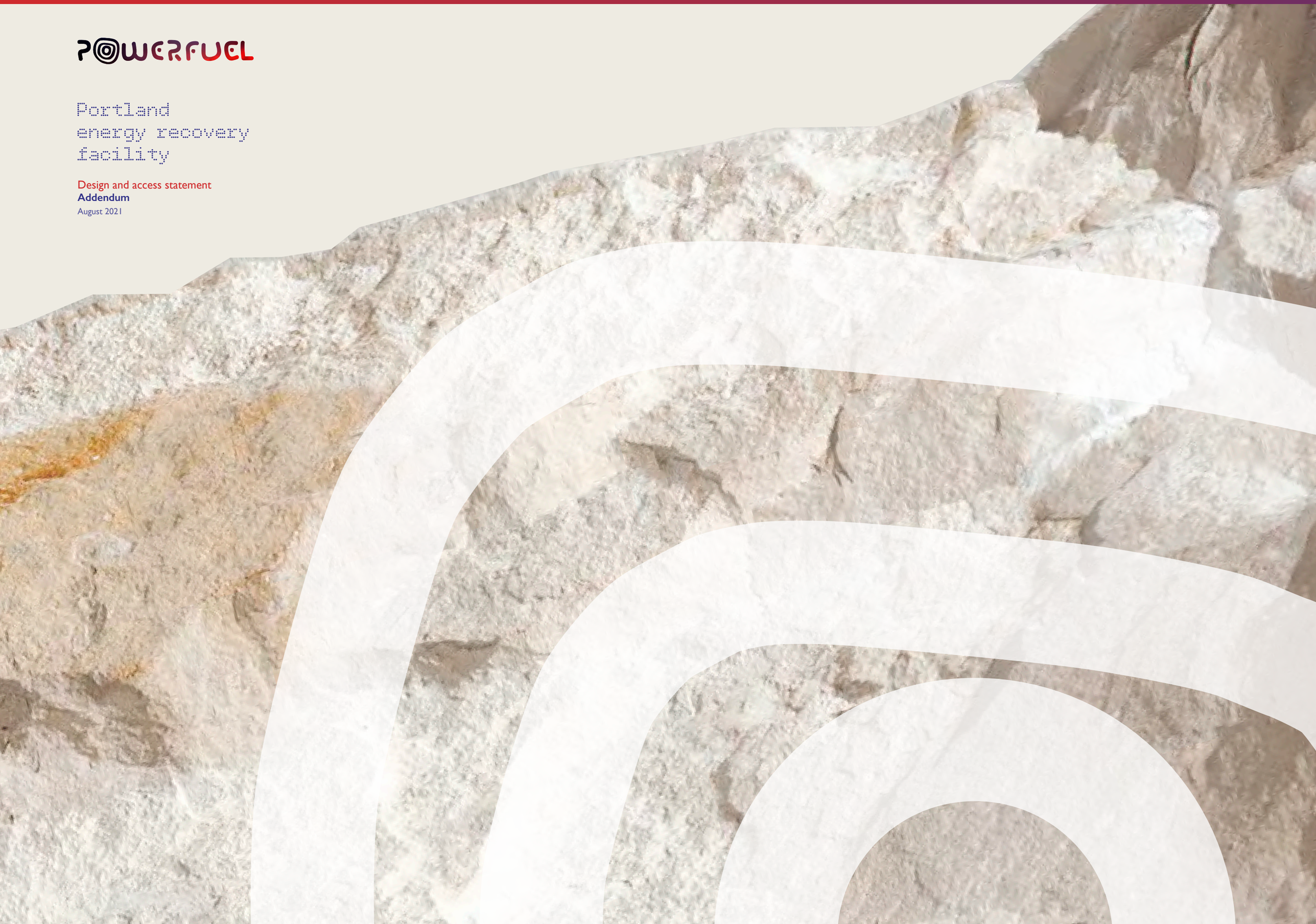
POWERFUEL

# Portland energy recovery facility

Design and access statement
**Addendum**
August 2021



# Contents



Portland ERF
Design and
access statement
**Addendum**

# Introduction

i In September 2020 Powerfuel submitted a planning application to Dorset Council for the development of an Energy Recovery Facility (ERF) at Portland Port, that will use waste as a fuel to produce 15MW of low carbon energy, enough to power around 30,000 homes.

ii During the consultation period for the application several queries have been raised regarding the design.

iii This DAS addendum provides supplementary information to demonstrate how these issues have been considered and resolved through the development of the design. Where the design has not been able to mitigate the full impact of the building, or its function, the document tries to identify the residual impacts of the proposals clearly and accurately so they can be fairly considered as part of the determination of the application.

iv Most of the design queries revolved around a couple of reoccurring themes so these have been used to structure this document into the following chapters:

- **Introduction:**
  The context and setting of the ERF within the wider port
- **Chapter 1:**
  The printed building envelope
- **Chapter 2:**
  The plume – occurrence and visibility
- **Chapter 3:**
  The plume – comparison with the objectors' photomontages
- **Chapter 4:**
  The visual impact of night-time lighting



Portland ERF
Design and
access statement
Addendum

# THE CONTEXT AND SETTING OF THE ERF WITHIN THE WIDER PORT

## THE PORT IN CONTEXT - ISLAND ELEVATION

### KEY EMPLOYMENT SITES

v The East Weare historically was home to a number of military buildings. Although most of these buildings have now been removed a number of the sites have been designated as Key Employment Sites within policy ECON2 Protection of Key Employment Sites from the West Dorset, Weymouth & Portland Local Plan 2015, as indicated on the insert plan to the right.

vi These Key Employment Sites are slowly being implemented through the growth of the port, such as the operational Glencore development on Incline Road and the recently approved Glencore Upper Osprey development, creating crucial job opportunities for the local residents.

vii Whilst the majority of the Key Employment Sites are within the Man made Harbour, as defined by the Dorset Coast: Landscape and Seascape Character Assessment, a number of the sites extend in to the Slumped Cliffs Character Area to the south of the proposed site.

viii As can be seen in the plan extract to the right and diagrams below the proposed ERF site sits within the Man made Harbour.

### PORTLAND PORT DEVELOPMENT

ix Below the 'unwrapped' elevation of the Isle of Portland places the ERF proposals in the context of the port, including the wider Key Employment Sites to the south.

x These clearly demonstrate that the location of the proposed ERF building sits within the main collection of industrial sheds within the Man made Harbour Character Area of the Dorset Coast: Landscape and Seascape Character Assessment.





