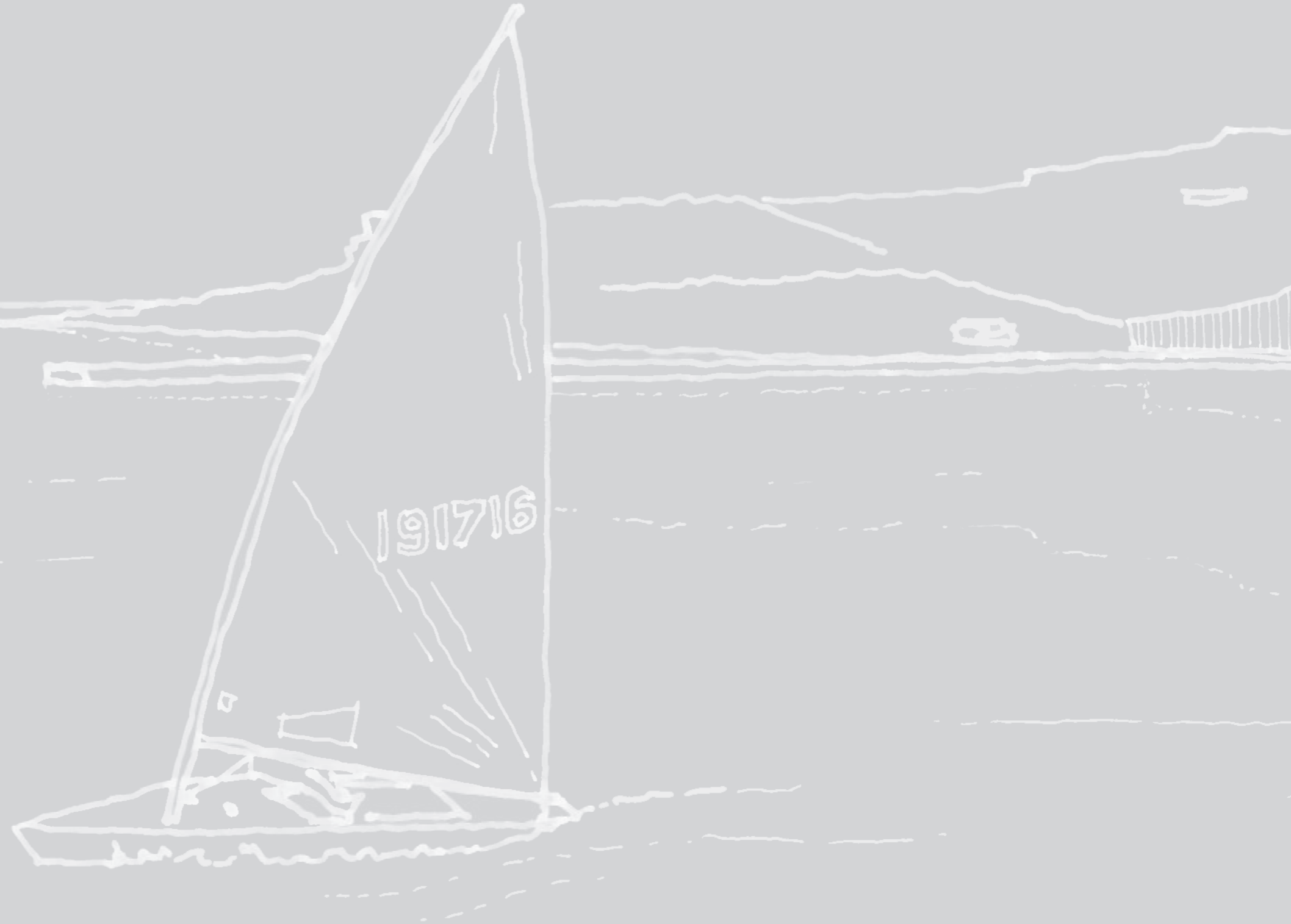




Design development ... massing & layout







DESIGN DEVELOPMENT - MASSING & LAYOUT PUBLIC CONSULTATION

3.1.1 A public consultation was held at Portland Community Venue in Fortuneswell on Friday 5th December 2019.

3.1.2 At the event indicative proposals were included on the public consultation boards, as can be seen to the right.

3.1.3 The concept behind the indicative proposals was a building that changed elevationally to respond to the varying sensitivity of the observer's view point, as set out in the Visibilities and Sensitivities section above. The building therefore utilised green camouflage cladding to make the building recessive from long distance views within the AONB whilst a series of vertical white louvres stepped up to surround the stack at the northern extent of the proposal and creating a landmark 'sail' like composition when viewed from the harbour.

3.1.4 The principle of a building that responds to the observer's view point remains sound but, as set out in the following chapter, the design has evolved to create a more cohesive building composition that takes on board comments of key stakeholders and the local authority.

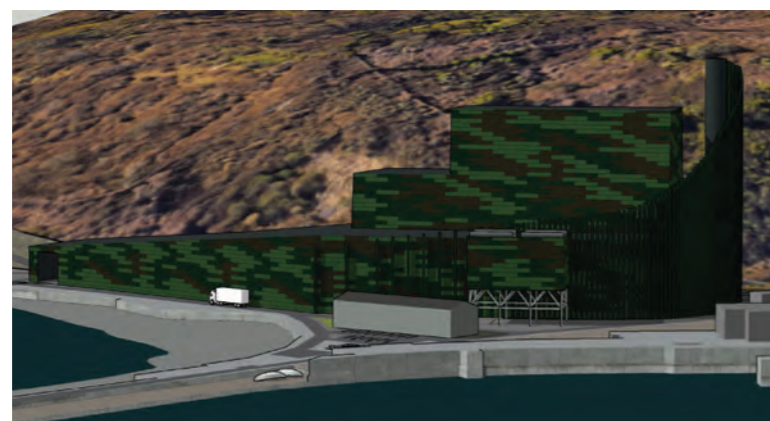


FIG 3.1
INDICATIVE PROPOSALS, AS PRESENTED AT THE PUBLIC CONSULTATION IN DECEMBER

Energy Recovery Facility Isle of Portland

POWERFUEL

The Site

Powerful Portland is proposing to deliver an Energy Recovery Facility (ERF) at Portland Port in a £100 million investment. The site at Portland Port already has planning consent for an energy plant and Powerful Portland is now preparing a new planning application to submit to Dorset Council.

This exhibition aims to provide information about our plans and answer any questions that members of the public may have.

There is currently a shortage of waste treatment facilities in Dorset and waste is exported out of the county by road to either be treated or sent to landfill. Using tried and tested technology, the proposed facility will export around 15MW of partially renewable low carbon energy enough to power around 30,000 homes.

