

Birsay Heritage Trust

Buildings at
HMS TERN
Twatt, Birsay



CONSERVATION MANAGEMENT PLAN

January 2014

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Orkney Surveying Services

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1 Understanding the Heritage

1.1 Description

1.1.1 Location

The former Royal Naval Air Station HMS Tern is located at Twatt in the West of the Orkney Mainland.



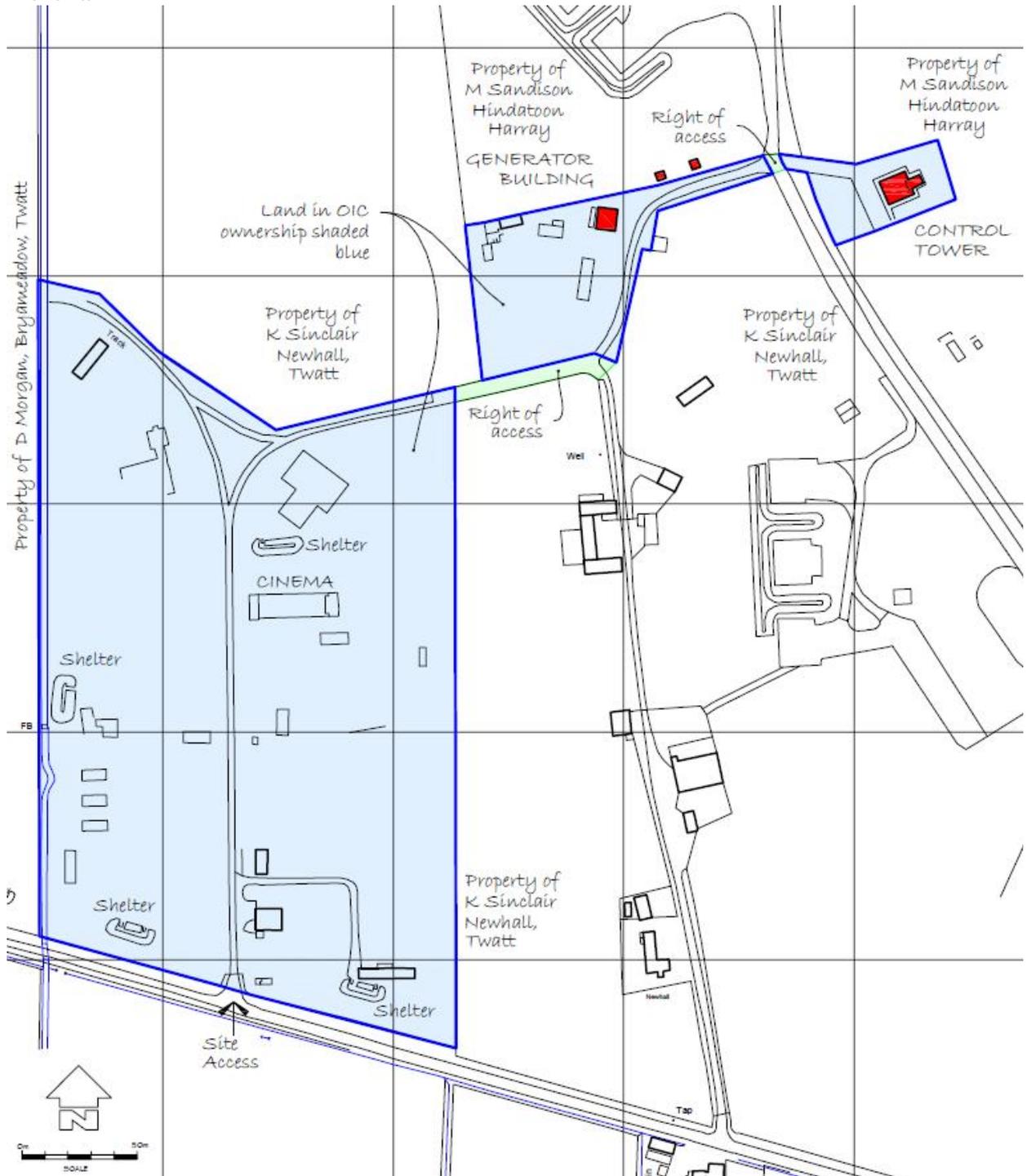
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1.1.2 Site

The site owned by Orkney Islands Council contains a number of standing buildings from the airfield, however the runways and a range of further buildings lie outwith this area in the adjoining farmland. There is understood to be goodwill towards the project and the retention of structures amongst the owners of the adjoining land.

