# Pell Frischmann

Imerys Wind Farm (Higher Biscovillack)

Abnormal Indivisible Load Route Survey

October 2025

10110810

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Report Ref.		10110810 Imerys Higher Biscovillack Wind Farm V117 RSR.Docx				
		https://pellf.sharepoint.com/sites/EdinburghOfficeTeam/Shared Documents/General/Projects/10110810 Clean Earth Imerys (Higher Biscovillack)/01 - WIP/Reports/10110810 Imerys Higher Biscovillack Wind Farm V117 RSR.docx				
Rev	Suit	Description	Date	Originator	Checker	Approver
0		Issue	24/10/2025	N McKim	S Weston	S Weston
Ref. reference. Rev revision. Suit suitability.						

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## 1 Introduction

Pell Frischmann Consultants Ltd (PF) has been commissioned by CleanEarth Energy Limited (CleanEarth) to undertake a Route Survey Review (RSR) to examine the issues associated with the transport of wind turbine Abnormal Indivisible Loads (AIL) associated with the construction and development of the proposed Imerys Wind Farm, located to the south of Cocksbarrow, in the Cornwall Council administrative area.

The RSR has been prepared to help inform CleanEarth on the likely issues associated with the development of the site with regards to off-site transport and access for AIL traffic and examines the issues associated with transport along the route from the quarry access junction to the Higher Biscovillack site access junction.

The access review identifies the key issues associated with AIL deliveries and notes that remedial works, either in the form of physical works or as traffic management interventions will be required to accommodate the predicted loads.

The detailed assessment and subsequent designs of any remedial works are beyond the agreed scope of works between PF and CleanEarth at this point in time.

It is the responsibility of the turbine supplier to ensure that the entirety of the proposed access route is suitable and meets with their satisfaction (depending upon contract). The turbine supplier will be responsible for ensuring that the finalised proposals meet with the appropriate levels of health and safety consideration for all road users and are in line with the relevant legislation at the time of delivery.

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## 2 Definitions & Terminology

#### 2.1 Definition of Abnormal Indivisible Load

The Department for Transport, of which National Highways (NH) is an executive agency, state that the strict definition of an AIL refers to a load which cannot, without undue expense or risk of damage, be divided into two or more loads for the purpose of carriage on roads which, owing to its dimensions or weight, cannot be carried on a vehicle which complies with the 'standard vehicle regulations' as follows:

- > The Road Vehicles (Construction and Use) Regulations 1986 (as amended)
- ➤ The Road Vehicles (Authorised Weight) Regulations 1998 (as amended)
- The Road Vehicles Lighting Regulations 1989 (as amended)

All equipment should be stripped of its ancillaries before they are transported. NH will only accept that further dismantling is not required where it cannot be economically achieved due to the requirement for its construction within factory environments or where extremely high tolerances have to be maintained.

### 2.2 Legislation

Conventional heavy goods vehicles have an operating weight limit of 44 tonnes. The category known as AIL covers those vehicles where the gross weight exceeds 44 tonnes. An AIL is defined as that which cannot be carried under Construction and Use (C&U) Regulations. Items which, when loaded on the load carrying vehicle, exceed the weights encompassed by the C&U Regulations, but do not exceed Special Order Permission Limits are governed by Special Types General Order (STGO) Categories 1 to 3 depending on size.

Where dimensions exceed 6,100 mm in width, 30,000 mm in rigid length or 150 tonnes gross weight, a Special Order from NH is required.

Special Order category AIL movements are authorised by the NH Abnormal Loads team, an executive agency of the Department for Transport, based in Birmingham.

## 2.3 Water Preferred Policy

The Department for Transport has adopted a 'water-preferred' policy for the transport of AILs. This means that, where an application is sought for the movement of a Special Order or VR1 category load (more than 5.0 m width) by road, the Department, via NH and Transport Scotland (TS), will turn down the application where it is feasible for a coastal or inland waterway route to be used instead of road.

NH advise that this decision is based on a number of factors including whether the load is divisible, the availability of a suitable route, the amount of traffic congestion that is likely to be caused and the justification for the load to be moved.

The NH Abnormal Loads Team is the department responsible for the authorisation of Special Order AlLs and government policy is that the closest available port of access should be used for the delivery of such oversized items.