The proposed ERF at Portland Port will use a refined Refuse Derived Fuel (RDF) and will be capable of treating local waste arising after recyclable materials have been removed.

The proposed facility will be permitted and monitored by the Environment Agency. There are many facilities using similar technology already operating in the UK and throughout the rest of the world.

The ERF that Powerful Portland is proposing provides a practical solution to a significant local problem. The site is an existing brownfield site on industrial land owned by Portland Port.

The site already has planning consent for an energy plant, which would have used either vegetable oil or waste rubber crumb from tyres.

Full planning permission was granted in January 2010 for the construction of an 'energy plant'. Several buildings were demolished to clear the site for development and the planning authority confirmed in writing that development had lawfully 'commenced'. In July 2013 the original permission was varied to permit end of life tyres to be used as fuel - this established the principle of waste to energy at the site.

Powerful Portland will be submitting a new application for its ERF. The new proposal is a very efficient and best-in-class process using a different fuel, making it a much cleaner and more energy-efficient facility.

What would the facility look like?

POWERFUEL

The ERF will be sensitively designed to reduce visual impact. The stack for the facility will be 50 metres tall. It needs to be that height to comply with regulations on emissions control and air dispersion.

A two-sided louvre system angled to present one side to the Portland Marina, and one side to the coast east of Weymouth Bay, will enable two different facades to be presented, depending on if the building is being seen against the sky / sea, or in front of the hillside.

The larger cruise ships dock close to the ERF site and are a similar height to the top of the building. The shape of the facility will be designed to blend into the landscape from important vantage points. The largest ships to dock at Portland Port are taller and longer than the proposed plant.

Transport

The port location means that RDF for the facility can be delivered by ship in a baled format or by road in a baled or loose format by lorry.

Powerful Portland is currently undertaking a detailed assessment to determine how many vehicles will be travelling to and from the facility. This analysis will look at the 'worst case' impact on the road network and so assumes that all RDF will arrive by road. In this worst case scenario we estimate that there will be around 40 delivery lorries a day into the site. This is not realistically going to be the case as the likelihood is that some fuel will come by ship and some by road.

Similarly, ash sinings could take advantage of the port location and leave the port by ship, but it is important to assess alternative scenarios where the ash residue would leave the port by road.

There is an existing accessible road to the site through the port. The previously permitted development in 2013 did not have a condition that set a limit for vehicle movements.

FIG 3.2
PRESENTATION BOARDS FROM DECEMBER PUBLIC CONSULTATION

What is Powerfuel Portland proposing?

POWERFUEL

The proposed new Energy Recovery Facility will process non-hazardous household and commercial waste which remains after recycling activities, by using it as a fuel. The ERF uses effective, proven technology, with more than 40 energy from waste facilities operating in the UK and many more across Europe.

The facility will have the capacity to process 180,000 tonnes of refined RDF. RDF consists largely of combustible components of non-hazardous municipal solid waste, comprising mixed household, commercial and skip waste after the recyclable material has been removed.

The plant will export around 15MW of low carbon electricity to the Grid, enough to meet the energy needs of around 30,000 typical homes per year. The project will provide approximately 350 construction jobs and then around 30 long term, permanent jobs directly at the plant. Up to 45 indirect jobs will also be created.

What is RDF?

Refuse Derived Fuel or RDF is a refined processed fuel which consists largely of combustible components of municipal solid waste (MSW), comprising household, commercial and skip waste after the recyclable material has been removed. The RDF can include similar characteristic wastes from commercial and industrial processes (but never hazardous or medical wastes).

It is dried and shredded and therefore has less volume and takes less energy to move than unsorted "wet waste". There are no odours when waste is transported in this dry state. It is usually in a baled and wrapped format for transportation, but if transported by road may be either baled or moved in sealed vehicles.

When used in an energy recovery facility as fuel it is more homogenous and therefore maintains a higher, more consistent performance in the energy extraction process and requires less additional energy inputs.

Because RDF is produced after recyclable materials have been removed, it is a genuine "residual". The Powerful Portland facility will not discourage the current high levels of recycling achieved in Dorset from continuing.

Why is the facility low carbon?

The RDF will contain many different types of waste and part of the RDF will come from things that were recently growing and are biodegradable (ie will break down in landfill), for example food, paper, wood etc. The energy generated from the recently grown materials in the mixture is considered renewable, so energy from waste is a partially renewable energy source, often referred to as a low carbon energy source.

As part of the Environmental Impact Assessment a carbon balance assessment will calculate the difference between the proposed ERF and sending the waste to landfill (with the associated production of methane) and this is expected to be a significant reduction. Methane is considered to be over 25 times more potent as a greenhouse gas than CO₂.

Environmental Matters

POWERFUEL

Visual and heritage effects

The site is well suited for the proposed development in terms of townscape character, in that it comprises brownfield land within an existing industrial site. The Port is an important area for economic development.

The grade II listed breakwater is next to the site, but no works are required to this structure. There are a number of other listed buildings and scheduled monuments within 1 km of the site, as well as Unlisted conservation areas. Portland Port is not part of the Dorset and East Devon Coast World Heritage Site. Any visual impacts during construction will be relatively short in duration.

Full visual and heritage impact assessments are being undertaken as part of the planning application and the design of the facility will limit any visual and setting impacts.

Odour

Odour impacts associated with the proposed development will be minimised by the design of the facility and the implementation of an odour management plan. Waste will be delivered to the facility in dry, wrapped bales or in sealed vehicles and then stored securely in the building ready for use. Residual impacts from odour are considered to be negligible at all receptor locations.

Air quality

Detailed air quality modelling is being undertaken to predict any impacts associated with stack emissions from the process. Computer modelling has been carried out to understand the wind characteristics at the site and on the dispersion of emissions from the facility, which demonstrates that there will be no unacceptable impacts on local air quality or public health.

Maximum off-site impacts are predicted to be negligible at all residential receptor locations. Emissions associated with operational traffic flows associated with the proposed development are being taken into account in detailed modelling that will support the application, including the potential for effects on nature conservation sites.

Public Health England advises that well run and regulated Energy Recovery Facilities do not pose a significant threat to public health. It also states that the effects are likely to be so small that they would be undetectable.

All ERFs in the UK are tightly regulated and must operate within the national and EU's requirements as set out in the Industrial Emissions Directive (formerly the Waste Incineration Directive). The Environment Agency also carries out spot checks to ensure that the monitoring equipment is operating correctly.