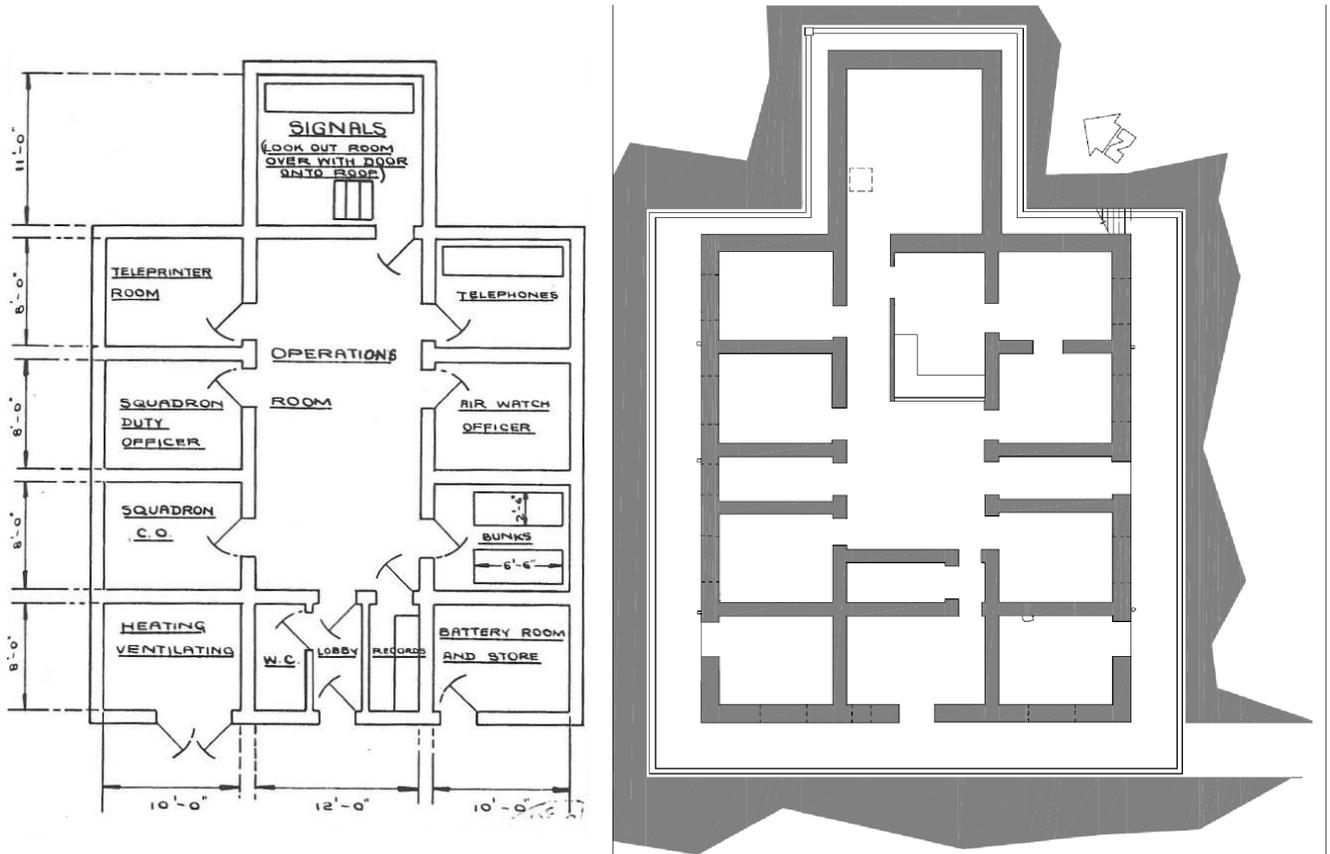
The existing site access is via a hard track, part of the original airfield road layout, from the Bryameadow Road. This is usable by larger vehicles such as buses, although narrow and some widening/provision of passing places may be required. Alternative access is available over the original runways from the A967. As this is now in agricultural use and outwith OIC ownership it could only be used by agreement and perhaps to allow a one-way system for larger events



1.1.3 The Buildings

1.1.3.1 Control Tower

The unique feature of the building is that it comprises a combination of two building types: a protected control building (PCB) and the airfield's control tower which has been added on top. From the Control Tower, with appropriate interpretation it will be possible to understand the layout and extent of the airfield.



Lamb – Sky over Scapa

The PCB consists of a single storey brick building with a flat concrete roof edged by a low parapet. An indicative plan is contained in Gregor Lamb's book (above right) and although it does not reflect the building as it stands (above left), it gives an idea of the original functions of the building.

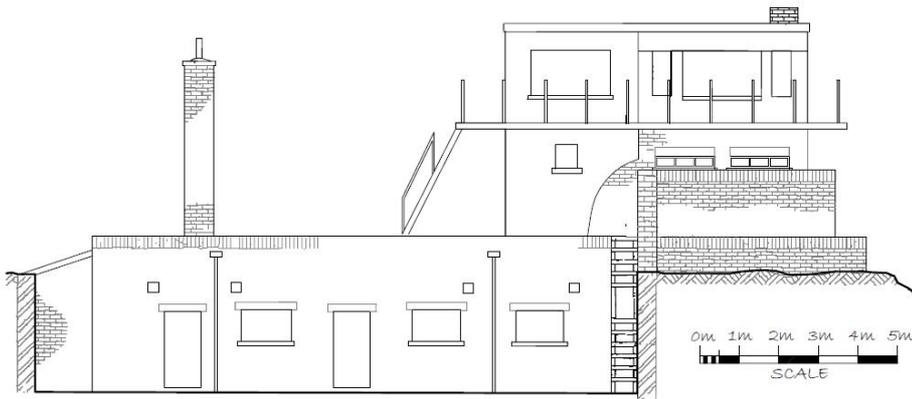
The main rectangle of the building contains a number of rooms with offices for senior officers and telecommunications functions all opening off a central space: originally the operations room. To the East lies a projecting signals room which has been lined with wire mesh to form a 'Faraday cage'. On top of this and accessed by a hatch in the roof, was a lookout room.