## 2.4 Third-Party Land & Land Ownership

A review of third-party land should be undertaken by the client to ensure that no additional land rights are required to enable deliveries or mitigation works. PF accepts no responsibility for the accuracy of land ownership assumptions, all of which should be confirmed across the entire access route by a qualified land agent.

The limits of road adoption can vary depending upon the location of the site and the history of the road agencies involved. The adopted area is generally defined as land contained within a clear boundary where the road agency holds the maintenance rights for the land. In urban areas, this is usually defined as the area from the edge of the footway across the road to the opposing footway back edge.

In rural areas, the area of adoption can be open to greater interpretation as defined boundaries may not be clearly identifiable. In these locations, the general rule is that the area of adoption is between established field boundary lines or a maximum 2 m from the road edge. This can vary between area and location.

#### 2.5 Abbreviations

AIL Abnormal Indivisible Load
C&U Construction and Use
CleanEarth CleanEarth Energy Ltd
NH National Highways
OS Ordnance Survey

PF Pell Frischmann Consultants Ltd

POE Port Of Entry

RSR Route Survey Review
SPA Swept Path Assessment
STGO Special Types General Order

SWC Super Wing Carrier TS Transport Scotland

## 3 Candidate Turbine

CleanEarth have indicated that they wish to consider the worst-case components from the Vestas V117 turbine at a 135 m tip height for the route assessment. The details of the components have been provided by Vestas and are detailed in **Table 3-1** below.

**Table 3-1: Turbine Component Summary** 

Component	Length [m]	Width [m]	Height / min. Diameter [m]	Weight [te]
V117 Blade	57.15	4.265	4.0	13.3
Base Tower	18.22	4.38	4.034	79.5
Mid Tower	23.24	4.034	3.916	55.5
Top Tower	30.0	3.916	3.268	44.0

The blade and worst-case tower section dimensions have been used for the subsequent assessment of the proposed loads along the access routes.

## 4 Site Location

The proposed development site is located to the west of Cocksbarrow, Cornwall. **Figure 4-1** illustrates the site location.

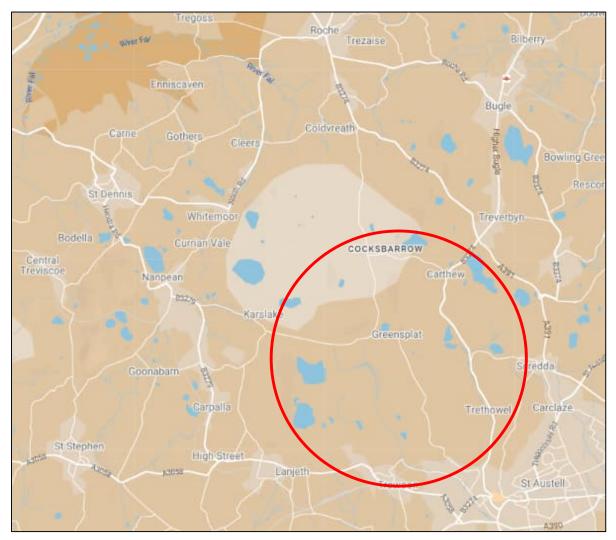


Figure 4-1: Site Location Plan

## 5 Access Routes

#### 5.1 Route 1

The proposed access route to the Higher Biscovillack site access junction is as follows:

- > Loads will travel southbound on unnamed road and turn right onto quarry access track southbound;
- > To access the Higher Biscovillack site, loads continue on unnamed road southbound and merge onto Greensplat Road;
- Loads will turn left to continue on Greensplat Road southbound and continue to the proposed site access junction.

The proposed access route is illustrated in Figure 5-1.