Controlling emissions

There are strict air emissions limits set by regulatory bodies. Powerful Portland will employ state-of-the-art emissions control technology to keep within the limits set by the Environmental Permitting and monitored by the Environment Agency. A large proportion of the plant is dedicated to capturing emissions in the exhaust.

Monitoring emissions

The Powerful Portland Energy Recovery Facility will operate under strict air emissions control limits. To demonstrate compliance, we will use a combination of continuous emission monitoring systems (CEMS) that monitor emissions 24 hours a day, seven days a week and perform regular stack testing.



Why do we need this facility?



There is currently a shortage of waste treatment facilities in Dorset. Local landfill disposal options have closed in the last year, resulting in waste being shipped out of the county by road at relatively high cost. The ERF will provide a regional solution that is scaled to handle regional waste arisings.

Powerful Portland is proposing to deliver an Energy Recovery Facility that will be capable of exporting around 15MW of electricity to the Grid. Instead of sending waste to landfill, it will be used as a fuel to generate low carbon energy. Direct power supplies to major consumers could also be made available, while additional energy in the form of hot water is also capable of being exported to local users.

The site is an existing brownfield site on industrial land owned by Portland Port. The Portland Port site has been chosen for the ERF because:

- This is an existing industrial area (currently unused) within the port allowing the processed refuse derived fuel or RDF to be transported to the site by road or delivered by ship.
- Planning permission already exists on this site for a very similar operation.
- Given the geography of the island and the location within the port, the ERF is being sensibly designed to reduce environmental impacts and minimise possible visual impact of the facility.
- The ERF will enhance local resilience providing a local solution to Dorset's waste problem consistent with the proximity principle in the Waste Framework Directive.
- Once the ERF is operating, in addition to paying local taxes, there will also be community benefit contributions allocated to local sustainability projects.



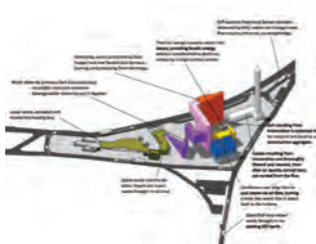
Powerful Portland is very committed to this project, which represents an investment of around £100 million into the site of Portland, and which will create 350 construction jobs and around 30 long-term, permanent jobs directly at the plant, plus a considerable number of indirect jobs.

Energy

The facility will export around 15MW of low carbon energy. Crucially this will be base load, low carbon energy that will reduce the need for fossil fuels and is required to stabilise the grid as more intermittent generation such as wind or solar power comes on-line.

A further, very significant benefit of the project is that the entire site of Portland is served solely by an 18MW Grid supply, which means that power is restricted on the island. This has proved to be a barrier to economic growth.

The electricity generated by the ERF will help counter this issue and enable Portland and its port to attract new businesses with the prospect of providing low carbon heat and power.



Who is the team behind the project?



Powerful Portland is a local company with an office in Dorset, whose Directors have extensive experience of delivering large-scale renewable energy facilities.

A high quality and experienced consultant team has been assembled to assist with the design of the ERF and the preparation of the EIA and planning application. This includes:



ARUP is a multinational professional services firm headquartered in London which provides engineering, design, planning, project management and consulting services for all aspects of the built environment. Arup is Powerful's lead technical advisor.



Terence O'Rourke is a planning and design company, based in Bournemouth and is Powerful's lead town planning advisors. TOR is advising Powerful on landscape architecture, urban design and environmental planning (including environmental impact assessment, heritage and ecology) services.



Whittam Cox Architects is an award-winning, commercial design practice founded and built on technical strength with a heritage that spans more than 45 years. Whittam Cox is leading on the design and visual aspects of the project.



AWP is an award-winning civil engineering consultancy based in Exeter, providing specialist development planning and infrastructure services to the property industry. AWP is Powerful's lead traffic advisor.



CGO Ecology is a Dorset-based ecological consultancy providing expert advice, species and habitat surveys, ecology reports for planning application, development mitigation, conservation and research.



Quantum Public Relations is a long-established communications agency, specialising in delivering public consultation and stakeholder engagement campaigns for development projects.

Have your say

Powerful Portland is very keen to receive feedback on our proposals. We invite you to fill in one of the available feedback forms.

Find out more...

Please talk to one of our development team members if you have any questions. There is also further information available on our website.

Web: www.powerfulportland.co.uk
Email: info@powerfulportland.co.uk
Telephone: 06081 681678



Next steps

All the comments that we receive during the public consultation will be reviewed and analysed by the development team before our planning application is finalised.

A planning application will then be submitted to Dorset Council, which will be subject to further consultation when interested parties will be able to make comments directly to the Council's planning team.

The application will then be reviewed by the Planning Officers at the Council before going to the Strategic Planning Committee for a decision.



DESIGN DEVELOPMENT - MASSING & LAYOUT



DESIGN APPROACH REVIEW - LANDMARK OR RECESSIVE

3.2.1 On Thursday 26th February 2020 a meeting was held at Dorset Council offices with the Landscape and AONB Officers to agree the most appropriate design approach for this sensitive site. As demonstrated to the right a range of sketch design solutions was presented.

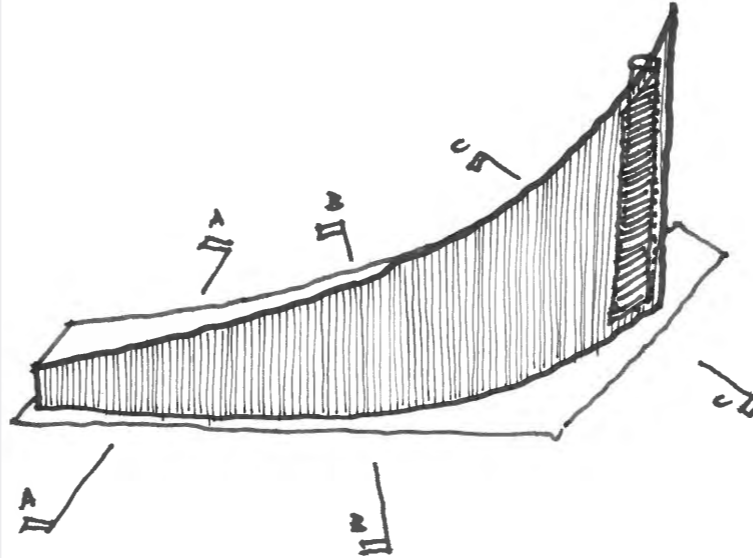
3.2.2 Option 1 looked to take advantage of the site's unique location at the intersection of the harbour breakwater and the Isle of Portland by creating a landmark 'sail' feature that would act as a gateway for both the Port and the wider harbour.

