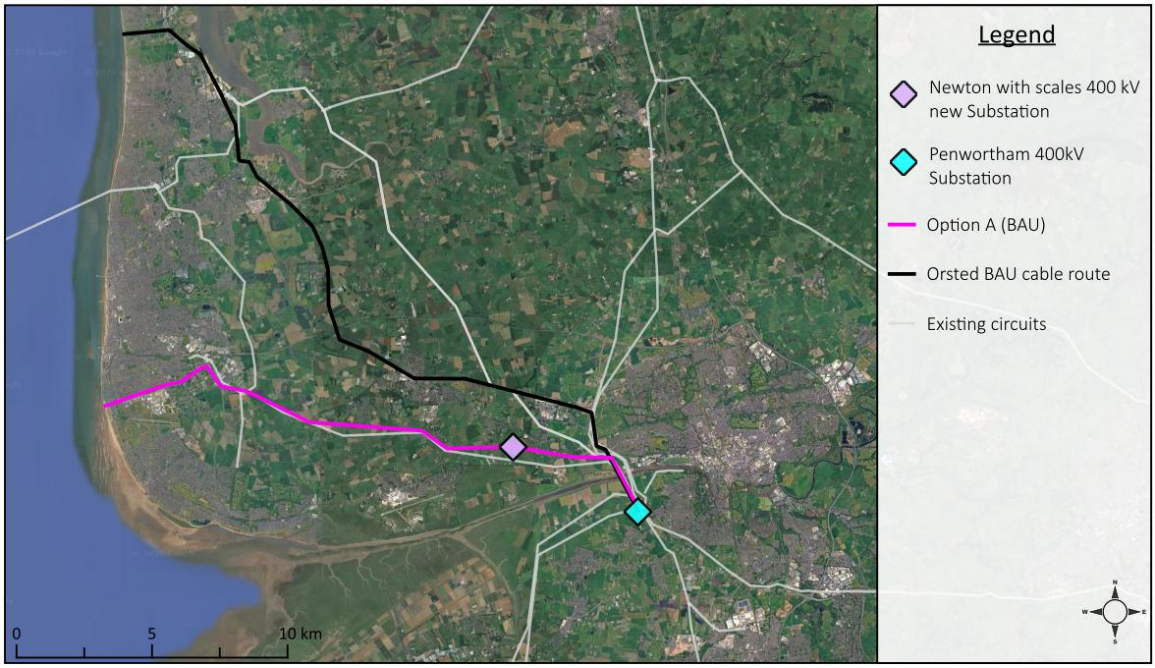


Figure 1-1: Option A - DCO Onshore Cable Route and Surrounding Network

Option B – Rossall Landing with Hillhouse/Stanah Connection

In this option, the export cables land at Rossall Beach and are routed underground through the local road network or road verges, including a crossing beneath the railway line (toward either a reinforced Stanah substation (Option B1) OR a new substation at Hillhouse (Option B2)). It is to be noted that direct connection to Stanah is not possible due to the voltage level mismatch i.e. 275 kV cable against the 132 kV at Stanah LV side as well as the low thermal capacity at 480 MVA. Therefore, to connect at Stanah substation directly (or indirectly), the substation has to be reinforced with higher thermal capacity as well as adding new bays for 275 kV connections from Morgan + Morecambe and Mooir Vannin.

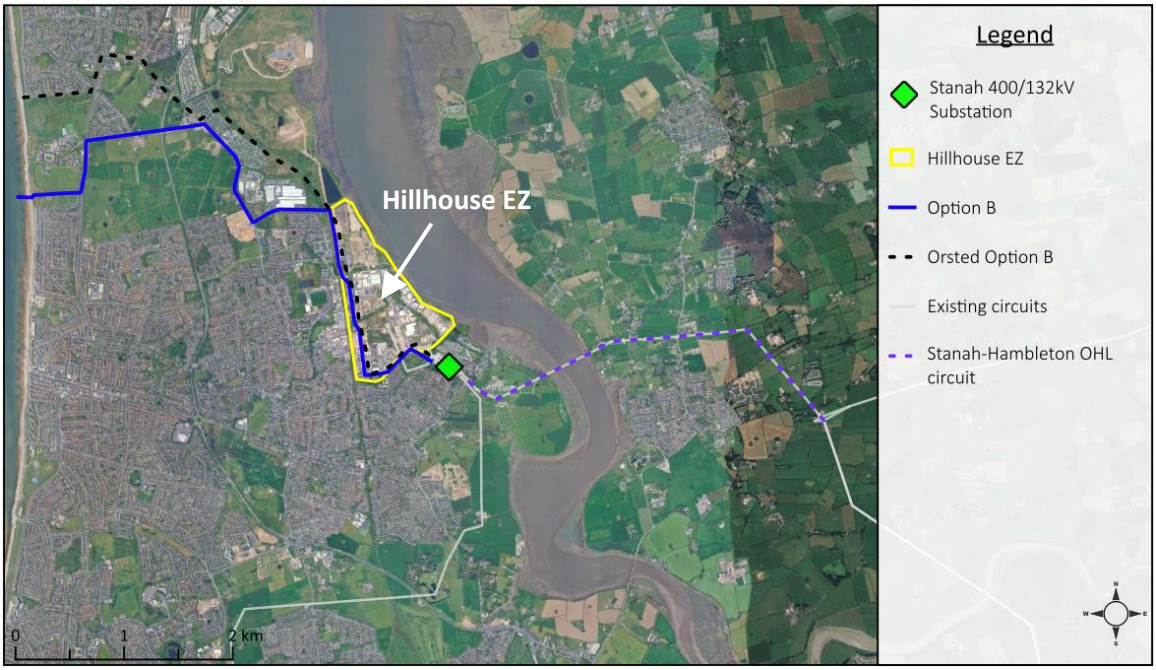


Figure 1-2: Option B Rossall Landing with Hillhouse/Stanah Onshore Cable Route and Surrounding Network

The route is shown in Figure 1-2 as the blue line. From this point, the upstream connection at HV side of Stanah to Penwortham would make use of the existing substation and overhead transmission lines, rather than requiring new underground cables along the full route to Penwortham, which is currently proposed by Ørsted. A key issue for this option (which needs further detailed study is whether the northern corridor via Hillhouse or Stanah could accommodate an additional export cable from Ørsted (shown as the black dotted line in Figure 1-2).

This would then avoid the need for further underground cabling all the way to Penwortham, and save considerable disruption and cost.

Option C – Airport Enterprise Zone Substation

The third option largely follows the DCO route (Option A) but proposes terminating the export cables at a new substation located within the Blackpool Airport Enterprise Zone rather than at Newton with Scales. In this configuration, the cables would again land at Starr Beach and be routed underground through the Blackpool Airport area via tunnels to the new substation, which could consist of an OFTO substation and potentially a primary substation. From there, the cables would continue underground along the same corridor proposed in the DCO route toward Penwortham. Under this option, Orsted's cables are landed at Rossall and follow the northern underground route toward Penwortham, bypassing Hillhouse (as per Option A).

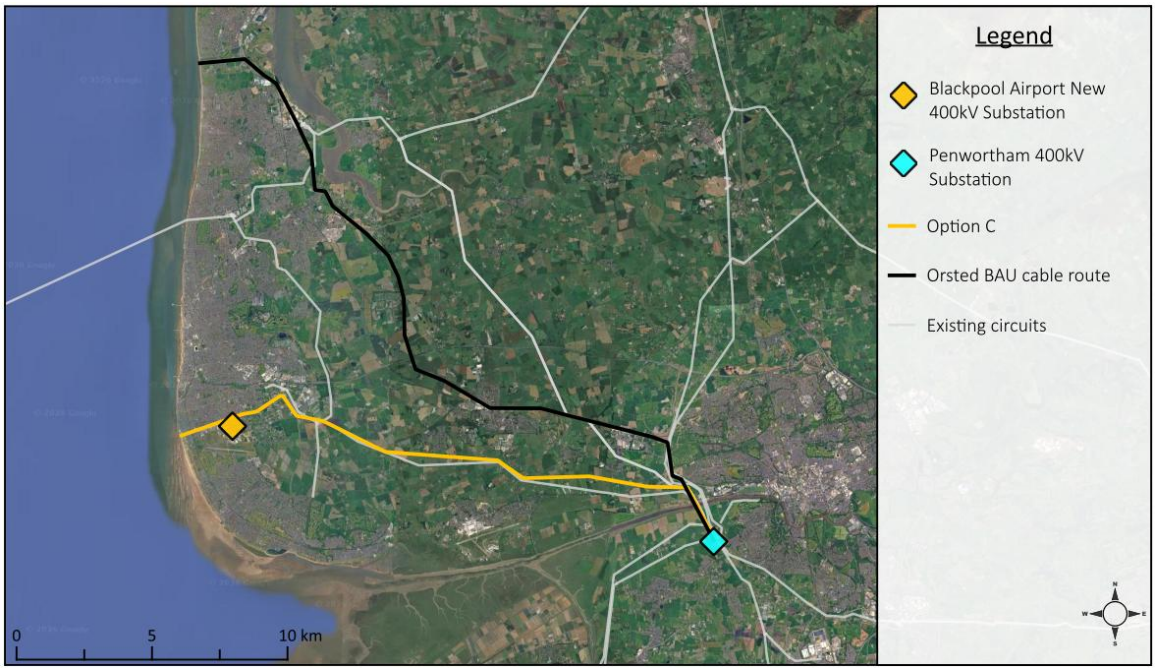


Figure 1-3: Option C - Airport Enterprise Zone Substation with Onshore Cable Route and Surrounding Network

2. Connection Options

This section reviews the transmission network near the project site. It examines Points of Connection, network asset capacities, current generation connections and anticipated future generation connections. In addition to this, this review assesses the Transmission network in the area to determine the circuit capacity at 400kV levels upstream from the point of connection.

The Transmission Entry Capacity (TEC) register provides detailed information on both connected and planned generation and storage projects, including their capacity, connection point, and predicted connection date. This has been the primary source of information used by BCC to generate the estimated connection queues at each potential point of connection. Additionally, we have processed the likely Gate 1 and 2 statuses of each project within the queue, based on our in-house CP2030 tools.

Further information on CP2030/TMO4+ and our in-house tools are provided within Appendix A.

There are two transmission substations within the local networks, Penwortham GSP and Stanah GSP.

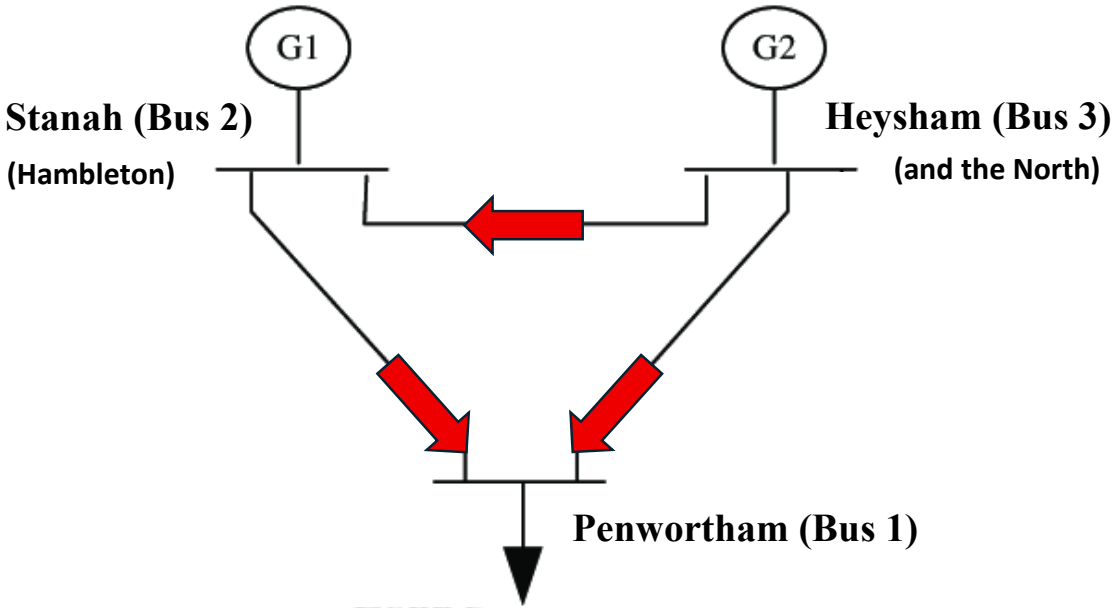


Figure 2-1: Simplified network representation of Stanah (and Hambleton), Penwortham (and the South) as well as Heysham (and the North)

Figure 2-1 above shows the representation of the simplified circuit. This is represented as a 3-bus network configuration. As the transmission network is highly meshed with existing North to South GB power flows in transmission circuits, additional power flow injections from the Offshore wind farms cannot be determined through simple radial assumptions and would require load-flow modelling, especially when considering Option B, where a constraint has been identified. To simplify the power flow, the DC power flow approximation is utilised. Using Penwortham (Bus 1) as the slack bus, the active power flow on a line (assuming $X \gg R$) is given by equation (1) below as:

$$P_{ij} = \frac{\theta_i - \theta_j}{X_{ij}} \quad (1)$$

Where,

- P_{ij}= power flow from bus i to bus j
- θ_i= voltage angle at bus i (can be determined)
- X_{ij}= line reactance (known)
- θ_i= Angle between bus i and j.
- $G1$ = Total Export from Stanah (known)
- $G2$ = Generation from Heysham and North of Heysham (derived from existing line loading[1])
- Total load and generation at Penwortham (Bus 1) and South of Penwortham (derived from existing line loading[1])

For the purposes of analysing power flows, the network is represented as a simplified 3-bus meshed system, with Stanah (to Hambleton, Bus 2), Heysham (and the North, Bus 3), and Penwortham (Bus 1). In this formulation, the generation at Bus 2 is treated as the fixed (non-dispatchable) injection, while the generation at Bus 3 is treated as an outcome variable (dependent, dispatchable generations) determined by system balance under the DC power flow approximation, and Bus 1 (Penwortham) acts as the slack bus maintaining system balance.

This means that any increase in power injected at Bus 2 results in a corresponding reduction in generation from Bus 3 (Heysham, Heysham nuclear power plant, and the wider northern system), as the network redistributes flows to maintain equilibrium.

2.1.1. Option A – BAU Proposed DCO (Assessment of Penwortham GSP)

Penwortham GSP is equipped with 12 transformers, at 400/132 kV (4 x 265 MVA) , 400/275 kV (2x 1129 MVA and 2 x 845 MVA), and 275/132 kV (2 x 261 MVA) levels, providing a total non-firm capacity of around 5.6 GVA[2]. However, as the connection is coming directly onto the HV side at 400 kV via another OFTO step 400/132 kV step up transformer, the thermal capacity of circuits outgoing of Penwortham are the only consideration. Penwortham is connected to the North via the Penwortham – Quernmore 400 kV circuit (represented as Heysham in Figure 2-1 as the closest Main Interconnected Transmission System (MITS) node) and the Hambleton – Penwortham 400 kV circuit (where Hambleton has a direct connection to the Stanah and Heysham circuits). To the South, Penwortham is connected via Padiham – Penwortham 400 kV circuit and Carrington – Penwortham 400 kV circuit. To the Southeast, Penwortham is connected to the wider network via the Washway Farm – Penwortham 275 kV circuit.

The Electricity Ten Year Statement (ETYS) Appendix B, Transmission Owner Reinforcement Instruction (TORI), and Transmission Works Register (TWR) indicates that there are planned reinforcement works for the Padiham – Penwortham circuit, increasing the circuit summer rating from 1940 MVA to 2110 MVA. There's also planned work to increase the Carrington - Daines

[1] Electricity DCLF Transport and Tariff Model
[2] Electricity Ten Year Statement, Appendix B — System Technical Data

double circuit to achieve a Summer pre fault rating of 3100MVA. Reconductor the Carrington - Daines 400kV circuit with 3x700mm² AAAC at 90°C (3160MVA), which further increases the capacity flowing south. Additionally, the minimum demand at the Penwortham GSP is 35 MW[3].

Given the available transfer capability, supported by planned reinforcements, constraints outwards from Penwortham GSP are not expected to be limiting. As such, a detailed headroom assessment at this stage has not been pursued. Nonetheless, the summary of existing Total Outbound Circuit Thermal Headroom Estimation is shown in Table 2-1 below.

Table 2-1: Penwortham Total Outbound Circuit Thermal Headroom Estimation

Supply Security	Minimum Demand [MW]	Total Circuit Thermal Capacity Surrounding Penwortham [MW]	Queue Size [MW]		Current Estimated Headroom [MW]	
			Current	Post CMP435	Current	Post CMP435
Firm	35	8,342	4,188	3,788	4,189	4,589
Non-Firm	35	16,684	4,188	3,788	12,531	12,931

2.1.2. Option B – Hillhouse EZ (Assessment of Stanah GSP)

The existing substation at Stanah and the immediate circuit from Stanah – Hambleton (before going south to Penwortham) is identified as the main bottleneck, with 480 MVA of non-firm capacity (240 MVA firm). For any offshore connection combinations of Morgan + Morecambe and/or Moorvanin (Orsted), the existing substation at Stanah must be uprated, and therefore the load flow studies mentioned are performed for this purpose, as this option is critical in terms of assessing the available thermal headroom.

However, according to the ETYS[4], the Stanah – Hambleton will be upgraded in 2027 to have a firm capacity of 1x1710 MVA and 1x1910 MVA with a total non-firm capacity of 3620 MVA. The Hambleton – Stanah circuit uprating (3.926 km) appears to be driven by wider transmission constraints rather than local demand or generation at Stanah. This is supported by the absence of any corresponding increase in 400/132 kV transformer capacity at the substation. The reinforcement is therefore likely addressing through-flows and contingency-driven loading within the meshed network, rather than enabling additional injection at Stanah.

Under Option B, where export is taken directly from Stanah, the substation constraint becomes the most limiting factor, as all power must pass through it. As such, this option is expected to require the most significant reinforcement at Stanah, if it were to be uprated.

However, if a new substation is developed by the OFTO at Hillhouse EZ, a direct tee-off connection onto the Hambleton – Penwortham circuit could be considered. This would bypass the constraint at Stanah – Hambleton circuit, but would likely require reinforcement of the Hambleton – Penwortham circuit, as well as any upgrades at Penwortham GSP if required. In this case, the developer would be exposed to reinforcement liabilities (secured upfront), with costs allocated

[3] Future Energy Scenarios, Regional Workbook, Gross Minimum Demand
[4] Electricity Ten Year Statement, Appendix B — System Technical Data

through mechanisms such as SIF and LARF, meaning these are not wholly direct or upfront construction costs borne solely by the project.

Nonetheless, if an agreement with NGET can be reached to uprate the wider Stanah substation to facilitate a direct connection at Stanah (as a MITS node), along with reinforcement of the Stanah–Hambleton circuit as part of the transmission system, these works may initially be delivered by NGET and subsequently recovered over time through the applicable charging mechanisms. In this scenario, the OFTO's role would be limited to delivering the connection infrastructure (e.g. new substation/interface assets), with the project exposed primarily to associated liabilities and securities, rather than directly funding the transmission reinforcement works themselves. This is the basis of the assumption adopted within this report.

