





Background

In 2007 Paul Jones, from Northumbria University was runner up in an international design competition to design a RNLI visitor centre and café on the beach at Chapel St Leonard in Lincolnshire. This facility was part of the Bathing Beauties Art Initiative that had running in Lincolnshire since 2005 and had built up an international reputation for art projects in the environment. The RNLI visitor centre and cafe was to be the centre piece of the initiative with £300000 being committed to the building; the competition attracted 75 entries from 20 countries. Due to issues with finance the winning entry was never built. In 2010 Lincolnshire Council, one of the original partners, of the Bathing Beauties Art Initiative, formed an association with a number of wildlife groups, including RSPB, Wild Planet, Lincolnshire Wildlife Trust, as well as the Arts Council, to run another limited competition with a different brief. The new building was to include a wildlife observatory, (specifically for the viewing of migratory birds that fly along the coast), a cafe and a gallery for local artists to exhibit. A different site was also proposed. The winners, the runners up and limited number of local practices were invited to submit proposals. Paul Jones, (with the competition organisers' permission) submitted an entry with Surface Light Space Architects, a design-based architectural consultancy in Newcastle.

The schemes were assessed on the suitability of the submission against the criteria set out in the briefing documents. The scheme was required to:

1. encourage and support activity and animation on the beach

- This stretch of beach is one of the finest in the UK, but it receives very few visitors. It is hoped that the visitor centre and beach café/restaurant will encourage more tourism.

2. be sensitive and appropriate for the context

 The beach and dunes is a site of special scientific interest and thus protected by Law. The environment is a haven for wildlife and fauna. Credit will be given for schemes which are sensitive to this precious landscape





images of the RNLI visitor centre and cafe

3. be respectful of the vernacular and the British seaside tradition.

The British seaside culture is in decline; many seaside developments have disappeared in recent years, only to be replaced with poor quality modern developments, with little or no reference to the seaside tradition. Credit will be given for scheme which are contemporary in appearance, but which are suitable for the context.

4. be realistically designed in relation to the budget

The total budget for the project was set at £550000 competitors should also demonstrate how they intended to design to the budget.





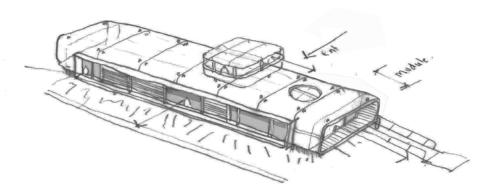
New Competition for a Wildlife Observatory and Art Gallery

The site for the new building was chosen on the edge of Chapel St Leonard, a small town on the Lincolnshire coast. A raised eminence, sitting above the beach, had been used in the second world war as an observatory platform due to its elevation; the clients set about organising a lease for this land. A scheme was prepared that developed some of the themes of the initial competition back in 2007. Because of the exposed site the design team proposed a building built in the factory and transported by lorry to the site in seven bays to be readily assembled. A viewing panoptican for the RNLI and Coastwatch was perched on top of the pavilion used for the gallery and wildlife observatory. See sketch below.

Paul Jones and Surface Light Spaces proposals were chosen and the joint team were commissioned to progress the project.

schedule of accommodation

GROSS FOOT PRINT	666.0388	
GROSS EXT DECK	97.489785	
GROSS EXT RAMP	49.030016	
NET FOOT PRINT	519.519	
VOLUME	AREA	NOTES
LOBBY	10.555293	
RECEPTION	6.098619	
STAFF OFFICE	5.868008	
PRIMARY WC CORE	14.243348	3 UNISEX WC WITH BASIN + 1 ACCESSIBLE WC WITH SHOWER & BABY CHANGING
CLEANERS STORE	0.603225	
KITCHEN	13.633047	
SERVERY	12.671617	
CAFE (GROSS PLATE)	133.38825	70 COVER ACCOMMODATION
EXT DECK	75.430105	
EXT BIRD HIDE	18.541114	
GALLERY	94.162826	
STORAGE WALL	7.03403	
PRIMARY STORE	28.535932	SHARED FACILITY
GALLERY WC	3.337241	I AMBIENT DISABLED UNISEX WC
NCI OFFICE	21.418414	
INT CIRC RAMP	20.032757	
WLT OBSERVATORY	68.898437	
TOTAL NET	534.4523	
TOTAL NET (INTERNAL ONLY)	459.0222	





ground floor plan



- a visitor centre
- b teaching space

i toilets

j servery

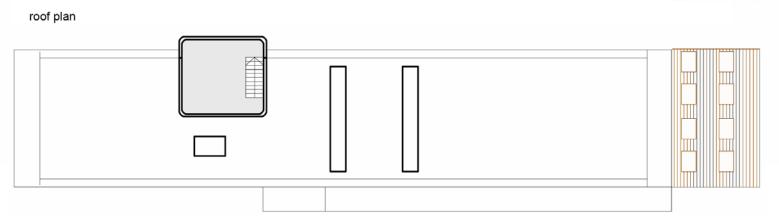
k external deck

I viewing pod

- c staff
- d kitchen
- e foyer and v. centre
- f gallery
- g cold store
- h kitchen