3.2.3 The remaining options looked at various ways the proposed building could blend into the landscape of the Isle of Portland that would form the backdrop from a number of the most sensitive long distance views.

3.2.4 Whilst acknowledging the building sits alongside the industrial buildings and cruise ships of the Port, the feedback suggested a visually prominent landmark, subject to further feedback, may visually detract from the enjoyment of the public using the coastal path throughout the AONB.

3.2.5 Instead the preference was for a building form that picked up on the geometry of 'Option 4 - A Folded Slope' or 'Option 5 - Cascading Angles' but investigated the use of green walls and cladding that reflected the vegetation and geology found on the cliffs and quarries of the Isle of Portland.

I. A Portland gateway



2. Hybrid - green wall

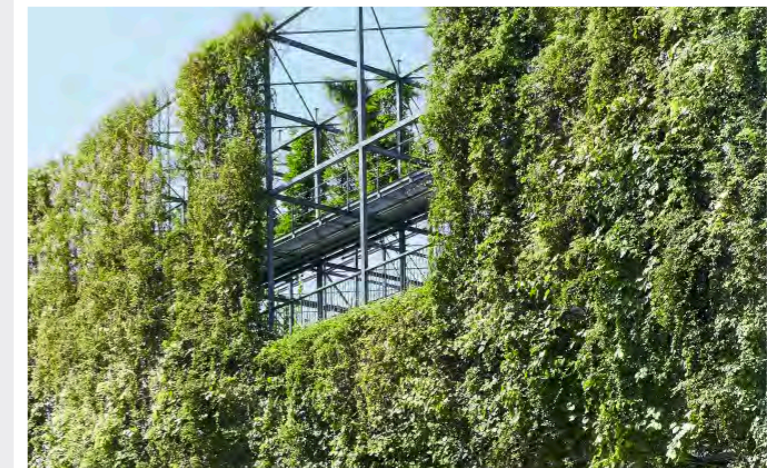
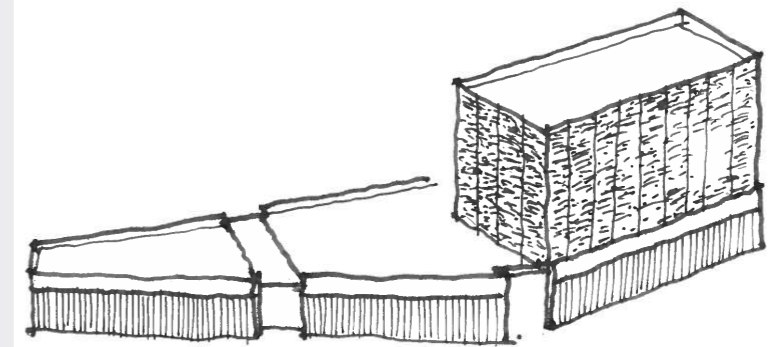
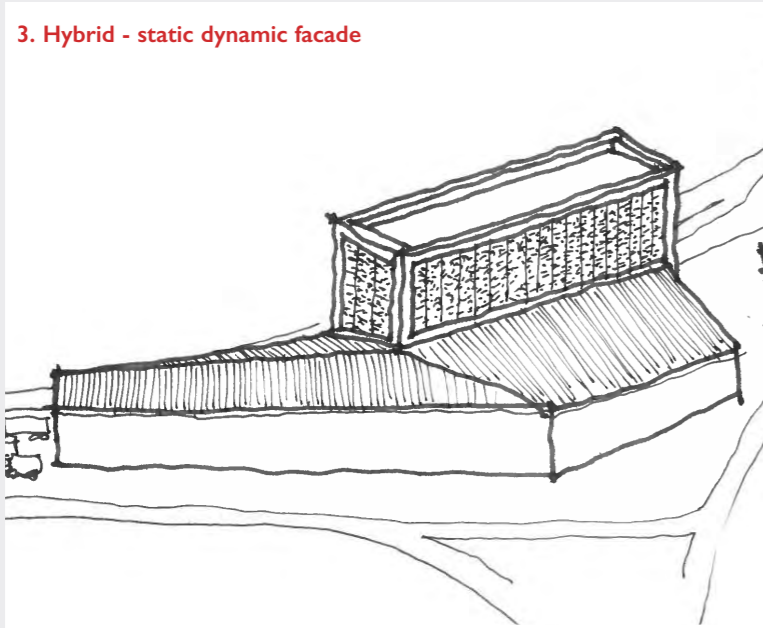
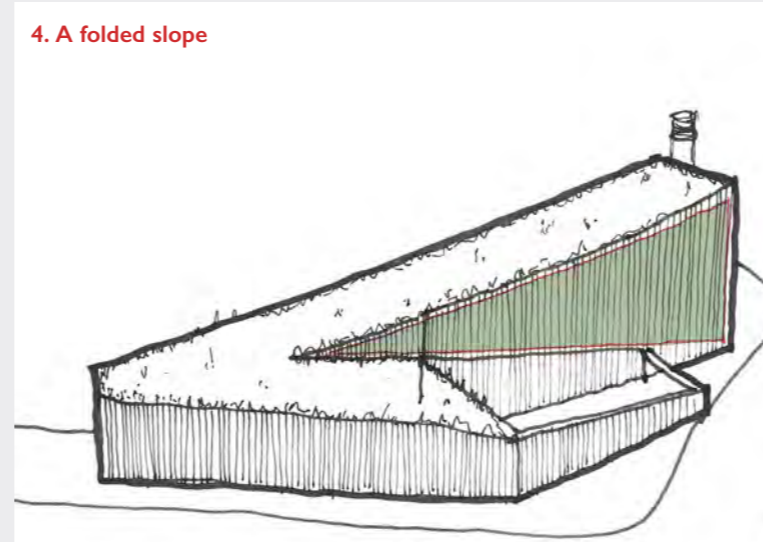


FIG 3.3
CONCEPT IDEAS PRESENTED AT THE FEBRUARY PRE APPLICATION MEETING

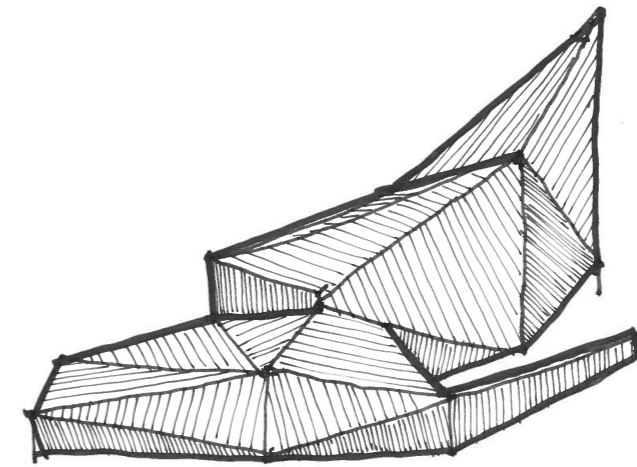
3. Hybrid - static dynamic facade



4. A folded slope



5. Cascading angles





DESIGN DEVELOPMENT - MASSING & LAYOUT

GEOLOGICAL AND GEOMETRICAL INSPIRATION

3.3.1 Geologically the Isle of Portland is separated into two areas.

3.3.2 Tophill is the larger area of gently sloping land, comprising Portland Stone, that falls from The Verne in the north to Portland Bill at the southern tip of the island.