In this feasibility assessment, only the indicative costs associated with the development of a new 400 kV substation at the Hillhouse EZ and the uprating of the Stanah – Hambleton – Penwortham (will be described as Hambleton-Penwortham circuit for the sake of brevity) 400 kV circuit are considered which will be described in a later section. The thermal headroom has been assessed for *Case 1*, comprising Morgan and Morecambe offshore export only, and *Case 2*, comprising Morgan, Morecambe, and Mooir Vannin (Orsted) combined export, and *Case 3* for Mooir Vannin (Orsted) only. The estimated headroom based on thermal capacity, post-CMP435 is calculated in Table 2-2 to 2-4.

A simplified DC power flow model was used to approximate how additional offshore generation would load the Stanah – Hambleton – Penwortham, Heysham – Penwortham, and Stanah – Hambleton – Heysham transmission corridors as mentioned in Section 2, equation (1). The network was reduced to a 3 bus system, with Penwortham treated as the slack bus and Stanah and Heysham represented as injection buses. The base case was first calibrated so that the model (and power injections) reproduced known existing flows of about 1,845 MW[5] on the Hambleton – Penwortham path and 2,668 MW[5] on the Heysham – Penwortham circuit, taken from the tariff model. This corresponds to 85% existing firm circuit loading at the Hambleton – Penwortham circuit and 66% for the Heysham – Penwortham circuit.

Offshore Generation is modelled as additional active power injection at the Stanah node (with existing generation queue), representing offshore export entering the transmission system. To maintain overall system balance, an equivalent reduction in generation is assumed at the northern node (Heysham and the North), such that total demand at Penwortham (and the South) remains unchanged. This change in injection shifts power flows across the meshed network, with power redistributing along the available paths in proportion to their electrical characteristics (reactance). As a result, increased DG at Stanah drives higher flows primarily towards Penwortham, reducing available headroom on the Stanah – Hambleton – Penwortham circuit and, to a lesser extent, affecting parallel paths. The net effect is a reallocation of existing flows rather than a simple addition, which is captured through the DC power flow approximation. The results were then compared against firm limits, taken as 50% of intact double circuit capacity to represent N-1 operation, and non-firm limits, taken as the full intact circuit rating, in order to estimate line loading and remaining headroom under each scenario.

[5] Electricity DCLF Transport and Tariff Model

Case 1: Morgan + Morecambe only at 1980 MW export at Stanah:

Table 2-2: Hambleton – Penwortham Circuit Thermal Headroom Estimation

Supply Security	Morgan + Morecambe Generation + Queue Size [MW]	Minimum Demand [MW]	Circuit Thermal Capacity [MW]	Existing Circuit Loading (%)	Circuit Loading after Offshore export (%)	Existing Headroom [MW]	New Headroom [MW]
Firm	2,160	22	2,189	85%	112%	344	-264
Non-Firm	2,160	22	4,378	42%	56%	2,533	1,925

Table 2-3: Heysham – Penwortham Circuit Thermal Headroom Estimation

Supply Security	Morgan + Morecambe Generation + Queue Size [MW]	Minimum Demand [MW]	Circuit Thermal Capacity [MW]	Existing Circuit Loading (%)	Circuit Loading after Offshore export (%)	Existing Headroom [MW]	New Headroom [MW]
Firm	2,160	22	3,098	86%	66%	430	1,037
Non-Firm	2,160	22	6,196	43%	33%	3,528	4,135

Table 2-4: Hambleton – Heysham Circuit Thermal Headroom Estimation

Supply Security	Morgan + Morecambe Generation + Queue Size [MW]	Minimum Demand [MW]	Circuit Thermal Capacity [MW]	Existing Circuit Loading (%)	Circuit Loading after Offshore export (%)	Existing Headroom [MW]	New Headroom [MW]
Firm	2,160	22	3,152	64%	21%	1,134	2,484
Non-Firm	2,160	22	6,304	32%	11%	4,286	5,636

From Table 2-2, the Hambleton – Penwortham circuit is identified as the limiting element for the Morgan and Morecambe offshore export. The firm headroom is negative at approximately −264 MW, while the non-firm headroom remains positive at around 1,925 MW. All other circuits are within both firm and non-firm limits, show improved headroom due to reduced North-to-South power flows. Based on the available thermal headroom on the Hambleton (Stanah) – Penwortham corridor, an increase in injection at Bus 2 will predominantly be transferred south via this interface.

As a result, even though reduced output from Heysham alleviates some north-to-south flows, the incremental generation introduced at Bus 2 still utilises the Hambleton – Penwortham circuit as the primary export path. Consequently, the loading on this circuit continues to increase, and the constraint is not materially mitigated by reductions in northern generation alone.

It should be noted that the assumed pre-export circuit loading of 85% may already reflect prevailing system dispatch and balancing actions that act to manage loading on the Hambleton – Penwortham circuit. As such, this baseline should not be interpreted as a hard upper bound on pre-fault loading under all operating conditions. If underlying loading to be materially higher in practice, the available headroom would reduce further and the extent of reinforcement required could be understated by this simplified assessment. Accordingly, the results should be interpreted as indicative, with detailed network modelling required to confirm the true constraint position under a broader range of dispatch conditions.

Case 2: Morgan + Morecambe + Mooir Vannin (Orsted) 3300 MW export at Stanah:

Table 2-5: Hambleton – Penwortham Circuit Thermal Headroom Estimation

Supply Security	Morgan + Morecambe Generation + Queue Size [MW]	Minimum Demand [MW]	Circuit Thermal Capacity [MW]	Existing Circuit Loading (%)	Circuit Loading after Offshore export (%)	Existing Headroom [MW]	New Headroom [MW]
Firm	3,480	22	2,189	85%	130%	344	-673
Non-Firm	3,480	22	4,378	42%	65%	2,533	1,516

Table 2-6: Heysham – Penwortham Circuit Thermal Headroom Estimation

Supply Security	Morgan + Morecambe Generation + Queue Size [MW]	Minimum Demand [MW]	Circuit Thermal Capacity [MW]	Existing Circuit Loading (%)	Circuit Loading after Offshore export (%)	Existing Headroom [MW]	New Headroom [MW]
Firm	3,480	22	3,098	86%	53%	430	1,447
Non-Firm	3,480	22	6,196	43%	26%	3,528	4,545

Table 2-7: Hambleton – Heysham Circuit Thermal Headroom Estimation

Supply Security	Morgan + Morecambe Generation + Queue Size [MW]	Minimum Demand [MW]	Circuit Thermal Capacity [MW]	Existing Circuit Loading (%)	Circuit Loading after Offshore export (%)	Existing Headroom [MW]	New Headroom [MW]
Firm	3,480	22	3,152	64%	8%	1134	2,908
Non-Firm	3,480	22	6,304	32%	4%	4286	6,060

From Table 2-5, the Hambleton – Penwortham circuit is again identified as the limiting element for the Morgan and Morecambe with Mooir Vannin offshore export. The firm headroom is negative at approximately −673 MW, while the non-firm headroom remains positive at around

1,516 MW. All other circuits are within both firm and non-firm limits and, in several cases, show improved headroom due to reduced north-to-south power flows.

Based on the results in *case 1* and *case 2*, the constraints in exporting is at the Hambleton – Penwortham circuit. To maintain firm operational headroom (assumed at 100%) on Hambleton – Penwortham after the additional offshore generation is connected, the thermal rating of the circuit (as well as the Stanah Substation and Stanah – Hambleton) would need to be increased. In the base case, Hambleton – Penwortham operates at approximately 85 % of its firm capacity (1845 MW flow against a firm limit of 2189 MW), leaving around 344 MW of firm headroom. When the additional generation is introduced, the power flow on Hambleton - Penwortham increases and therefore the existing rating would no longer provide equivalent headroom. To maintain firm operating margin at 100%, the circuit rating is recalculated as:

$$\textit{Firm loading} = \frac{|\ P_{12}\ |}{\textit{Firm limit}} \times 100 \tag{3}$$

Where $|\ P_{12}\ |$ is the power flow between Hambleton – Penwortham, which gives the required firm limit as:

$$\textit{Firm limit}_{\textit{required}} = |\ P_{12}\ | \tag{4}$$

Since the firm limit corresponds to half of the total double-circuit capacity (N-1 condition), the required new non-firm circuit rating becomes:

$$\textit{Line limit}_{\textit{required}} = 2 \times |\ P_{12}\ | \tag{5}$$

Applying this to *case 1* and *2* indicates that the **Hambleton – Penwortham** non-firm rating would need to increase to approximately **4906 MW** for ***case 1*** and **5724 MW** for the ***case 2*** in order to maintain a 100% operational firm headroom. It is to be noted that the non-firm rating would need to be further increased should the firm rating is limited at 85% pre-fault limit by adjusting equation (3) denominator to 85%. Nonetheless, it is assumed in this case that 100% operational firm headroom is acceptable.

Case 3: Mooir Vannin (Orsted) 1320 MW export at Stanah:

In a separate analysis considering only the Orsted (Mooir Vannin) export at Hillhouse EZ, the Hambleton – Penwortham circuit is observed to exceed its firm limit. The actual flow is approximately 2248 MW against a firm limit of 2189 MW, resulting in a firm loading of 102.7% and a negative firm headroom of around −59 MW. However, the circuit remains within its non-firm limit, with a loading of approximately 51.3% and positive non-firm headroom of around 2,130 MW. To enable firm operation, the circuit would require uprating to approximately **2248 MW** and for **non-firm at 4496 MW**.

Summary of Circuit Uprating:

Table 2-8: Hambleton – Penwortham Circuit Thermal Headroom Estimation

Cases		Circuit Thermal Capacity [MW]	New Circuit Thermal Capacity [MW]	Difference (%)
1	Firm	2189	2453	12.1
	Non-Firm	4378	4906	12.1
2	Firm	2189	2862	30.7
	Non-Firm	4378	5724	30.7
3	Firm	2189	2248	2.7
	Non-Firm	4378	4496	2.7

The results in Table 2-8 indicate that the Hambleton – Penwortham circuit requires varying levels of uprating depending on the generation scenario, with the most significant reinforcement needed when multiple offshore projects are combined.

- Case 1 (Morgan + Morecambe):

  Requires a moderate uprating of approximately 12%, increasing firm capacity from 2189 MW to ~2453 MW.

- Case 2 (Morgan + Morecambe + Orsted):

  Requires a substantial uprating of approximately 31%, with firm capacity increasing to ~2862 MW, representing the most demanding scenario.

- Case 3 (Orsted only):

  Requires only a minor uprating of ~3%, indicating that this scenario is closest to being accommodated within existing limits.

Overall, this demonstrates that incremental connections may be feasible with limited reinforcement, whereas coordinated large-scale offshore integration drives a reinforcement in required network capacity on the Hambleton – Penwortham corridor.

Summary of Total Generation:

The total demand at Bus 1 (Penwortham and the South) remains constant at 4685 MW across all scenarios as shown in Table 2-9. As additional offshore generation is introduced at Bus 2 (Stanah), total export increases significantly from 158 MW (base case) to 2138 MW (Morgan + Morecambe) and further to 3458 MW (including Orsted) – see Figure 2-1 for Buses nomenclatures.

This increase is offset by a corresponding reduction in generation from Bus 3 (Heysham and the North), which decreases from 4527 MW to 2547 MW, and then to 1227 MW, maintaining overall system balance.

However, despite this displacement of northern generation, the additional power injected at Stanah is predominantly transferred south via the Hambleton – Penwortham corridor. As a result, the reduction in northern generation does not materially relieve this interface, and the loading on the Hambleton – Penwortham circuit increases progressively across the scenarios, ultimately driving the constraint observed in the analysis.

Table 2-9: Total Generation Changes

Scenarios	Base Case [MW]	Morgan + Morecambe [MW]	Morgan + Morecambe + Orsted [MW]
Total Demand (Penwortham and the South) – Bus 1	4685	4685	4685
Total Export at Stanah (Hambleton) – Bus 2	158	2138	3458
Total Generation from Heysham + the North – Bus 3	4527	2547	1227

It is also important to note the distinction between dispatchable and non-dispatchable generation in this modelling approach. The offshore wind generation connected at Stanah is treated as non-dispatchable (must-run), meaning it is assumed to have priority access to the network and is not curtailed in the first instance. As such, its output is modelled as a fixed injection.

By contrast, generation from Heysham and the wider northern system is treated as dispatchable, meaning it can be adjusted in response to system conditions. In the model, this is therefore represented as the dependent variable, which reduces as offshore generation increases in order to maintain system balance.

The Morgan + Morecambe (+ Orsted) scenarios illustrate a potential future case where dispatchable generation is reduced or decommissioned, such as the closure of the Heysham nuclear power station. In this context, the increase in offshore generation at Stanah effectively replaces the output previously supplied by Heysham and the wider northern system, demonstrating how power flows would redistribute under such conditions.

2.1.3. Option C – Blackpool Airport (Assessment of Penwortham GSP)

Options A and C are broadly similar in terms of thermal headroom assessment, as both ultimately export onto the Penwortham interface via comparable routes. As such, the conclusions drawn for Option A are considered applicable to Option C, and Option A has therefore not been taken forward for further consideration, as previously highlighted. The primary distinction between these options lies in the cost implications, which are discussed in subsequent sections.

2.2. Assessment of Indicative Cost

The estimated costs presented include cable supply, trenching, jointing, installation, substation upgrade works, and traffic management. They exclude costs related to development, design, project management, and property/legal fees.

For each option, cost estimates have been provided for both Morgan and Morecambe, as well as for a scenario that includes the Orsted costs.

In addition, Blake Clough has investigated the currently triggered transmission works in the area where the projects are connecting. We believe that the projects will have the same works associated with each option, excluding Option B which will require the same works as Option A and C as well as additional reinforcements. For this reason, we have only provided the estimated securities of the additional reinforcement work associated with Option B for the purposes of comparison.

Securities are paid progressively in the period leading up to the project's connection date. If the project is successfully energised, these costs are refunded to the customer. They are required to protect the Transmission Owner (TO) from investing in reinforcement works that may become redundant if the project does not proceed to energisation. The cost of these reinforcement works is ultimately recovered by the TO over time through Transmission Network Use of System (TNUoS) charges, which are paid by generators, suppliers, and transmission-connected demand users.

2.2.1. Option A – Assessment of Indicative Cost

This option includes two separate cable routes, with both the M&M and Orsted projects connecting to the transmission network at Penwortham 400kV Substation.

These costs have been estimated using the following assumptions:

- **Morgan and Morecambe:**
  - Connection point: Penwortham 400kV Substation
  - Circuits will follow a shared cable route.
  - Onshore export cables are assumed to be 275 kV.
  - A total of six separate 275 kV cables will be installed, each within its own trench (four from Morgan and two from Morecambe).
  - The 275 kV cables are assumed to run for 5 km within roadway and 12 km across fields.
  - The Morgan and Morecambe substation will comprise of 5 x 500 MVA 275/400 kV transformers and will function as an OFTO substation.
  - The substation is assumed to be located near to Newton with Scales.
  - Circuits from the OFTO substation to Penwortham 400 kV substation will comprise four separate 400 kV cables, each within its own trench (two from Morgan and two from Morecambe).
  - The 400 kV cables are assumed to run for 13 km across unmade (agricultural) ground.

- The full cable route will include approximately 162 joint bays.
- A total of 500 m of major directional drilling is assumed for the crossing of the River Ribble.

- **Orsted:**
  - Connection point: Penwortham 400kV Substation
  - Onshore export cables are assumed to be 275 kV.
  - A total of five separate 275 kV cables will be installed, each within its own trench.
  - The 275 kV cables are assumed to run for 23 km within roadway.
  - The Orsted substation will comprise 3 x 500 MVA 275/400 kV transformers and will function as an OFTO substation.
  - The substation is assumed to be located in the area surrounding Newton with Scales.
  - Circuits from the OFTO substation to Penwortham 400 kV substation will comprise two separate 400 kV cables, each within its own trench.
  - The 400 kV cables are assumed to run for 7 km within roadway.
  - The full cable route will include approximately 137 joint bays.
  - A total of 500 m of major directional drilling is assumed for the crossing of the River Ribble.

Table 2-9: Option A Estimated Costs

Category	Morgan + Morecambe Cost	Morgan + Morecambe + Orsted Cost
Cable Supply	£168,250,000	£303,275,000
Trenching	£42,800,000	£120,200,000
Jointing	£1,108,000	£2,478,000
Installation	£191,076,500	£349,428,250
Substation Cost	£40,000,000	£70,000,000
Total (excluding Securities)	**£443,234,500**	**£845,381,250**

2.2.2. Option B – Assessment of Indicative Cost

This option is divided into two separate cost components, reflecting differences in security requirements depending on the chosen connection point.

If projects are able to connect at Stanah 400kV substation, they will only be required to provide securities for reinforcement works at Stanah. As this is a MITS node, they are not liable for any securities associated with the wider network beyond Stanah.

Conversely, if connection at Stanah is not feasible due to substation expansion constraints, projects may connect via a tee-off to the 400kV overhead line circuits downstream of Stanah. In this scenario, projects would be expected to provide securities for both:

- The new 400kV circuit connecting to the existing transmission network (typically fully funded by the generator; however, as this asset will serve multiple generators, it is treated as shared infrastructure), and
- Reinforcement works on the existing transmission circuits up to and including the nearest MITS nodes — Heysham, Stanah, and Penwortham.

2.2.2.1. Option B1

This option includes one cable route running from Rossall to Hillhouse. The projects will connect to the transmission network via a newly built 400/275 kV OFTO substation in Hillhouse EZ, then through the reinforced Stanah 400kV Substation.

These costs have been estimated using the following assumptions:

- **Morgan and Morecambe:**
  - Connection point: Stanah 400kV Substation
  - Circuits will follow a shared cable route.
  - Onshore export cables are assumed to be 275 kV.
  - A total of six separate 275 kV cables will be installed, each within its own trench (four from Morgan and two from Morecambe).
  - The 275 kV cables are assumed to run for 6.5 km within roadway.
  - The Morgan and Morecambe substation will comprise of 5 x 500 MVA 400/275 kV transformers and will function as an OFTO substation.
  - The substation is assumed to be located at Hillhouse
  - Circuits from the OFTO substation to Stanah 400 kV substation will comprise four separate 400 kV cables, each within its own trench (two from Morgan and two from Morecambe).
  - The 400 kV cables are assumed to run for 0.5km across fields.
  - Stanah 400kV substation will be extended to facilitate four new 400kV bays with Gas Insulated Switchgear
  - The full cable route will include approximately 53 joint bays.
- **Orsted:**
  - Connection point: Stanah 400kV Substation
  - The Orsted circuit will follow the same route as the Morgan and Morcambe cables
  - Onshore export cables are assumed to be 275 kV.
  - A total of five separate 275 kV cables will be installed, each within its own trench.
  - The 275 kV cables are assumed to run for 6.5 km within roadway.