The building is surrounded by earth embankments against a brick retaining wall.



www.flickr.com – Patrick and Marilyn – The K Team (taken July 2007 before clearance of vegetation etc.)

The Control Tower has been added on top of this. A further later modification saw the addition of a room at first floor level to accommodate the gear for lighting the airfield. At this point the Control Tower was also expanded.



1.1.3.2 Generator Building

The generator building is a simple rectangular structure with a flat concrete roof supported on brick walls and a steel frame. Original windows would have been single-glazed with steel frames and doors would have been of timber.



1.1.3.3 Other buildings and structures

The site includes a range of other buildings, which are outwith the scope of the present project, but which present opportunities for future development or interpretation. These include notably:

The Cinema: The brick-built frontage to a large Nissen Hut, the cinema is set within the camp near the entrance to the site. The projection windows and the ticket desk are still clearly visible. The stage still stands and the outline of dressing rooms which were occupied by the likes of Gracie Fields and other ENSA stars.



The auditorium: the ex-cinema seats were specially flown up by the Nuffield Services organisation - HORNE





Air Raid Shelters: A number of shelters exist within the site and include some constructed of precast concrete sections.



A range of workshops and other buildings remain elsewhere on the site and present various future opportunities.

1.2 History

HMS Tern at Twatt was one of four airfields in Orkney during World War II as part of the defences for the Fleet Anchorage at Scapa Flow. Hatston, just outside Kirkwall which opened in August 1939; nearby Skeabrae, which opened in February 1940 and Grimsetter, the current civil airport which opened in October 1940.

Pictures from 'Sky over Scapa'



The following history of Twatt is extracted from the book 'Sky over Scapa' by Gregor Lamb (Byrgisey 1991):

"Between 23 and 24 May 1940, Admiralty surveyors were already in the islands looking at the alternative sites available and, the following month, it was decided to construct a new station at Twatt in the parish of Birsay with plans to accommodate one reinforcing fighter squadron but this was very soon changed to accommodate one and a half squadrons. The landowners concerned got even less warning than their Sandwick counterparts [at Skeabrae]. The farm of Hyval was to be immediately demolished followed by Festigarth, Skogar, Newhall and North Newhall.



The RAF was not happy about the Royal Navy choosing a site in such close proximity to Skeabrae, the airfields being barely two miles distant. It was considered that, without some measure of Flying Control, it was inevitable that, with the wind blowing from a north-westerly or south-easterly direction aircraft landing at one station would collide with aircraft taking off at the other. The RAF proposed that it be responsible for Flying Control in the immediate area of both stations. The Royal Navy objected most strongly to this and thus began between these two services, a series of sharp exchanges. The Royal Navy could not, understandably, tolerate a situation in which a junior officer in Flying Control at Skeabrae might countermand the order of a carrier Admiral to embark his squadrons immediately. The RAF felt so strongly about the issue that they suggested the Royal Navy move to

their station at Grimsetter! The argument was never resolved. Both services controlled their aircraft independently and, as a matter of fact, the only collision which occurred over Skeabrae during the war involved RAF aircraft and the only incident at Twatt was a mid-air collision between two Royal Navy planes.

Twatt was commissioned on 1 April 1941 as HMS Tern, a satellite of Hatston and the first aircraft, a detachment of four Sea Hurricanes of 880 Squadron landed on. At first it acted as an overflow for frontline squadrons disembarked at Hatston.



Twatt, with 700 Squadron and 771 Squadron both of which had the largest number of aircraft of any of the Royal Naval squadrons was crowded with aircraft and could rarely accept front line disembarkations. On 30 March 1944 the proposal was made to develop Twatt as the only suitable airfield in Orkney where disembarked squadrons of Home Fleet aircraft could train together.

After the arrival of 771 Squadron, Twatt had already been expanded from a one and a half to a three squadron station. New proposals included demolition of the Control Tower and the construction of a superior Fearn type tower, more squadron hangars, workshops, offices and upgrading of the accommodation to accept 1,872 personnel including 438 WRNS. A large frontline training unit accommodating three squadrons of Fighters, each with fourteen aircraft and two squadrons of Torpedo Bombers with twelve aircraft each was envisaged. To make this possible, the whole of the Fleet Requirements Unit, 771 Squadron, the largest squadron in the Royal Navy and now combined with 700 Squadron was to move to a new station. In July, the former Coastal Command station, Dounreay in Caithness was acquired for this purpose and established as a satellite of Twatt as HMS Tern II but as the war progressed attention shifted to the Far East and, as a consequence, the huge expansion plans for Twatt were barely implemented. On 5 December 1944 the plans were abandoned and it was decided merely to make some minor cosmetic changes to the station.

With the cessation of hostilities in Europe on 8 May 1945, the writing was already on the wall for Orkney's military airfields. In their quick demise there were echoes of their tortuous beginnings.

With the departure of No. 451 Squadron from Skeabrae in September, Skeabrae itself came under the wing of Twatt and, for a short time the commander of Twatt was responsible for the control of four stations, Grimsetter, Skeabrae and Dounreay, in addition to his own!