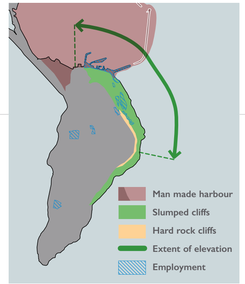
xi Within the Dorset Coast: Landscape and Seascape Character Assessment the Shaping the Future Seascape for the Man Made Harbour section states:

*"Any new development should be planned to improve the character, layout and architectural quality of land based facilities around the Harbour and take account of visual impact on adjacent land areas such as the upper reaches of Portland and other coastal areas."*

xii As demonstrated through the submission of the DAS, and this subsequent addendum, it is considered that the design of the proposed ERF would contribute to improving the character, layout and architectural quality of the port.

xiii Whilst the proposed ERF would be the tallest building within the port, the diagrams below demonstrates that although the height of the individual Glencore sheds are lower their position on elevated ground and selection of materials results in higher ridge lines and a visually more prominent development.

xiv The ridge of the proposed ERF would sit at a similar elevation to the Ocean View Apartments and lower than that of the former naval block 'Prince Andrew House' which are both more visually prominent due to the use of concrete and light coloured renders.





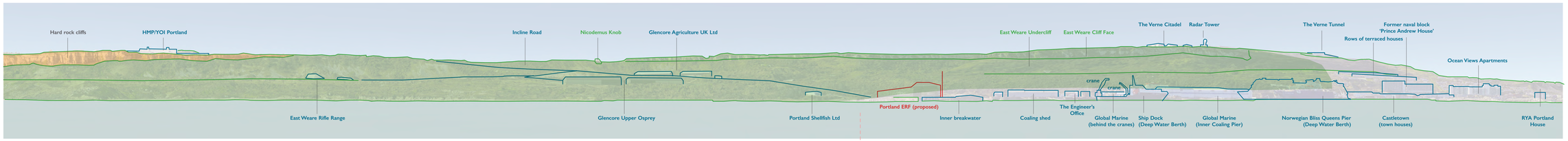



Fig 1.1 'Unwrapped' Isle of Portland elevation showing the built context of proposals

# 1 The printed building envelope



Portland ERF
Design and
access statement
Addendum

THE RECESSIVE GREEN WALL

# 1.1 INTRODUCTION

## i INTRODUCTION

**1.1.1** This chapter is intended to provide supplementary information on the areas of 'green wall' of the proposed Energy Recovery Facility.

**1.1.2** In Sections 4.5 to 4.9 the original DAS included details of a range of options that had been considered during the development of the final design.

**1.1.3** In the final proposals either a printed façade replicating a photograph of the existing undercliff vegetation, or a camouflage pattern with similar tones, was proposed.

**1.1.4** Whilst there are a couple of ways of achieving the printed façade, the most likely method of achieving this is a PVC mesh which is printed, sealed and then stretched across a sub frame fixed back to the main façade/ building structure.

**1.1.5** Through the initial consultation period a number of reservations have been raised regarding this design solution, which have been grouped in to the broad themes identified below:

- The PVC mesh will not make the building invisible from all angles
- Speculation that the full mass and scale of the building will become prominent without the mesh
- Durability of the fabric façade and printing, particularly in the windy coastal environment, for the full life expectancy of the building
- Image selection
- Effectiveness of the selected image in different seasons and lighting conditions

**1.1.6** These themes have therefore been used to structure this chapter and to provide additional details, information and images to assure the determining local authority of the appropriateness of this solution.

## ii 'RECESSIVE' NOT 'INVISIBLE'

**1.2.1** It should be noted that the intention of the elevational design has never been to make the building invisible.

**1.2.2** Instead the proposals respond to the landscape and AONB officer's request during the pre-application stages of the design for a building that is recessive and picks up on the geological and cultural context of the Isle of Portland.

**1.2.3** The final design solution for the 'green wall' areas of the building therefore looks to provide sufficient tonal and colour variation to ensure the form of the ERF building is not immediately obvious, particularly from the more sensitive viewpoints in the WHS and AONB to the east.

**1.2.4** It is acknowledged that, given the scale of the proposals, on close inspections the building will be visible, particularly by those trying to locate it.

**1.2.5** It is also acknowledged that from viewpoints along the northern edge of Portland Harbour and along Chesil Beach Road the building will start to be come visible against the sky from these angles.

**1.2.6** In part, this is reflected in the change of materials from the 'green wall' façade to the grey, profiled metal cladding which will ensure the building is read as part of the collection of Portland Port buildings.

**1.2.7** This change in material visible from these viewpoints also ensures a clear distinction between the built environment and the natural landscape.

**1.2.8** Whilst the building will stand proud from certain angles, as the Portland Marina dry stack does when viewed from Nothe Fort, the distinction between the built and natural environment will avoid the elongation of the distinctive wedge shape of Portland landscape.

Fig 1.2 View from Ferrybridge Inn



Portland ERF
Design and
access statement
Addendum


Fig 1.3 View from Nothe Gardens
Photograph taken on Monday 25th January 2021 at 9:47am.

THE RECESSIVE GREEN WALL

# 1.0 THE BUILDING ENVELOPE

## iii SPECIFICATION OF THE WATERTIGHT ENVELOPE - A BASELINE COLOUR

**1.3.1** To create a watertight envelope the building will be enclosed using a sheet metal cladding which will be fixed back with cladding rails to the primary steel fame.

**1.3.2** It is proposed that this cladding will be specified in a dark green to create a suitable backdrop colour. The proposed PVC mesh would then be installed on a sub frame that is spaced slightly off of the surface of the building's façade.

**1.3.3** The dark green cladding would not only provide a suitably dark back drop to the perforated mesh but should the mesh be temporarily removed, for maintenance or any other unforeseen reason, it would still maintain a recessive appearance as indicated by the adjacent images.

**1.3.4** This coloured cladding approach has recently been approved on the Upper Osprey Glencore application just to the south of the site. The inclusion of the PVC mesh is to provide additional tonal diversity and to break up the mass of the proposals, as described in more detail in Sections 4.5 & 4.8 of the original DAS.

**Fig 1.4 COVERWORLD**
Plastisol - Olive Green, or similar approved

**Fig 1.5** VP11: Proposed view from Osmington White Horse
**Photograph taken on Thursday 14th May 2020 at 7:22am.**



Portland ERF
Design and
access statement
Addendum

**Fig 1.6 VP3: Proposed view from Inner Breakwater**
**Photograph taken on Thursday 14th May 2020 at 8:20am.**

THE RECESSIVE GREEN WALL

# 1.4 A PRINTED PVC MESH

## THE FABRIC

**1.4.1** The PVC mesh is likely to be a Serge Ferrari 'Frontside' range, or similar approved, textile façade.

**1.4.2** Used extensively in the design of tensile fabric structure and façades across Europe, the composite fabric is well proven and is provided with a 10-year unlimited warranty.