3.3.3 Underhill at the northern end of the island, where the port and site are located, is defined by a series of plateaus and steeply inclined escarpments.

3.3.4 The geology of Underhill is responsible for the land forms in this area with the Kimmeridge Clays that are exposed adjacent to the harbour responsible for a series of landslides that have formed West and East Weares.

3.3.5 Whilst scrub vegetation has covered much of the lower lying land the steep cliff faces of the Portland Stone Beds that have been exposed as a result of the landslides is still a prominent feature when viewed from long distance views in the Dorset AONB.

3.3.6 Another prominent feature from these views is Incline Road. Formerly the Admiralty Incline Railway, the road was constructed in 1849 as a cable-worked incline railway to transport stone from the Admiralty Quarries down to the harbour for the construction of the Portland Harbour breakwater. Carved into the face of the cliff the road, along with a number of other subsequent roads, now create strong diagonal features as they traverse the eastern face of the island.

FIG 3.4
ISLE OF PORTLAND
SIMPLIFIED
GEOLOGICAL
SECTION



FIG 3.5
ISLE OF PORTLAND FROM WEYMOUTH BAY

(Google Earth)

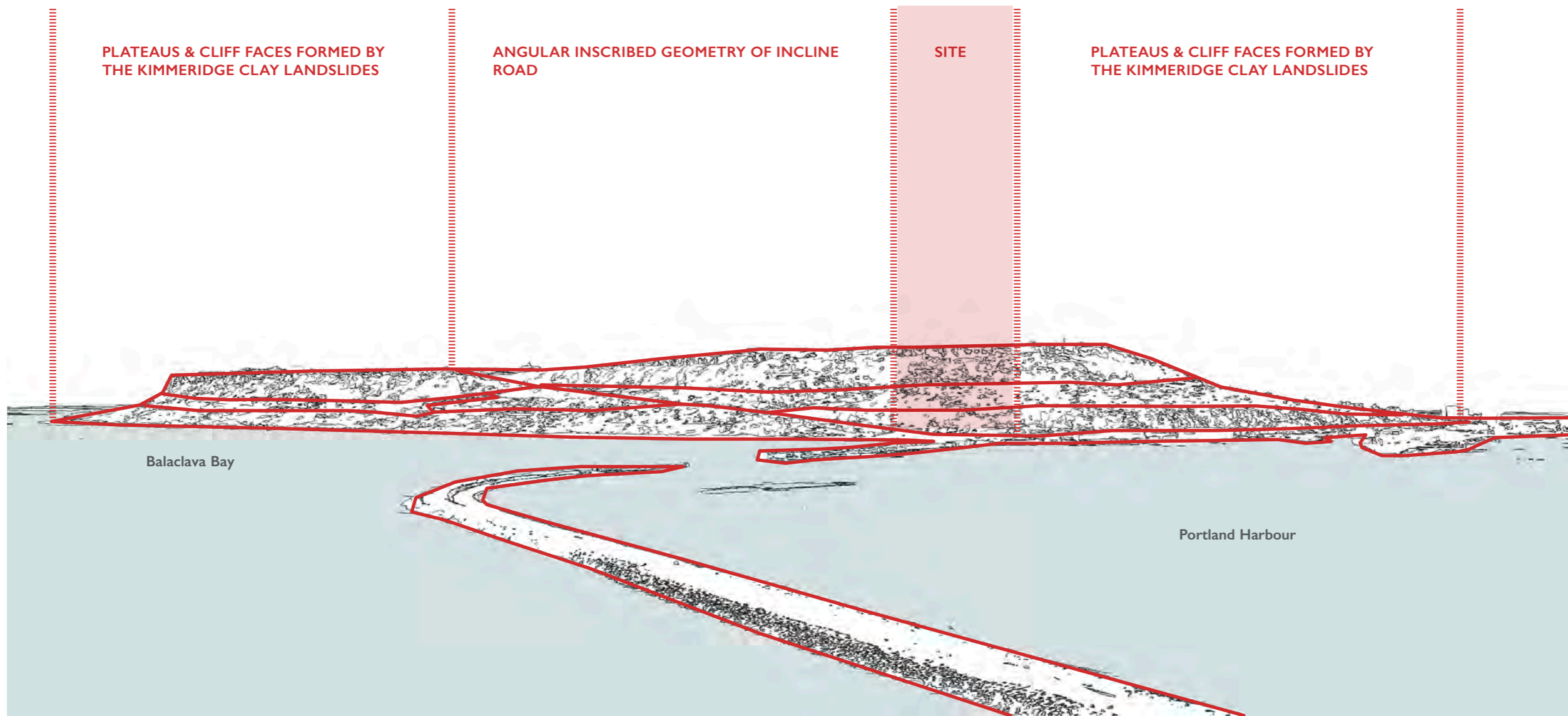


FIG 3.6
ISLE OF PORTLAND GEOMETRY FROM WEYMOUTH BAY



DESIGN DEVELOPMENT - MASSING & LAYOUT

SITE LAYOUT AND DEVELOPMENTS

3.4.1 The building's layout and design have been through a number of iterations. The key steps in the design development are set out below and in the plans and block models to the right.

OPTION 1

3.4.2 As set out in Section 2.2 the original site layout was largely dictated by the technical relationships and space requirements of the different areas of the plant.

3.4.3 The building envelope consisted of a collection of square volumes that closely follow the minimum clearance requirements around the plant with no further consideration to the overall appearance of the building.

3.4.4 Large areas of plant and equipment remained outside the building envelope making them highly visible from a number of view points.

