



## **APPENDIX 4-7**

***ELS COOLE WIND FARM  
DELIVERY ROUTE SELECTION  
AND ASSESSMENT***

# Coole Wind Farm Route Assessment (N4 to Kiltareher)



21 - 08 - 2020



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<b>Customer</b>	<b>Statkraft</b> Building 4200 Cork Airport Business Park Cork Ireland. T12 D23C
<b>Project</b>	Coole WF, Co Westmeath
<b>Survey Date</b>	21/08/2020
<b>Survey Personnel</b>	Edwin Sunderland, ELS John Webb, ELS
<b>Load Dimensions</b>	85x 4.5 x 4.5 x 65t (with 15m overhang)
<b>Route Surveyed</b>	L1927 – L5828 – R395
<b>Route Distance</b>	11.5km
<b>Route Assessment Criteria</b>	This route was surveyed and assessed on 21/08/2020 for transport of Wind Turbine Blades of 77.5m length from the National road network (N4) to the R395 entrance.  Assessment based on moving a convoy of three blades or two or three tower sections.
<b>Route Requirements</b>	The route from the N4 to site will require enabling works for passage of blades and towers.  The proposed works are assessed and proposed on the basis of: <ul style="list-style-type: none"> <li>• Ease of build</li> <li>• Least disruption to safety related street furniture</li> <li>• Safety of other road users during transport phase.</li> <li>• Safety and ease of passage for transport.</li> </ul>

## Site Location



©Google Maps

Figure 1

## Proposed Route from N4

M4 – L1927 – L5828 –  
R395 – R396 - to site

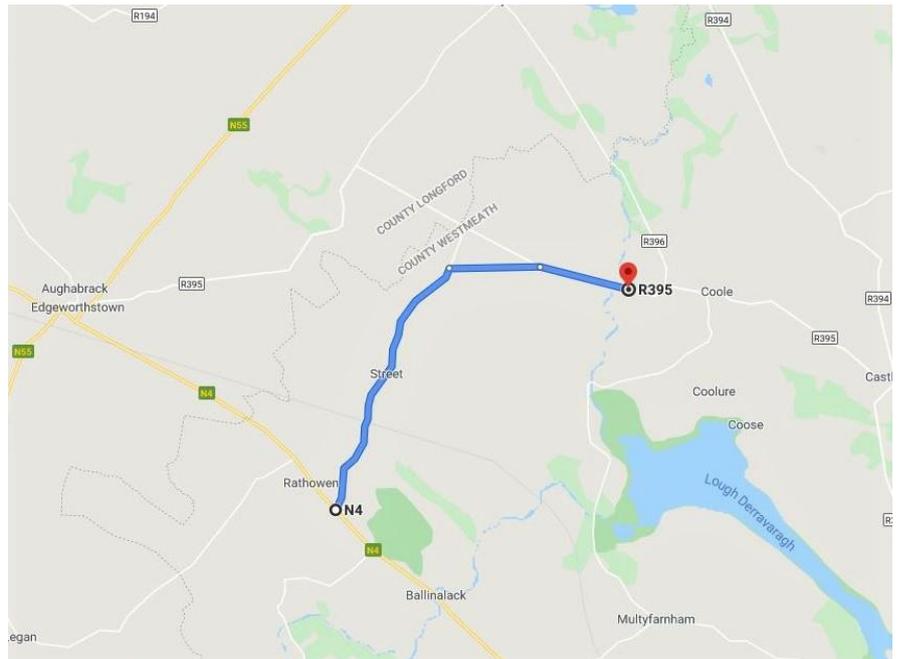


Figure 2

**Area 1.**  
N4 – L1927 Junction.  
(53.649735, -7.510959).

This area will require load bearing works on road verge and rear oversail into third party land.

Area on roadside is 40m x 9m approx.



Figure 3

**Area 1.**  
N4 – L1927 Junction.

Grass verge (red box) should be made load bearing.

Green line denotes oversail area



Figure 4

**Area 1.**

N4 – L1927 Junction.

All signs and bollards should be removed for transport of blades to facilitate mid oversail of load.  
No load bearing required.