**1.4.3** The innovative technology has the following properties:

- A high-tenacity polyester micro-yarn base cloth ensuring no deformation during installation or usage
- A coating with fabrics under bi-axial constant tension in both warp and weft direction prevents elongation and ensures tear resistance.
- A enhanced coating at the top of the yarns, along with the dirt resistant surface treatment, provides long-term strength and aesthetic quality.

## FIXING

**1.4.4** The fabric will be attached to the building using a tensioned system with aluminium profiles, similar to those indicated on the adjacent page.

**1.4.5** The PVC mesh sub-frame will be securely fixed back through the building's façade to the primary frame.

**1.4.6** The spacing of the aluminium profiles will be limited to spans of around 3m. This is well within the system's capability and will ensure the fabric façade stays taut across the lifespan of the system with the strong winds that are likely to be experienced in this exposed coastal environment.

## PRINTING

**1.4.7** Large format printers print directly onto the rolls of fabric allowing sharp, high quality (360dpi) images in an almost unlimited range of colours.

**1.4.8** A specially developed top coating is then applied to enhance the material's durability, protect it from environmental and chemical influences, repel dirt and intensify colours and image depth.

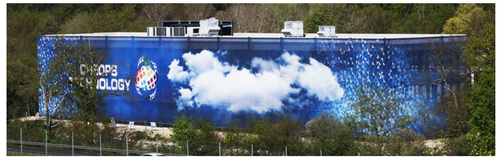
**1.4.9** The top coating has been developed to provide UV-resistance which has been tested to demonstrate negligible changes in colour consistency over the equivalent of a 10-year warranty period.

## DURABILITY

**1.4.10** To ensure that the PVC mesh camouflage remains effective throughout the lifespan of the building, Powerfuel is committed to reviewing the effectiveness and structural integrity at the end of the 10-year warranty period, and each year afterwards.

**1.4.11** Powerfuel, by way of planning condition, commits to continuously replacing the wrap after a maximum of 15-years for the life of the building.

**1.4.12** Given the nature of the camouflage, in providing tonal variation, some very minor reduction in colour intensity will not affect the visual performance of the fabric wrap.



https://printable.eu/

**Fig 1.7 Printed PVC mesh precedent image - Cheops office building**

Accelerated Weathering Test
(COT Q102) ISO 105-A02 / ISO 11507
Aging test April 2015

LAB15-0198-RAP

Printable asked the Dutch inspection agency, COT*, to test the colour consistency of its **Solidskin side curtains** for trucks and the **Printable Industrial Canvas facade fabric** against international standards. The tests were carried out from September 2014 until March 2015.

The products were tested using an Accelerated Weathering Tester (COT Q102) on a 5-point scale that forms part of the ISO 105-A02 standard. These tests are part of the ISO 11507 aging test and are easy to apply to the actual use of the product. Instead of simulating daylight using a Xenon light-source, a UV light-source was used (Type II - UVA 340 nm). All tests were carried out with and without the influence of water condensation.

The duration of the tests was set at 5000 hours, which equals the average number of hours of sunshine in Western European countries over a period of 10 years (500 hours in laboratory correspond to one year outside exposition). All tests were carried out on coated printed 100% colour samples used in the Printable Industrial Canvas printing process and in Solidskin products. The results of these tests are given below (LAB15-0198-RAP) together with the visual results against the treated, unexposed reference set.

| Color | Exposure 0 hours | Exposure 2500 hours | Exposure 5000 hours |
|---|---|---|---|
| Blue (cyan) | Class 5 | Class 5 | Class 4-3 |
| Red (magenta) | Class 5 | Class 5 | Class 5-4 |
| Yellow | Class 5 | Class 5 | Class 5-4 |
| Black (key) | Class 5 | Class 5 | Class 5 |

Explanation: Class 5 = No discolouring - Class 1 = Very severe discolouring

No exposure (Class 5)

5000 hours exposure

*The C.O.T is an established Dutch testing agency with over 70 years' experience in carrying out independent inspections and investigations, and advising industry on national and international standards: **cot-nl.com.**

**Fig 1.8 COT Q102 Accelerated weathering test certificate**





## Charleroi-Danse
*(Shot 4 years later)*

Charleroi-Danse-©-Tim-Fisher

Charleroi-Danse-©-Tim-Fisher

**Fig 1.9 Printed PVC mesh precedent image - Charleroi-Danse**

THE RECESSIVE GREEN WALL

# 1.5 IMAGE SELECTION - MILITARY CAMOUFLAGE

## MILITARY CAMOUFLAGE

**1.5.1** The most obvious way to make the green walled areas of the building recessive would be to use a military camouflage print.

**1.5.2** Military and paramilitary camouflage patterns have been in use since the beginning of the 20th century and work on the principle of coloured patterns that help blend troops, vehicles and even buildings into their surrounding environment.

**1.5.3** Whilst there are hundreds of different patterns for different environments, one of the most successful camouflage techniques is Disruptive Pattern Material (DPM) which uses a palette of colours applied in patches and broad brush stokes.

**1.5.4** The small selection of different military camouflages to the right have been selected for their tonal similarity to the East Weare undercliff.

**1.5.5** Whilst all successfully provide additional tonal variety to the façade, the DPM that visually is most successful in making the building recess into the vegetation of the undercliff is the Spekter (summer) with its blacks, light green and dark green speckled pattern.

## SITE CONTEXTUALISATION

**1.5.6** Whilst Portland Port was historically a military port, and on occasions is still used in military activities, the port is now predominantly a civilian facility.

**1.5.7** Although the military camouflage successfully diminishes the scale of the building, the following pages explore an alternative approach that might be considered more complementary to the civilian activities of the port today.

### DPM S95


### MULTICAM TROPICS


### SPEKTER (SUMMER)


**Fig 1.10** Military camouflage options



Portland ERF
Design and
access statement
Addendum


**Fig 1.11** P3: Proposed view from Inner Breakwater
Photograph taken on Thursday 14th May 2020 at 8:20am.

THE RECESSIVE GREEN WALL

# 1.6 IMAGE SELECTION - TOURISM BILLBOARD

*Portland - The Gateway to the Jurassic Coast*

**PORTLAND BILL** | **CORFE CASTLE** | **LYME REGIS** | **OLD HARRY ROCKS**

Fig 1.12 Dorset attractions abstract camouflage images





## A BILLBOARD FOR THE JURASSIC COAST

**1.6.1** Approaching the camouflage from a different angle, this option takes photographs of well known tourist destinations within close proximity to the Jurassic Coast.