elevation from the rear

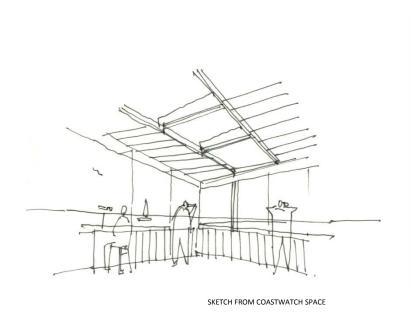


Scheme 2-

The site changed fairly early on in the process from Chapel St Leonard to Huttoft sands due to issues with the lease of the land. The site constraints meant that a lightweight pavilion was designed and raised above the dunes to protect it from surge tides and also allow the wind underneath the building to replenish the sands of the dunes. Huttoft Sands has a concrete platform to build off, however after core holes were drilled it was discovered that the slab was of insufficient depth for point loads. The environment agency wanted us to explain our construction strategy to give them confidence that the Dunes and Sea defences would not be compromised by the building work. (See Technical Strategy for Environment Agency)











SCHEME 2 HUTTOFT SANDS

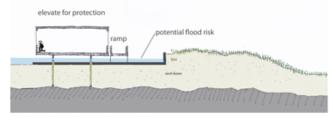
building in a unprotected zone

The option to build the proposed visitor centre on what is currently used as the car park could expose the facility to future risk, as this area has no sea defences to protect it



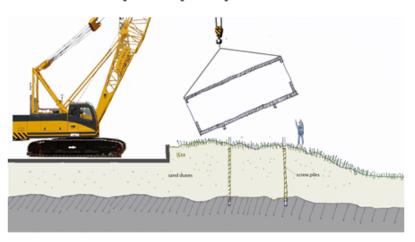
building will need elevation

The visitor centre will require some elevation above the concrete deck in case of flooding due to surge tides etc. It is impossible to know how what elevation is necessary. Considerable ramps would be needed for access to the building.



minimal disturbance to dunes

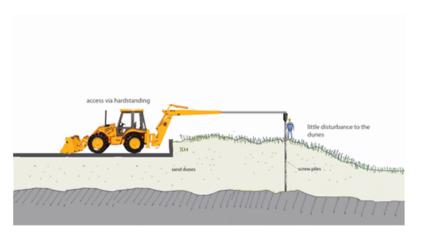
The building is to be constructed off-site and lowered onto the column heads without disturbance to the dunes. The buildings are already internally and externally finished; the only disturbance to the site is the waste connection to the existing drain servicing the existing toilets



minimal disturbance to dunes through screwpiles

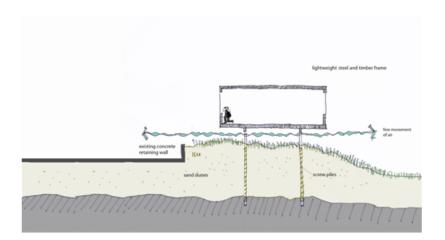
An extendable arm can be used to bridge the dunes thus avoiding platforms having to be constructed on top of the Dunes. It is envisaged that all construction can take place off the hard standing

see next image for construction of building



building elevated above the dune

The below diagram illustrates how we intend to elevate the building's above the dunes to enable the free movement of air to maintain the shape and structure of the dune