- The Morgan, Morcambe and Orsted substation will comprise of 8 x 500 MVA × 275/400 kV transformers and will function as an OFTO substation.
- The substation is assumed to be located at Hillhouse.
- Circuits from the OFTO substation to Stanah 400 kV substation will comprise two separate 400 kV cables, each within its own trench.
- The 400 kV cables are assumed to run for 0.5km across fields.
- Stanah 400kV substation will be extended to facilitate two new 400kV bays with Gas Insulated Switchgear
- The full cable route will include approximately 42 joint bays.

Table 2-9: Option B1 Estimated Costs

Category	Morgan + Morecambe Cost	Morgan + Morecambe + Orsted Cost
Cable Supply	£42,425,000	£76,962,500
Trenching	£23,800,000	£43,500,000
Jointing	£506,000	£906,000
Installation	£49,448,750	£89,871,917
Substation Cost	£40,000,000	£60,000,000
Reinforcement Securities	***£48,000,000***	***£72,000,000***
Total (excluding Securities)	**£156,179,750**	**£271,240,417**

2.2.2.2. Option B2

This option includes one cable route running from Rossall to Hillhouse. The projects will connect to the transmission network via a newly built 400/275 kV OFTO substation in Hillhouse EZ, then through new 400kV circuits to a tee-in at Hambleton.

We have chosen Hambleton as the tee-in location as it already has different circuit routes connecting there; however, if a tee-in point closer to the OFTO substation is feasible, this could reduce overall costs. While it may require uprating a longer section of the existing 400 kV circuit, this is generally more cost-effective than installing new 400 kV cable, which tends to be significantly more expensive.

These costs have been estimated using the following assumptions:

- **Morgan and Morecambe:**
  - Connection point: New substation at Hillhouse
  - Circuits will follow a shared cable route.
  - Onshore export cables are assumed to be 275 kV.
  - A total of six separate 275 kV cables will be installed, each within its own trench (four from Morgan and two from Morecambe).
  - The 275 kV cables are assumed to run for 6.5 km within roadway.

- The Morgan and Morecambe substation will comprise of 5 x 500 MVA 400/275 kV transformers for N-1 operation and will function as an OFTO substation.
- The substation is assumed to be located at Hillhouse
- Circuits from the OFTO substation to a tee-in at the 400kV OHL at Hambleton will comprise four separate 400 kV cables, each within its own trench (two from Morgan and two from Morecambe).
- The 400 kV cables are assumed to run for 4km across fields and require 600m of HDD.
- The full cable route will include approximately 67 joint bays.
- The Hambleton – Penwortham 400kV OHL circuits require uprating by 528MW.

- **Orsted:**
  - Connection point: New substation at Hillhouse
  - The Orsted circuit will follow the same route as the Morgan and Morecambe cables
  - Onshore export cables are assumed to be 275 kV.
  - A total of five separate 275 kV cables will be installed, each within its own trench.
  - The 275 kV cables are assumed to run for 6.5 km within roadway.
  - The Morgan, Morcambe and Orsted substation will comprise of 8 x 500 MVA × 275/400 kV transformers and will function as an OFTO substation.
  - The substation is assumed to be located at Hillhouse.
  - Circuits from the OFTO substation to a tee-in at the 400kV OHL at Hambleton will comprise two separate 400 kV cables, each within its own trench.
  - The 400 kV cables are assumed to run for 4km across fields and require 600m of HDD.
  - The full cable route will include approximately 49 joint bays.
  - The Hambleton – Penwortham 400kV OHL circuits require uprating by 818MW.

Table 2-9: Option B2 Estimated Costs

Category	Morgan + Morecambe Cost	Morgan + Morecambe + Orsted Cost
Cable Supply	£59,575,000	£102,687,500
Trenching	£26,600,000	£47,700,000
Jointing	£590,000	£1,032,000
Installation	£66,259,250	£115,087,667
Substation Cost	£40,000,000	£60,000,000
Reinforcement Securities	***£55,920,000***	***£92,190,000***
Total (excluding Securities)	**£193,024,250**	**£326,507,167**

2.2.3. Option C – Assessment of Indicative Cost

These costs have been estimated using the following assumptions:

- **Morgan and Morecambe:**
  - Connection point: New substation near Blackpool Airport
  - Circuits will follow a shared cable route.
  - Onshore export cables are assumed to be 275 kV.
  - A total of six separate 275 kV cables will be installed, each within its own trench (four from Morgan and two from Morecambe).
  - The 275 kV cables are assumed to run for 2.5 km within roadway.
  - The Morgan and Morecambe substation will comprise 5 x 500 MVA 275/400 kV transformers and will function as an OFTO substation.
  - The substation is assumed to be located in the area next to Blackpool Airport.
  - Circuits from the OFTO substation to Penwortham 400 kV substation will comprise four separate 400 kV cables, each within its own trench (two from Morgan and two from Morecambe).
  - The 400 kV cables are assumed to run for 2.5 km in roadway and 23km across fields.
  - The full cable route will include approximately 161 joint bays.
  - A total of 500 m of major directional drilling is assumed for the crossing of the River Ribble.
- **Orsted:**
  - Connection point: Penwortham 400kV Substation
  - Onshore export cables are assumed to be 275 kV.
  - A total of five separate 275 kV cables will be installed, each within its own trench.
  - The 275 kV cables are assumed to run for 5 km within roadway.
  - The Orsted substation will comprise 3 x 500 MVA 275/400 kV transformers and will function as an OFTO substation.
  - The substation is assumed to be located in the area at Hillhouse.
  - Circuits from the OFTO substation to Penwortham 400 kV substation will comprise two separate 400 kV cables, each within its own trench.
  - The 400 kV cables are assumed to run for 25 km within roadway.
  - The full cable route will include approximately 83 joint bays.
  - A total of 500 m of major directional drilling is assumed for the crossing of the River Ribble.

Table 2-9: Option C Estimated Costs

Category	Morgan + Morecambe Cost	Morgan + Morecambe + Orsted Cost
Cable Supply	£150,125,000	£237,000,000
Trenching	£35,000,000	£80,000,000
Jointing	£1,210,000	£2,040,000
Installation	£156,262,417	£249,629,667
Substation Cost	£40,000,000	£70,000,000
Total (excluding Securities)	**£382,597,417**	**£638,669,667**

2.2.4. Point of Connection and Costing Summary

Overall, the lowest-cost connection option is Option B, which connects into the network in the vicinity of Stanah 400 kV substation. The exact connection arrangement will need to be agreed with NESO and NGET, as the substation may not have the physical capacity for extension, and a tee-in solution may be required. However, it is expected that any feasible connection configuration at this location will remain more cost-effective than the alternative options.

Option C, which locates the OFTO substations closer to shore, is slightly more cost-effective than Option A, where the OFTO substations are located at Newton with Scales. Although Option C involves longer 400 kV cable routes (which are more expensive than 275kV circuits), fewer 400 kV circuits are required compared to 275kV circuits. This reduces the overall volume of infrastructure and installation needed, resulting in a lower total cost despite the increased route length.

3. Identified Risks

Queue Position Risk

A key consideration across the routing options is the potential impact on connection queue position under current connection reform arrangements. Where a project makes a material change to its connection design, for example, moving from the original DCO-aligned route to an alternative corridor, this is likely to be treated as a new or significantly modified connection application. In such cases, there is a risk that the project would be repositioned within the queue, potentially moving behind other contracted or progressing projects, especially if it would trigger new reinforcement works.

In this context:

Option A and Option C are broadly consistent with the existing DCO-based connection. As such, they are more likely to be treated as variations of the same connection, and therefore less likely to result in a loss of queue position.

Option B, by contrast, represents a fundamentally different connection approach, involving routing via the Stanah–Hambleton – Penwortham corridor and interaction with the existing transmission network. This constitutes a material change in both electrical and geographical terms, and therefore may be treated as a new connection application.

The implication is that Option B carries a heightened risk of queue deferral, which in turn introduces a significant programme risk. In the worst case, this could delay the project to the extent that it impacts overall project viability. Accordingly, while Option B may present potential cost or engineering advantages, these must be considered alongside the non-trivial regulatory and delivery risks associated with connection queue reclassification.

Land Availability and Spatial Constraints (Hillhouse and Stanah)

A further key constraint relates to land availability for new transmission infrastructure, particularly within the Hillhouse EZ and at the existing Stanah substation. The scale of infrastructure required for the combined Morgan + Morecambe (~2 GW) and Mooir Vannin (~1.3 GW) developments is substantial.

At a high level:

- A 400/275 kV substation for ~2 GW typically requires on the order of ~6–10 hectares
- A ~1.3 GW substation would typically require ~4–7 hectares,
- With combined ~12 hectares needed for Morgan + Morecambe + Mooir Vannin

Additional land may be required for:

- Cable sealing end compounds
- Reactive compensation equipment
- Access, laydown, and construction areas

This implies that a combined build-out approaching ~3–4 GW scale could require in excess of ~10–15 hectares, depending on final layout and design philosophy. The Hillhouse EZ is not an unconstrained site, and available developable land may be limited once other planning, environmental, and commercial constraints are taken into account. Delivering one or more large substations within Hillhouse may therefore place significant pressure on available land, particularly if multiple developers require separate assets (e.g. due to different OFTO packages). In the case of a Stanah upgrade, existing spatial constraints are already evident. Any significant expansion (e.g. additional transformers, bays, or reconfiguration works) may exceed the current site boundary, and require encroachment onto adjacent land, potentially affecting nearby industrial or residential areas.

Power Flow Risk

The key constraint across the options, particularly for Option B, is the Stanah–Hambleton – Penwortham corridor, which is already heavily loaded. Additional offshore generation is likely to push flows beyond firm limits, requiring reinforcement, the scale of which remains uncertain with the simplified DC load flow studies and the three bus network simplification.

A major challenge is the meshed nature of the network, meaning power flows are not straightforward and cannot be accurately estimated using simplified assumptions. While the DC power flow approximation used at this stage provides a reasonable indication of loading and trends, a full network representation and AC load flow study would be required for more accurate and reliable results.

It is also important to note that, under the study assumptions, total system demand is held constant and bulk power transfer is predominantly from north to south. As a result, increased offshore export at Stanah would tend to displace existing northern generation, rather than compete for the same capacity along the Stanah–Hambleton – Penwortham corridor. This effect is partially reflected in the modelling through reduced output from conventional generation sources (Heysham) from the North.

4. Conclusions and Recommendations

Based on the analysis undertaken, Option B (Hillhouse / Stanah – Hambleton – Penwortham route) presents a material cost advantage compared to the DCO-aligned options (Options A and C). The primary driver of this saving is the reduction in underground cable length and associated civil works, which dominate overall project costs.

However, this cost benefit comes with significant technical and delivery risks:

- Substantial reinforcement requirements are likely, not only at Stanah substation (e.g. transformer capacity, busbar configuration, spatial constraints), but also along the Stanah–Hambleton – Penwortham transmission corridor, which is already heavily loaded.
- The extent of reinforcement is uncertain at this stage due to the meshed nature of the network, and while DC power flow provides a reasonable indication, detailed AC studies are required for accurate quantification.
- Land constraints at both Stanah and Hillhouse EZ introduce additional delivery risk, particularly given the scale of infrastructure required (~3–4 GW level).
- Most critically, Option B represents a material change to the connection strategy, and therefore carries a high risk of queue reclassification, potentially pushing the project back in the connection queue. This could have a significant programme impact and, in the worst case, affect project viability.

From a power flow perspective, while offshore generation would displace northern generation (rather than directly compete for capacity), the corridor remains a binding constraint under high export scenarios, reinforcing the need for upgrades.

Option B is economically attractive and should not be dismissed on cost grounds. However, it carries non-trivial risks across:

- Transmission reinforcement scope and cost uncertainty
- Land availability and constructability
- Regulatory and queue position risk (most critical)

4.1. Next Steps

We recommend arranging a follow-up discussion to review the outcomes of this feasibility assessment and to agree the preferred strategy. We suggest followings as our recommendations:

- Retain Option B as a viable but higher-risk option as it offers clear economic benefits and is worth progressing further, but should be treated as a risk-weighted alternative, not a baseline.
- Undertake more detailed power system studies A full AC load flow assessment is required to better quantify , detailed reinforcement requirements, flow distribution across the meshed network, sensitivity to generation dispatch assumptions.

- Engage early with NGET on connection classification to clarify whether Option B would be treated as a modification or a new application, as this is a critical go/no-go factor.
- Assess land availability and planning constraints in parallel to confirm developable area within Hillhouse EZ, and assess feasibility of Stanah expansion vs new site development to Identify any planning or stakeholder constraints early.
- Use Options A and C as lower-risk benchmarks, where these remain more aligned with the existing connection strategy and therefore provide a more secure delivery pathway, albeit at higher total costs.

4.2. Limitations

While we use best endeavours to ensure suggestions provided are feasible, we rely on publicly available data which at times will not be 100% accurate, and will not include in flight non-accepted offers or demand connections. Additionally, while significant effort has gone into forecasting attrition of projects based on CP2030, forecasts can never be 100% accurate and so actual network conditions may differ from what we have indicated.

For the Lancashire offshore wind project (Morgan & Morecambe together with Mooir Vannin), the power flow assessment presented in this study is based on a DC power flow approximation and a set of assumed loading conditions. While this approach is appropriate for high-level optioneering and identifying relative constraints across the Stanah – Hambleton – Penwortham corridor, it inherently simplifies system behaviour using simplified 3 bus network approach. In particular, DC power flow neglects reactive power flows, voltage constraints, and losses, and assumes linear relationships based on fixed network impedances.

In addition, the loading conditions used in the analysis are based on assumed generation dispatch and demand levels rather than time - coincident operational data. This means that the results should be interpreted as indicative rather than definitive, particularly in a network where flows are highly dependent on wider system conditions.

As such, while the study provides a robust directional understanding of thermal constraints and reinforcement needs, a more detailed AC load flow and time-series assessment would be required to validate the findings, capture voltage and stability effects, and confirm the operability of the preferred connection option under realistic system conditions.

5. Appendices

Appendix A NESO Connection Delivery Pipeline and CP2030 Capacity Context

NESO has published its connection delivery pipeline, refer to Figure 5-1, which sets out the volume of export capacity by technology that is expected to progress through the reformed connections process. This pipeline provides an indication of how the existing queue compares with the CP2030 capacity requirements. The figure below summarises the export capacity by technology relative to CP2030 targets.

For **onshore wind**, the pipeline indicates that Great Britain is undersupplied relative to the 2035 CP2030 requirement by approximately 5 GW. This shortfall is driven by a lack of sufficiently "ready" projects in **England and Wales**, while **Scotland** is already above the relevant capacity limits. As a result, the next application window is expected to accommodate new, ready onshore wind projects in England and Wales, whereas in Scotland only projects that benefit from protections are likely to be able to progress.

For **solar**, the pipeline shows that the capacity is slightly undersupplied for the 2035 pathway in certain zones. However, the remaining headroom is limited, with less than approximately 500 MW of capacity available in some zones in the next application window. At a GB level, solar appears to fall below the 2030 CP2030 target, although this is largely explained by the fact that **rooftop solar is not captured within the connection pipeline data**, despite a significant proportion of this capacity already being built and operational.

For **BESS**, the pipeline shows a significant oversupply of projects relative to CP2030 requirements, with around three times more capacity in the queue than is permitted under the CP2030 targets. This oversupply is primarily driven by projects that benefit from protections, such as those holding planning permission. As a result, there is effectively **no available CP2030 capacity for new battery projects** in the next application window. Only projects that have become protected since the previous application window are expected to be able to progress.

In technologies and regions where there is a shortage of ready projects, the next application window is likely to allow new projects to progress. By contrast, in areas where capacity is already oversubscribed, progression is expected to be limited to projects that benefit from protections. This pipeline position underpins the Gate 2 Strategic Alignment assessment and informs how queue reordering will be applied under the TMO4+ framework, as described in Appendix B.

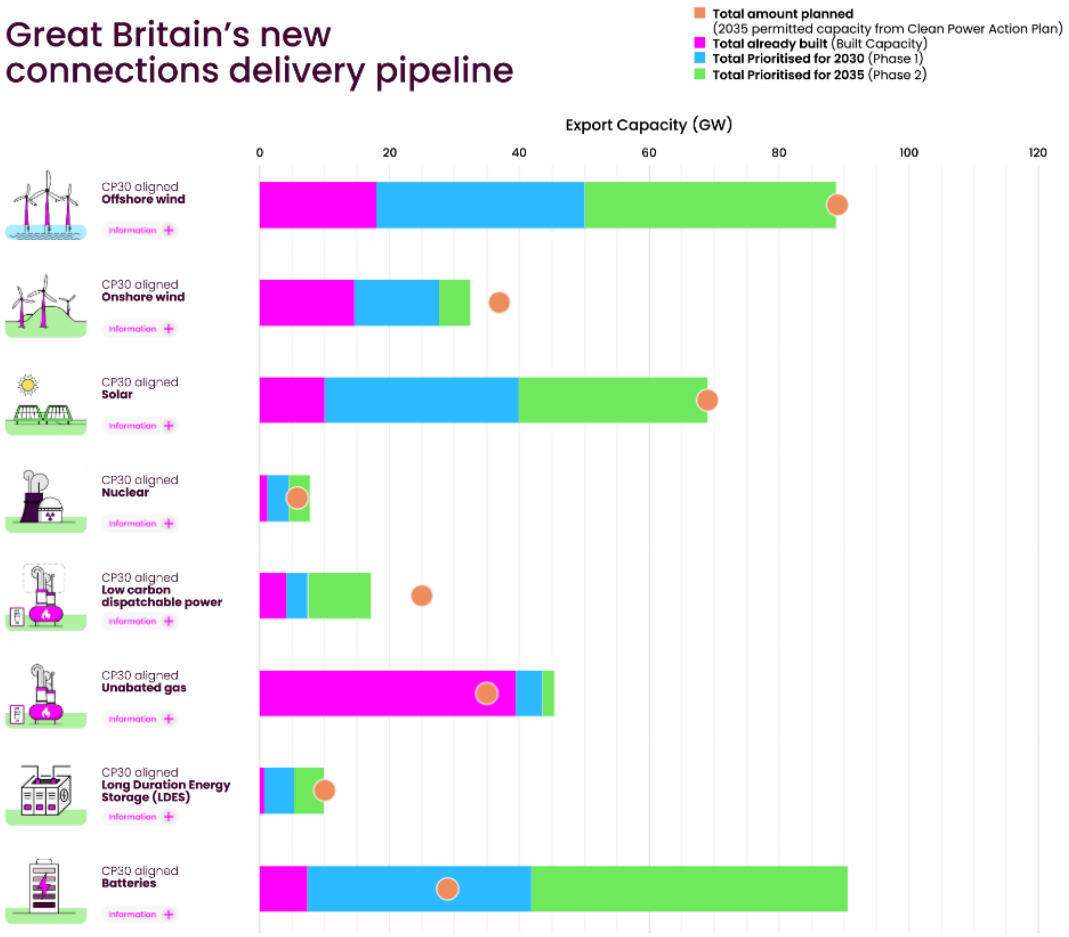


Figure 5-1: Connection Delivery Pipeline

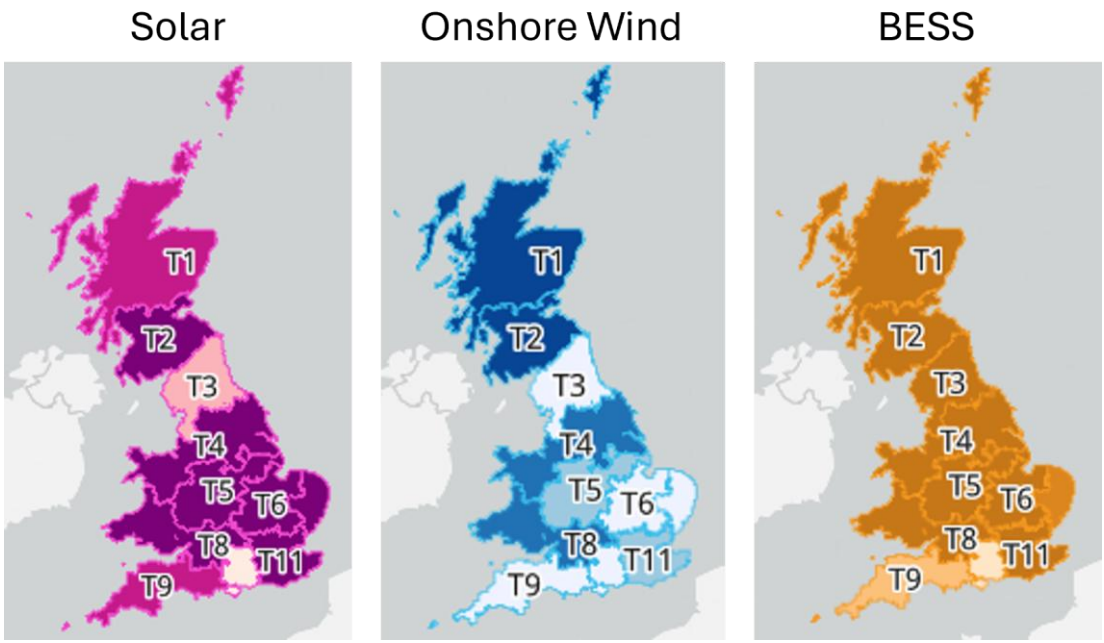


Figure 5-2: Zonal Breakdown for Each Technology

Appendix B Effects on TM04+ and Clean Power 2030

Under the new TMO4+ reforms, only projects holding a Gate 2 Connection offer would be allowed to energise.