**1.6.2** The images are simplified and converted into five tones found in the scrub vegetation of the East Weare undercliff.

**1.6.3** Enlarged versions would then be printed on to the PVC mesh and hung across the 'green wall' areas of the elevation.

**1.6.4** At close range the abstract images would act as a billboard for the Jurassic Coast, in particular promoting local attractions to tourists arriving at the port by cruise ship.

**1.6.5** In the longer distance views from within the WHS and AONB to the east this would still achieve a successful camouflage effect, helping the building to recess into the undercliff behind.

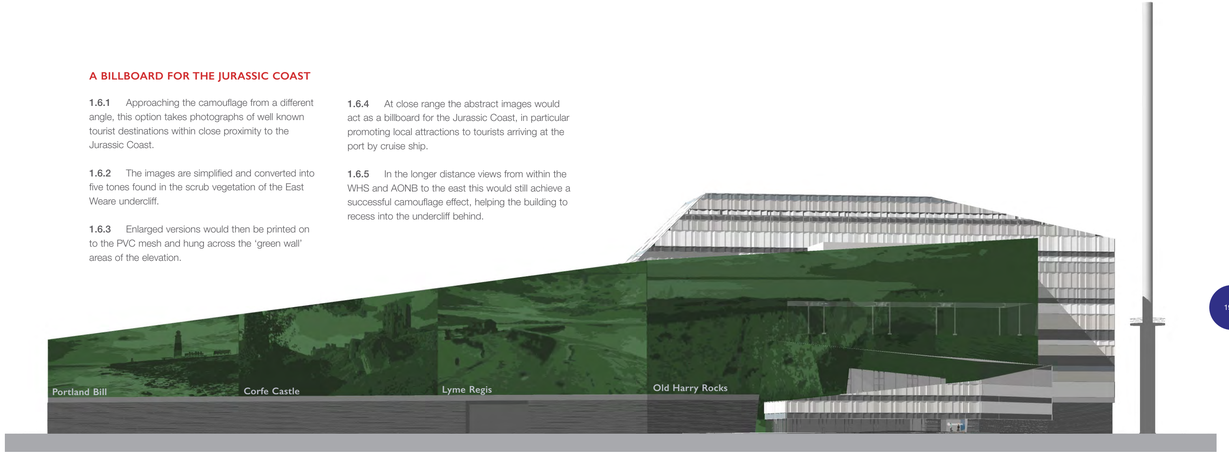



Fig 1.13 North east elevation with Jurassic Coast billboard camouflage


**BALACLAVA BAY**


**PORTLAND INNER HARBOUR**
*(East Shipping Channel)*


**DOCKED CRUISE SHIP**
*(Deep Water Berth)*


Fig 1.14 Jurassic Coast billboard camouflage from various viewpoints within the harbour

THE RECESSIVE GREEN WALL

# IMAGE SELECTION - TOURISM BILLBOARD

*The Billboard - Different Distance, Different Effect*

## BILLBOARD CAMOUFLAGE - VIEW FROM OSMINGTON WHITE HORSE

### EFFECTIVENESS OF THE PVC MESH

**1.7.1** The billboard camouflage is intended to work at two different levels:

- **Close range** - as a billboard displaying local attractions and contributing to *'Portland, the gateway to the Jurassic Coast'* to tourists arriving by cruise ship or leisure users of the harbour
- **Long distance** - as a camouflage that helps make the building recessive from long distance views in the AONB and WHS to the east.

**1.7.2** As the image on this page demonstrates less tonal variety is visible from these longer distance views.

**1.7.3** Whilst this is partly due to the limitations of the human eye, atmospheric perspective reduces clarity, contrast and colour as all the detail visible at close range surrenders to simple forms and block colours at this distance.

**1.7.4** The careful selection of the five green tones from the scrub vegetation of the East Weare undercliff ensures sufficient tonal variation breaks up the mass of the building and allows the bulk of the building to recede into the backdrop from views in the harbour and wider bay.

**1.7.5** However, on closer inspection from the nearer views, the detail of the local landmarks can be identified. This is indicated by the image on the adjacent page.

Fig 1.15 VP11: Proposed view from Osmington White Horse
Photograph taken on Thursday 14th May 2020 at 7:22am.