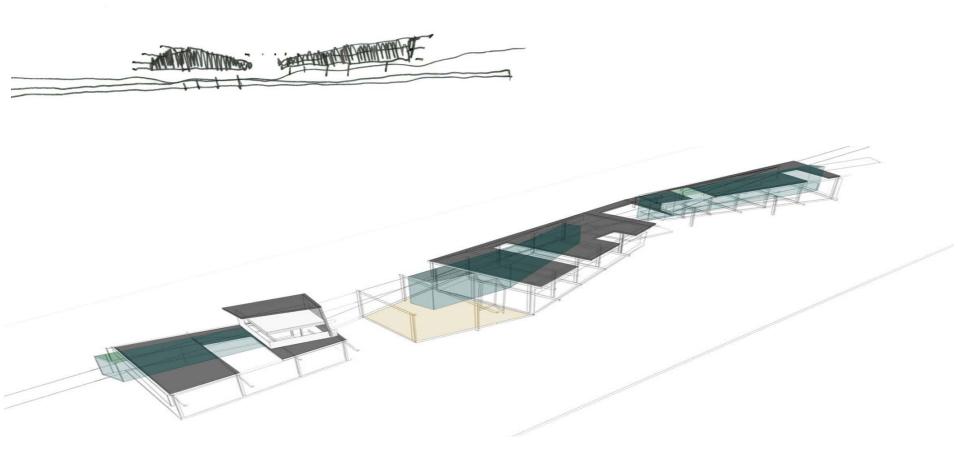


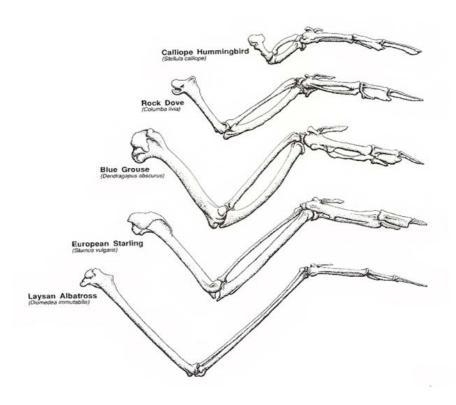
new proposals-scheme 3

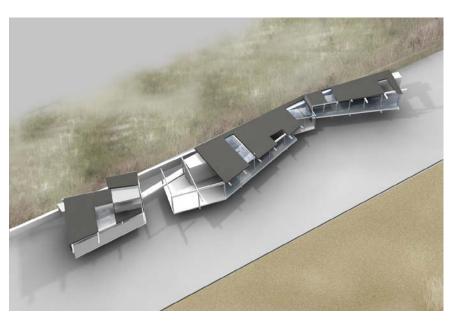
The client feedback on the initial design was positive, although the clients discussed possibly breaking up the form, to enable the different client groups to open and close their part of the facility at different times. We also showed the clients some design ideas of the building as a more dynamic bird-like form, rising above the dunes. They were very positive about this direction.



initial plan diagram breaking up form









New proposals after consultation with Client and Environment Agency

The scheme altered slightly to include comments from the Environment Agency. Consultations with Flood Risk Lincolnshire ruled out building in the Dunes behind the Sea Defence Wall. The primary concern was that building within the Dunes may compromise the Sea Defence and the fragile ecology. A series of meetings, several on site, were held to establish a set of parameters to put into place to ensure that the construction of the facility would not compromise the existing conditions of the site.

The following parameters were agreed:

- No development within the dunes was permitted.
- The stability of the concrete retaining wall, a vital element of the sea defence, could not be compromised.
- The vegetation and associated habitats within the dunes were not to be damaged during or after the buildings construction.
- The sand deposited by wind / tidal action was to be regularly cleared and transferred back to the beach.
- The building must be raised off the existing concrete deck, as not to interfere with the ecology of the dunes .
- The building accounts for tidal / storm surge water levels, by being raised up
- The building may overhang the dune in principle. This overhang will be limited however and the structure be designed to allow for sunlight to reach the vegetation within the dunes
- Construction work is not to adversely affect the stability or integrity of the sea defence retaining wall

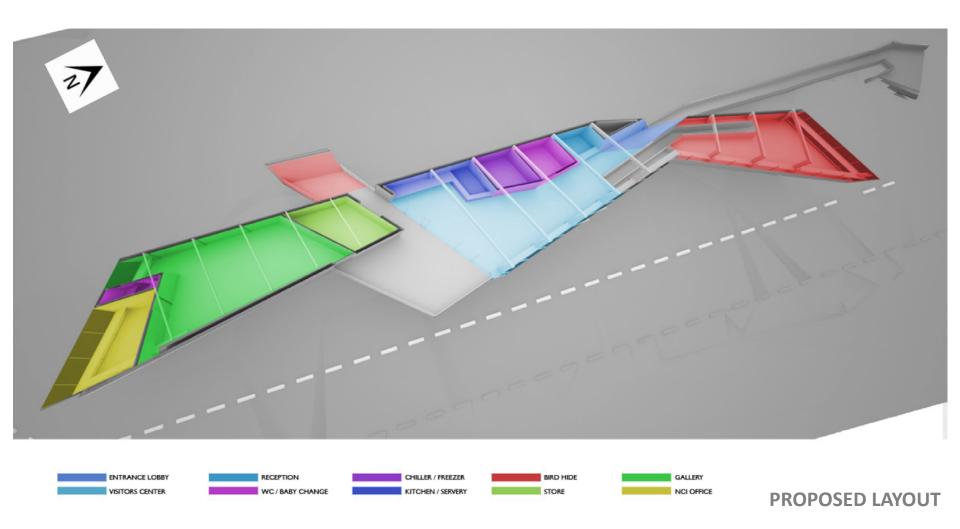
The above constraints led to a new proposal and direction for the project in terms of design concept and strategy