To receive a Gate 2 offer, projects must meet both the **Readiness Criteria** (mainly by holding Land Rights) and the **Strategic Alignment Criteria** (based on the Clean Power 2030 capacity targets). If a project does not meet **both** these criteria during CMP435, it will be moved to a Gate 1 offer, its connection date will become indicative (losing its queue position) and the project will need to apply for a Gate 2 offer in future CMP434 "Application Windows" alongside new connection applications.

The Department for Energy Security and Net Zero's (DESNZ) **CP2030 Plan** sets out generation and storage capacity targets across 11 Transmission Zones and 8 Distribution Zones[6] in Great Britain These targets determine which projects will receive **Gate 2 offers** under the TMO4+ process.

- Each zone has specific **MW capacity buckets** for different technologies.
- **Transmission and Distribution projects are usually assessed separately** against these capacity buckets.

For Solar and Onshore wind, the 2035 buckets are slightly more nuanced. On 7 April 2025, the UK Government announced that **solar capacity targets** for Transmission and Distribution will now be assessed together, using a combined queue and capacity target by Transmission Zone. This means that Distribution solar projects beyond 2030 will now **compete with Transmission projects under shared 2035 targets**. In a similar way, Onshore Wind is assessed Zonally for the 2030 pathway while projects that fall beyond 2030 are assessed against 2035 targets in only two zones: Scotland and England & Wales.

NESO have published their queue reordering methodology, which will be used to determine which projects receive a Gate 2 offer in the upcoming CMP435 window:

Firstly, projects that do not meet the Readiness Criteria (defined in the subsections below) will be moved to Gate 1. **Secondly**, the remaining projects will be assessed against the Gate 2 Strategic Alignment Criteria which aligns with the amount of generation and storage capacity that NESO's modelling indicates will be needed in the relevant geographical Zones of the network; the CP2030 capacity targets.

To select the projects that meet Gate 2 Strategic Alignment Criteria, the queue of projects within each Zone will be temporarily re-ordered by planning consent status (with those with Planning Consents Obtained at the front) and added into these capacity buckets for the relevant technology type until the buckets are filled. The figure below outlines each of the steps involved in the queue reordering process in CMP435.

[6] Uk Government's Clean Power 2030 Action Plan: Connections reform annex

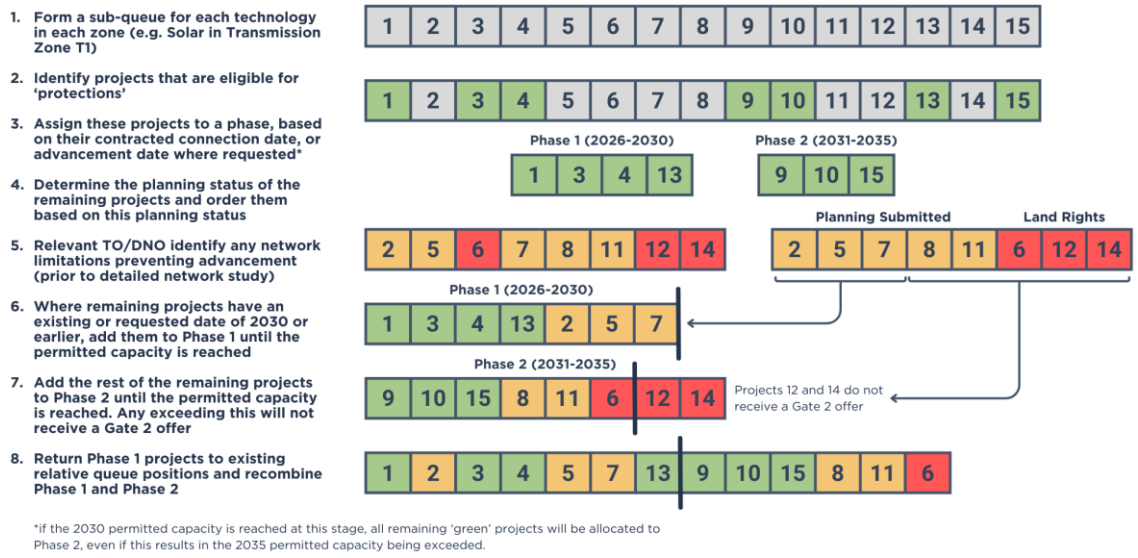


Figure 5-3: Illustration of the Assessment of Existing Projects against the Strategic Alignment Criterion in the Gate 2 to Whole Queue process.

Blake Clough has formed zonal queues for BESS, Wind and Solar projects based on the queue reordering methodology described above. Our methodology replicates the eight-step process, using an in-house script that combines data from publicly available sources such as the Transmission Entry Capacity (TEC) register and the Embedded Capacity Register (ECR). We also assign planning statuses to projects using planning data from the Renewable Energy Planning Database and Solar Media Planning datasets.

This enables us to estimate the connection queues post-CMP435, accounting for projects that may drop out at various levels (GSP, BSP, or Primary) of the network. This analysis feeds into our evaluation of headroom within different parts of the network that could be accessed by future Gate 2 projects.

As a summary, our CP2030 analysis allows us to:

- Assess whether the proposed project could be accommodated within the existing CP2030 target thresholds.
- Assess whether existing projects at the target connection location are likely to get Gate 1 offers and hence drop out of the respective queues.

Appendix C Ecological and Environmental Review

Morgan & Morecambe Wind Farm

Ecological Desk Review

April 2026

Contents

Figures

Tables

Appendices

Executive Summary

Site Name	Morgan & Morecambe Wind Farm
Location and Proposed Development	The Site is located within Thornton Cleveleys extending from SD 34942 43063 to SD 31280 44651. The proposed development involves the installation of a cable route from Stanah Substation, extending offshore.
Designated Sites	Four statutory designated Sites of importance to nature conservation have been identified within 2km of the proposed cable. The closest of which was Morecambe Bay Ramsar, Morecambe Bay and Duddon Estuary SPA and Morecambe Bay SSSI which span to the east of the cable route, approximately185m northeast at the closest point. SSSI IRZs are used to identify if a proposed development is likely to affect a terrestrial SSSI and those European designated Sites underpin and when to consult Natural England to seek advice. The Site lies within SSSI IRZ which suggests consultation with Natural England based upon the consultation requirements.
Protected and notable species	The majority of the Site is unsuitable for protected and notable species consisting predominantly of developed land, sealed surfaces. Where the cable route intersects natural habitats, including woodland, grassland, hedgerows and trees, there is increased suitability for protected and notable species, including: - Great crested newts - Natterjack toad - Hazel dormice - Badgers - Bats - Otter and water vole - Reptiles - Invasive non-native species (INNS)
Habitats	The majority of the Site follows main roads consisting of developed land, sealed surfaces with minimal ecological value. Four sections (H1–H4) intersect natural habitats and require ecological consideration (Appendix E). The Site was identified as intersecting a parcel of priority deciduous woodland to the east (H3) and was directly adjacent to a large parcel of priority coastal and floodplain grazing marsh to the west.
Recommendations	A Stage one Habitat Regulations Screening Assessment should be undertaken to assess impacts of the proposed development on the qualifying features of Morecambe Bay SAC SPA Ramsar SSSI. Best practice construction methods should be outlined in a CEMP to mitigate impacts on priority habitats, watercourses and protected species. Where possible, habitats such as hedgerows, grassland, woodland and trees should be retained. Where this is not possible, a walkover survey should be conducted to assess habitats presence and their suitability for protected species. This may trigger the requirement for further surveys to investigate the presence and identify mitigation requirements for protected species. Vegetation clearance of scrub, hedgerows and trees should be undertaken outside of nesting bird season, where this isn't possible, a pre-commencement nesting bird check should be conducted 24 hours prior to vegetation removal.

1 Introduction

We have been commissioned by Genecon Ltd. to undertake an ecological desk review of the proposed cable route for Morgan & Morecambe Wind Farm.

1.1 Scope of Works

The objectives of the ecological desk review are to ascertain the key ecological constraints relating to the proposed cable route. This includes identifying potential impacts upon designated Sites, protected and notable species and habitats, and determining whether there is a need for more detailed surveys. Sufficient ecological information is required to fully inform the Site design and the proposed works. This report identifies the ecological constraints at the Site and makes recommendations for further ecological surveys. Recommendations have been made based on the initial design proposals and proposals for suitable mitigation have also been made.

The adoption of the mitigation proposals will enable the project to satisfy current UK and European legal wildlife requirements, as well as national and local planning regulations (see Section 2 and Appendix A). All public bodies have statutory obligations under the Natural Environment and Rural Communities Act 2006 to conserve and enhance biodiversity. Sufficient ecological information is required to fully inform the Site design and the proposed scheme. The review comprises the following elements:

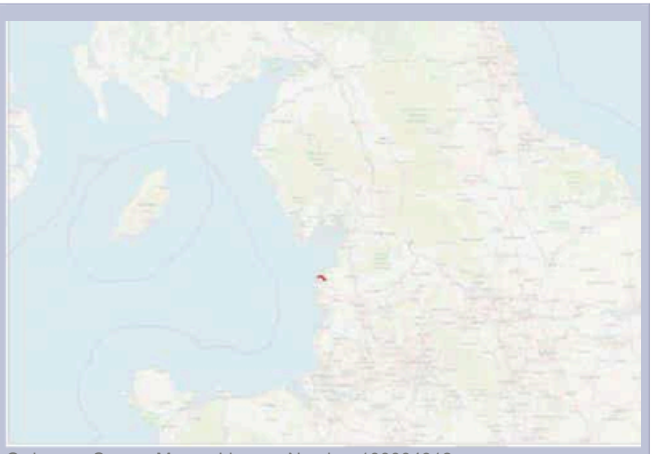
- Desktop study of available Site information;
- Assessment of the potential impacts of the proposed scheme;
- Appraisal of the requirements for further survey work;
- Appraisal of the requirements for mitigation and potential for enhancement

1.2 Site Location and Description

The Site is located at Thornton Cleveleys extending from SD 34942 43063 to SD 31280 44651 and offshore as shown in Figure 1. The proposed development involves the installation of a cable route extending offshore.

Figure 1 Site Location Plan

Google Earth Imagery - License Number JCPMB2ZBMMAWBHP



Ordnance Survey Maps - License Number 100004912

2 National Legislation

2.1 Introduction

This section summarises the legislation and planning policy in relation to ecology and biodiversity within the UK and Wyre Council within which the Site is located.

2.2 Legislation

A number of different acts and regulations refer to the protection of wildlife and habitats. Those potentially relevant to this project include:

- The Environment Act 2021;
- The Wildlife and Countryside Act (WCA) 1981 (as amended);
- Conservation of Habitats and Species 2017 (as amended);
- The Natural Environment and Rural Communities Act (NERC) 2006;
- The Countryside and Rights of Way Act (CRoW) Act 2000;
- The Invasive Alien Species (Enforcement and Permitting) Order 2019;
- The Protection of Badgers Act 1992; and
- The Hedgerow Regulations 1997.

These are outlined in more detail in Appendix A. It is recommended that the full legislation texts are referred to when dealing with individual cases and further legal advice is obtained where required. Protected species licences may be required to further comply with this legislation prior to the implementation of the project.

2.3 Planning Policy

2.3.1 National Policy

The National Planning Policy Framework (NPPF 2024) paragraphs 187 to 195 set out the Government's policies on conserving and enhancing the natural environment and habitats and biodiversity through the planning system. These policies are expected to be incorporated into development planning documents at regional and local scales and are also of material worth in considering individual planning applications.

Of particular relevance to biodiversity NPPF paragraph 187 states that '*Planningpoliciesanddecisionsshould contributetoand enhancethenaturaland localenvironment by:*

a) protecting and enhancing valued landscapes, Sites of biodiversity or geological value and soils (in a manner commensurate with their statutory status or identified quality in the development plan);
b) recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services – including the economic and other benefits of the best and most versatile agricultural land, and of trees and woodland;
c) maintaining the character of the undeveloped coast, while improving public access to it where appropriate;
d) minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures.'

The NPPF paragraph 193 advises that '*when determining planning applications, local planning authorities should apply the following principles:*

a) if significant harm to biodiversity resulting from a development cannot be avoided (through locating on an alternative Site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;
b) development on land within or outside a Site of Special Scientific Interest, and which is likely to have an adverse effect on it (either individually or in combination with other developments), should not normally

be permitted. The only exception is where the benefits of the development in the location proposed clearly outweigh both its likely impact on the features of the Site that make it of special scientific interest, and any broader impacts on the national network of Sites of Special Scientific Interest;

c) *development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons and a suitable compensation strategy exists; and*

d) *development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to improve biodiversity in and around developments should be integrated as part of their design, especially where this can secure measurable net gains for biodiversity or enhance public access to nature where this is appropriate.*

2.4 Local Planning Policy

2.4.1 Wyre Local Plan

Chapter 4 of the Wyre Local Plan (2011–2031), adopted on 26 January 2023, sets out the environmental policies relevant to this project. Policies of particular relevance to ecology and biodiversity include:

- **Policy CDMP4 – Environmental Protection** – " *Development will not be permittedwhere it would result in unacceptable harmtothe naturalenvironment, including biodiversity,geodiversity, water quality, air quality and soil resources. Where significant harm cannot be avoided, adequately mitigated or, as a last resort, compensated for, planning permission will be refused."*
- **Policy CDMP6 – Ecology**: - "*Development proposals should protect, conserve and enhance biodiversity and geodiversity. Proposals that would have an adverse effect on internationally, nationally or locally designated Sites, priority habitats or protected species will not be permitted unless the benefits of the development clearly outweigh the impacts. Development must follow the mitigation hierarchy and provide appropriate ecological assessment proportionate to the scale and nature of the proposal*"
- **Policy CDMP2 – Flood Risk and Surface Water Management** – "*Sustainable drainage systems should be designed to maximise biodiversity and ecological enhancement wherever practicable*."
- **Policy CDMP3 – Design** – "*Development should, where possible, retain existing landscape features, including trees, hedgerows, ponds and watercourses, and incorporate green infrastructure that enhances biodiversity and contributes to ecological networks*"
- P**olicy SA1 – Development Strategy** – "*Development should protect and enhance the natural environment, including designated Sites, ecological networks, landscape character and green infrastructure*."

2.4.2 Lancashire Local Nature Recovery Strategy

The Lancashire Local Nature Recovery Strategy (LNRS) has been prepared under the Environment Act 2021 to provide a strategic framework for nature recovery, habitat creation and biodiversity enhancement across Lancashire, Blackburn with Darwen and Blackpool. The strategy supports planning policy, land management and the delivery of Biodiversity Net Gain (BNG) and identifies where actions for nature recovery will be most effective. It comprises the two statutory components: the Statement of Biodiversity Priorities and the Local Habitat Map, which together guide spatial and strategic decision-making.

Statement of Biodiversity Priorities: The Statement of Biodiversity Priorities sets out the long-term vision, strategic aims, priority landscapes, and the habitats and species of greatest importance across Lancashire. The LNRS sets out a vision for "a resilient, nature-rich Lancashire where habitats are protected, restored and expanded to support biodiversity, climate resilience and healthy communities." The strategy aims to reverse biodiversity decline, strengthen ecological networks and deliver landscape-scale recovery, with opportunities for habitat creation and enhancement identified across the county.

The strategy identifies a series of aims, including:

- Climate resilience – restoring habitats that store carbon, reduce flood risk and buffer climate impacts.
- Water and wetlands – improving water quality, restoring rivers, estuaries and wetlands, and supporting natural flood management.
- Coast and estuary systems – protecting and enhancing internationally important coastal habitats and species.
- Peatlands – restoring upland and lowland peat to reduce emissions, improve water quality and support rare species.
- Woodlands and trees – expanding and connecting native woodland, wood pasture and riparian tree networks.
- Grasslands – protecting and restoring species-rich meadows, pastures and coastal grasslands.
- Urban nature – enhancing green and blue infrastructure, urban greening and nature-rich development.
- Farming and land management – supporting nature-friendly agriculture and sustainable soil and water management.
- Development and BNG – ensuring development avoids harm to high-value habitats and contributes positively to ecological networks, including through targeted BNG delivery.

2.4.2.1 Priority areas

Lancashire's LNRS identifies a set of landscape-scale priority areas forming the backbone of the long-term Nature Recovery Network, including:

- Morecambe Bay and Lune Estuary – internationally important coastal, estuarine and wetland systems.
- Forest of Bowland – upland heath, blanket bog, clough woodland and species-rich grassland.
- West Pennine Moors – moorland, reservoirs, valley wetlands and wooded cloughs.
- Ribble Valley and Ribble Estuary – floodplain meadows, wetlands and coastal habitats.
- Fylde Coast and Mosslands – lowland peat, wet grassland and coastal dune systems.
- Urban Nature Networks – green and blue corridors across Preston, Blackburn, Blackpool and wider settlements.