## BILLBOARD CAMOUFLAGE - VIEW FROM INNER BREAKWATER



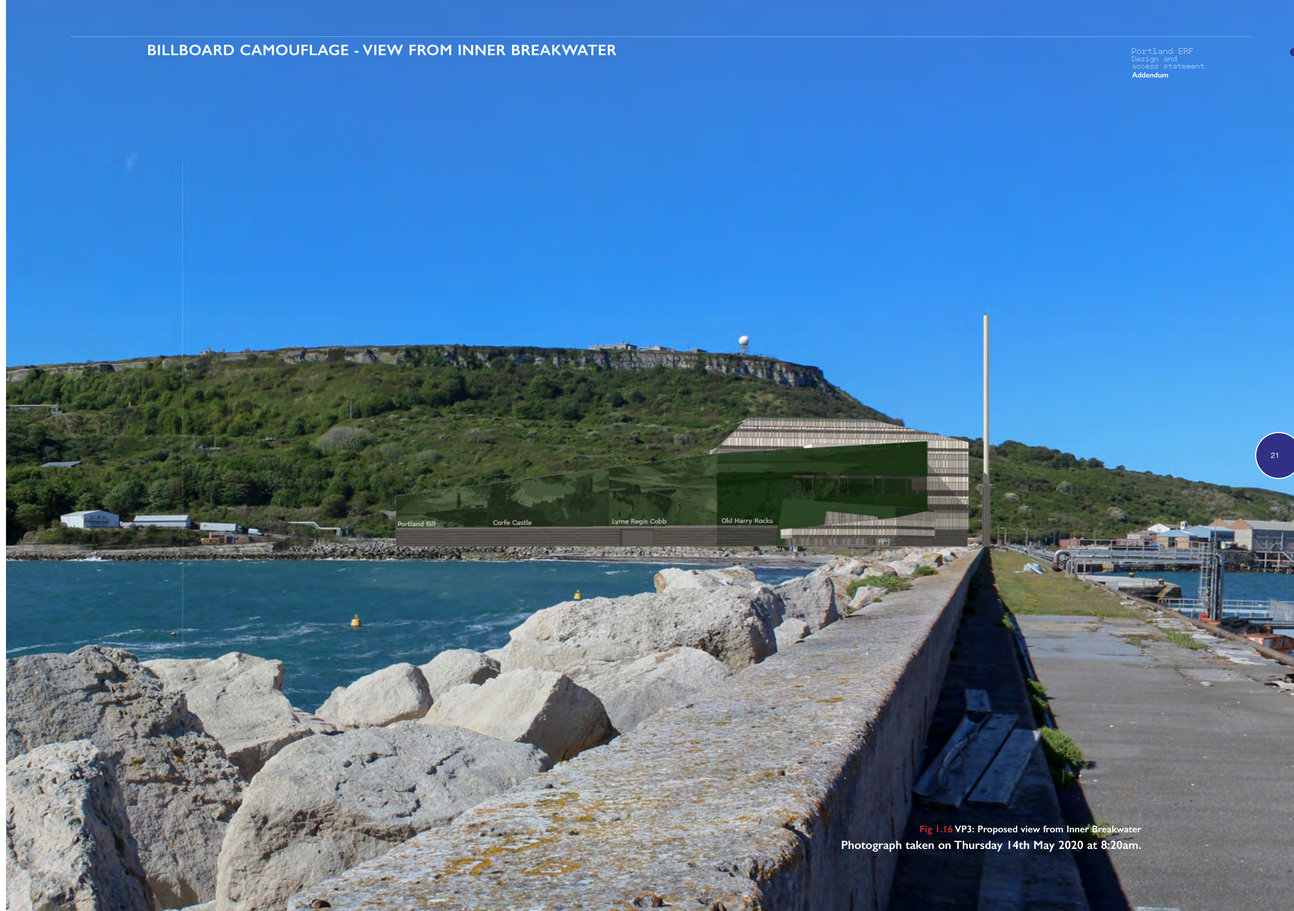



Fig 1.16 VP3: Proposed view from Inner Breakwater
Photograph taken on Thursday 14th May 2020 at 8:20am.

THE RECESSIVE GREEN WALL

# 1.8 SEASONAL VARIATION - SHORT RANGE (FROM THE HARBOUR)

## VIEW FROM INNER BREAKWATER - SUMMER

### SEASONAL EFFECTIVENESS

**1.8.1** Due to atmospheric perspective the seasonal variation in the tones of the East Weare undercliff vegetation is going to be almost indistinguishable from the long range views from the AONB and WHS in the east. The study on this spread therefore focuses on the closer viewpoints that represent what will be visible by tourists arriving by cruise ship or local leisure users of the harbour.

**1.8.2** The vegetation on the undercliff supports limestone grassland and scrub communities including bryophytes. The matrix of scrub includes buddleja, bramble, ivy and clematis.

**1.8.3** As the photographs to the right demonstrate, the majority of these species will continue to give good coverage of the undercliff during the winter months but will fade in colour from green in summer to more autumnal colours and tones.

**1.8.4** This has been considered in the selection of the five green tones used to create the billboard images, ensuring the design successfully contributes to the recessive appearance of the building throughout the year.

### SELECTION OF TONES FOR ALL YEAR ROUND PERFORMANCE

**1.8.5** When selecting the green tones a slight bias has been placed on the colours found in the summer months.

**1.8.6** This approach has been adopted as the higher, brighter sun creates more vibrant variations in the colours of the undercliff vegetation in these summer months.

**1.8.7** In winter, the days are shorter and the sun rises later in the morning. The site's position on the north eastern corner of the peninsula results in the vegetation, and the relevant elevations of the building, sitting in shadow for longer periods of the day, resulting in darker tones with less distinguishable variations in colour.

**1.8.8** This principle, and how it influences the perceived success of the camouflage, can be seen in the sample photomontages to the right which reflect the way the light changes across both the undercliff and building through out the day in January.

**1.8.9** The selection of more summer tones is also considered appropriate as the harbour is less likely to be used for leisure activities, and the arrival of fewer cruise ship tourists, during the winter months.

**1.8.10** Therefore, although there is likely to be increased variation between the vegetation of the undercliff and building façade in the winter months, there will be fewer daylight hours, increased shadowing and considerably fewer observers from these close range views where this will be noticeable.

**1.8.11** The slight variation in colour and tone during the winter months would still be indistinguishable in the longer distance views due to the atmospheric perspective and limitation of the human eye, as demonstrated by the images on the following pages.

Fig 1.17 VP3: Proposed view from Inner Breakwater
**Photograph taken on Thursday 14th May 2020 at 8:20am.**





Fig 1.18 VP3: Proposed view from Inner Breakwater
**Photograph taken on Monday 25th January 2021 at 12:50pm.**