Figure 5

**Area 2.**

Culvin Railway Crossing  
53.669308, -7.499583

This area will require works on the right side to allow a clear path across railway without the need to remove railway signs and/or level crossing barriers.

There is a land agreement in place for these works.



Figure 6

**Area 2.**

Area opposite house should be widened by 4m.  
Grass verge should be filled to load bearing from lead into curve.



Figure 7

**Area 3.**  
Burgesland (Right Curve)

53.686285, -7.489249

Hedge should be lowered for mid-oversail



Figure 8

**Area 3.**  
Burgesland (Right Curve)

Hedge should be lowered between poles.

2<sup>nd</sup> pole should be moved 5m off bend, which can be undertaken in consultation with ESB.



Figure 9

**Area 4.**  
Ballykildevin.

(53.700793, -7.473397)

This right curve will require  
mid oversail on the right.

The oversail is over a stone  
wall.



Figure 10

**Area 4.**  
Ballykildevin.



Figure 11

**Area 5.**  
Boherquill

(53.704445, -7.467809)

This area requires load bearing land take for right turn.  
There is a land agreement in place for these works.



Figure 12

**Area 6.**  
Kiltareher  
Junction with R395/L5828  
(53.704848, -7.433631)

An area on the left side of the R395 should be filled to load bearing for truck headroom. (30m x 3m approx).  
All works can be accommodated within the road boundary.



Figure 13

<p>Conclusions</p>	<p>This route if modified and upgraded as per above report would be suitable for movement of wind turbine blades up to 77.5m and tower sections on Tower Clamp Adapters.</p> <p>Swept Path Analysis should be carried out on all areas/ pinch points to establish required dimensions.</p> <p>Overhead cables have not been assessed.</p> <p><b>An early trial run is recommended to verify clearances.</b></p> <p>Special consideration should be given to the Dublin -Sligo rail crossing as it would have a regular passenger service during daytime but also a freight service which may impact on night moves.</p> <p>A corridor of W6.00m x H5.50m free of vegetation and cables is required for entire route from the N4.</p>

Revision Record		
Date	Author	Description
25/08/20	Edwin Sunderland	Report. (V1)
01/12/20	Edwin Sunderland	Revision 02

## Appendix I.

### Port Alternatives

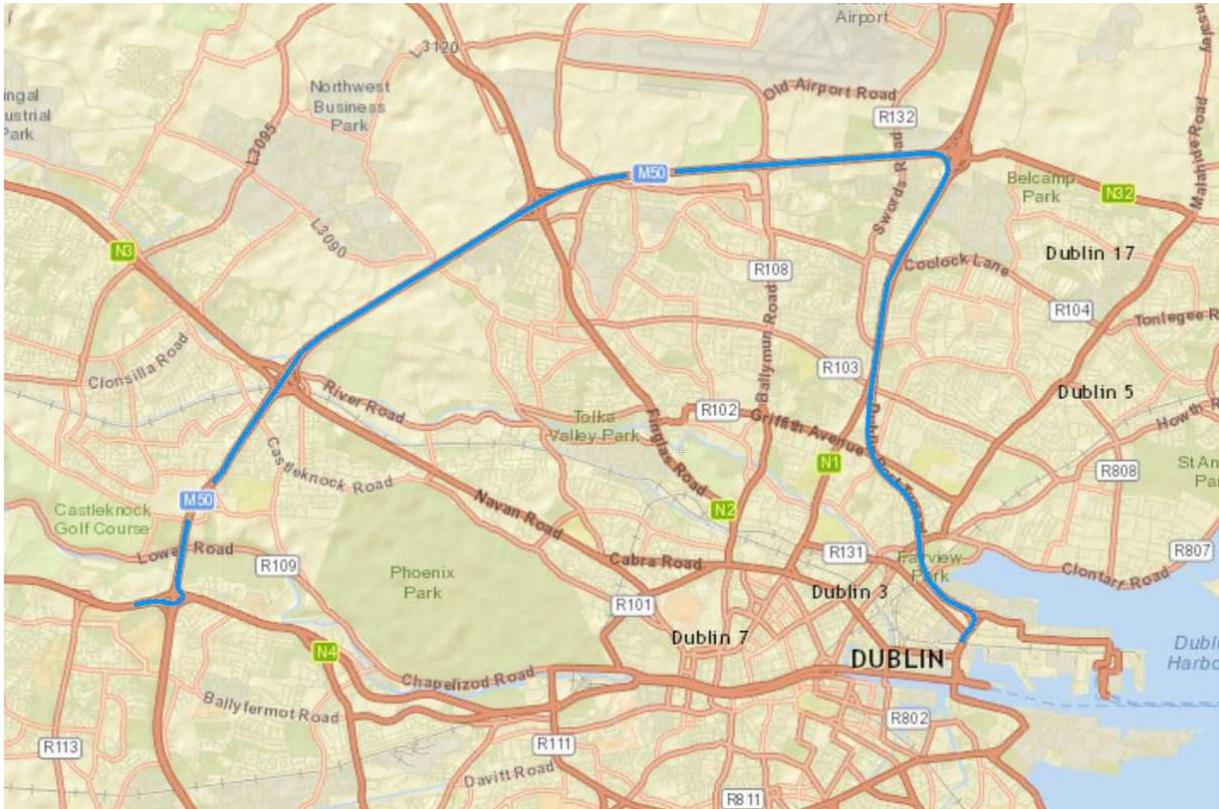
A number of components will enter the country through the ports including the blades, towers sections and nacelles. Three ports have been assessed as potential delivery locations for the various components. A combination of these ports may be used as there is the potential that different components will come through different ports. The access routes from Dublin, Waterford and Ringaskiddy ports to the site have been assessed herein. All routes will use the M6 to access the site.