3.4.5 The offices were a stand alone building with no obvious relationship with the main building.

OPTION 2

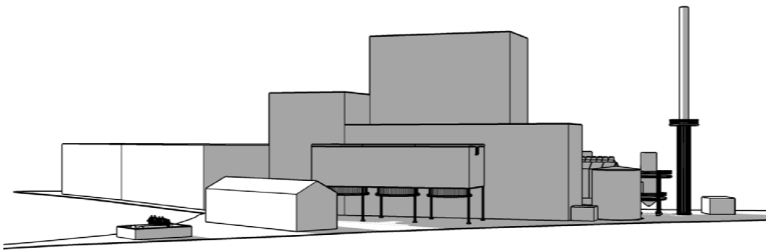
3.4.6 The offices are integrated into the bulk and mass of the main building with the internal plant reconfigured into ascending height allowing the building to be configured into a single cohesive building. The offices location adjacent to Balaclava Bay provides the best opportunity for natural light, ventilation and views which will create a comfortable and attractive environment for the buildings occupants.

3.4.7 The folded form picks up on the inscribed geometry of Incline Road with the relocated offices, and lower plant areas, wrapping around the base of the taller Boiler House behind largely concealing and diminishing the scale of the building when viewed from the east.

3.4.8 The air filtration plant of the previous option is now incorporated into the footprint of the building. The air cooled condensers are lifted up onto the roof, where the built envelope is amended to screen the equipment, and all remaining silos and plant is located adjacent to Incline Road where the building conceals it from the long distant view.

3.4.9 The footprint of the building was increased to incorporate all vehicle movements within the building but this was dismissed as maintenance access needed to be retained to the fuel line adjacent to Balaclava Bay.

OPTION 1



OPTION 2

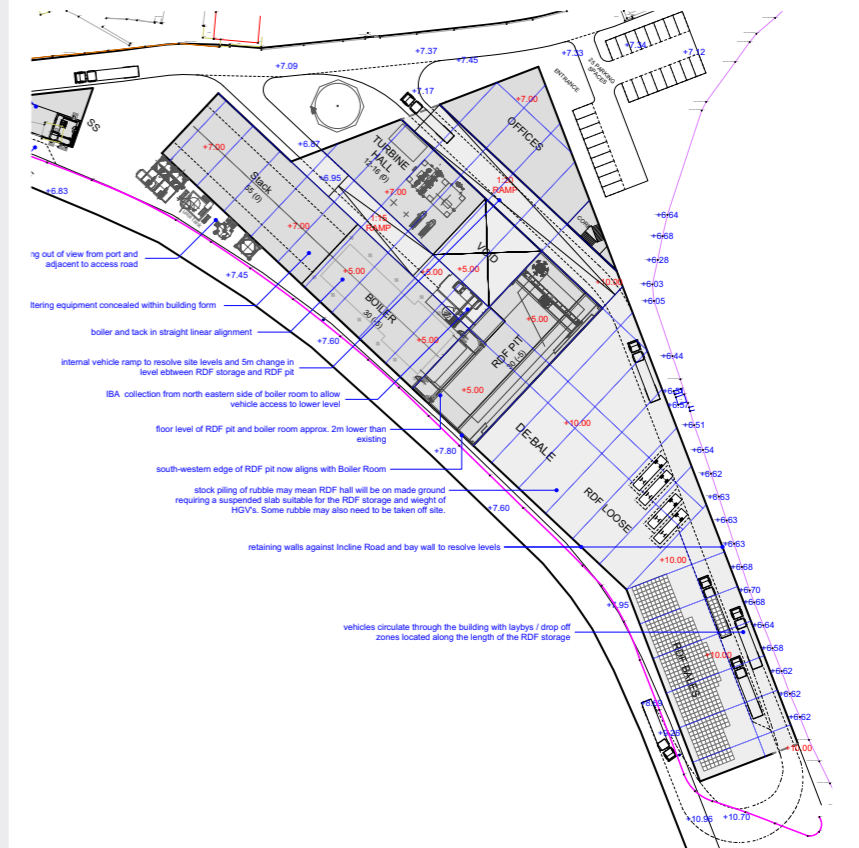
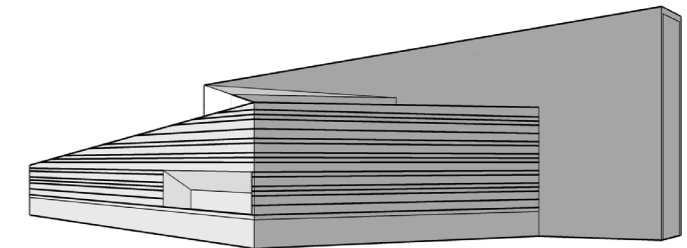
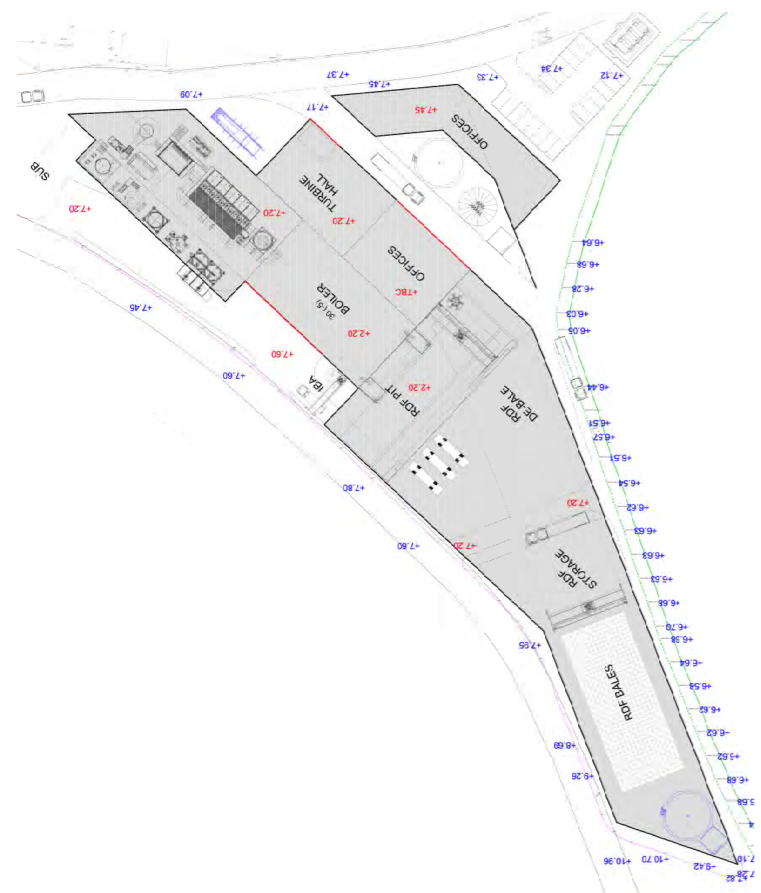
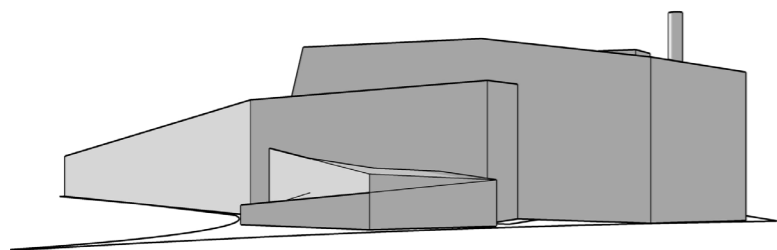
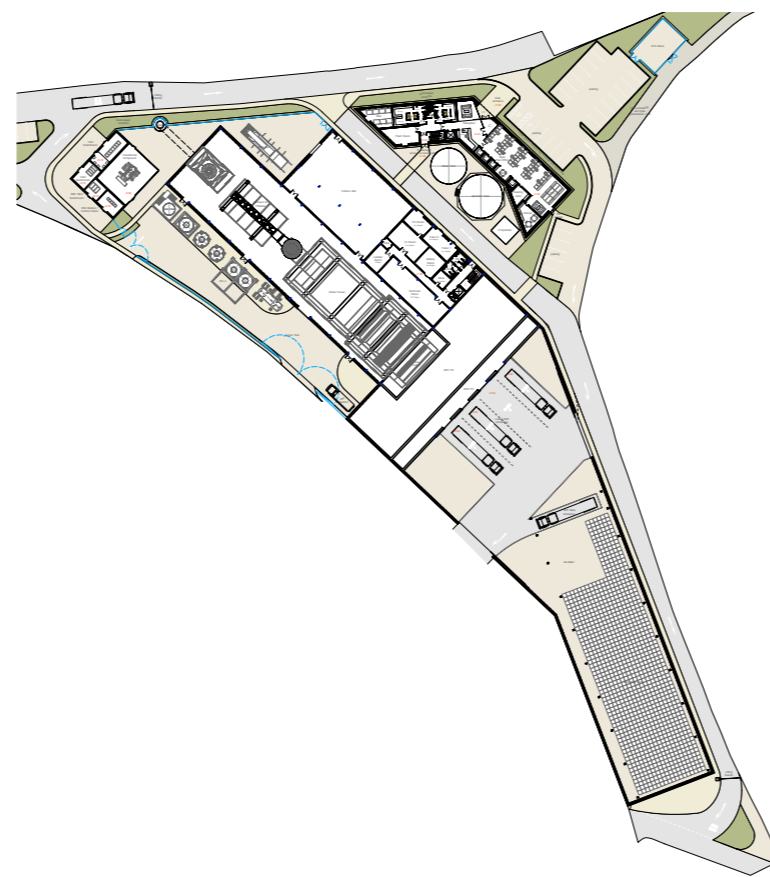
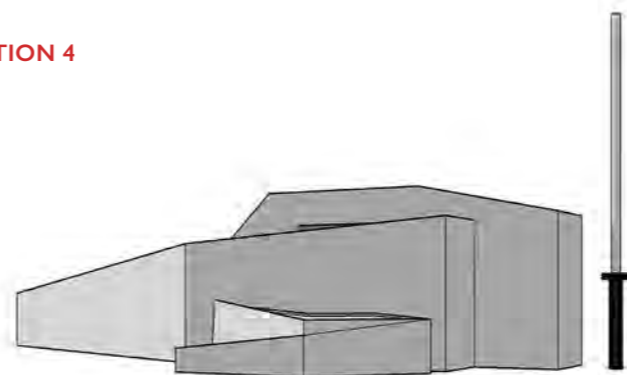