## VIEW FROM INNER BREAKWATER - WINTER

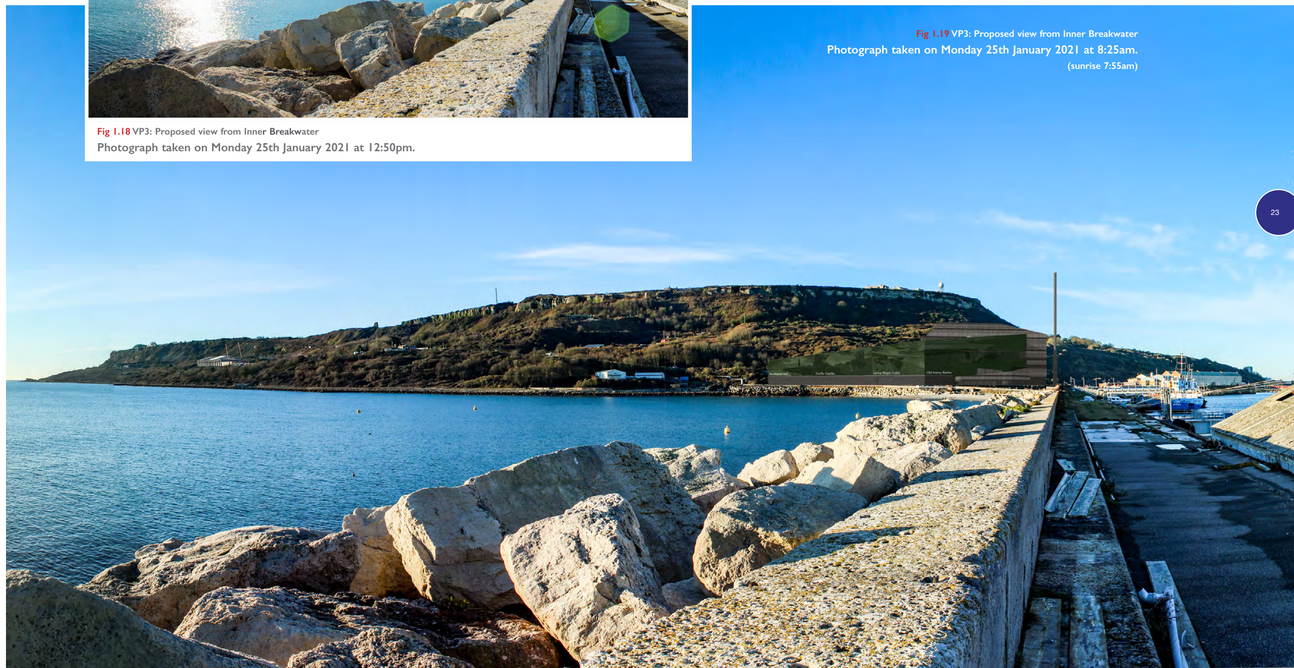


Fig 1.19 VP3: Proposed view from Inner Breakwater
**Photograph taken on Monday 25th January 2021 at 8:25am.**
**(sunrise 7:55am)**

## VIEW FROM THE OSMINGTON WHITE HORSE - SUMMER

Fig 1.20 VP11: Proposed view from Osmington White Horse
Photograph taken on Thursday 14th May 2020 at 7:22am.





THE RECESSIVE GREEN WALL

# 1.0 SEASONAL VARIATION - LONG RANGE (OSMINGTON WHITE HORSE)

## VIEW FROM THE OSMINGTON WHITE HORSE - WINTER

Fig 1.21 VP11: Proposed view from Osmington White Horse
Photograph taken on Thursday 19th November 2020 at 12:35pm.

# The plume - occurrence and visibility




Portland ERF
Design and
access statement
Addendum

# 2.1 PLUME VISIBILITY MODELLING RESULTS

## INTRODUCTION

**2.1.1** This chapter is an addendum to the original Design and Access Statement and is intended to provide supplementary information on the plume and its visual impact in association with the proposed Energy Recovery Facility at Portland Port.

**2.1.2** When waste is combusted, the flue gases released from the stack contain water vapour. This partly comes from the moisture in the waste and partly comes from hydrogen in waste which becomes water when combusted.

**2.1.3** The flue gases are released at around 140°C, which means that the water is gaseous. As the flue gases mix with the air, the water vapour cools and condenses. It also disperses in the atmosphere. Under some circumstances, the liquid water content of the exhaust gases can be high enough for the plume to become visible. This normally happens on cold, still mornings. If it is cold, the flue gases cool more quickly and if there is little wind, the flue gases disperse more slowly.

**2.1.4** The ADMS dispersion model, which is an industry-leading model used across the country and approved by the Environment Agency, includes a function to model when the plume is visible, based on the water content of the plume and the meteorological conditions. We have used this model and five years of hourly weather data to assess how frequently the plume would be visible.

## RESULTS

**2.1.5** The results of the modelling are presented in the table overleaf. For each year of weather data, we have shown the following figures.

1. The number of daylight hours which have been modelled. (It is not relevant whether the plume is visible at night.)
2. The number of daylight hours when the plume is predicted to be visible.
3. The number of daylight hours when the plume is predicted to be visible when the cloud cover was not high (7 or 8 oktas[1]), as the plume would be obscured by cloud on cloudy days.
4. The percentage of daylight hours when the plume is predicted to be visible on non-cloudy days.
5. The number of daylight hours when the length of the visible plume on non-cloudy days was 0-20m, 20-50m, 50-100m or 100-200m.
6. The length of the longest visible plume.

**2.1.6** 2018 was an unusual year, in weather terms. This is because there were two periods when the temperature remained at or below 0°C for extended daylight periods – the Beast from the East and Storm Emma from 26 February to 2 March and a follow-up on 17 to 19 March. In contrast, the recorded temperature was above 0°C for the whole of 2014-2017. Given that the visibility of the plume would probably not be a concern during such periods of unusual weather conditions, we have also presented figures for 2018 excluding these periods.

Source: Powerful Portland Ltd Portland ERF Plume Visibility Modelling Results. S2953-0200-0002SMO by Fichtner Consulting Engineers Ltd (18th November 2020)

[1]An okta is a unit of measurement used to describe the amount of cloud cover at any given location such as a weather station.



Portland ERF
Design and
access statement
Addendum

*Table 1: Plume Visibility Results*

| Year | 2014 | 2015 | 2016 | 2017 | 2018 | Total | 2018 (adjusted) | Total (adjusted) | Average (adjusted) |
|---|---|---|---|---|---|---|---|---|---|
| Daylight hours modelled | 4,371 | 4,435 | 4,409 | 4,358 | 4,312 | 21,885 | 4,230 | 21,803 | 4,361 |
| Daylight hours with visible plume | 18 | 29 | 28 | 34 | 96 | 205 | 60 | 169 | 33.8 |
| Non-Cloudy daylight hours with visible plume | 11 | 17 | 22 | 19 | 52 | 121 | 42 | 111 | 22.2 |
| Percentage of daylight hours with visible plume, non-cloudy | 0.25% | 0.38% | 0.50% | 0.44% | 1.21% | 0.55% | 0.99% | 0.51% | 0.51% |
| Non-cloudy daylight hours with visible plume length: | | | | | | | | | |
| 0-20m | 2 | 10 | 8 | 4 | 8 | 32 | 7 | 31 | 6.2 |
| 20-50m | 1 | 4 | 9 | 9 | 14 | 37 | 10 | 33 | 6.6 |
| 50-100m | 5 | 2 | 1 | 4 | 20 | 32 | 17 | 29 | 5.8 |
| 100-200m | 3 | 1 | 4 | 2 | 10 | 20 | 8 | 18 | 3.6 |
| Maximum length of visible plume, daylight hours, non-cloudy | 123.38 | 124.49 | 187.89 | 171.90 | 168.06 | 187.89 | 156.88 | 187.89 | 187.89 |

Over the five years of weather data considered, the plume was expected to be visible for only 205 daylight hours. However, 84 of those hours had high levels of cloud cover and 10 further hours took place during the unusual weather conditions in 2018, so only 111 hours, or 0.51%, would have been genuinely visible.