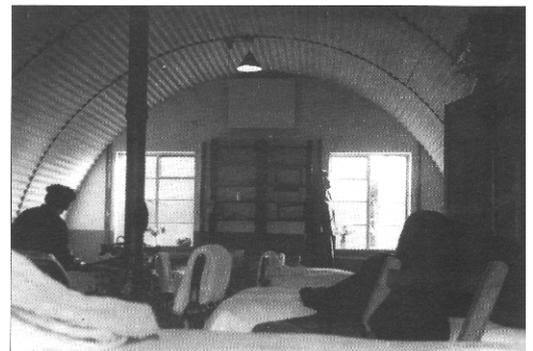
Twatt became a reserve station under Lossiemouth until 1949 when both it and its satellite Skeabrae were placed on a Care and Maintenance basis. But an end was in sight. With the announcement in June 1956 of the closure of Scapa Flow Royal Naval Base, there was clearly no future for the Royal Naval Air Stations. Both Skeabrae and Twatt were sold off in 1957. All timber and Nissen buildings were removed and the land reverted to what could only be described as limited agricultural use because of the vast amount of concrete and brickwork left on the airfields.

But Skeabrae and Twatt were not dead by any means - only apparently unconscious for in the 1970's military surveyors again appeared warning the new proprietors and indeed the contiguous proprietors that their lands were to be requisitioned for a new airfield which this time would combine both the old RAF and Fleet Air Arm Stations. At that time relations between Britain and Iceland were strained over fishing rights, the so called 'Cod War' and it was feared that NATO was to be asked to pull out of its base at Keflavik. The new NATO base was to be in Orkney. The fishing dispute was finally solved and the plan to redevelop Skeabrae and Twatt abandoned.

Shortly afterwards with the advent of North Sea oil both airfields came to the fore again when it was planned to construct a huge airfield there to handle trans-Atlantic oil-related freight. Like the many schemes which mushroomed at this time, the trans-Atlantic air freight



Flying Control Officer Sub-Lt. Paul Coughlin in Control Tower, March 1944 - PEMBERTON



WRNS' accommodation at Braemar, Twatt - IHI



port came to nothing. In the mid 1980's when oil prices were high and the development of the fields to the west of Orkney became a real possibility, the British Helicopter Advisory Board recommended that Twatt be considered as a helicopter base. Unfortunately the price of oil dropped steeply curtailing further offshore exploration and so Twatt airfield, the first British proving ground of helicopters, was denied a new lease of life.

In 1986 Government monies could be directed to the removal of wartime relics and consequently, with the permission of the new landowners, the final demolition process was begun. Ironically what had been an eyesore for forty years was, by this time, being seen by some people in a completely new light. So, when the parish of Birsay, a community which had been totally involved in the war objected to the demolition of Twatt airfield, the Orkney Islands Council was taken aback. An appeal was made for the retention of the Control Tower at least to form the basis of a small museum. A sympathetic Council agreed and, at the eleventh hour, when the demolition charges were already implanted, a stay of execution was granted. This triumph was followed by an immediate reversal of Council policy. The Control Tower was to be preserved."

771 Squadron which was based at Twatt for most of the War was a Fleet Requirements Unit (FRU) whose main role was in towing drogues for gunnery practice, both by ships and anti-aircraft batteries. They also assisted in the calibration of radar. They carried out over 4,000 exercises, flying more than 11,000 hours and, by the end of the war had 51 aircraft of various shapes and sizes, including three helicopters.

The Royal Navy's first operational helicopters, R-4 Sikorskys (right) were flown at Twatt. Three were delivered for assembly and evaluation in May 1944. In January 1945 five or six were delivered in crates and a maintenance crew of six or seven assembled them and they were put into service, although their practical use seems to have been limited by their novelty and Lamb records them being used to collect eggs from surrounding farms and to take an Admiral on a fishing expedition.

Also among the duties of the Squadron was the recovery of crashed aircraft to its extensive workshops at Twatt.



"Stand-easy", coffee break on the squadron: Air Mechanics of 771 Sqn. Twatt, at the main camp, 1944. LIA Mechanic John Shadden: Wren Jean Wensham: Wren Ruby Heymans: Air Mechanic Cyril ?? - HEYMANS



Summer 1990: Lynx Mk. 3 (CTS) of 700L Squadron, Portland, pays a nostalgic visit to Twatt Airfield, the proving ground of the Royal Navy's first operational helicopters and where the original 700 Squadron disbanded in March 1944 - JOHNSTON



1.3 Local Context

Scapa Flow was one of the principal anchorages of the British Fleet through two World Wars. The ships brought with them a supporting population of servicemen which outnumbered the local population many times over and Orkney was transformed into a fortress.

The legacy of this remains throughout the landscape in the form of gun batteries, pillboxes and other wartime structures. At Lyness, there is a Museum dedicated to the Naval Anchorage, whilst the huts at Ness Battery in Stromness give a flavour of life for the thousands of Army personnel stationed in the isles.

Although there are remnants of the other airfields, Skeabrae has been largely cleared, whilst Hatston and Grimsetter have undergone major modern developments which make it hard to understand the original character of the sites, making it the ideal place to tell the story of aviation and the war in the air in Orkney.

1.4 The Wider Heritage Context

Four hundred and forty four airfields were built in Britain during World War II, so HMS Tern is not unique, although its role as a Naval Air Station makes it highly unusual and there appear to be no other RNAS Control Towers open to the public. The design of the building is also highly unusual in combining both a Protected Control Building (PCB) and Control Tower.