Overview Map

## 1. Dublin Port

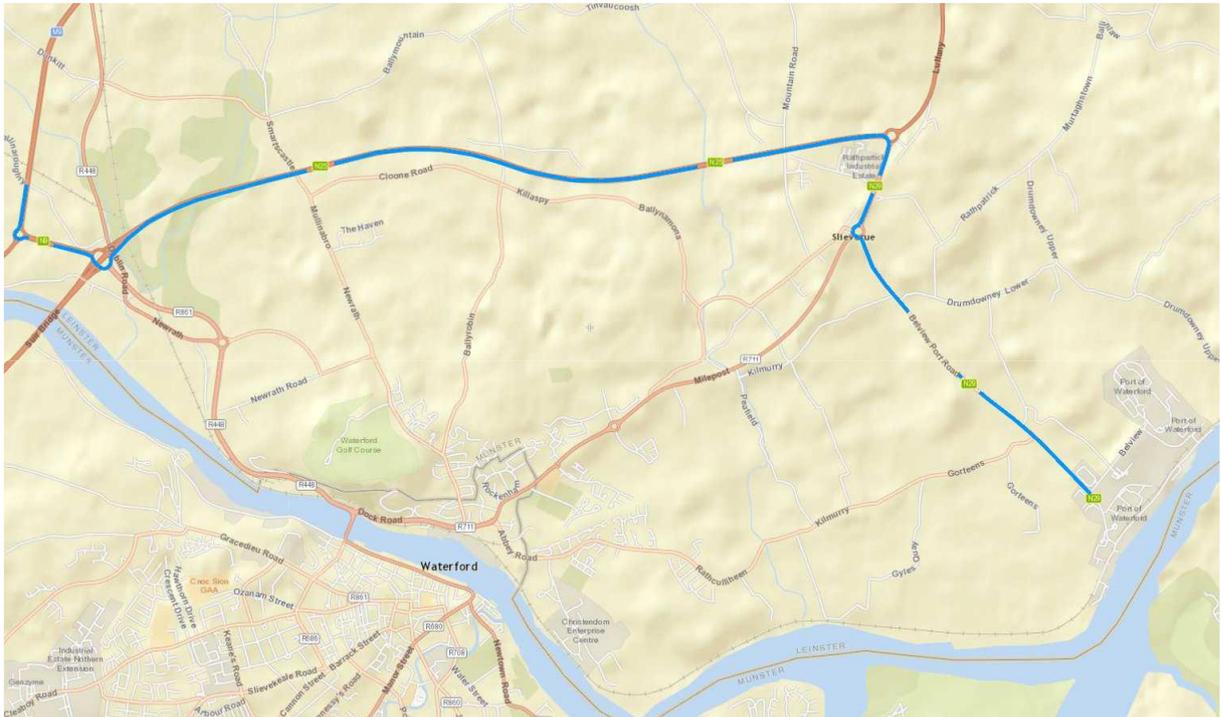
Dublin Port is currently being upgraded. Delivery from the port exit to the site would be through the Port Tunnel and onto the M50 and M4. This route would require alterations to the current Alexandra Road and East Wall Road Junction requiring the relocation of the traffic islands and associated signage and street furniture in order to accommodate the delivery of blades. The turn-in to the Port Tunnel Emergency By-pass Lane (EBL) would also require widening works to accommodate blade delivery.