The distribution of those visible plumes through the year is illustrated in Figures 1 to 5 overleaf. In Figure 5, for 2018, the visible plumes during the unusual weather conditions are shown in red. It can be seen that virtually all of the visible plumes occurred in January to April, with a few in December but none in the summer months.

Figure 6 shows the number of visible plumes predicted in each direction from the stack over the five years considered.

**Fig 2.1** Extract from page 2 Powerful Portland Ltd Portland ERF Plume Visibility Modelling Results. S2953-0200-0002SMO by Fichtner Consulting Engineers Ltd (18th November 2020)

Powerful Portland Ltd

FICHTNER

*Figure 1: 2014 Visible Plumes*


**Fig 2.2** Extract from page 3 Powerful Portland Ltd Portland ERF Plume Visibility Modelling Results. S2953-0200-0002SMO by Fichtner Consulting Engineers Ltd (18th November 2020)

*Figure 2: 2015 visible plumes*

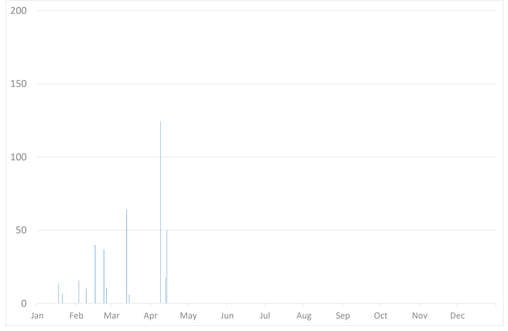



**Fig 2.3** Extract from page 3 Powerful Portland Ltd Portland ERF Plume Visibility Modelling Results. S2953-0200-0002SMO by Fichtner Consulting Engineers Ltd (18th November 2020)





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*Figure 3: 2016 Visible Plumes*

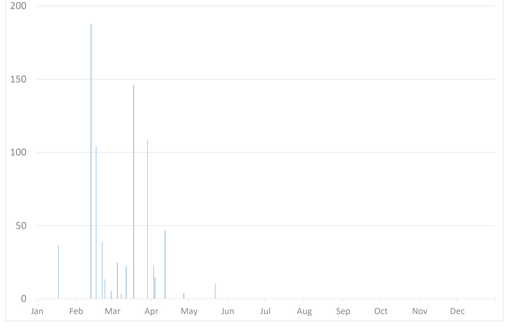


**Fig 2.4** Extract from page 4 Powerful Portland Ltd Portland ERF Plume Visibility Modelling Results. S2953-0200-0002SMO by Fichtner Consulting Engineers Ltd (18th November 2020)

*Figure 4: 2017 Visible Plumes*

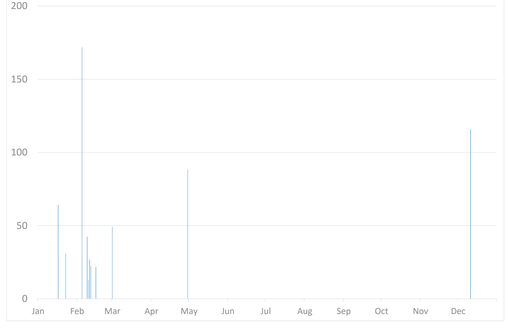


**Fig 2.5** Extract from page 4 Powerful Portland Ltd Portland ERF Plume Visibility Modelling Results. S2953-0200-0002SMO by Fichtner Consulting Engineers Ltd (18th November 2020)

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*Figure 5: 2018 Visible Plumes*

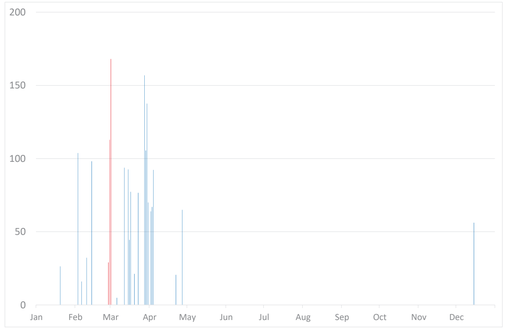



**Fig 2.6** Extract from page 5 Powerful Portland Ltd Portland ERF Plume Visibility Modelling Results. S2953-0200-0002SMO by Fichtner Consulting Engineers Ltd (18th November 2020)

*Figure 6: Direction of visible plumes*

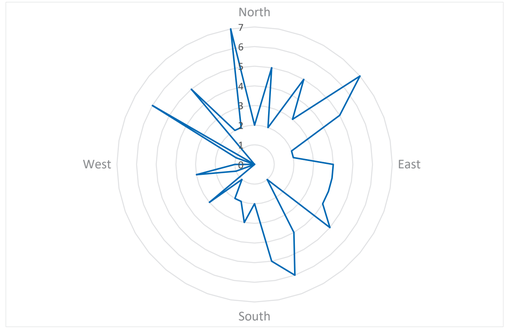



**Fig 2.7** Extract from page 5 Powerful Portland Ltd Portland ERF Plume Visibility Modelling Results. S2953-0200-0002SMO by Fichtner Consulting Engineers Ltd (18th November 2020)





# THE PLUME VISIBILITY - LENGTH AND OCCURRENCE

**2.2.1** The following pages provide an indication of what the visual impact of the plume might be from the Dorset Area of Outstanding Natural Beauty (AONB), Dorset and East Devon Coast World Heritage Site (The Jurassic Coast WHS) and from the northern coast of Portland Port, adjacent to the town of Weymouth.

## OCCURRENCE

**2.2.2** To grasp how often the plume would be visible the pie chart to the right graphically demonstrates the results of the Fichtner *Plume Visibility Results Report*, as outlined above.

**2.2.3** Based on the historic regional weather data for the last five years this would suggest that, on average, the plume would have been visible against a clear sky / partial cloud for 24.2 hours each year which represents only 0.55% of all daylight hours.

## PLUME LENGTH

**2.2.4** Whilst the plume would be visible for an average of 24.2 hours per year its length would not be consistent for the entire duration, changing the visual impact it would have from the various locations being considered. Therefore the number of daylight hours the plume would be visible has been broken down by plume length in the bar graph to the right. This accompanies the diagrams on the following pages that demonstrate the plume lengths in relation to the proposed ERF building.