The ongoing interest in the history of Orkney in wartime will only increase with the impending centenary of World War One which will be followed by the 70th Anniversary of the events of World War Two.

Notable aviation history relating to Orkney and its airfields:

- The first successful landing of an aircraft on a moving ship in Scapa Flow; 2 August 1917;
- First UK domestic airmail contract awarded by the Post Office; Highland Airways; 29 May 1934;
- First aircraft shot down by anti-aircraft fire in WW2; 17 October 1939;
- First British civilian killed by bombing in WW2; 16 March 1940;
- First major warship sunk by aircraft: Cruiser Königsberg sunk in Bergen harbour by Skuas from Hatston 10 April 1940
- The 'Battle of Orkney' and the 'Scapa Barrage'
- Reconnaissance aircraft from Hatston confirm that the Bismarck had sailed into the Atlantic; May 1941.

1.5 Management Information

1.5.1 Current Ownership and Management

The Site is owned by Orkney Islands Council. The site is to be the subject of a long-term lease to the Birsay Heritage Society, who will work in conjunction with the Aviation Research Group Orkney and Shetland (ARGOS).

1.5.2 Capital Works to Existing Structures

All works are to be carried out in accordance with current Conservation best practice. Works will be designed, specified, carried out and supervised by experienced and accredited consultants and contractors, familiar with the forms of construction involved.

1.5.3 New Works

Any new works to be carried out on the site must be in sympathy with the setting and character of the existing structures and must seek to make no alteration to existing structures or cause damage to existing fabric.

1.5.4 Ongoing Management and Maintenance

The continuing management and maintenance of the site will be the responsibility of the Society.

All future works and maintenance should be carried out in accordance with the principles above and all those commissioning, specifying and carrying out works should do so having made themselves familiar with the contents of this plan.

2 Statement of significance

2.1 Listing

TWATT AIRFIELD (FORMER HMS TERN), COMBINED CONTROL TOWER AND OPERATIONS BLOCK (Ref:51783)

This building is in the Orkney Islands Council and the Birsay And Harray Parish. It is a category B building and was listed on 15/07/2011.

Group Items: N/A, Group Cat: B, Map Ref: HY 26223 22940.



Description

1940-41. Combined Royal Naval Air Service (RNAS) control tower and operations block, set in open landscape now comprising principal building of Twatt Airfield (former HMS Tern). Rendered brick. 3-storey, rectangular-plan control room and watch office adjoining single-storey operations block to form T-plan. OPERATIONS BLOCK: single storey, flat-roofed operations block at ground surrounded by outer brick blast-wall and earthwork embankments; blast wall entrance to S corner angle. Main entrance to operations block to centre W elevation; 2 small windows flanking. 2 doorways and 3 windows to S elevation. Stair to SE corner angle rising to roof, parapeted to hold stone chippings; concrete drainage gutter bridging gap between outer blast wall; tall, narrow brick chimney with clay can. Cast-iron rainwater goods.

CONTROL ROOM/WATCH OFFICE: predominantly narrow horizontal openings to control room. External metal stair rising from roof of operations block to cantilevered, shuttered concrete walkway around N, S and E elevations of control tower watch office; large openings flanked by narrower lights to N, S and E elevations of watch office.

INTERIOR (seen 2010): operations block; arrangement of 11 rooms and ground floor of control tower surrounding central operations room. Brick shelves in L-plan arrangement to central room. Square hatch opening rising though floors of control tower to watch room above.

Notes

Part of a B Group at Twatt Airfield including: Combined Control Tower and Operations Block; 5 Air-Raid Shelters; 2 Pillboxes (see separate listings). The Royal Naval Air Service combined control tower and operations building at Twatt Airfield is an important survival of a Second World War airfield building in Orkney. The building is an early example of this integrated design, similar to early watch offices with attached operations rooms found on RAF satellite bomber airfields in the English midlands. The blast walls and earthwork embankments surrounding the operations block to roof level indicate the perceived level of threat and the importance of maintaining airfield operations in Orkney. The internal plan also differs from standardised RNAS control tower design with a suite of rooms surrounding a central operation room at the core providing additional protection from potential bomb and gas attack. There is an internal

hatch rising through the floors to the watch room. Most of the outer rooms have a window for light and ventilation. The structure occupies a prominent position on open ground within the surrounding low-lying landscape. The strategic contribution of Orkney during World War II was nationally significant. Air defences in Orkney were a significant contributor to national security with strikes from airfields in Orkney helping to counter U-boat, surface vessel and air threats over the North Sea and at Scapa Flow. The airfield at Twatt was begun in 1940 and commissioned as HMS Tern in 1941 as a satellite of Hatston airfield for the Royal Marine engineers and remained in service until 1949. The hub of the Royal Navy's sea base operations were located at Lyness at the entrance to Scapa Flow including the Wee Fea Naval Communications and Operational Centre (see separate listings). Royal Naval Air Stations were separate from the Air Ministry and therefore developed their own distinct airfield architecture and layout. Most satellite airfields had smaller watch offices although throughout the war many were adapted as needs changed. The RNAS airfield layout tended to have 4 intersecting runways rather than the 'A' plan layout favoured by the Air Ministry (RAF). The interest of the control tower is increased by the survival of various associated WWII structures. Of the four main military airfields in Orkney, Twatt has the greatest level of surviving WWII infrastructure with little remaining at Hatston, Skeabrae and Grimstter (Kirkwall). The surviving elements include 5 concrete air-raid shelters and 2 octagonal concrete pill boxes (see separate listings). None of the aircraft hangers remain. Other remains include the brick shells of the vehicle and parachute stores, sick bay/decontamination unit and generator house and the projection room section of the former cinema. The airfield covered 440 acres of land in 1941, extended to a total of 564 acres in 1943. There are three abandoned 19th century farmsteads within the perimeter.