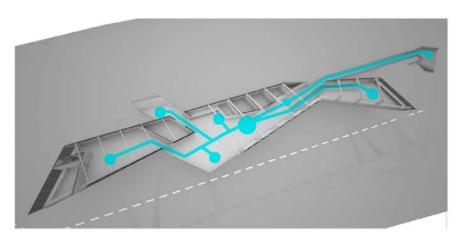


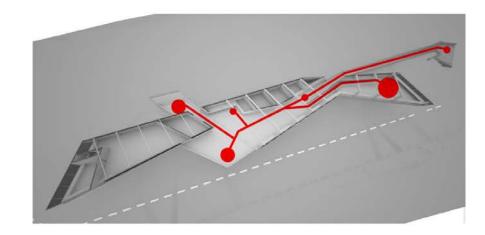
SITE CONSTRAINTS LEADING TO A NEW SCHEME

The new proposals shows the building is split into two sections with slightly different elevations, accessed via a ramped walkway, with the upper floor level raised one meter above the lower. The building is designed so that it can be managed from a single control point within the reception area. Due to the nature of the building several of the spaces are designed to be shared facilities, which can be reconfigured to serve several purposes. The upper deck will consist of a Wild Life Trust bird watching facility, with integrated media display systems.

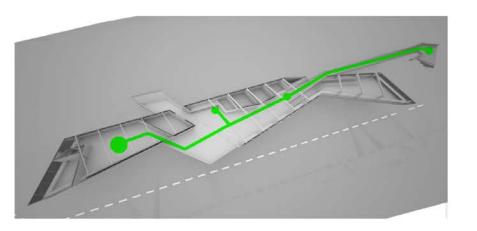
The lower deck will consist of a shared visitors centre with reception, staff facilities and wc core facility. (see plan) A 70-cover cafe is also located on the lower level, with a galley style kitchen and servery. The NCI office as well as the Artist's retreat and gallery is located in a separate volume at the southern extreme of the building. An external deck, which is suspended above the ground, links the two volumes. An external canopy partially shelters the deck, so that access remains protected in inclement weather.



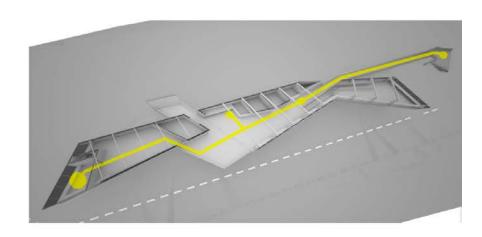




GENERAL PUBLIC



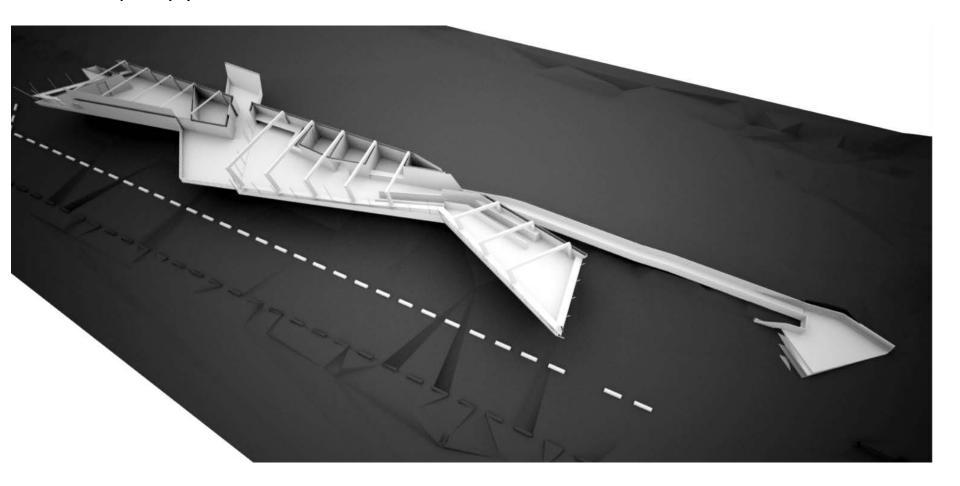
WILD LIFE TRUST MEMBERS / BIRD WATCHERS



ARTISTS / GALLERY VISITORS

NCI OFFICERS / NCI VISITORS

scheme development-physical model for client use





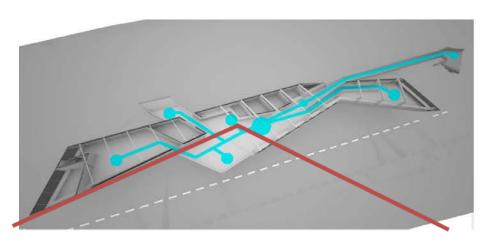


The Building Form

As well as the reference to the bird-like structure, the form and layout of the building are a reaction to the site; the geometry of the building is designed to maximise the seaward aspect. The relationship between the internal spaces, as well as the external building form was generated through the projection of vistas and sight-lines. The building form was conceived as a the silhouette of a bird rising above the landscape. The building has been elevated above the existing sea defence wall; this allows the windblown sand to be deposited onto the dunes as part of the sea defence strategy, as well as ensuring the building is protected against future storm surges and the possibility of rising sea levels. Approaching the coast from the land, views of the sea shore are cut off by sea defences that stretches for miles upon miles along the Lincolnshire coast, built in response to the 1953 flood that killed 52 people. It is not until you rise above these structures can you see the sea. As the user enters the building they will be presented with an expanding seaward vista, which opens to a full panoramic view as they enter the main visitor centre / cafe space.