FIG 3.7
DESIGN DEVELOPMENT OPTIONS

OPTION 3



OPTION 4



OPTION 3

3.4.10 The alignment of the vehicular route remains the same as Option 2 but becomes external to provide access to the fuel line.

3.4.11 Whilst this severs the office block from the main building the retained positioning and angular form of the offices still screen the base of the Boiler House behind whilst providing greater articulation to the built form.

3.4.12 A dedicated service yard is created adjacent to Incline Road allowing vehicles to pull off the main thoroughfare during deliveries/collections.

3.4.13 Refinement of the building envelope to include chamfered elevations to the north and south end of the building and the gently sloping roofs reflects the landscape forms of the East Weare cliffs behind.

3.4.14 The angular wall of the north elevation encloses the base of the stack.

OPTION 4

3.4.15 The building envelope is pulled back on the northern elevation to create 10 metres separation to the stack and the stack height was increased to improve the flow of clean air and ensure the suitable dispersion of exhaust gases. Refer to Air Quality report for further details.

3.4.16 The plant and silos that were previously enclosed on the western side of the Boiler House now become external to improve access and ease of delivery/collection.

3.4.17 The switchroom and transformer compound is located just to the west of the stack.

3.4.18 Improved vehicular and pedestrian segregation is created across the site.

DESIGN DEVELOPMENT - MASSING & LAYOUT



PROPOSED SITE LAYOUT AND MASSING

3.5.1 The proposals provide 8,564sqm of floorspace across two buildings and a number of out buildings and storage compounds.

3.5.2 The smaller, front of house, office building sits to the eastern edge of the site partially screening the taller, longer plant building that sits to its west.

3.5.3 The office building is separated from the main plant building by the HGV route which links Canteen Road and Balaclava Road. This then circulates back around the southern edge of the site to Incline Road.

3.5.4 A second weighbridge is positioned to the northern end of this road to slow vehicle movements and prioritise pedestrian movement between the office and main plant buildings.

3.5.5 The configuration of the operational plant is refined and enclosed within the building's envelope to provide a visually cohesive building.

3.5.6 The taller areas of the plant building, the flue and boiler room, are located to the northern western edge of the site. In addition to allowing the bulk of the mass to hug the tall cliffs behind, it retains the height towards the Port's operational areas before feathering down in height towards the water's edge around the perimeter of Balaclava Bay.