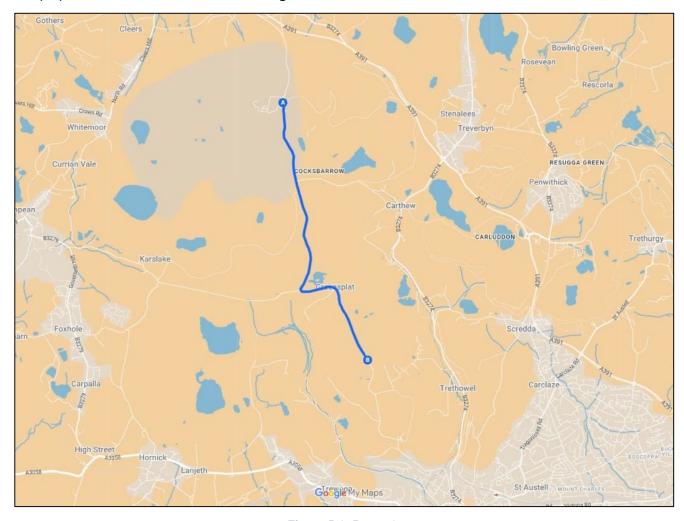


Figure 5-1: Route 1

## 6 Delivery Equipment

To provide a robust assessment scenario based upon the known issues along the access route, it has been assumed that all blades would be loaded onto a SWC trailer to reduce the need for mitigation in constrained sections of the route, shown in **Figure 6-1**.



Figure 6-1: Super Wing Carrier Trailer

Towers would be loaded onto a 4+7 clamp adaptor style trailer shown in **Figure 6-2**, whereas loads such as the hub, nacelle housing and top towers would be carried on a six-axle step frame trailer.



Figure 6-2: Tower Clamp Trailer

These configurations are subject to confirmation by the chosen haulier at the time of their commissioning.

As the loads are classified as Special Order, due to a rigid length in excess of 30 m, a full Police Escort would be required along the full length of the route.

## 7 Route Constraints

#### 7.1 Route Constraint Assessment

The constraints noted during the review are provided in **Table 7-1** below. These cover all constraints from the port access gate through to the site access junction and are classified in terms of risk to delivery as follows (N.B. the below list is not exhaustive):

#### **High Risk**

- Building / overbridge conflict
- Third-party land owner(s) access permission
- Permanent road works
- Reprofiling / ground works
- Bridge upgrades
- Overhead line removal / relocation
- Tree clearance

#### **Medium Risk**

- > Land searches to confirm extent of available adopted land
- Topographical survey
- Detailed junction / access track design
- Structural assessment / overbridging
- Overhead line survey
- Vertical elevation check
- Bridge parapet removals
- Street furniture removals
- Tree / vegetation pruning
- Vegetation clearance
- Use of dedicated abnormal load bypass / access track
- Shunt / contraflow manoeuvre
- Trailer interchange
- Carriageway surface repairs

#### **Low Risk**

- Temporary load bearing surface to be laid
- Existing load bearing surface to be utilised
- Parking restrictions
- Loads to be raised above obstruction using trailer hydraulics

Risk has been assessed in terms of enabling works time, potential cost and complexity.

Full details of the mitigation measures are shown on the SPA drawings included in Appendix B.

## 7.2 Route Constraint Tables

**Table 7-1** details constraints from the Imerys quarry access junction through to the proposed Higher Biscovillack site access junction.

Table 7-1: Route 1 Constraint Points and Details (SWC and Tower Clamp Trailer)

POI	e 7-1: Route 1 Constraint Points and Details (SWC and Key Constraint	Details			
1	Unnamed road / quarry RH turn				
'	James Toda / quarry 1311 turn	Direction of travel			
		Loads will turn right onto quarry access track sou			
		Document reference	Doc. No.		
		Swept path assessment	SPA-01		
		Mitigation measures	Risk level		
		Third-party land owner(s) access permission	High		
		Ground works	High		
		Topographical survey	Medium		
		Street furniture removals	Medium		
		Tree / vegetation pruning	Medium		
		Vegetation clearance	Medium		
		Temporary load bearing surface to be laid	Low		
		Loads to oversail raised embankment using trailer hydraulics	Low		
2	Unnamed road S-bend southwest of Hensbarrow	Direction of travel			
	Beacon				
		Loads will continue on unnamed road southbound S-bend.	d around an		
		Document reference	Doc. No.		
		Swept path assessment	SPA-02		
	Value Variation	Mitigation measures	Risk level		
		Ground works	High		
		Overhead line removal / relocation	High		
		Tree / vegetation pruning	Medium		
		Loads to oversail raised embankment using	Low		
		trailer hydraulics			
3	Unnamed road S-bend west of Gunheath	Direction of travel			
		Loads will continue on unnamed road southbound around ar S-bend.			
		Document reference	Doc. No.		
		Swept path assessment	SPA-03		
		Mitigation measures	Risk level		
		Ground works	High		
		Street furniture removals	Medium		
		Vegetation clearance	Medium		
		Temporary load bearing surface to be laid	Low		
	to a large A selfer great	Loads to oversail raised embankment using	Low		
		trailer hydraulics			