2.4.2.2 Habitats of Local Priority

The LNRS identifies priority habitats across woodland, grassland, wetland, coastal, freshwater, farmland and urban environments, including:

- upland oak woodland, lowland mixed deciduous woodland
- species-rich grassland, coastal grasslands
- lowland fen, reedbed, wet grassland
- upland streams, lowland rivers, estuarine channels
- saltmarsh, dunes, mudflats
- hedgerows, ponds, field margins
- urban SuDS, canals, brownfield nature site

Each habitat is supported by mapped actions (spatially specific), unmapped actions (general opportunities) and supporting actions (policy, monitoring, engagement).

2.4.2.3 Species of Local Priority

The LNRS identifies species of local importance across birds, mammals, plants, invertebrates, amphibians and fish, including:

- Birds – Curlew, Lapwing, Redshank, Hen Harrier, Twite.
- Mammals – Otter, Water Vole, Brown Long-eared Bat, Pipistrelle species.
- Plants – Bog Rosemary, Bird's-eye Primrose, Grass-of-Parnassus.
- Invertebrates – Northern Brown Argus, White-letter Hairstreak, freshwater pearl mussel
- Amphibians & reptiles – Great Crested Newt, Common Lizard, Adder
- Aquatic species – Atlantic Salmon, European Eel, White-clawed Crayfish.

2.4.2.4 Local Habitat Map

- The Local Habitat Map provides the spatial component of the LNRS and:
- maps existing high-value habitats, designated sites and ecological networks
- identifies Areas of Particular Importance for Biodiversity (APIB) and Areas that Could Become Important (ACB) highlights where habitat creation, restoration or buffering would deliver the greatest benefits
- supports the targeting of BNG enhancements to locations that contribute to a coherent Nature Recovery Network
- integrates the landscape-scale priority areas and district-level nature networks
- identifies opportunities for ecosystem service benefits such as carbon storage, water quality improvements, natural flood management, coastal resilience and access to nature

3 Methodology

3.1 Desktop Study

To accurately assess the potential ecological impacts of the scheme, a desktop study has been undertaken to identify the presence of sensitive ecological receptors within the Site and within the ecological zone of influence (EZI).

Data has been obtained from

- Multi-Agency Geographic Information for the Countryside (MAGIC)
- Google Earth (2026) Satellite Imagery
- Lancashire Local Nature Recovery Strategy – Local Habitat Map
- National Biodiversity Network Atlas (NBN)

MAGIC mapping was used to identify statutory designated Sites, including Sites of Special Scientific Interest (SSSIs), Special Areas of Conservation (SACs), Special Protection Areas (SPAs), Ramsar Sites, National Nature Reserves (NNRs) and Local Nature Reserves (LNRs) Presence of SSSI Impact Risk Zone (IRZ) was obtained from MAGIC. These zones outline when Local Planning Authorities should consult Natural England, based on the likelihood that a development could affect the SSSI or the qualifying features of nearby SSSIs or Special Areas of Conservation (SACs). Records for priority habitats (Habitats of Principal Importance) were obtained from the MAGIC Priority Habitat Inventory. Records of Granted European Protected Species Licences (EPSLs) have been provided by MAGIC. A focus on species identified within the past 20 years (i.e. since 2003) has been provided where applicable.

The habitats surrounding the pipe route identified through a desk-based review using satellite imagery and street-level photography available via Google Earth (2026). This enabled an initial assessment of habitat types and their suitability for protected species, as well as the identification of any priority or higher-value habitats, to determine whether Site-based verification was required.

Lancashire's Local Habitat Map identified areas classified as areas of particular importance for biodiversity and areas that could become important for biodiversity as outlined within Lancashire's Local Nature Recovery Strategy (LNRS). The NBN atlas was used to identify records of European protected species.

3.2 Survey Limitations and Constraints

Aerial imagery from Google Earth may be out of date and not show recent habitat changes, seasonal variation, or temporary features such as standing water. These desk-based constraints introduce a degree of uncertainty, but this has been addressed through a precautionary approach and, where necessary, recommendations for further survey or precautionary working methods.

4 Results

4.1 Sites of Importance to Nature Conservation

4.1.1 Statutory Designated Sites of Importance for Nature Conservation

Five statutory designated Sites of importance to nature conservation have been identified within 2km of the Site. The closest of which was Morecambe Bay SAC, Morecambe Bay Ramsar, Morecambe Bay and Duddon Estuary SPA, Morecambe Bay SSSI, which span coastal areas to the east of the cable route, approximately 185m northeast at the closest point. In addition to Liverpool Bay SPA which inlcude offshore area 1.35 km west of the Site.

The area to the east of the route, within the Morecambe Bay and Duddon Estuary SPA and Morecambe Bay SSSI the area is designated as a marine conservation zone designated under the Marine and Coastal Access Act 2009 to protect nationally important, rare, or threatened habitats, species, and geological features in UK water

These are detailed below in Table 1, the location of the designated Sites within 2km are shown on the Designated Sites plan in Appendix B.

4.1.1.1 SSSI Impact Risk Zone

SSSI IRZs are used to identify if a proposed development is likely to affect a terrestrial SSSI and those European designated Sites underpin and when to consult Natural England to seek advice.

The Site lies within SSSI IRZ which suggest consultation with Natural England based upon the following requirements. Those which the proposed development falls under include:

- All Consultations: All planning applications (except householder applications) where the proposed development is outside or extends outside existing settlements/urban areas and will increase lighting levels or affect greenspace, farmland, semi natural habitats, trees/woodland, waterbodies, rural buildings/structures (manmade or natural) or linear landscape features such as hedgerows, streams and rivers through direct loss, fragmentation or change of use.
- Infrastructure: Pipelines and underground cables, pylons and overhead cables (excluding upgrades and refurbishment of existing network). Any transport proposal including new or extended footways, cycleways, roads/car parks, railways and waterways (excluding routine maintenance). Airports, helipads and other aviation proposals.

Further assessment is therefore required in the form of a stage 1 Habitat Regulations Assessment (HRA) screening to evaluate the impacts of the development on the qualifying features of European designated Sites.

Table 1 Sites of Importance to Nature Conservation within 2km of the Site

Designated Site name	Designation	Distance	Description
Morecambe Bay	Ramsar	185m North East	- One of the largest intertidal estuarine systems in the UK and is internationally important for its extensive mudflats, sandflats, saltmarsh and associated wetland habitats. - Supports internationally important numbers of wintering and passage waterbirds, including key species such as oystercatcher (*Haematopus ostralegus*), knot (*Calidris canutus*), dunlin (*Calidris alpina*), redshank (*Tringa tetanus*), curlew (*Numenius arquata*), shelduck (*Tadorna tadorna*), teal (*Anas crecca*), and nationally important populations of several additional wader and wildfowl species. - Contains significant areas of saltmarsh, transitional habitats and feeding/roosting Sites essential to the

			functioning of the wider Morecambe Bay wetland complex.
Morecambe Bay and Duddon Estuary	SPA	185m North East	- Part of one of Britain's largest intertidal estuarine systems, internationally important for wintering waders. - Nationally significant for black-tailed godwit (*Limosa limosa*), turnstone (*Arenaria interpres*) and teal , with large numbers of lapwing and golden plover also using the Site. - Contains extensive ungrazed saltmarsh and a network of key high- and low-tide roosts, with waders feeding on rocky skears and moving between the Wyre and wider Morecambe Bay depending on tide state.
Morecambe Bay	SAC	185m North East	- The Site is designated for a suite of Annex I coastal and estuarine habitats forming one of the most extensive systems in north-west England - The Site is also designated for great crested newts (*Triturus cristatus*) which are an Annex II species, located on the southern shore of the Duddon estuary. - The SAC includes the UK's largest continuous intertidal mudflat and sandflat complex, rich in invertebrates and saltmarsh transitions - A nationally important example of large shallow inlets and bays, with mobile sands, mussel beds and reef-forming cobbles.
Morecambe Bay	SSSI	185m North East	- Internationally important for wintering waders and nationally important for black-tailed godwit, turnstone, teal, lapwing and golden plover. - It supports the largest area of ungrazed saltmarsh in north-west England, with clear transitions from pioneer to upper marsh and into freshwater swamp. - The Site contains diverse saltmarsh communities, including extensive sea-purslane stands and the nationally scarce *Limonium humile*, and supports complex bird movements between feeding and roosting areas across the estuary.
Liverpool Bay	SPA	1350m West	- Covers a large area of shallow coastal waters in the Irish Sea and is designated for its internationally important populations of wintering and passage waterbirds. - Supports significant numbers of red-throated diver, common scoter, little gull, common tern and little tern, alongside important aggregations of other seabirds using the bay for feeding, loafing and migration. - The shallow, productive waters provide essential foraging habitat, particularly during winter and migration periods, and the Site forms part of a wider network of marine SPAs supporting mobile seabird populations in the Irish Sea.

4.1.2 Non-statutory Sites of Importance for Nature Conservation

Records of non-statutory designated sites were on the Lancashire LNRS Habitat Map. This identified areas of particular importance to biodiversity including those Sites outlined in Table 1, non-statutory designated sites including Biological Heritage Sites (BHS) and areas designated as could be of particular importance for biodiversity. Ten non statutory designated sites have been identified within 2km of the Site. The closest of which are Fleetwood Railway Branch Line, Trunnah to Burn Naze Biological Heritage Site (BHS) and Fleetwood Farm Fields BHS located directly adjacent to the Site. These are detailed below in Table 2 and the location of non-statutory designated sites within 2km of the Site are displayed in Appendix C.

Table 2 Non statutory designated sites within 2km of the Site.

Designated Site name	Designation	Distance	Description
Fleetwood Golf Course	Biological Heritage Site	1.9km north	None provided
ICI Hillhouse International Pool	Biological Heritage Site	240m north	None provided
Fleetwood Marsh Industrial Lands	Biological Heritage Site	310m north	None provided
Rossall Lane Wood and Pasture	Biological Heritage Site	100m northwest	None provided
Jameson Road Saltmarsh	Biological Heritage Site	800m northeast	None provided
Skippool Marsh and Thornton Bank	Biological Heritage Site	1.2km southeast	None provided
Fleetwood Railway Branch Line, Trunnah to Burn Naze	Biological Heritage Site	0m – intersects the eastern section of the route	None provided
ICI Hillhouse Estuary Banks	Biological Heritage Site	1.7km east	None provided
Fleetwood Farm Fields	Biological Heritage Site	0m – directly adjacent to the western section of the route.	None provided
Burglars Alley Field	Biological Heritage Site	240m east	None provided

There are no records for areas of Ancient Semi Natural or Replanted Ancient Woodland (ASNW/PAWS) within a 2km search radius of the Site.

4.1.2.1 Priority Habitats

Priority Habitats are listed under Section 41 of the NERC act 2006 and are identified as those most threatened and requiring conservation action. The Priority Habitats Inventory (PHI), available on the MAGIC website, identified 372 parcels of priority habitats within 2km of the Site. The Site was identified as intersecting a parcel of priority deciduous woodland to the east and was directly adjacent to a large parcel of priority coastal and floodplain grazing marsh to the west (Appendix D). Priority habitats recorded within 2km of the cable route consisted of:

- 51 parcels of Coastal and floodplain grazing marsh
- 173 parcels of Coastal saltmarsh
- 51 parcels of Deciduous woodland
- 2 parcels of Lowland fens
- 36 parcels of Mudflats

- 57 parcels of No main habitat but additional habitatspresent[1]
- 2 parcels of Traditional orchards

4.1.2.2 Local Nature Recovery Strategy

The Site runs directly adjacent to and intersects and area of particular importance for biodiversity to the west.

4.2 Satellite habitat classification

4.2.1 General Habitat Description

A review of available aerial imagery identified that the majority of the Site follows main roads consisting of developed land, sealed surfaces with minimal ecological value however, four sections (H1–H4 see (Appendix E) intersect natural habitats and require ecological consideration.

H1 – Stanah Substation to South Road

- The route begins at Stanah Substation, located within an open grassland field and passes through a stand of dense trees. The route continues through a short section of river habitat (Hillylaid Pool – inland river) before emerging onto the public highway at South Road (SD 34766 43143).

H2 – West Road to Industrial Estate

- The route extends from West Road (SD 34324 43079) into an area of dense trees (SD 34123 43843) and then re-emerges onto an artificial, unvegetated unsealed surface adjacent to an industrial estate (SD 34073 44181).

H3 – Priority Woodland to Fleetwood Road

- The route re-enters natural habitat within a parcel of priority deciduous woodland (SD 33955 44438). The alignment crosses the railway line and continues through dense trees and hedgerows before emerging at the Bourne Road roundabout exit. A further short section of hedgerow would be crossed before the route are-enters developed land sealed surface of Fleetwood Road (SD 33317 44319).

H4 – Coastal Grassland to Offshore

- The route continues along Rossall Lane (SD 32410 45152), crosses the A585 at the Amounderness Way junction, and proceeds along Rossall Lane (B5409). The route then crosses the tramway at Rossall School Tram Stop (SD 31779 45043), continued along Broadway to the A587, and would traverse an area of coastal grassland (SD 31641 44599) before extending offshore

[1] No main habitat may present butnot mapped because the patch is smaller than the minimum mapping unit has complex mosaics of highly natural and diverse vegetation has potentially mis-recorded habitats has low confidence in attribution due to lackof data"

4.3 Protected and Notable Species

4.3.1 Amphibians

Great crested newts) (GCN) and natterjack toads (*Epidalea calamita*) in the UK receive full protection under Schedule 2 of the Conservation of Habitats and Species Regulations (2017) as amended and Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). Common amphibian species are protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) against sale only; however, should be considered during construction on animal welfare grounds. Desk Study

The MAGIC search returned five records of EPSLs relating to GCN within 2km of the Site. None of these licences are active. The closest EPSL was approximately 100m east of the Site within the Stanah Substation area, active between 2013 and 2019 for destroying GCN breeding Site.

Nine records were returned for GCN class survey licences in 2014 which all confirmed GCN presence. All records were to the eastern edge of the Site. Three of these class survey licences were within 500m of the Site. The remainder of the records were in the wider Thornton area, or on the other side of the River Wyre which acts as a barrier of movement between the ponds and the cable route. Sevon records were returned for GCN pond surveys (2017-2019). All pond survey records were to the eastern edge of the Site and two of these were within 500m of the Stanah Substation area.

Approximately 12 ponds were identified within 500 m of the Site using MAGIC Maps and Natural England Open Data. However, additional ponds may be present beyond those shown in Appendix F.

The eastern extent of the Site lies within a green zone for District Level Licensing (DLL). The majority of the route lies within an amber zone, with the western section towards the offshore area returning to a green zone (Appendix F)

- Amber zones: areas containing key GCN population centres, important habitats, and connecting dispersal routes. GCN are highly likely to be present. Development poses a higher risk due to potential impacts on core populations and connectivity.DLL could be used to address these risks through off-Site compensation, although larger schemes might still require impact assessments.
- Green zones: areas where GCN are sparsely distributed with moderate habitat suitability. GCN could still be present but at lower densities and with reduced connectivity. Development posed a lower level of risk. Suitable for DLL, allowing developers to contribute to the regional compensation scheme to meet legal obligations.

The National Biodiversity Network (NBN) Atlas returns distribution and historical records of natterjack toads. The closest records to the Site are approximately 8 km south of the Site within the Blackpool area, with no records returned within 2 km of the Site.

4.3.1.1 Satellite habitat suitability results

No ponds were within the direct footprint of the proposed route, but one pond appeared to lie directly adjacent to a section of the western part of the route within the Rossall School area. Based on aerial imagery, terrestrial habitat suitability could not be assumed; open grassland areas such as H1 were considered less likely to support terrestrial habitat for GCN and common amphibians compared to H3, which consisted of woodland and hedgerow. Where significant vegetation removal is proposed within 250m of suitable GCN breeding habitat (ponds, ditches) or terrestrial sheltering habitat, further assessment and surveys will be required to determine the likelihood of GCN presence and the need for mitigation or licensing.

Natterjack toads are typically associated with coastal sand dunes, heathlands and upper saltmarsh habitats. The majority of the route does not support these habitat types; however, where the route passes areas of Priority Habitat coastal grazing marsh, this may provide marginally increased suitability for the species. However, the lack of known distribution within the proposed cable route area reduces the likelihood of disruption to the species.

4.3.2 Birds

All nesting birds are protected under the Wildlife and Countryside Act 1981 (as amended). In addition, those species list on Schedule 1, Part 1 of the Wildlife and Countryside Act 1981 (as amended) are afforded additional protection for which it is an offence to intentionally or recklessly disturb birds and their young at, on or near an active nest.

4.3.2.1 Desk Study

At its closest point, the proposed cable route lies approximately 200 m from Morecambe Bay SPA/SAC/Ramsar/SSSI, designated for its extensive intertidal estuarine systems which support internationally important populations of wintering waders and waterfowl.

4.3.2.2 Satellite habitat suitability results

The majority of the route consisted of low value habitats for nesting birds comprised of main roads which are largely associated with main roads dominated by developed land, sealed surfaces. Where the proposed cable route intersects natural habitats such as trees and hedgerows, these are suitable for nesting birds. No habitats within the route are considered suitable to support significant aggregations of wintering birds such as waterfowl. However, where the route passes directly adjacent to two areas of coastal and floodplain grazing marsh PHI, this habitat could support wintering waterfowl such as lapwing (*Vanellus vanellus*).

4.3.3 Badgers

Badgers (*Meles meles*) and their setts are protected under the Protection of Badgers Act 1992 from injury/fatality, damage and any form of disturbance.

4.3.3.1 Satellite habitat suitability results

The majority of the cable route consisted of main roads dominated by developed land; sealed surface which is considered unsuitable for badger activity. However, the presence of badger setts cannot be ruled out in the areas where the proposed cable route intersects natural habitats, particularly those which consist of woodland parcels (H1-H3 in in Appendix E) which may be suitable for badger sett building and activity.

4.3.4 Bats

All species of bat in the UK receive full protection under Schedule 2 of the Conservation of Habitats and Species Regulations (2017) as amended and Schedule 5 of the Wildlife and Countryside Act 1981 (as amended).

4.3.4.1 Desk Study

The MAGIC search returned three records EPSLs relating to bats within 2km of the Proposed cable route. None of these licences were currently active. The closest EPSL was 900m west of the route active between 2017 and 2018, required for destroying a common pipistrelle resting place. The other EPSLs returned were active between 2014 and 2016 and 2019 and 2024, related to destroying the resting places for common pipistrelle (*Pipistrellus pipistrellus*), natterers (*Myotis nattereri*), brown long eared (*Plecotus auritus*), and soprano pipistrelle (*Pipistrellus pygmaeus*).

4.3.4.1 Satellite habitat suitability results

Linear parcels of trees, and hedgerows present throughout H1-H4 (see Appendix E) are suitable for foraging and commuting bats. Trees may be suitable for roosting bats. Where trees are required to be removed as part of the route installation, further assessment is required.