Dublin Port to N4

## 2. Waterford Port

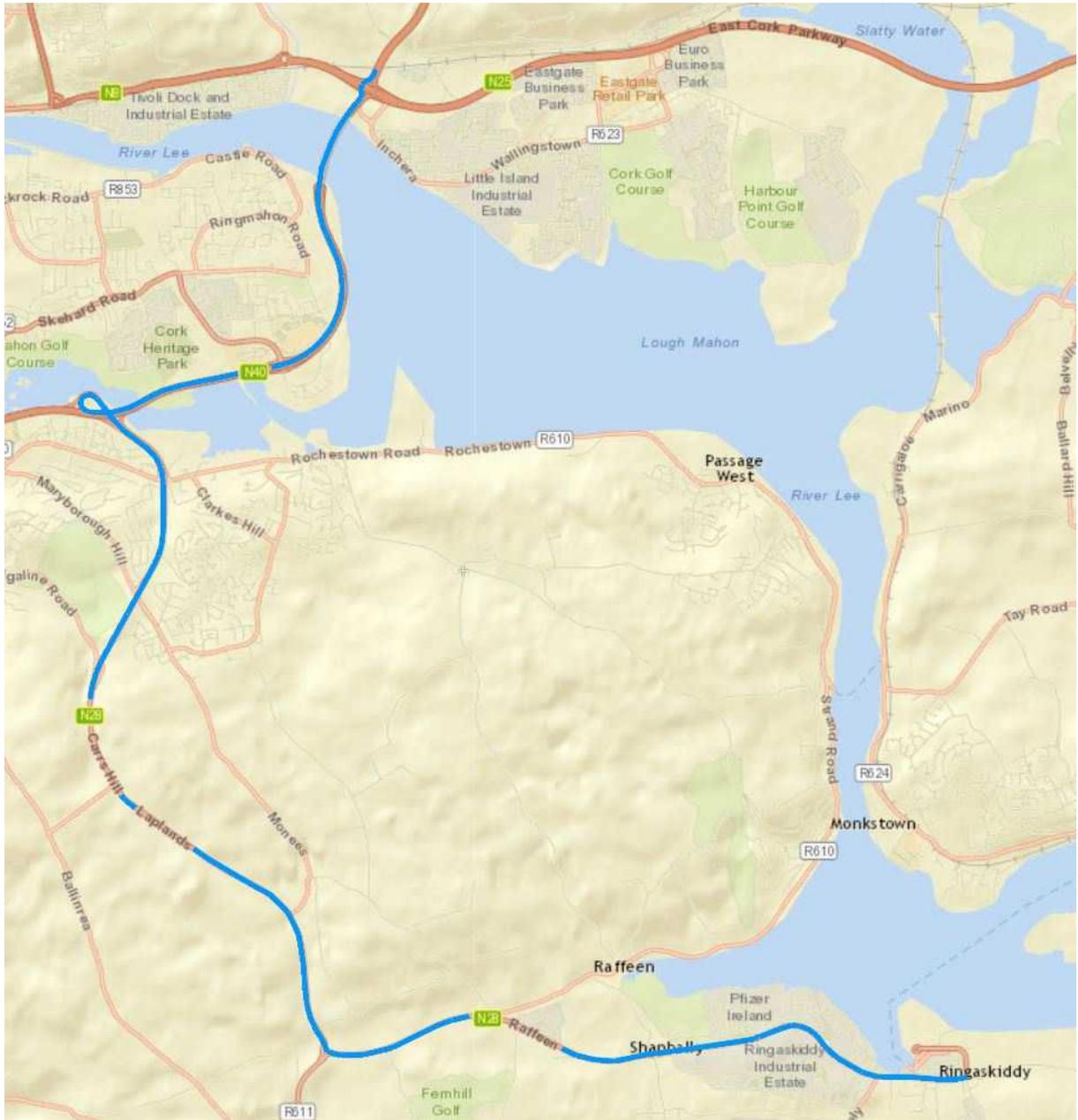
Waterford Port has the capacity to accommodate the delivery and storage of all components. Access to site would be via the N29, N25, M9, M7, N7, M50, M4 and M6. Accommodation works would be required at the four roundabout locations on this route including temporary street furniture relocation, barrier alterations and localised load bearing works.