POI	Key Constraint	Details	
4	Greensplat Road S-bend west of Greensplat	<u>Direction of travel</u>	
		Loads will continue on Greensplat Road southbound around an S-bend.	
		Document reference	Doc. No.
		Swept path assessment	SPA-04
		Mitigation measures	Risk level
	7/5	Tree / vegetation pruning	Medium
5	Greensplat Road LH turn	Direction of travel	
		Loads will turn left at the junction to continue on Road.	Greensplat
		Document reference	Doc. No.
		Swept path assessment	SPA-05
	A MINTERS	Mitigation measures	Risk level
		Third-party land owner(s) access permission	High
		Ground works	High
	/ <b>5</b>	Overhead line removal / relocation	High
		Tree clearance	High
		Land searches to confirm extent of available adopted land	Medium
		Topographical survey	Medium
		Tree / vegetation pruning	Medium
		Vegetation clearance	Medium
		Temporary load bearing surface to be laid	Low
		Blade tip to oversail embankment	Low
6	Greensplat Road west of Ruddlemoor RH bend	<u>Direction of travel</u>	
		Loads will continue on Greensplat Road southbor a right-hand bend.	und around
		Document reference	Doc. No.
		Swept path assessment	SPA-06
		Mitigation measures	Risk level
	Green Green	Permanent road works	High
		Ground works	High
		Overhead line removal / relocation	High
		Tree clearance	High
		Land searches to confirm extent of available adopted land	Medium
		Topographical survey	Medium
		Detailed carriageway design	Medium
		Street furniture removals	Medium
	Company of the Compan	Vegetation clearance	Medium
		Loads to oversail street furniture using trailer hydraulics	Low
	Along the length of Greensplat Road, there are sections	s where the carriageway width does not meet the	e minimum

Along the length of Greensplat Road, there are sections where the carriageway width does not meet the minimum requirements for abnormal load delivery. The carriageway will need to be widened to a minimum of 4.5 m on straight sections and further through bends. In addition, a 5.5 m wide clearance envelope is required for the loads. Early engagement with turbine suppliers on possible reductions to this specification is suggested. Land searches and topographical survey recommended along length of the Greensplat Road section to inform the design.

POI	Key Constraint	Details	
7	Greensplat Road / Higher Biscovillack access road RH turn	Direction of travel	
		Loads will turn right onto site access track westbound.	
		Document reference	Doc. No.
		Swept path assessment	SPA-07
		Mitigation measures	Risk level
	The Contract of the Contract o	Third-party land owner(s) access permission	High
		Permanent road works	High
	<b>(2)</b>	Ground works	High
		Tree clearance	High
		Land searches to confirm extent of available adopted land	Medium
		Topographical survey	Medium
		Detailed junction design	Medium
		Detailed access track design	Medium
		Street furniture removals	Medium
		Vegetation clearance	Medium

## 8 Swept Path Assessment Terminology

The detailed Swept Path Assessment (SPA) drawings for the locations assessed are provided in **Appendix B** for review. The drawings illustrate tracking undertaken for the worst-case loads at each location.

The colours illustrated on the swept paths are:

- Grey / Black Ordnance survey (OS) / topographical base mapping;
- Green Vehicle body swept path;
- Red Wheel swept path;
- Magenta Load swept path.

Where mitigation works are required, the extents of the overrun and oversail areas are illustrated and fully detailed on the SPA drawings. Additional land areas to those indicated in the SPA drawings may be required to facilitate the construction of the proposed physical mitigation measures depending on the site conditions and topography. The extent of any additional areas required to construct the mitigation works highlighted within this study and the detailed design of said mitigation works is beyond the scope of this study and should be confirmed on detailed topographical survey data.

Please note that where SPA have been undertaken using OS base mapping, AutoCAD based aerial mapping and historic topographical data, there can be errors in these data sources.

Where provided by the client, topographical data has been utilised. Please note that PF cannot accept liability for errors on the data source, be that OS base mapping, aerial mapping, historic topographical surveys or client supplied data. Where applicable, mapping has been augmented with aerial imagery for illustration only. The accuracy of this mapping cannot be confirmed by PF.