References

Civil Engineer in Chief's Dept, Plan of R.N.A.S - Twatt S2559/44 (1944).
D J Smith, Action Stations 7: Military Airfields Of Scotland, The North East And Northern Ireland (1983).
G Lamb, Sky over Scapa 1939-1945 (1991) pp23.
Ed B Lowry, 20th Century Defences In Britain (1996) p115.
W Hewison, This Great Harbour: Scapa Flow, Aspects of Orkney Series (1985) pp 323, 326-7. Further information courtesy of Paul Francis, Geoffrey Stell and Birsay Heritage Trust (2011).

2.2 Buildings at Risk

Extract from



General Details and Location

Category

AT RISK

Name of Building

Control Tower: Twatt Aerodrome (Former)

Other Name(s)

HMS Tern

Address

Twatt

Locality

Birsay

Postcode (click to find nearby buildings)

KW17 2JH

Planning Authority

Orkney Islands

Divisional Area

Reference No

4127

Listing Category

Unlisted

OS Grid Ref

HY 26223 22942

Location Type

Rural

HS Reference No

Description

World War II control tower within disused airfield, of brick and concrete construction, rising above a bunker protected by earth embankments. The control tower is unusual in that it is also built on top of the operations block. The whole structure was made ready for demolition and holes were drilled in the structure for explosives. In the event demolition was averted at the last minute, though the drilled holes can still be seen in the walls of the building (ref: RCAHMS). HMS Tern was used as a Fleet Air Arm base and was home to some twenty different types of aircraft including Seafires and Hurricanes. (ref: Burgher, 1991). Closed in 1949 and sold off in 1957, now agricultural land (ref: controltowers.co.uk)

Building Dates

1941-42

Architects

Unknown

Category of Risk and Development History

Condition

Very Poor

Category of Risk

High

Exemptions to State of Risk

Field Visits

12/08/2009

Development History

August 2009: External inspection reveals that the building is vacant and in a derelict state.

Guides to Development

Conservation Area

Planning Authority Contact

[Tom Hunter](#)

PAC Telephone Number

01856 873535

Availability

Current Availability

Unknown

Appointed Agents

Price

Occupancy

Vacant

Occupancy Type

N/A

Present/Former Uses

Name of Owners

Type of Ownership

Unknown

Information Services

Additional Contacts/Information Source

Birsay Heritage Trust

Bibliography

Burgher, L. Orkney 1991, p.43.

Online Resources

<http://www.birsay.org.uk/>

Classification

Military Installations

Original Entry Date

25/08/2009

Date of Last Edit

08/09/2009

2.3 Other Statutory Designations and Policies

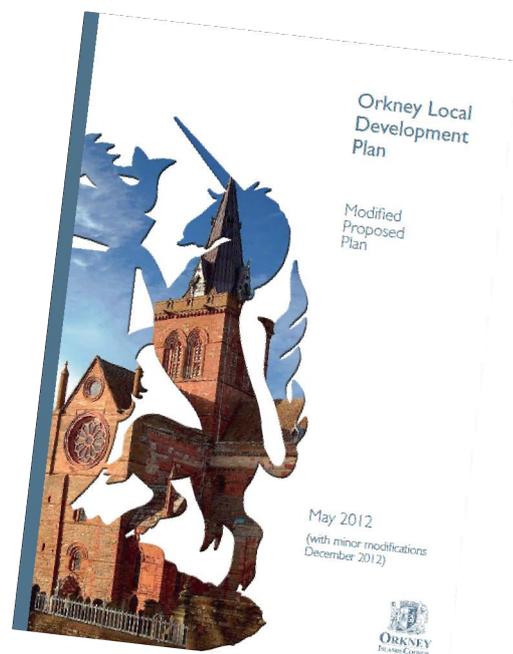
The building falls under the Historic Buildings policies of the current Orkney Islands Council Local Plan which seek to protect and enhance the historic environment. The Council's Orkney Local Development Plan (May 2012, modified December 2012) is currently (July 2013) in draft form and pending review by the Scottish Government reporter.

The relevant policy is Policy HE3: Listed Buildings and the Orkney Local List which states:

"Development that preserves a building which is either listed or appears on the Orkney Local List, its setting, or any features of special architectural or historic interest which it possesses will be supported. The layout, design, materials, scale, siting and use of any development must be appropriate to the character and appearance of the specific building and its setting, and must not significantly compromise the overall architectural integrity of the building or its historic interest.

"There is a presumption against demolition or other works that adversely affect the special interest of a Listed Building or its setting. No Listed Building should be demolished unless it can be clearly demonstrated that the building is essential to delivering significant benefits to economic growth of the wider community; or that the repair of the building is not economically viable but that it has been marketed at a price reflecting its location and condition to potential restoring purchasers for a reasonable period.