The bird hide itself is accessed via an internal access ramp. Again, this ramp closes down the view to mirror the approach sequence, opening up again as the user reaches the observation platform. The gallery is accessed via the external deck. A physical separation of the two building masses is used to create a separation of function as previously discussed. An important requirement for the client group is that the gallery can be closed down at different times of the year. The gallery, as with the visitor centre, has controlled views back out across the landscape. The gallery is also accessed via the ramped walkway externally, which serves to form a narrative connection between the beach and the dunes. As the user rises up the ramp, the seaward view is closed off, with only a view across the dunes being visible. This unveiling of the view reflects the approach to the coastline in this part of Lincolnshire.

The angled glass serves to provide a projection and implied connection between the visitors centre and the sea and provides favourable optical qualities for the user, especially the ornithologist, as the glass is angled to reduce glare, minimising summer time solar gain while



circulation and panorama



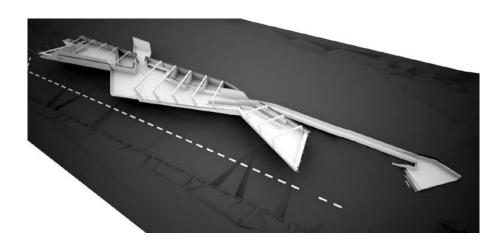
VIEW THROUGH VISITORS CENTRE

maximising solar gain in the winter. An external deck is suspended above the car parking terrace, serving as a link between the visitors centre and the combined art gallery. The deck will act as a break out space during the spring / summer months to allow expansion of visitors centre / cafe / gallery operations. Partial shelter is provided via an overhanging canopy. A secondary bird hide is situated on the external deck, overhanging and facing across the dunes, to provide a viewing platform cross the dunes. This will be a sheltered eternal space.

The NCI office employs the same angled glass facade to optimise optics, with its relative position designed to maximise its seaward aspect to increase functionality, provide an uninterrupted 180 degree view of the coast. A large volume storage facility is provided to the 'back' of the gallery. This is intended as a shared facility for the building. As such it can be accessed via the gallery or directly from the external decking via larger loading doors.

Materiality

The angular planes and edges of the building will change with the light throughout the day and with the changing light conditions throughout the year. The building will also act as an impressive beacon at dawn and dusk, when the facade will interact with low light, maximising the effect of the silhouette as the sun highlights the edges of the faceted, crystalline skin. The building is to be clad in iroko timber panels, treated not only to maximise resistance to the hostile coastal environment, but to also enhance the natural aesthetic of the building. The roof is to be clad in a standing seem zinc system. This will oxidise over time to a textured appearance, although the roof will be only partially visible from certain vantage points atop the sea defence wall / dunes.







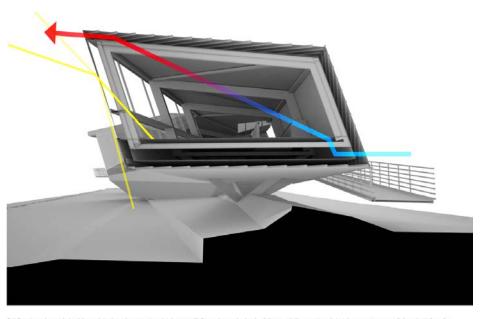
Landscaping

The building is intended to 'touch the ground lightly', with minimal disturbance to the existing site. As such there will be no traditional landscaping on site. Any such intervention would have a negative impact on the ecology and habitat which is already established.