Please note that turbine supplier guidance suggests that the minimum road width for the safe transport of AIL components is 4.5 m. All public roads and onsite access tracks should comply with this standard unless a relaxation has been agreed with suppliers.

The need to widen public roads will require engagement with the relevant road authority and may constitute permanent or temporary surfacing.

## 9 Summary

## 9.1 Summary of Route Survey Review

Pell Frischmann Consultants Ltd (PF) has been commissioned by CleanEarth Energy Limited (CleanEarth) to undertake a Route Survey Review (RSR) to examine the issues associated with the transport of wind turbine Abnormal Indivisible Loads (AIL) associated with the construction and development of the proposed Imerys Wind Farm, located to the south of Cocksbarrow, in the Cornwall Council administrative area.

This report identifies the key points and issues associated with the proposed routes and outlines the issues that will need to be considered for successful delivery of the components.

The access review has been based upon Vestas V117 135 m tip height wind turbine components and has been undertaken on the basis of a Super Wing Carrier (SWC), a blade lifter trailer and a tower clamp trailer.

The route travels south on an unnamed road where the loads will turn right onto the Imerys quarry access track. To access the Higher Biscovillack site, the loads continue south along the unnamed road before merging onto Greensplat Road southbound. Loads will then turn left to continue on Greensplat Road southbound to the proposed site access track junction.

Third-party land uptake is required at the unnamed road / quarry access junction, Greensplat Road junction and Greensplat Road / Higher Biscovillack site access junction. Detailed junction and carriageway design is also required at these locations and there are sections of Greensplat Road where the carriageway width does not conform with the wind turbine manufacturer standards, therefore, general carriageway widening works are required along this section of the route.

The remainder of the route is considered negotiable with areas of temporary load bearing surface, ground works, overhead line removal, street furniture removals; and tree and vegetation clearance.

No consideration has been given to the on site design requirements as part of this report.

The report is presented to CleanEarth for consideration. Various road modifications and interventions are required to successfully access the site. If these are assessed, approved and undertaken, access to the site is considered feasible..

#### 9.2 Further Actions

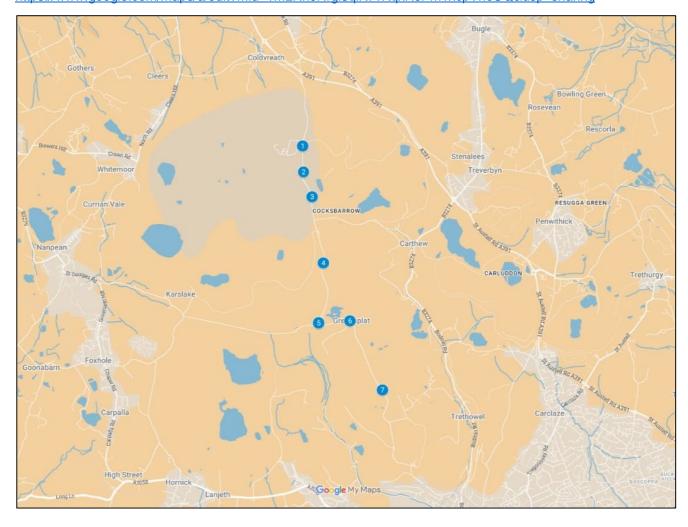
The following actions are recommended to pursue the transport and access issues further:

- Prepare detailed mitigation design proposals to help inform the land option / consultee discussions;
- Obtain the necessary land options;
- Undertake discussion with the affected utility providers and roads agencies;
- Undertake topographical survey at the identified locations and repeat the swept path assessments to confirm mitigation measures;
- > Develop detailed junction designs at the identified locations;
- Conduct a test run to confirm negotiability and identified mitigation measures;
- Obtain the necessary statutory licences to enable the mitigation measures; and
- Develop a detailed operational Transport Management Plan to assist in transporting the proposed loads.

Appendix A Points Of Interest

## An electronic version of the POI plans can be found here:

https://www.google.com/maps/d/edit?mid=1mLRh0Nrgl8qiK7vKqxNsPm1xcpVnoUQ&usp=sharing



Appendix B Swept Path Assessments