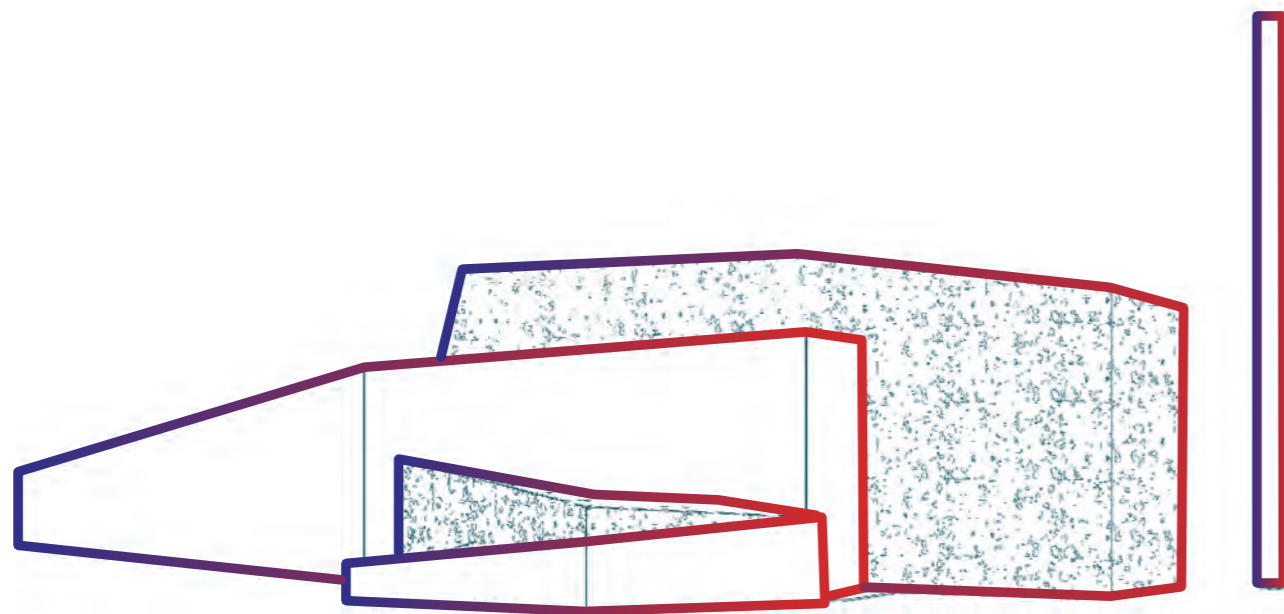
3.5.7 The stepping planes of the elevation reflect the vertical faces of the exposed limestone cliff face whilst the angles of the roofs replicate both the natural slopes of the Lower Kimmeridge Clay slopes of the East Weare and the inscribed geometry of Incline Road.

3.5.8 Tanks, silos and services areas generally located on the western sides of the buildings largely screening these from view of the Port and the AONB further afield.

3.5.9 Further details on the internal layouts for both the office and plant building are included in section 5.3 and 5.4.



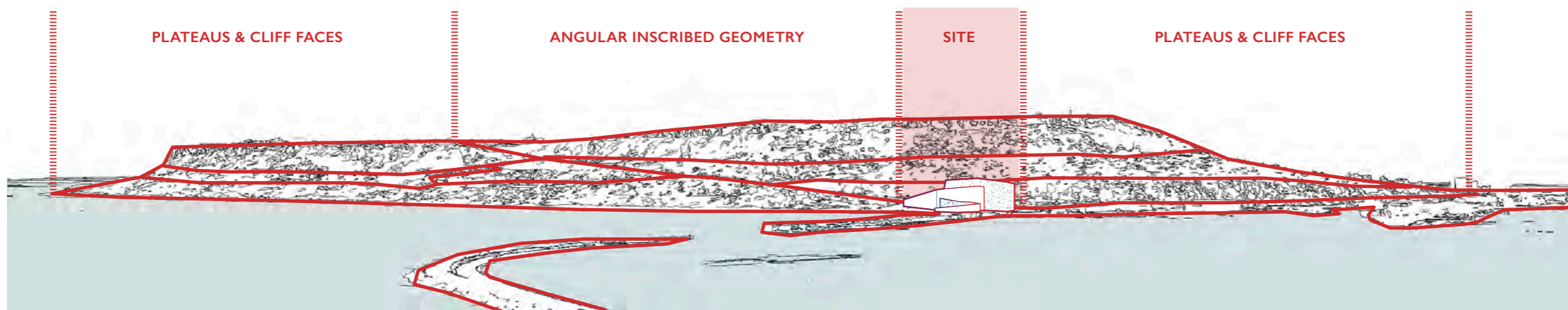
FIG 3.8
PROPOSED SITE PLAN



BUILDING	ROOM/AREA	GIFA	
		sqm	sqft
MAIN PLANT	RDF Store, Delivery & Pit	4,071	43,820
	Boiler House	808	8,697
	Air Filtration Hall	601	6,469
	Turbine Hall	514	5,533
	Plant Control Centre (4 floors)	1,398	15,048
	IBA Store	130	1,399
OFFICES	Ground floor offices, reception and changing facilities	535	5,759
	First floor executive offices and meeting rooms	275	2,960
TRANSFORMER COMPOUND	Switch-rooms, batteries and control rooms	232	2,497
TOTALS		8,564	92,182

Proposed massing and high level articulation

Schedule of Accommodation (GIFA)



Proposed massing and high level articulation in context

FIG 3.9
THE PROPOSED MASSING IN THE CONTEXT OF THE ISLE OF PORTLAND



DESIGN DEVELOPMENT - MASSING & LAYOUT

PROPOSED MASSING IN CONTEXT

3.6.1 The illustrations to the right show how the proposed block massing sits in the context of the site.

3.6.2 In long distance views from the sea, or the AONB / WHS to the east, the building form is read against the East Weare landscape.

3.6.3 In mimicking the sloping forms and cliff faces of the island the form of the building's southern end is softened from these angles.

3.6.4 When viewed from Ferry Bridge Inn, and other locations along the northern edge of the harbour, the narrowest facade of the proposed building will be visible as one of the collection of port buildings that stand clear of the East Weare undercliff and is read against the sky.

3.6.5 When observed from these views the massing is squarer to allow the stack to stand clear of the building and assist with the air dispersion of the air leaving the stack.

3.6.6 The elevational treatment and materials should look to expand on this ensuring the proposals read as part of the wider collection of industrial buildings that form the port and avoid elongating the natural landscape form of the island.



Proposed massing - View from Ferry Bridge Inn

(produced using Google Earth)



(produced using Google Earth)

Proposed massing - View from Balaclava Bay



(produced using Google Earth)

Proposed massing - View from Sandsfoot Castle

FIG 3.10
PROPOSED FINAL MASSING IN CONTEXT



Proposed massing - Zoomed in by Osmington Mills