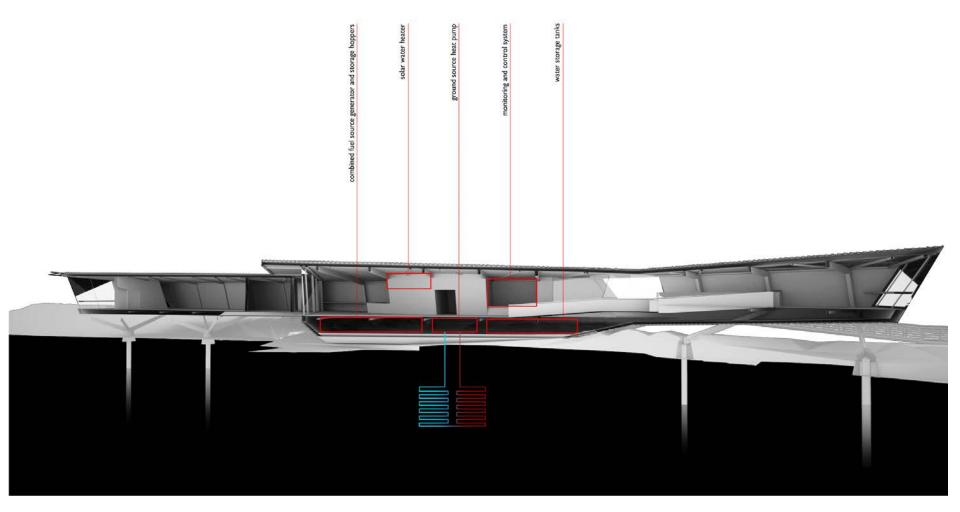
Environmental Strategy

The building is entirely 'off-grid', with no access to mains supply electricity or gas. The design and layout of the building from the outset has been heavily influenced by this need to be completely self-sufficient benefitting from solar gain in the winter months. The profile of the section has been designed to maximise natural lighting and ventilation. The shell of the building is to be highly insulted to reduce the need for heating in the winter months, heat generated from the users and the kitchen. The ventilation strategy designed to eliminate the need for mechanical cooling in the summer.

On-site energy generation will be employed through a small combined generator as a back up due to requirements for building control due to the facility being a public building. It is envisaged the majority of electricity will be generated from a wind turbine. The building is powered by the gazelle wind turbine which provides 20 kW of power, this is sufficient to power the building, including the demands of the commercial kitchen.



3d Section through building, showing the way in which air will flow through the building and illustrating the solar protection of the glass facade.



The facility is heated via a ground source heat pump, with an integrated heat exchanger. The wind turbine powers the heat pump, therefore not requiring any mains input. In the summer there is the potential for comfort cooling using the ground source at ambient temperatures.

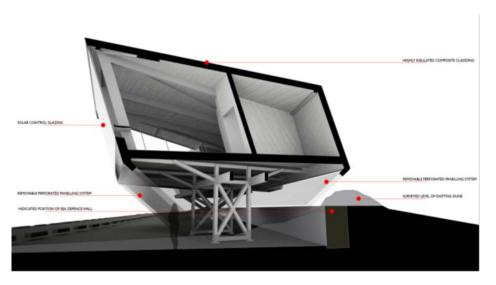
A closed loop heat pump with a refrigerant solution draws heat out of body of water which has a temperature within a band of 9-12 degs.

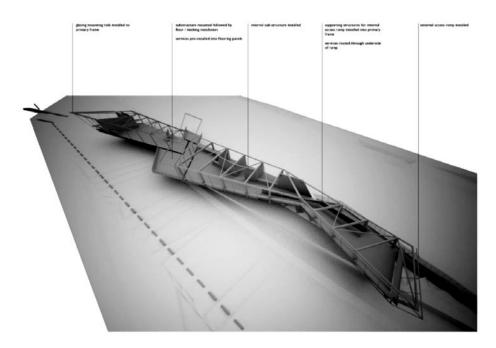
Water will be harvested and a composting holding system used for waste water storage and treatment.

The profile of the building has been conceived to maximise natural lighting and ventilation. Cold air is taken in at low level through the service wall; this cold air then enters the internal volume at floor level. The hot air is then discharged at high level through vents along the glazed edge. During the winter months the inlet vents can be partially or completely closed to control the inlet of cold air. Similarly the discharge vents can be controlled to maintain a comfortable internal air temperature while still allowing for sufficient air changes.

Structural Strategy

The building consists of a series of prefabricated vertical bow-trusses, connected by a series of triangulated horizontal trusses, forming a highly rigid but lightweight skeletal structure. Cladding panels and glazing systems then mount directly to the skeletal frame. This approach results not only in a reduced on site construction time, but also in improved quality as the majority of the building elements are produced in factory conditions off-site. The building is designed so that if a future need arises to relocate the building, for example, if the sea level was to rise dramatically, then the building can be dissembled and relocated. The building will sit on piled foundations, drilled directly through the existing concrete deck. Reinforced footings are mounted directly on top of the piles, which serve to elevate the building above the Dunes.





TECHNOLOGY/ ENVIRONMENTAL STRATEGY

Waste

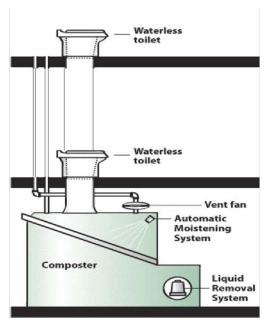
Because of the distance of the facility from the mains, we propose a commercial composting toilet (diagram taken from Clivus Multrum). The composting chambers will be slung underneath the facility to achieve gravity drop. This facility has a European Agrement Certificate accepted by Building Control. The toilet will be emptied every 6 months. There is now the technology to enable the maceration of food and composting within industrial chambers for commercial use. The liquid within the foodstuffs is evaporated by use of solenoids and then broken down over time to form humus. The system outlined above is now being piloted at Sheffield College.