4.3.5 Hazel Dormice

Hazel dormouse (*Muscardinus avellanarius*) in the UK receives full protection under Schedule 2 of the Conservation of Habitats and Species Regulations (2017) as amended and Schedule 5 of the Wildlife and Countryside Act 1981 (as amended).

4.3.5.1 Desk Study

The wider Lancashire area which the cable route is situated in, is known as an area where hazel dormouse introductions had previously been undertaken. Therefore, their presence within the cable route area cannot be ruled out. Potential suitable habitats could occur in the sections where deciduous woodland and hedgerows are present and require removal (sections H2 and H3 in Appendix E).

4.3.5.2 Satellite habitat suitability results

The majority of the route was considered unsuitable for hazel dormouse due to the dominance of developed land and the limited availability of continuous woody vegetation. However, well-connected hedgerows and woodland along parts of the route where the cable intersects natural habitats may provide suitable habitat for nesting, foraging and dispersal.

Where these features were proposed to be removed, further assessment of habitat suitability was required to determine the likelihood of dormouse presence and to inform any necessary mitigation.

4.3.6 Otters and Water Voles

Otter (*Lutra lutra*) in the UK receive full protection under Schedule 2 of the Conservation of Habitats and Species Regulations (2017) as amended. Both otter and water vole (*Arvicola amphibius*) receive full protection under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended).

4.3.6.1 Satellite habitat suitability results

The majority of the cable route was considered unsuitable for otter and water vole due to the dominance of roads and developed land. However, to the east of the route, at H1, a section appears to cross a river, where suitable conditions for both species may be present. Where habitat which may be suitable for otter or water vole activity, holt creation (secluded riverbanks, rocks, hollow trees) or burrowing (soft, vegetated banks) is to be removed as part of the development, further assessment will be required to assess habitat suitability and inform any necessary mitigation.

4.3.7 Invertebrates (terrestrial and aquatic)

4.3.7.1 Satellite habitat suitability results

The majority of the proposed cable route is considered unsuitable for invertebrates due to the predominance of developed land, sealed surfaces. However, where the route intersects natural habitats, features such as grassland and native hedgerows may offer suitable opportunities for pollinator species. Woodland habitats may provide opportunities for detritivores invertebrates associated with leaf litter and deadwood. The watercourse may provide opportunities for aquatic and semi-aquatic invertebrates.

4.3.8 Reptiles

All reptiles are protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) against intentional killing or injuring. Sand lizards (*Lacerta agilis*) in the UK receive full protection under Schedule 2 of the Conservation of Habitats and Species Regulations 2017 (as amended) and Schedule 5 of the Wildlife and Countryside Act 1981 (as amended).

4.3.8.1 Desk Study

The NBN Atlas returned distribution and historical records of sand lizards displaying their presence along the wider coast line. The closest records to the proposed cable route are approximately 8 km south of the Proposed cable route within the Blackpool area, with no records within 2 km of the Proposed cable route.

4.3.8.2 Satellite habitat suitability results

The majority of the cable route was considered unsuitable for reptiles, being dominated by developed land; sealed surfaces. From aerial imagery, it is difficult to accurately determine the suitability of habitats within H1–H4; however, several sections have the potential to support reptiles.H1 contained grassland and hedgerow features with potential thorny edges, which could have provided limited suitability for species such as adder (*Vipera berus*), grass snake (*Natrix natrix*), and slow worm (*Anguis fragilis*). Similar habitat characteristics were present at H2 and H3, where woodland and hedgerow cover offered potential for sheltering or foraging. At H4, the presence of coastal grassland indicated potential suitability for reptile species, particularly adder, which is known to occur in dune, coastal grassland and marshland systems.

While sand lizard typically requires early-successional dune systems, heathland mosaics or structurally diverse coastal grassland with open sandy patches, the habitats at H4 present the only area along the route with any potential to support this species. The absence of data records within close proximity to the Proposed cable route reduces the likelihood of their presence.

Given the presence of potentially suitable habitat within these natural parcels, further assessment is recommended to assess habitat suitability where vegetation removal or ground disturbance was proposed.

4.3.9 Other Protected and Notable Species

4.3.9.1 Satellite habitat suitability results

The majority of the Proposed cable route was considered unsuitable for other protected or notable mammal species due to the dominance of developed land and limited availability of suitable habitat. However, the hedgerows and grassland fields along parts of the route provided suitable habitat for hedgehog (*Erinaceus europaeus*) and harvest mouse (*Micromys minutus*), both of which are Species of principal importance under Section 41 of the NERC act (2006).

4.3.10 Invasive and Non-Native Species

4.3.10.1 Desk Study

The desk review cannot scope out the presence of invasive and non-native species along the Proposed Cable Route.

5 Discussion and Recommendations

The survey identified ecological features within the Site boundary that would be impacted by the project proposals for the Site which involve the installation of a cable route.

The following recommendations are made based on this. Should the project change or further detailed designs be made available, these recommendations should be reviewed by an ecologist and amended as required.

The following recommendations have been proposed to minimise the potential ecological impacts and provide further detail to identify detailed mitigation requirements.

5.1 Ecological Constraints within the Site

The ecological impact hierarchy requires that all steps are taken to avoid adverse impacts to habitats and species. Only where impacts cannot be avoided, steps should be taken to mitigate for any losses within the scheme boundary. In cases where all options for on-Site mitigation have been exhausted, off-site compensation measures can be considered.

The NPPF (2024) and the Environment Act (2021) sets a requirement of achieving 10% biodiversity net gain (BNG). BNG requires developers to provide an increase in natural habitats and ecological features over and above that being impacted on during development and aims to restore ecological networks. This should ideally be at the same location, but where that is not possible, may be achieved by improvements for biodiversity in other locations. BNG encourages the retention of habitats defined as very high, high and medium distinctiveness, and that any habitats lost should be replaced on a like-for-like basis.

5.1.1.1 Designated Sites

The Site lies within 200m of Morecambe Bay SPA, SAC, Ramsar and SSSI. The IRZ suggest that the proposed development has the potential to disturb the qualifying features of the SSSI and those European designated Sites it underpins. Standard pathways relevant to development within proximity to Morecambe Bay Ramsar, SPA and SAC features requiring Habitat Regulations Assessment (HRA) Stage one Screening include:

- Disturbance (Construction & Operation): Noise, vibration, visual disturbance may disturb wintering and passage waterbirds using intertidal feeding areas and high-tide roosts.
- Habitat Loss or Degradation: Direct land-take of supporting habitat (e.g., saltmarsh, mudflat, transitional grassland) if development occurs within or adjacent to functional land or Indirect habitat degradation through changes to drainage, shading, or altered land management.
- Hydrological Change: Changes to surface water flows, groundwater levels or tidal influence may affect saltmarsh, mudflat stability or freshwater–brackish transitions. Altered run-off patterns could affect sedimentation processes essential to intertidal habitats.
- Water Quality Impacts: Construction run-off, pollution incidents, wastewater discharges or increased nutrient loading may affect intertidal invertebrate communities and wetland vegetation. Increased turbidity or contaminants could reduce prey availability for waders and wildfowl.
- Air Quality (Traffic Emissions): Increased NOx deposition from road traffic may affect nitrogen-sensitive saltmarsh and transitional habitats within 200 m of affected roads.
- Lighting Impacts: Artificial lighting may disrupt nocturnal behaviour of waterbirds, reduce roost suitability or alter predator–prey dynamics.
- In-Combination Effects: Combined effects with other regional development, recreation pressure, coastal change or water quality pressures across the Morecambe Bay complex.

The Site is predominantly located within developed land; sealed surfaces within the existing road footprint therefore, no direct loss, fragmentation or degradation of Priority Habitat is anticipated.

However, the route was identified as intersecting a parcel of Priority Habitat deciduous woodland to the east. Should construction require the removal of trees within this section, this would constitute a direct loss of Priority

Habitat woodland which should be avoided where possible. Where removal is required, the ecological mitigation hierarchy should be followed, if priority habitat is removed, compensation may be required for the loss.

Where the route intersects only the ground layer of this parcel, potential impacts would be limited to temporary air quality effects during construction. The route also runs directly adjacent to a large parcel of Priority Habitat coastal and floodplain grazing marsh to the west. Although no direct habitat loss is expected in this location, ground-level works could provide indirect air quality and water quality impacts. These impacts are unlikely to be measurable, provided standard best-practice pollution measures are implemented which should be outlined in a Construction Environmental Method Plan (CEMP).

5.1.1.2 Habitats

Where extensive vegetation removal and excavation of natural habitats is required for the installation of the proposed cable route, a walkover survey is suggested to be undertaken (H1-H4) to ascertain the habitat types present in those areas that are to be removed and the impact that could have on protected species the habitats support.

The habitat survey should also record the presence of any rivers, streams and waterbodies that the route runs through or is adjacent to (250m).

5.1.1.3 Protected and notable species

Where significant vegetation removal is required to install the cable route and based on the walkover survey there may be requirements for further surveys to assist in informing the scheme design. This may include (not limited to) those outlined in (Table 3)

5.1.2 Avoidance Recommendations

The following avoidance options should be followed where possible within the design and construction of the project. Where these cannot be followed, further surveys and mitigation option are set out below:

- Keys habitats such as priority deciduous woodland, woodland, trees, hedgerows, other neutral grassland, coastal grassland. watercourses and ponds should be retained wherever possible;
- Potential bat foraging flightlines (e.g. hedgerows) should be applied within the scheme design and illumination of retained feature avoided though lighting design.
- Works within 10m of watercourses should be avoided through scheme design to ensure retention of the riparian corridor. Where watercourse crossings are required open cut crossings should be avoided where possible and the corridor width minimised with 10m of watercourses

5.2 Further Survey Requirements

Based on the walkover survey, data records and potential works, there will requirements for further surveys to assist in informing the scheme design and subsequent planning application.

Table 3 Further Survey Requirements

Ecological Survey Required	Location within the Site	Seasonal Program	Frequency of Surveys
Assessment			
Habitat Regulation Assessment (HRA)	A stage one screening assessment is recommended due to the proximity of the Site to Morecambe Bay European designated Site.	Can be conducted at any time of year	N/A
Preliminary Ecological Appraisal (PEA)	This will include a desk study, UKHab habitat survey, identification of ecological constraints and	Can be conducted at any time of year	N/A

Ecological Survey Required	Location within the Site	Seasonal Program	Frequency of Surveys
	opportunities, and an assessment of the potential for protected and notable species. The PEA will provide clear recommendations for any further surveys, mitigation, or design considerations required to support the proposed development.		
Biodiversity Net Gain (BNG) Assessment	Where a planning application is required, BNG assessment will be completed in accordance with the Biodiversity Metric 4.0 methodology to quantify baseline habitat units and assess the predicted change in biodiversity resulting from the proposed development. This will include UKHab mapping, habitat condition assessments, metric calculations, and identification of the measures required to achieve the mandatory 10% net gain.	Can be conducted at any time of year	N/A
Surveys			
UKHab Survey	A UKHab survey will be completed to establish the ecological baseline across the Site, including a detailed assessment of the sections where the proposed route passes through Priority Habitat to confirm habitat type, condition and sensitivity. This is required for the production of the PEA.	Optimal botanical survey season (April-September)	One visit (carried out in conjunction BNG condition assessment and MoRPh survey)
BNG condition assessment and river modular physical survey (MoRPh)	Where a planning application is required, BNG condition assessment and River condition assessment required for habitats within red line boundary and MoRPh survey of watercourses within 10m of the red line boundary. This is required for the production of the BNG assessment.	Optimal botanical survey season (April-September)	One visit (carried out in conjunction with UKHab Survey)
Preliminary roost appraisal of trees or Aerial inspection of trees	Where trees are proposed to be removed, an inspection of those trees may be required to inform the suitability for bat roosts and further mitigation requirements.	These surveys can be conducted at any time of the year.	One visit per tree with additional emergence surveys if required following climbing survey
Badger Sett monitoring surveys	Where badger sets are identified during the initial walkover of habitats where excavation for the development is proposed, within 30m of the cable route, a monitoring survey may be required to assess the activity status of those setts and inform further mitigation requirements.	These surveys can be conducted at any time of the year.	21 days of recording required
GCN eDNA	Where ponds and associated terrestrial habitat are identified as to be disturbed as part of the cable root installation, a GCN eDNA survey may be recommended to inform the presence/absence of GCN and whether payment to the DLL scheme is an option.	15th April – 30th June	One visit per pond
Hazel dormice	Where the walkover survey assesses habitats to be disturbed as suitable for hazel dormice.	April – November	One visit per month (based on starting in April. Dates later than this may require additional survey effort the following spring)

Ecological Survey Required	Location within the Site	Seasonal Program	Frequency of Surveys
Otters	Where the walkover survey identifies a watercourse which is to be impacted by the installation of the cable route and is suitable for otters and holt creation.	These surveys can be conducted at any time of the year.	Two survey visits at different times of year
Reptiles	Where the walkover survey identifies habitats which provide suitable reptile habitat and is proposed to have significant vegetation removal as part of the proposed installation of the cable route.	March – May OR September - October	Eight visits in total
Water Voles	Where the walkover survey identifies a watercourse which is to be impacted by the installation of the cable route and is suitable for water vole activity and burrows. .	April/May and August/September	Two survey visits total across the two seasons

5.3 Provisional Mitigation Recommendations

The following general mitigation measures are recommended for the proposed scheme based on current proposals. Upon finalisation of the detailed design, consultation with an ecologist is advised to confirm the applicability of these measures and to provide additional mitigation as necessary to minimise potential impacts on ecological receptors.

Table 4 Provisional Mitigation Recommendations

Ecological Feature	Seasonal Constraint	Likely Mitigation	Licencing Requirements
Designated Sites			
Designated Sites	None	Consultation with Natural England is required due to the location of the Site within the SSSI impact risk zone. Stage one HRA to assess impacts of the cable route installation on the qualifying features of Morecambe Bay European designated Sites. Where impacts cannot be screened out, a Stage 2 appropriate assessment will be required. Best practice construction methods should be outlined within the scheme Construction Environmental Management Plan (CEMP). Works within proximity to habitat suitable to support wintering bird aggregations to be undertaken between March and October to avoid potential for disturbance of wintering aggregations associated with the Morecambe bay European designated sites.	
Habitats			
Hedgerows and trees	None	Where hedgerows and trees are to be retained, the root protection areas should be protected with suitable fencing. Full details regarding tree protection should be outlined within an Arboricultural Survey.	Non-applicable
Ponds	None	A buffer of 10m around ponds which lie within 250m of the proposed cable route installation should be retained to maintain habitat viability.	Non-applicable
Grassland	None	Where grassland may be removed, replanting of native species should be considered within the project landscape plan. This should include native grassland species to reflect those currently present within the Site.	Non-applicable
Species specific mitigation			

Ecological Feature	Seasonal Constraint	Likely Mitigation	Licencing Requirements
Badgers	None	As a minimum, contractors should be made aware of the possible presence of badgers both within the Site and the surrounding area. The Site should be kept clean and tidy overnight to discourage badgers from trying to enter construction zones. Food should be kept locked away. If ditches are left open overnight, a piece of scaffold board should be angled within the ditch so that animals can escape and do not get trapped if they fall in.	Licensable works in relation to badger sett may only be carried out between July and November (inclusive).
Foraging and commuting bats	Yes – dependent on survey results	In the event that potential flightlines cannot be retained, new flightlines in the form of hedgerows or line of trees should be created to aid commuting and foraging bats. Technical specifications should be outlined in the detailed plan. To ensure that bats continue to use the commuting and foraging features (where identified) being retained, it is strongly recommended that any lighting used within the Site is kept to an absolute minimum and is carefully designed to prevent light spilling onto important foraging and commuting features.	Non-applicable
GCN	Yes – dependent on survey results	Due to nearby records of GCN and the suitability of the Site ponds, it is possible that GCN may be present. If GCN are identified within the Site, DLL payment may be required. .	Yes
Hazel dormice	Yes – dependent on survey results	If habitats that are proposed to be removed are suitable for hazel dormice, evoking further surveys and the additional surveys identify the presence of the species. Where their habitats s cannot be retained, then further mitigation and Natural England licencing will be required. This could include new hedgerows should be created with at least five and preferably seven shrub and tree species.	Yes
Hedgehog		Vegetation clearance required during the hibernation period should be undertaken under an ecological watching brief. Overnight works should be limited to reduce additional lighting to enable hedgehog to continue foraging.	Non-applicable
Invasive species		It is recommended that a suitable management plan is produced with the aim of containing the infestation and preventing further spread. This should include as a minimum a briefing for all staff to be aware of the potential presence of INNS and details of removal and/or control through mechanical or chemical (e.g. herbicide) means.	
Nesting birds	Typically, late February – early September	Any construction or clearance works impacting on areas of hedgerows, trees, and scrub should be completed outside of the breeding bird season. If this is not possible then the works will require a pre-commencement nesting bird survey to ensure that the habitats are clear of nests.	Non-applicable
Reptiles	Yes – dependent on survey results	If the walkover survey identifies suitable reptile habitat and reptile surveys identify the presence of reptile species within the Site, further mitigation including exclusion fencing, translocation programme and supervised vegetation clearance may be required. The retention of areas of existing habitat and the creation of refugia may also be required.	Non-applicable
Roosting bats	Yes – dependent on survey results	Where trees proposed to be suitable for bats are identified during the walkover survey, and further assessment identifies the presence of a bat roost, mitigation may be required for the loss of bats roosts where required could include integrated bat boxes into retained trees.	Yes
Otters	Yes – dependent on survey results	Areas of vegetation removal that are suitable for terrestrial otter habitat should be completed be under an ecological watching brief (riparian zone of watercourses). Overnight works should be limited to reduce additional lighting to enable otter to continue foraging. Best practice construction methods should be outlined within the scheme CEMP to avoid pollution impacts to the watercourse.	Yes (for destruction or disturbance or resting place)

Ecological Feature	Seasonal Constraint	Likely Mitigation	Licencing Requirements
Water voles	Yes – dependent on survey results	If water voles are identified mitigation may involve creation of new habitat that is equivalent to the loss. This can be measured in terms of length of bankside habitat and diversity of bankside and marginal vegetation. New bankside vegetation should be composed of a tussocky, species rich sward varying in height.	Yes
Wintering birds	Yes – dependent on survey results	Given the proximity of the works to the SPA, mitigation for wintering birds may be required following Stage 1 HRA Screening on minimising disturbance through seasonal timing and activity controls. Where feasible, works within the disturbance-risk zone will be scheduled outside the core wintering period (October–March). If works are required during this period, measures such as noise and visual screening, reduced lighting, and careful management of plant and personnel will be implemented to limit disturbance.	

6 Ecological Report Limitations

The information reported herein is based only on the interpretation of data collected during the desk study investigations. This work pertains specifically to the identification of protected species on the proposed Site. Information provided by statutory information sources has been accepted as being accurate and valid.

This report has been prepared with all reasonable skill, care and diligence, and taking account of the man-power and resources devoted to it by agreement with the client.

The evaluation and conclusions do not preclude the existence of protected species, which could not reasonably have been revealed by the comprehensive desk studies and Site visit. Hence, this report should be used for information purposes only and should not be construed as a comprehensive characterisation of all Site habitats.