**Waterford Port (Belview) to M9**

### 3. Ringaskiddy Port

Ringaskiddy Port has the capacity to accommodate the delivery and storage of all components. Access to site would be via the N28, N40 (South Ring Road), The Jack Lynch Tunnel, M8, M7, N7, M50 M4 and M6. Enabling works would be required at the four roundabout locations on this route including temporary street furniture relocation and localised load bearing works.



Ringaskiddy Port to M8

## Apendix II.

### Alternative Delivery Methods

In order to minimise the impact on the existing environment during turbine component deliveries there are several alternative options available.

The above report details the alterations needed for the delivery of the largest turbine component using an extendable rear steer trailer.

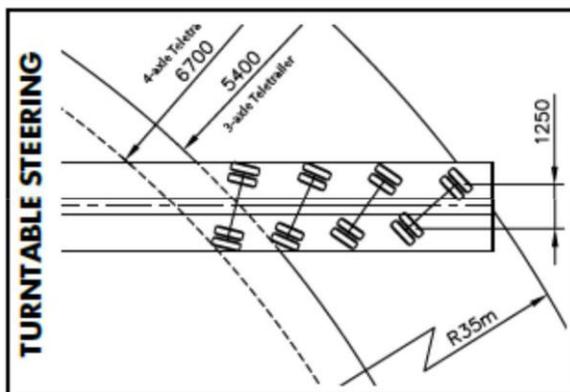
#### 1. Multi Adapt Blade Trailers

See below details of the Nooteboom Mega Wing blade transporter currently in use on wind farm sites.

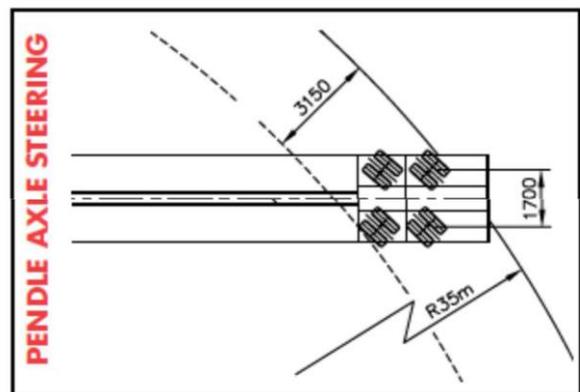
- Retractable Axle Assembly - (helps to reduce the turning area of the trailer)



- Pendle Axle Steering – rear axle steering requires less hardcore area and offers a tighter turning radius



Conventional Rear wheel steer



New Pendle axle steering

- Height Adjustable Trailer – The trailer load can be raised by up to 1.2m above FRL