Industrial macerator



Commercial macerator connected to industrial composting chambers



Commercial compost unit

Planning Process

The building was submitted for planning in January and is presently being considered and is likely to go to committee at the beginning of April. Several meetings with local people and stake holders have taken place as part of the pre-planning process.

A Public Consultation Meeting

Concerns were raised regarding the management of the sand on the car parking terrace. This concern will be addressed through the management strategy. However the issue can never be completely mitigated, as the wind blown sand is essential for dune enrichment as part of the coastal defence strategy.

Several locals who attended the meeting expressed a view that the building should also provide additional viewing space looking back across the dunes. To address this a secondary hide was included adjacent to the external deck.

The response to the building form was building was very positive.

Meeting with the Highways Agency

The Highways Agency have been consulted regarding the possibility of increased use of the coastal access route, as well and the decking access. As a result of this consultation the width and level of the road have been adjusted to comply with their requests.

A clear 3.0m head room over a 6.0m width is desirable.

There was an assumption that the access ramp on to the beach at this point would be retained for emergency use - or relocated away from the car parking area.

The access up to the existing car terrace will also remain at or above the required sea defence level.

Consideration should be given as to how we might raise the sea defence / wall in the future, if required below the building.

Consideration should also be given to ensure that the existing sea wall can be visually inspected to check its condition on an annual basis.

Meeting to discuss LCCP Development Framework

The proposed North Sea Observatory is part of the wider development of the Lincolnshire Coastal Country Park (LCCP) which is seeking to improve and diversify wildlife habitats, extend the tourist season and its attractions, and enhance community facilities along this part of the coastline.

Potential impacts associated with the observatory, such as reduced parking caused by the installation footprint, are being taken into account in plans to develop the LCCP, which have looked at rationalising, improving and balancing the facilities for visitors and car parking throughout the locality, including the Huttoft Car Terrace area. Three car parking areas to the south of Huttoft have already been upgraded as part of the LCCP project. Proposals to provide new and extended nature reserve areas, adjacent and close to the observatory area, will include improvements and formalisation of existing hard-standing and parking areas within this locality, providing additional car parking and turning facilities. The project will also seek to link these amenities with new and improved footpaths and cycle ways as part of improving public access along this part of the coastline.

The slides following slides were taken from the Design and Access Statement submitted to planning. It is envisaged that the building will be opened in the Spring of 2013



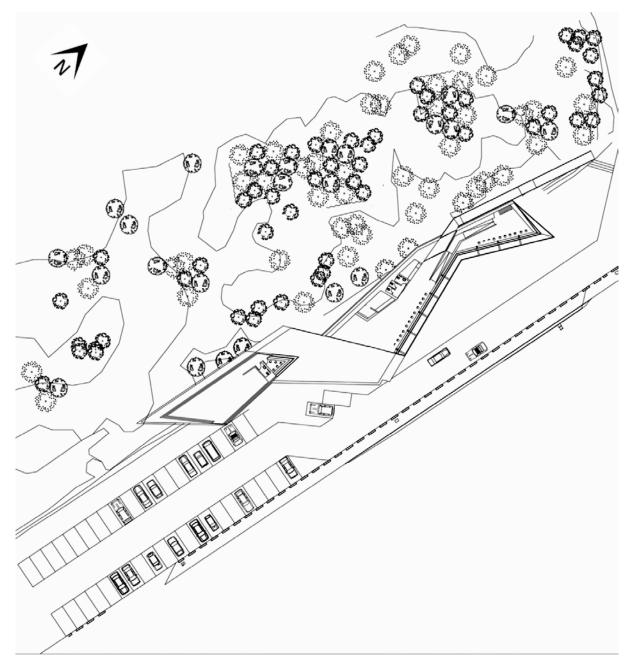
The site is located on the seaward side of the existing sea defences at Huttoft beach.

The proposed uses for the building are:

- Bird hide
- Wildlife trust visitors centre
- Arts council backed gallery
- Coastal watch office
- Cafe

The proposal to form a key part of the wider coastal and country parks long term regeneration and reinforcement strategy.

The observatory is to serve as an exemplar building and hub within the proposed Coastal and Country Park, as well as the wider region.