In addition, this report details only the conditions on Site at the time of reporting. The dynamic nature of the natural environment will result in changes to the surrounding environment as seasons change. No responsibility is taken by the author to the existence of additional species identified on this Site at a later date.

The impact assessment made in this report relates only to the effects from the proposed scheme. This report does not therefore apply to any other developments within the Site.

This report has been prepared solely for the use of Genecon Ltd. and may not be relied upon by other parties without written consent. In addition, it must be understood that this report does not constitute legal advice.

7 References

Collins, J. (ed.) (2023) Bat Surveys for Professional Ecologists: Good Practice Guidelines, 4th edition. The Bat Conservation Trust, London.

CIEEM (2017) Guidelines for Preliminary Ecological Appraisal, 2nd edition. Chartered Institute of Ecology and Environmental Management, Winchester.

Froglife (1998) Froglife Advice Sheet 9: The planning system and Site defence. How to protect reptile and amphibian habitats. Froglife, Halesworth.

Froglife (1999) Froglife Advice Sheet 10: Reptile survey: An introduction to planning, conducting and interpreting surveys for snake and lizard conservation. Froglife. Halesworth .

Gent, T. and Gibson, S. (2003) Herpetofauna workers manual. Joint Nature Conservation Committee.

Institute of Environmental Assessment (1995) Guidelines for Baseline Ecological Assessment. E & F N Spon, London.

Lancashire: Local Nature Recovery Strategy (2026). Available at: https://www.lancashire.gov.uk/council/strategies-policies-plans/environmental/local-nature-recovery-strategy/

Langton, TES., Beckett, CL., and Foster, JP. (2001) Great Crested Newt Conservation Handbook. Froglife, Halesworth.

Multi Agency Geographical information on the Countryside [online]. Available at: http://magic.defra.gov.uk (Accessed DAY-MONTH-YEAR).

National Planning Policy Framework (2024) [online].

Available at: https://assets.publishing.service.gov.uk/media/675abd214cbda57cacd3476e/NPPF-December-2024.pdf (Accessed DAY-MONTH-YEAR).

UKHab Ltd. (2023) UK Habitat Classification Version 2.01 [online]. Available at: https://www.ukhab.org

Wyre Local Plan 2011-2031. Available at https://www.wyre.gov.uk/local-plan/local-plan-2011-2031

Appendix A Legislation

The Environment Act 2021

The Environment Act 2021 provides a framework for environmental governance, including provisions to establish a 'post-Brexit' set of statutory principles including the creation of an environmental watchdog The Office for Environmental Protection (OEP). In relation to Biodiversity and Nature Conservation, the Act includes targets to halt biodiversity decline by 2030 and mandates a 10% Biodiversity Net Gain for developers.

The Wildlife and Countryside Act 1981 (as amended)

The Wildlife and Countryside Act (WCA) 1981 (as amended) consolidates national legislation to implement the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention) and the Directive on the conservation of wild birds (Birds Directive) 2009/147/EC (which is the codified version of the Council Directive 79/409/EEC).

The WCA is the principal mechanism for the legislative protection of wildlife in the UK and is divided into four parts, the first section of which details the protection of wildlife. This legislation protects wild animals listed on Schedule 5 and wildflowers which are listed on Schedule 8. All wild birds and their eggs and nests are protected, with special protection for birds listed on Schedule 1. Invasive plants listed on Schedule 9 must not be spread or propagated in any way.

Conservation of Habitats and Species Regulations 2017 (as amended)

The Conservation of Habitats and Species Regulations 2017 (as amended by the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019) transpose Council Directive 92/43/EEC, on the conservation of natural habitats and of wild fauna and flora (EC Habitats Directive), and the Directive on the conservation of wild birds (Birds Directive) 2009/147/EC (which is the codified version of the Council Directive 79/409/EEC) into national law.

The regulations protect animals listed on Schedule 2 and plants listed on Schedule 5, also known as European Protected Species. The Regulations allow the designation and protection of Special Areas of Conservation (SACs), Special Protection Areas (SPA's) and RAMSAR Sites. These are collectively known as National Site Network within the UK (formerly known as Natura 2000 Sites). A development which would have an adverse effect on the conservation interests for which a National Site Network area has been designated should only be permitted where:

- There is no alternative solution; and
- There are imperative reasons of over-riding public interest, including those of a social or economic nature.

Where a priority habitat or species (as defined in Article 1 of the Habitats Directive) would be affected, prior consultation with the European Commission is required unless the development is necessary for public health or safety reasons. These conditions also apply to any European protected species that may be present.

The Natural Environment and Rural Communities Act 2006

The Natural Environment and Rural Communities (NERC) Act 2006 places an obligation on all Local Planning Authorities to conserve and protect biological diversity and the natural environment. Section 40 of the Act concerns biodiversity and states: 'Every public authority must, in exercising its functions, have regard, so far as is consistent with the proper exercising of those functions, to the purpose of conserving biodiversity.'

The Act states that: 'it is important that public authorities seek not only to protect important habitats and species but actively seek opportunities to enhance biodiversity through development proposals, where appropriate.'

This legislation also details those species for each county that are of 'principal importance for the purpose of conserving biodiversity' and includesthose that are most threatened, declining, or where the UK population

represents a significant proportion of the global population. These species are mainly derived from the original UK Biodiversity Action Plans (UK BAP) which has now been succeed by the UK Post-2010 Biodiversity Framework published in 2012 and highlights those that are of conservation concern, detailing why they are of concern and the actions required to prevent further declines and to encourage habitat/population expansion.

Local Biodiversity Action Plans (LBAPs) have been developed which set priorities for locally important habitats and wildlife. The statutory basis for species and habitats listed in the LBAP is provided by Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006.

The Countryside and Rights of Way Act, 2000

The Countryside and Rights of Way Act 2000 (CROW Act, 2000) increased the measures for the management and protection of Sites of Special Scientific Interest (SSSI), reinforces existing wildlife enforcement legislation, and requires that local authorities provide for better management and have due regards for Areas of Outstanding Natural Beauty (AONB).

Species of principal importance for the conservation of biodiversity in England (as identified under the CROW Act) should be protected from adverse impacts of development. To ensure that the habitats of these species are not adversely impacted upon, the planning authority may impose planning conditions or obligations.

The Invasive Alien Species (Enforcement and Permitting) Order 2019

The Invasive Alien Species (Enforcement and Permitting) Order 2019 are regulations which aim to prevent and minimise the impact of the introduction and spread of non-native plants and animals 'not ordinarily resident in' and 'not a regular visitor to Great Britain in a wild state' or otherwise listed in Schedule 2. The order lists 66 species which are of special concern and apply to live plant and animal specimens (including anything they can reproduce from, such as seeds, spores and fragments of plants). The regulations make it an offence to import, keep, breed, transport (except transporting for eradication), sell, exchange, allow to grow, cultivate or permit to reproduce, or release into the environment unless a licence, permit or exemption is in place.

The Protection of Badgers Act 1992

The Protection of Badgers Act 1992 provides protection to badgers and their setts from injury/fatality, damage and any form of disturbance; however, this does not extend to the protection of other habitats badgers may utilise.

The Hedgerow Regulations 1997

The Hedgerow Regulations 1997 affect hedgerows that are 20m or more in length or are connected at both ends to another hedgerow (of any length) and enable their protection from intentional or reckless removal, or to cause or permit another person to remove a hedgerow. The regulations apply to hedgerows that are on, or adjoining, land that is used for the following – agriculture; forestry; breeding or keeping of horse, ponies or donkeys; common land; village greens; and SSSI's or Local Nature Reserves (LNR's).

the LPA have powers to serve a Hedgerow Retention Notice, requiring that the hedgerow is retained if a hedgerow is deemed to be important under specified criteria (found in chapter 7 The Hedgerow Regulations – A Guide to the Law and Good Practice) and is older than 30 years. The regulations do not apply to hedges that are attached to houses.

Ancient Woodlands and Veteran Trees

Ancient semi natural woodland consists of any wooded area which has been wooded continuously since at least 1600 AD and has protection under the NPPF. Ancient Woodlands are described as irreplaceable habitats as per Natural England's standing advice which states that local planning authorities '*should refuse planning*

permission if development will result in the loss or deterioration of ancient woodland, ancient trees and veteran trees unless:

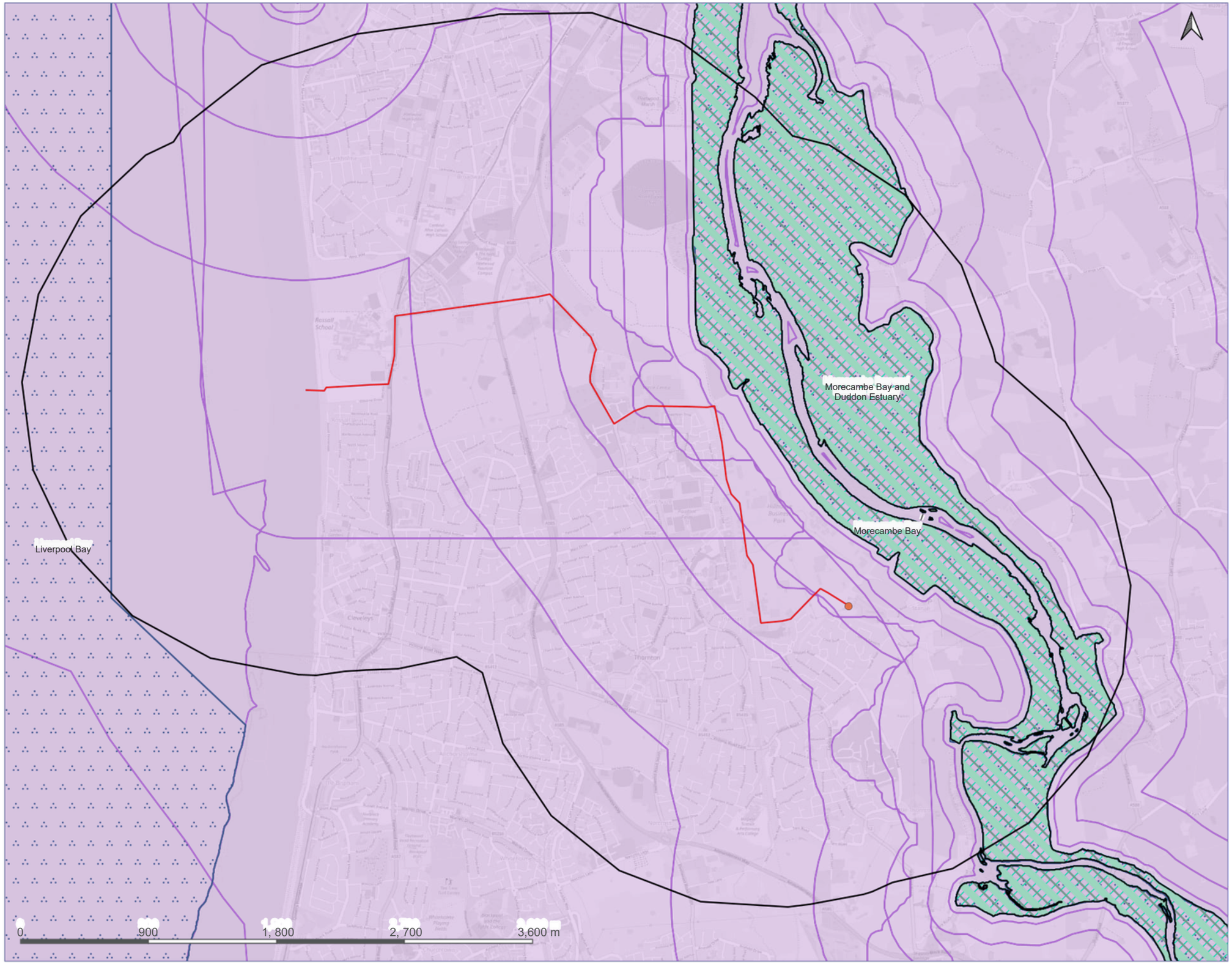
- *there are wholly exceptional reasons*
- *there's a suitable compensation strategy in place*

To protect Ancient Woodland and Veteran Trees during development, The Forestry Commission and Natural England have published guidance (known as 'standing advice'). This standing advice is a material consideration during the planning process and should therefore be considered when making decisions on relevant planning applications. This standing advice was last updated in November 2018 and states the following:

- '*For ancientwoodlands, youshould have a buffer zoneof at least 15 metres to avoidroot damage. Where assessment shows otherimpacts are likely toextend beyond thisdistance, you're likely to need a larger buffer zone. For example, the effect of air pollution from development that results in a significant increase in traffic*'.
- '*A buffer zone around an ancient or veteran tree should be at least 15 times larger than the diameter of the tree. The buffer zone should be 5m from the edge of the tree's canopy if that area is larger than 15 times the tree's diameter*'.

Appendix B Designated Site Map

Genecon Morgan & Morecambe Wind Farm
Statutory designated sites map



Legend

2km buffer

Proposed cable route

Internationally designated sites

Ramsar

Special Protection Areas

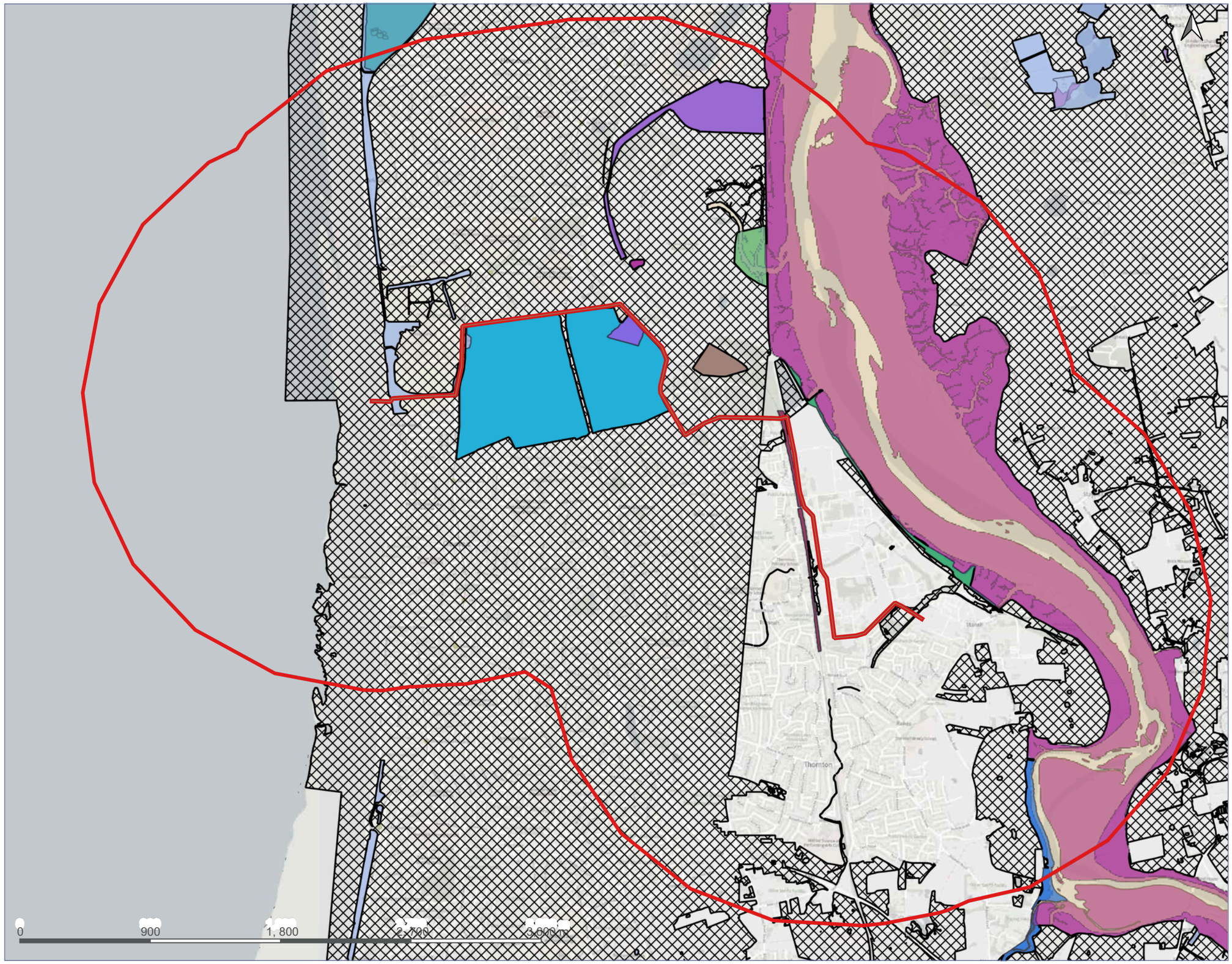
Sites of Special Scientific Interest

SSSI Impact Risk Zones (IRZ)