"The detailed policy guidance and criteria set out in the Supplementary Guidance Listed Buildings and the Orkney Local List will be used by the council to assess applications for Listed Building consent and proposals which will impact upon the setting of a listed building or building which features on the Orkney Local List."



2.4 Architectural Significance

The building is a survivor among a group of buildings erected in haste, neglected for years, but which represent a pivotal time in our history.

Its blocky outline and flat roofs reflect 1930s architectural trends and with the restoration of steel windows and interior decoration will be a fine example of that period.

As a type it is believed to be unique in combining the Protected Control Building at ground floor operations room with a Control tower.

2.5 Historic Associations and Stories

Orkney's wartime history is a rich vein and is increasingly of interest to visitors who are interested in their family history. This is a story, not just of war and military history, but of the thousands of individual servicemen and women who passed through Orkney in wartime.

Notable aviation history relating to Orkney and its airfields:

- The first successful landing of an aircraft on a moving ship in Scapa Flow; 2 August 1917;
- First UK domestic airmail contract awarded by the Post Office; Highland Airways; 29 May 1934;
- First aircraft shot down by anti-aircraft fire in WW2; 17 October 1939;
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- The 'Battle of Orkney' and the 'Scapa Barrage'
- Reconnaissance aircraft from Hatston confirm that the Bismarck had sailed into the Atlantic; May 1941.

The story of the saving of the building with the last minute reprieve from demolition is also particularly interesting. The holes drilled in the walls to take the explosive charges being still visible.



Watchkeepers Cabin off duty, Twatt: Back Row: Paula Edwards, Janet Renston, L/Wren Helen Wilson, Nan Chisholm, unknown, Hilda Smith. Front Row: Doreen Campbell, Margaret Mitchell, unknown, unknown – REMMINGTON



Rugby at Twatt, 1944: RNAS Twatt in hooped jerseys v. RNAS Grimsetter: the score was 36 - 3 for Twatt, two of the tries for Twatt being scored by Trevor Dole – REMMINGTON

3 Risks and opportunities

3.1 Risks and Threats

The building is in poor condition and has badly deteriorated due to neglect, vandalism and work carried out in the 1980's ahead of proposed demolition. Without intervention the decay will continue and will lead to loss of the remaining ironwork and eventual structural collapse of the balcony, reinforced concrete lintols and roof slabs.

3.2 Opportunities

The opportunity exists to create a visitor attraction or museum which will tell the story of Orkney's fascinating aviation history.

The collaboration with ARGOS will also allow them to display a collection of artefacts recovered from aircraft crash sites in the isles.

This can form an important part of an existing wartime trail which consists of the Scapa Flow Visitor Centre and Museum at Lyness, Ness Battery at Stromness and numerous smaller and undeveloped sites around the islands.

The Twatt Airfield is perhaps the most accessible of these sites being located in the heart of Orkney's West Mainland, on the main tourist routes and close to attractions such as Skara Brae and the Heart of Neolithic Orkney World Heritage Site, the Orkney Brewery, Marwick Head. The Trust's own Barony Mill is also nearby.

It is well placed to take advantage of the large numbers of tourists who visit Orkney on coach tours, either on day trips from Inverness and John O'Groats or on one of the 70 cruise liners which call annually in Orkney. However, in order to achieve this it will be necessary to make provision for coaches to park and provide suitable facilities to cope with groups of up to 50 at a time.