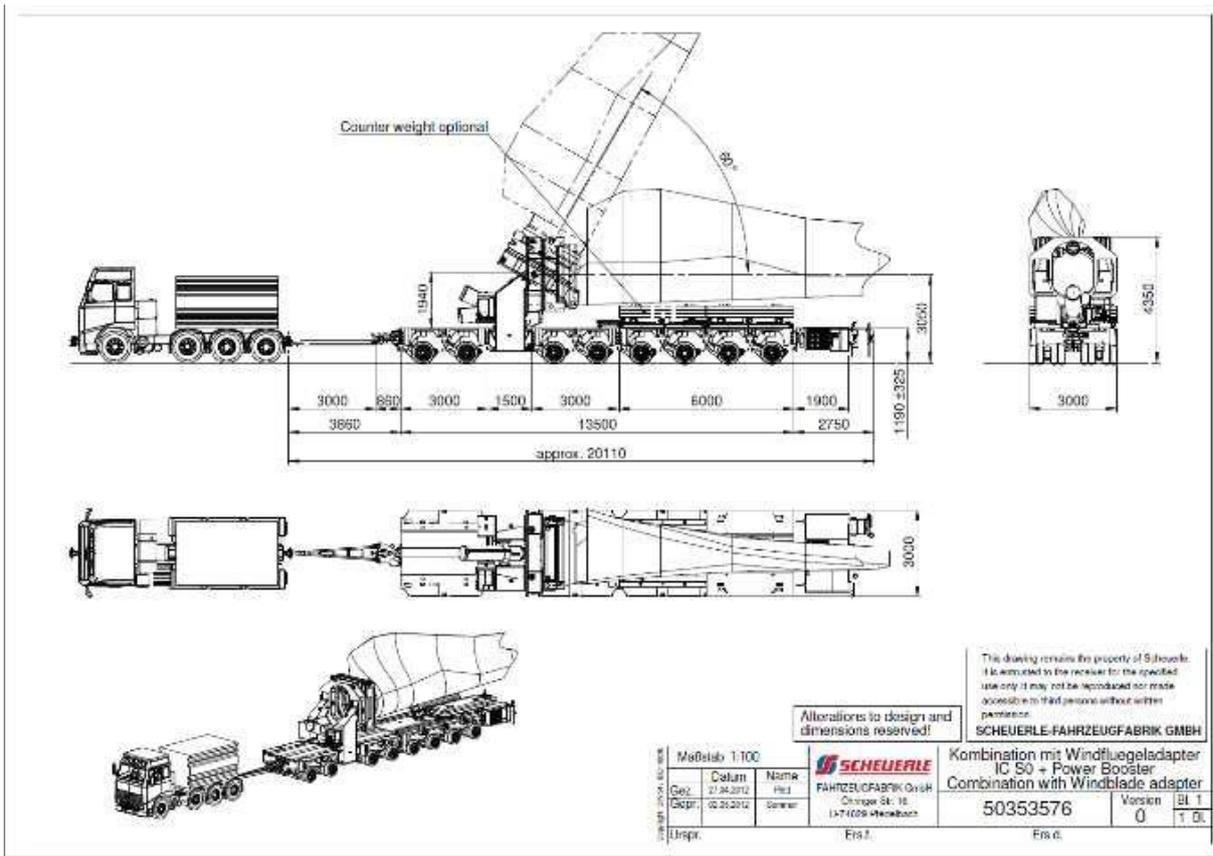
## 2. Blade Adaptor

Depending on the site location, some access routes may not have the physical landscape to allow alterations be carried out. This can happen on narrow access roads where there is no option to cut/fill at bends. Circumstances on delivery routes could change resulting in a node too tight to get around with the blade in the conventional position i.e. horizontal. If this situation arises, a blade adaptor can be used whereby the blade is connected to a specially adapted motorised unit, tilted up to 60deg into the air and transported through the restricted area. By tilting, the blade length is effectively reduced to 30m thus the land area needed for transport is reduced. A detailed topographical survey will be needed to ensure the public road is capable of taking the load in the adapted position. The transport company is to ensure all overhead utilities are locally diverted or temporarily lowered. More details can be seen on the following site; <http://www.spedition-bender.com/blade-transporters.html>

Blade connected to the blade adaptor



See below Blade adaptor considered on another Wind Farm project in Ireland





### Nacelle Transport Options

Option 1 – Multi Axel Semi Loader – 20m long x 5.1m high

PLAN & ELEVATION VIEW