Scale 1:26355 at A3

Contains OS data © Crown Copyright 2026

Appendix C Local Nature Recovery Strategy Map

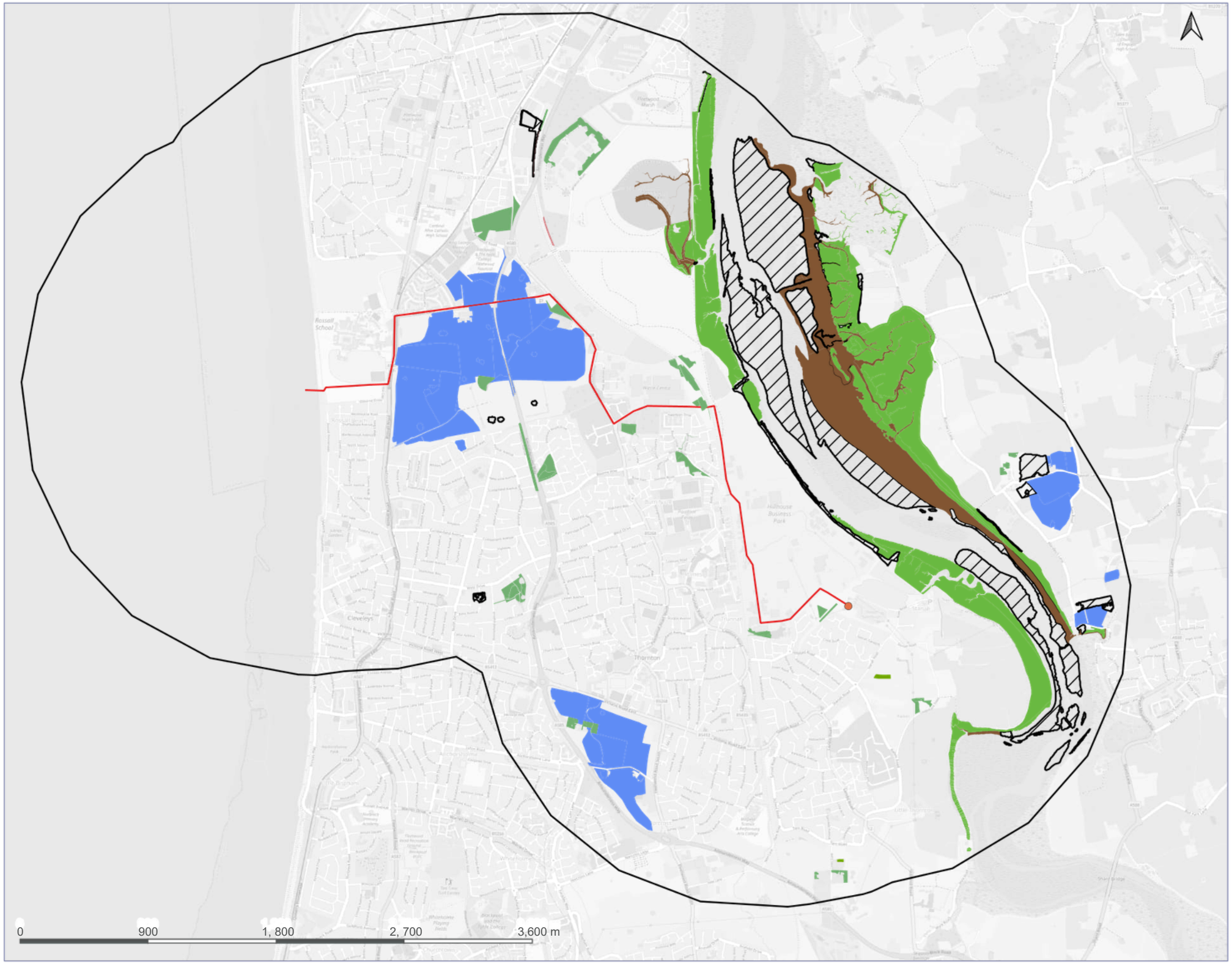


Scale 1:25909 at A3

Contains OS data © Crown Copyright 2026

Appendix D Priority Habitat Map

Genecon Morgan & Morecambe Wind Farm
Priority Habitat Inventory Map



Legend

- 2km Buffer
- Proposed Cable Route

Priority Habitats

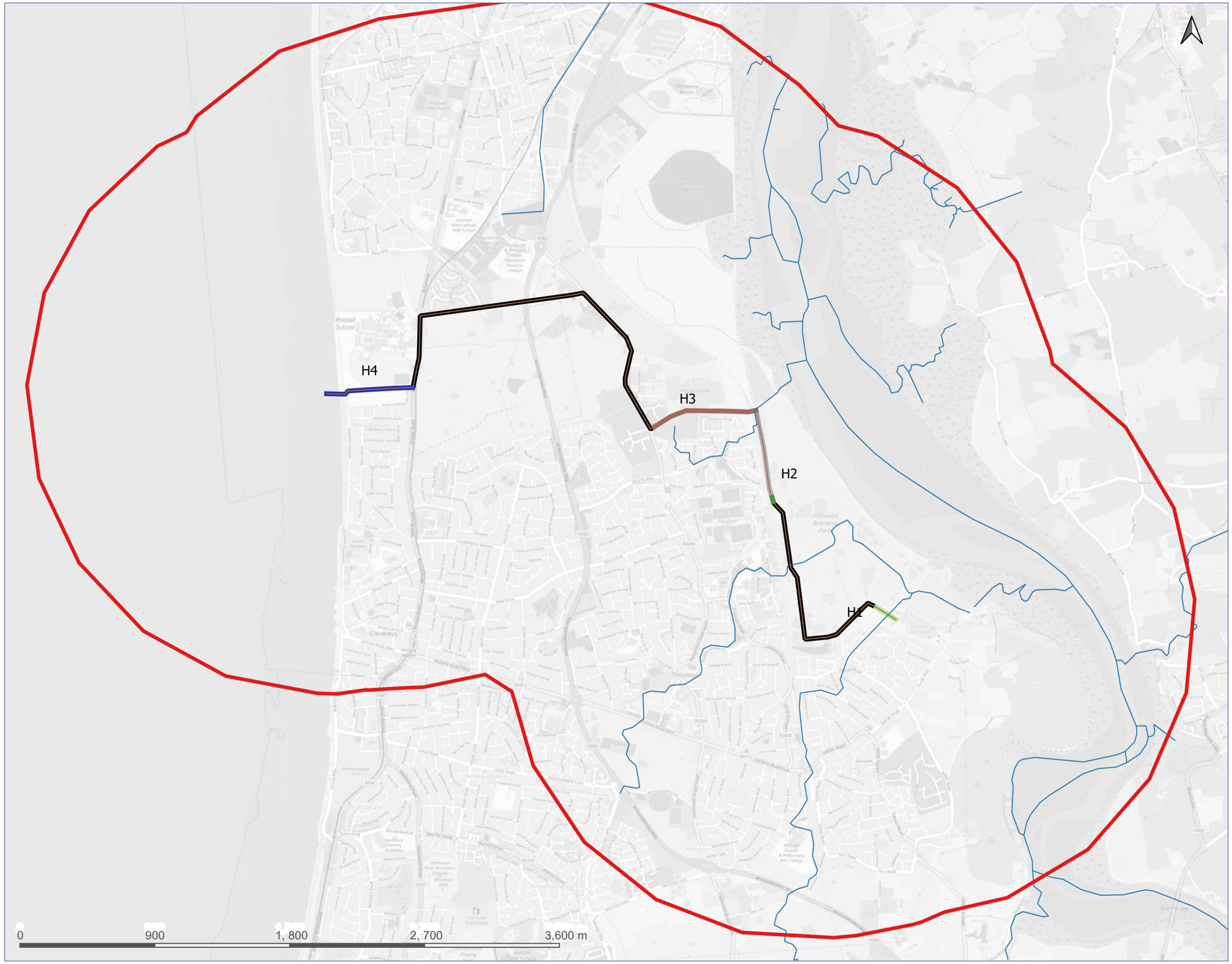
- Coastal and floodplain grazing marsh
- Coastal saltmarsh
- Deciduous woodland
- Lowland fens
- Mudflats
- No main habitat but additional habitats p
- Traditional orchard

Scale 1:26355 at A3

Contains OS data © Crown Copyright 2026

Appendix E Satellite Imagery Habitat Map

Genecon Morgan & Morecambe Wind Farm
Potential ponds and GCN risk zones



Legend

- 2km Buffer

Proposed cable route

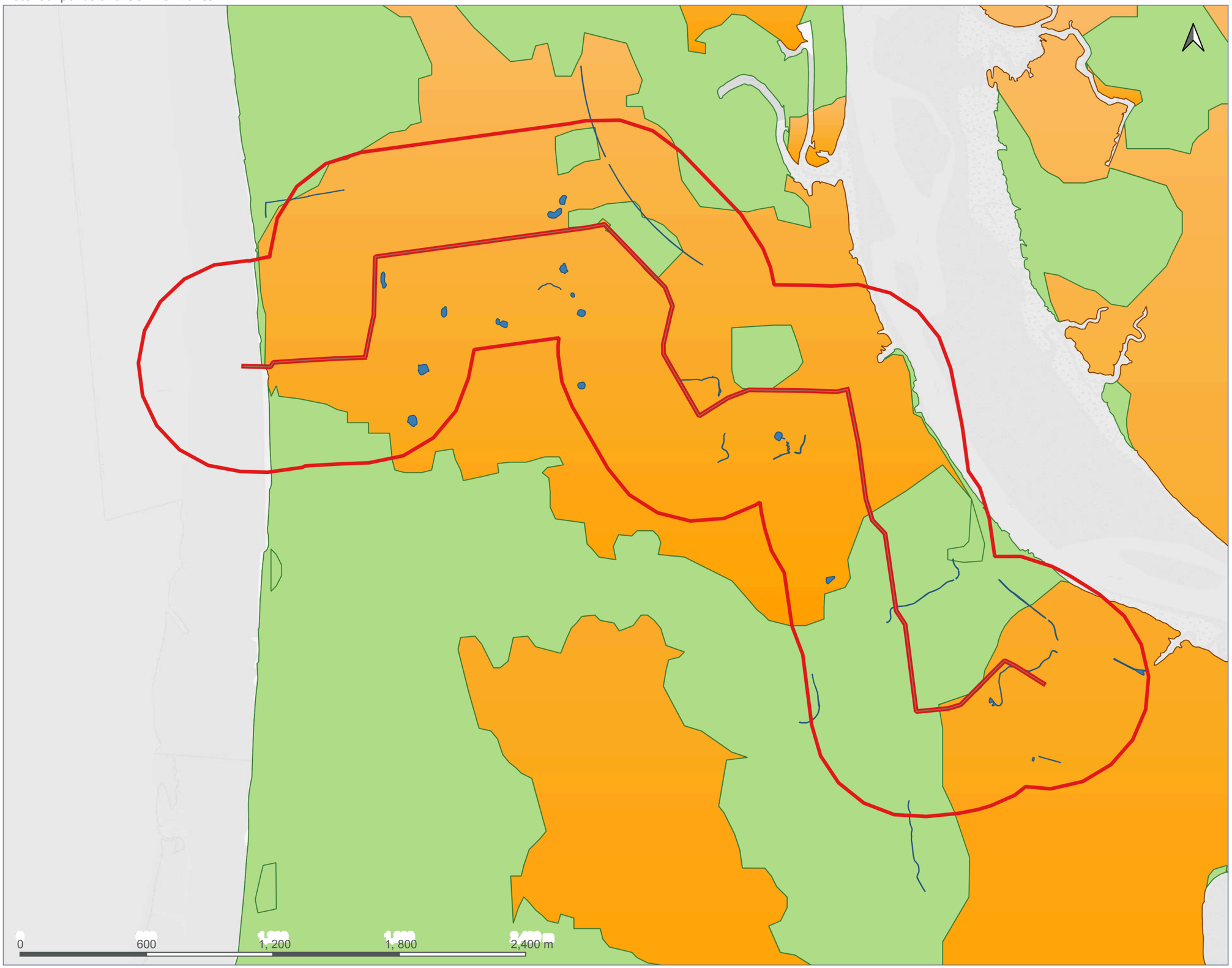
- Artificial unvegetated; unsealed surface
- Coastal grassland to offshore
- Dense group of trees/woodland parcel
- Developed land; sealed surface
- Grassland and scattered trees
- Priority deciduous woodland parcel extending into hedgerows
- Watercourses (OS Open Rivers)

Scale 1:25023 at A3

Contains OS data © Crown Copyright 2026

Appendix F Pond locations and GCN risk zones

Genecon Morgan & Morecambe Wind Farm
Potential ponds and GCN risk zones



Legend

Proposed cable route

GCN risk zones Lancashire

Amber Zone

Green Zone

Waterbodies under 0.2ha

500m Buffer

Scale 1:17824 at A3

Contains OS data © Crown Copyright 2026

Appendix D DCO Progress and Process Technical Note

DCO Progress and Process Technical Note

CONTENTS

TABLES

NO TABLE OF FIGURES ENTRIES FOUND.

FIGURES

NO TABLE OF FIGURES ENTRIES FOUND.

APPENDICES

No table of contents entries found.

Revision	Description	Originated	Checked	Reviewed	Authorised	Date
01	Draft	GC	GC	LT	LT	03/03/2026
Job Number: 18658						

1.0 INTRODUCTION

1.1 This Technical Note has been prepared for Genecon Limited to provide planning inputs into Genecon's offshore grid project for Lancashire County Council (LCC)

1.2 The first section of this Technical Note considers the current progress of the Morgan and Morecambe Offshore Wind Farms Transmission Assets Development Consent Order (the 'M&MOWFTA DCO') through the DCO regime and notes the DCO's timeframes to decision.

1.3 The second section of this Technical Note goes on to provide a summary of the key amends to the DCO regime set out in the Planning and Infrastructure Act 2025 (PIA 2025) which has amended several sections of the Planning Act 2008 (PA 2008) under which DCOs have progressed since 2008 and identifies when these are anticipated to come into effect.

2.0 PROGRESS OF THE MORGAN AND MORECAMBE OFFSHORE WIND FARMS TRANSMISSION ASSETS DCO

Progress to Date

2.1 This section considers the progress of the M&MOWFTA DCO through the DCO regime to date.

2.2 In setting the scene, the M&MOWFTA DCO seeks a single consent for the transmission assets that are to connect both the Morgan Offshore Wind Project and Morecambe Offshore Windfarm (which are the 'generation assets') to the National Grid.

2.3 The M&MOWFTA DCO was drafted as a result of National Grid Electricity System Operator's Holistic Network Design Review (HNDR). The HNDR recommended that Morgan Offshore Wind Project and Morecambe Offshore Windfarm work together to connect these two projects via consolidated offshore and onshore cabling and a landfall site into the National Grid Electricity Transmission (NETS) network at Penwortham in Lancashire.

2.4 The M&MOWFTA DCO has been drafted with provisions to enable the connection of either project independently of one another should either of the generation asset DCOs fall away. With the applicants of the two generation asset DCO's in agreement, a single DCO for the Transmission Assets was progressed as the M&MOWFTA DCO.

2.5 On review of the M&MOWFTA DCO's progress to date, it is noted that the proposed DCO had completed its examination on 29 October 2025, as confirmed by the Section 99 Letter issued by the Examining Authority on 3 November 2025 **[PD-018]**.

2.6 In accordance with Section 98 of the PA 2008, the Section 99 Letter also confirmed that the Examining Authority (ExA) would have until 29 January 2026 to issue its recommendation report to the relevant Secretary of State (SoS).

Progress to Consent

2.7 Following the ExA's issuing of their recommendation report to the SoS on 29 January 2026, the SoS has until 29 April 2026 to decide the DCO application (in accordance with Section 107 of the PA 2008). However, Section 107 of the PA 2008, specifically subsections (3) and (5) grant the SoS the power to set a later date than the 29 April 2026 for their decision and that they can exercise this power 'more than once'.

2.8 The SoS may choose to exercise their powers under Section 107 of the PA 2008 to allow further time to request additional information that may not have been provided for during the examination period and recommendation stage.

2.9 The SoS's exercising of their power to set a later date for decision is unquantifiable at this stage. Though, should the SoS exercise this power and based on our experience, it would anticipated that a revised decision date would be circa. three months on from 29 April 2026.

3.0 REVISED DCO PROCESS PURSANT TO THE PIA 2025

3.1 This section summarises, in order of the stages of the DCO process, the key revisions pursuant to the amendments written into the PIA 2025. All references to Sections below should be taken to mean the Sections found within Part 1, Chapter 1 of the PIA 2025; unless stated otherwise.

3.2 It should also be noted that much of the PIA 2025 is yet to come into force and so a majority of the Act does not yet take effect, though it is our anticipation that the PIA 2025 will take effect by summer 2026.

3.3 The below headings summarise the key changes to the existing DCO regime with the assumption that all aspects of the PIA 2025 and secondary legislation would be in force were a new DCO application sought for an alternative routing of the transmission assets to a point of connection into the NETS network. Below, we term this 'the project'. We also assume Genecon has a good working knowledge of the (pre-PIA 2025) DCO regime.

Pre-Application Stage

3.4 At the inception stage, the PIA 2025 does not amend what constitutes a Nationally Significant Infrastructure Project (NSIP) under the relevant Sections 14 and 16 of the PA 2008. Sections 14 and 16 of the PA 2008 are relevant as it is our understanding that the project would be connecting circa. 2 Gigawatts of renewable offshore wind into the NETS network via offshore and onshore export cables that, all told, would be circa. 500 kilometres in length. Under this understanding, the project would need to formally request that the SoS exercises their power under Section 35 of the PA 2008 to direct the project into the DCO regime.

3.5 Should the project be directed into the DCO regime, the PIA 2025 has amended several key aspects of the pre-application stage and these can be summarised as follows:

- **Removal of Statutory Consultation:** Section 5 of the PIA 2025 notably removes Sections 42, 47 and 49 from the PA 2008, thereby removing the requirement for statutory consultation, though leaving some limited forms of statutory publicity. This removal is expected to reduce the time projects spend in the pre-application stage; though the removal of statutory consultation does not remove the need for high-quality engagement with consultees.

  Instead, it is envisaged that consultation will be more flexible during the pre-application stage with some anticipation that engagements explore new lines of communication and social media avenues that might be more meaningful and effective in engaging communities. The removal of Sections 42, 47 and 49 from the PA 2008 does not remove

the need to meet publicity requirements though (e.g., national newspaper advertisements still need to be produced and issued).

- **Removal of the need for Preliminary Environmental Information Reports (PEIR):** Further to the above, the removal of the requirement for statutory consultation also does away with the need for applicants to produce PEIRs on which to consult. PEIRs had become an industry standard exercise and in practice became voluminous and in excess of what was required to comply with regulation 12 of the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017. It is our expectation that applicants may instead share draft Environmental Statement (ES) chapters directly with technical consultees throughout the pre-application stage (such as via Natural England's discretionary advice service, which is underpinned by the recently introduced cost recovery regime that is leading to more detailed pre-application advice). Applicants may also choose to undertake regular topic specific workshops to allow technical consultees to meaningfully engage in the design of projects. These approaches should better inform design decisions from an earlier stage and should also allow projects to enter into examinations with less matters 'not agreed' with key agencies and other public bodies (e.g., the Environment Agency, National Highways, Historic England etc.). These more flexible approaches could reduce spend by applicant's during the pre-application stage and reduce the time projects spend in the pre-application phase. However, there is potentially tension with the increasing levels of detail sought by technical consultees as they implement the recently introduced cost recovery regimes.
- **Ease of Access to Land:** Section 11 of the PIA 2025 enables authorised persons to enter land for surveying purposes and a warrant can be sought should there be resistance to access. 'Authorised persons' include persons who are seeking to make a DCO application. This Section may enable applicants to access land more easily and without delay, though this understanding should be confirmed and checked with land agents and/or legal teams.

Acceptance Stage

- **Further Guidance to be Issued on Acceptance:** The legal test for acceptance has not changed, but further guidance is anticipated to give guidance to applicants around how to best meet the acceptance tests. The timescale for this is unclear. More generally, the PIA 2025's removal of Sections 42, 47 and 49 from the PA 2008 means one component of the acceptability tests falls away, however in tension with this is the recent (separately

from the PIA 2025) introduction by PINS of an expectation to show regard to S51 advice issued by PINS throughout the pre application stage, within an application.

Post-Decision

- **Changes to Judicial Review:** Section 118 of the PA 2008 currently permits 'three bites of the cherry' (i.e., a paper permission stage, the option to renew to an oral permission hearing, and the right of appeal to the Court of Appeal) should a claim be filed within six weeks of a DCO decision. Section 13 seeks to amend these 'three bites' down to 'two bites' by amending Section 118 of the PA 2008. This amend recognises that should the High Court decide that a review application is made *"totally without merit"*, that review application cannot proceed to the 'third bite' (which is the right to appeal the decision at the Court of Appeal). For DCO applications, this revision may help expedite the Judicial Review process where claims are made to frustrate a grant of consent. We recommend legal advice is sought.

Other Amendments

- **Non-Material and Material Changes to a DCO:** Section 12 removes the distinction between what constitutes a Non-Material and Material Change to a DCO. It is envisaged that making changes to made DCOs will be much simpler going forward and this amendment also seeks to recognise that making changes is acceptable. The change process will be brought into a single process, though this process is to be developed further through secondary legislation to the PIA 2025.