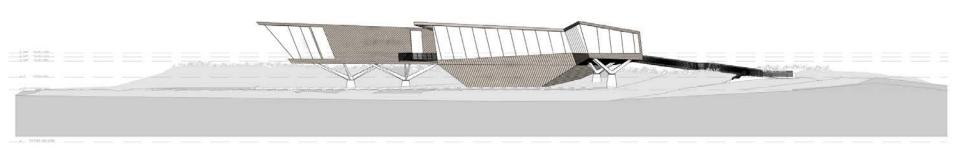
PLAN USED FOR PLANNING SUBMISSION

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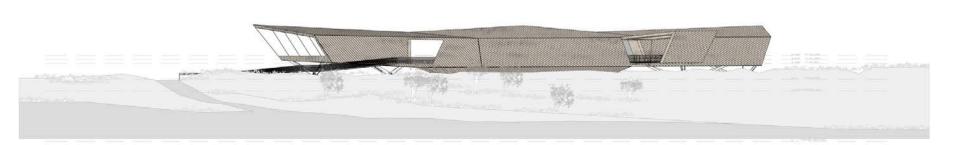


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VIEW FROM DUNES FROM WEST



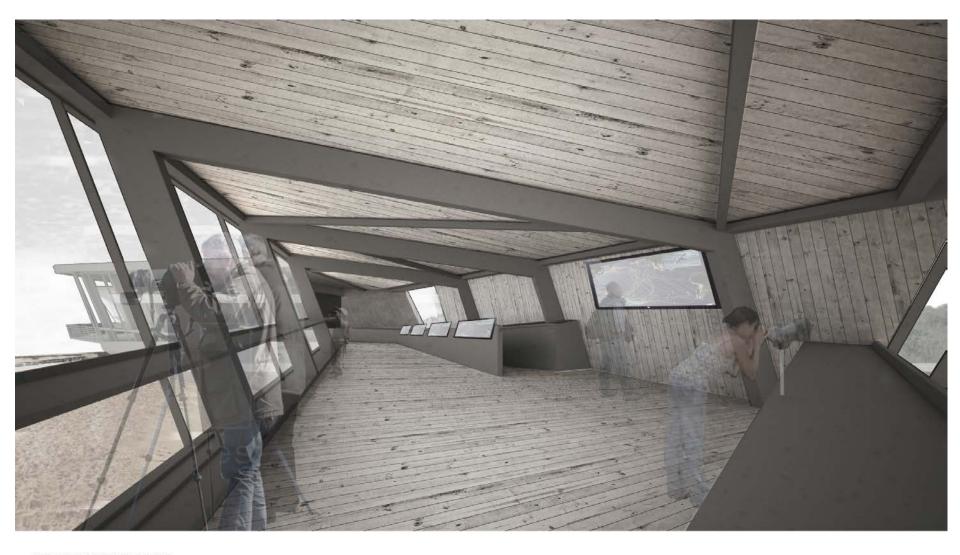
VIEW FROM NORTH OF ENTRANCE APPROACH



VIEW FROM EAST OF OBSERVATORY FROM BEACH



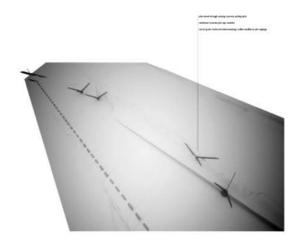
VIEW FROM SOUTH OF COAST WATCH AND GALLERYFROM BEACH

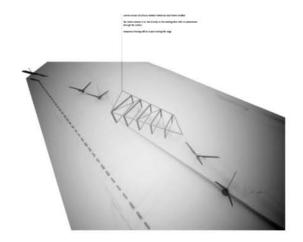


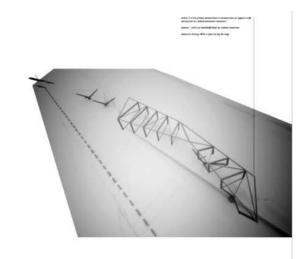
VIEW THROUGH BIRD HIDE

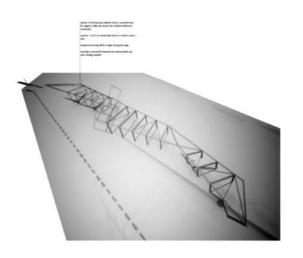


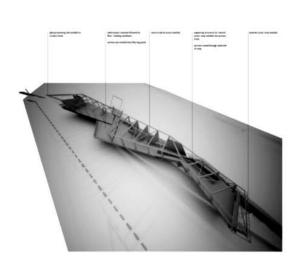
VIEW THROUGH VISITORS CENTRE

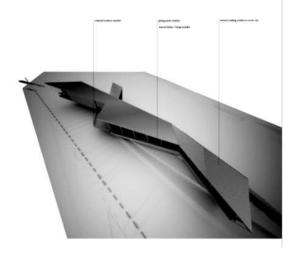












The building is designed to be constructed from a kit of pre-fabricated units, which can be rapidly assembled on-site. This will significantly reduce disruption during construction. The building is designed so that it could be relocated further inland in the event of sea level increase or a major flooding event.

CONSTRUCTION SEQUENCE