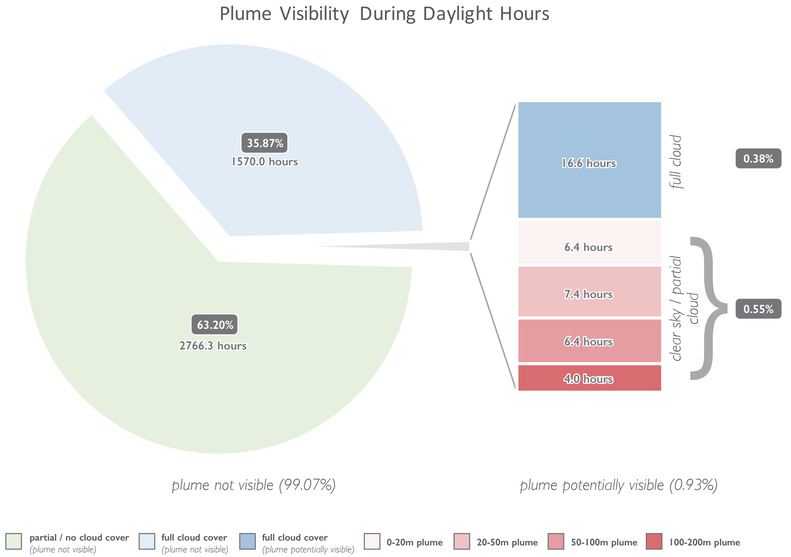



**Fig 2.8** Plume visibility during daylight hours (based on the average weather conditions for the last 5-years).

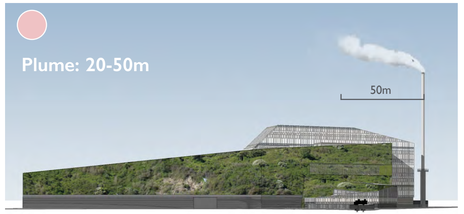
THE PLUME - INDICATIVE VISUALISATIONS

# INDICATIVE VISUALISATIONS - PLUME LENGTH

## (A BEAUTIFULLY CLEAR SUMMER DAY AND WIND BLOWING AT 90 DEGREES TO THE OBSERVER)

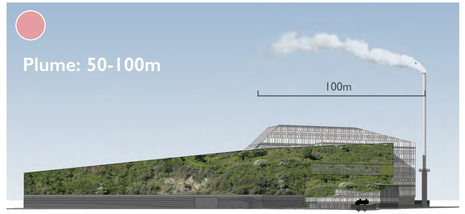

Average of 6.4 hours per year of visible plume during non-cloudy daylight hours. (Based on an average over the last 5 years including the Beast from the East and Storm Emma)

Average of 6.2 hours per year of visible plume during non-cloudy daylight hours. (Based on an average over the last 5 years adjusted to remove the Beast from the East and Storm Emma)



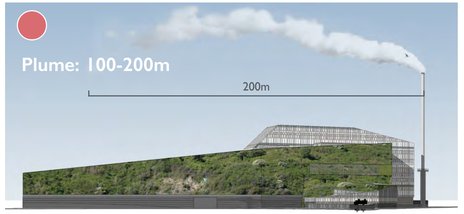

Average of 7.4 hours per year of visible plume during non-cloudy daylight hours. (Based on an average over the last 5 years including the Beast from the East and Storm Emma)

Average of 6.6 hours per year of visible plume during non-cloudy daylight hours. (Based on an average over the last 5 years adjusted to remove the Beast from the East and Storm Emma)




Average of 6.4 hours per year of visible plume during non-cloudy daylight hours. (Based on an average over the last 5 years including the Beast from the East and Storm Emma)

Average of 5.8 hours per year of visible plume during non-cloudy daylight hours. (Based on an average over the last 5 years adjusted to remove the Beast from the East and Storm Emma)




Average of 4.0 hours per year of visible plume during non-cloudy daylight hours. (Based on an average over the last 5 years including the Beast from the East and Storm Emma)

Average of 3.6 hours per year of visible plume during non-cloudy daylight hours. (Based on an average over the last 5 years adjusted to remove the Beast from the East and Storm Emma)

**Fig 2.9** Diagram showing comparitive plume length





## VISUAL IMPACT - MAXIMUM LENGTH OF PLUME 90 DEGREES TO THE OBSERVER

**2.3.1** The following 3 photomontages demonstrate the visual impact of the plume from three key viewpoints of the Osmington White Horse, Nothe Fort and Ferrybridge Inn, as agreed with the AONB and Landscape officers during the pre application process.

**2.3.2** In each of these images a plume of 187.89m (the longest anticipated plume, excluding storm data) has been modelled with the wind blowing at 90 degrees to the observer to understand the worst case visual impact for each viewpoint.

**2.3.3** The base photographs were taken in May 2020 on a sunny, clear and dry day.

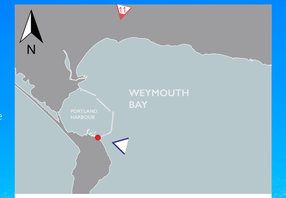
*Photomontages Note*

*Photomontages are used to illustrate the likely view of a proposed development, as it would be seen in a photograph. It is important to note, as stated in the Landscape Institute Technical Guidance note 06/19 Visual Representation of Development Proposals paragraph 1.2.13, that "Two-dimensional visualisations, however detailed and sophisticated, can never fully substitute what people would see in reality. They should, therefore, be considered an approximation of the three-dimensional visual experiences that an observer might receive in the field."*

*The following photographs are zoom shots and therefore are not strictly in accordance with the Landscape Institute's visualisation guidance. However the scale and height of the proposed building and length of the plume have been verified using the LVIA fully verified photomontages and so represent a true and accurate depiction of the proposals for the purpose of this assessment.*

*For verified photomontages that fully comply with the detailed methodology set out in the Landscape Institute's, 2019 Visual Representation of Development Proposals Landscape Institute Technical Guidance Note 06/19 (17 September 2019) please refer to the LVIA, Chapter 9 of the Environmental Statement.*

*The LVIA photomontages are produced at A1 size and are to be viewed at a comfortable arm's length. They represent a type 4 photomontage which provides the highest level of locational accuracy and image scaling and have been produced at an enlargement factor of 150%. The LI visualisation note explains that as a result of research in Scotland over the last decade there is a consensus that increasing the printed image size by 150% provides a better impression of scale for most viewers using both eyes (binocular vision).*




direction of wind
(Direction of wind 90 degrees to observer)

**Fig 2.10 VP11: Proposed view from Osmington White Horse (with 187.89m plume with the wind coming from the east)**

**Photograph taken on Thursday 14th May 2020 at 7:22am.**

**Weather conditions were dry and sunny.**