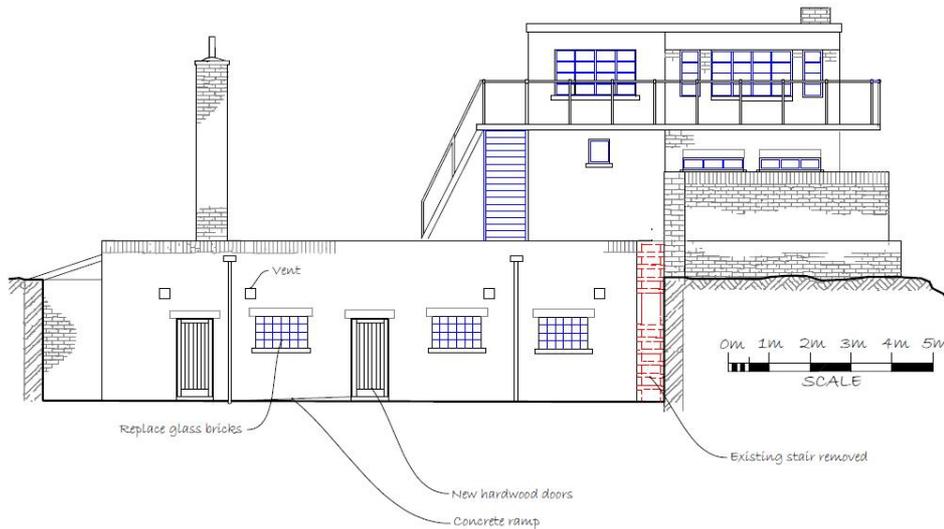


3.3 Proposals

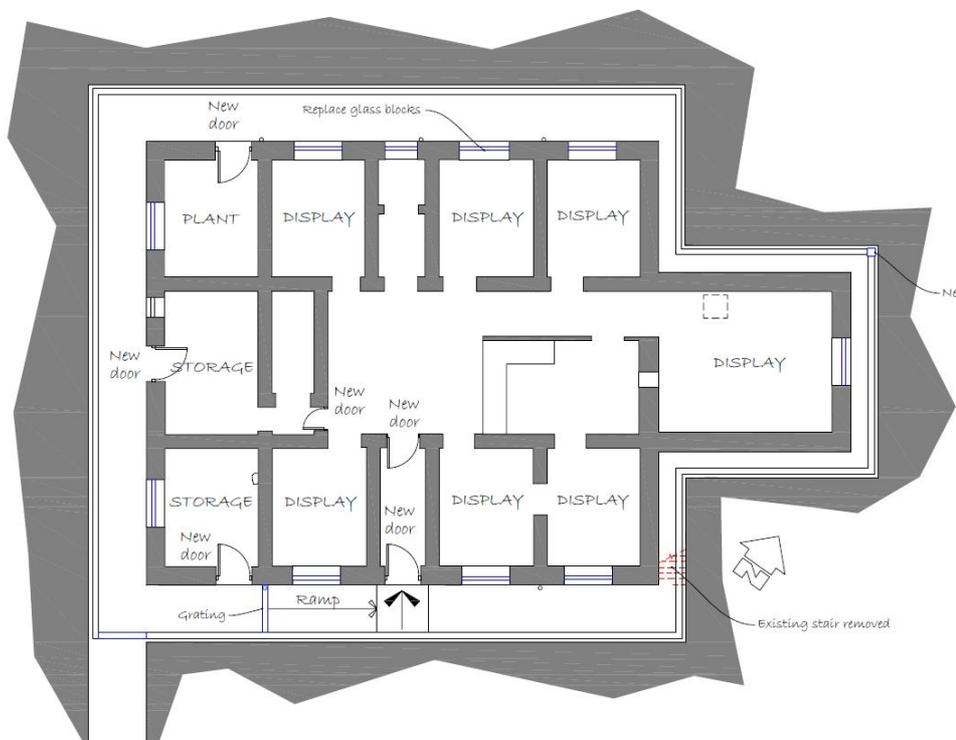
Full details of the proposals are contained within the Condition Survey and Proposals Document.

3.3.1 Control Tower

It is proposed that the Control Tower be restored to form the centrepiece of the proposed museum. The building will generally be put back into good order as described at 3 above.



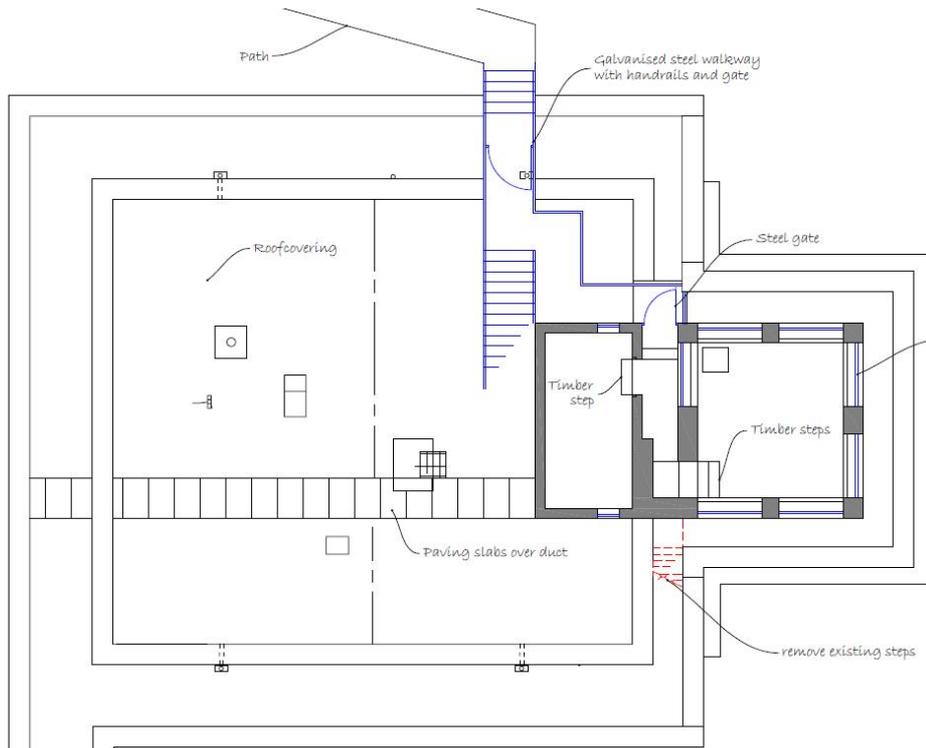
The building will be simply refurbished internally to provide display space as below with rooms dedicated to information on each of the different airfields in Orkney.



It is proposed that insulation be introduced to the roof of the PCB by overlaying the existing slab with board insulation. This will reduce heat loss and reduce the risk of condensation if the building is heated in the winter, which will be a necessity if artefacts are to be maintained in good order. A thin gravel



layer may be introduced for cosmetic reasons to replicate the original finish if required, but this would not be necessary and may lead to long term damage to the waterproof layer.



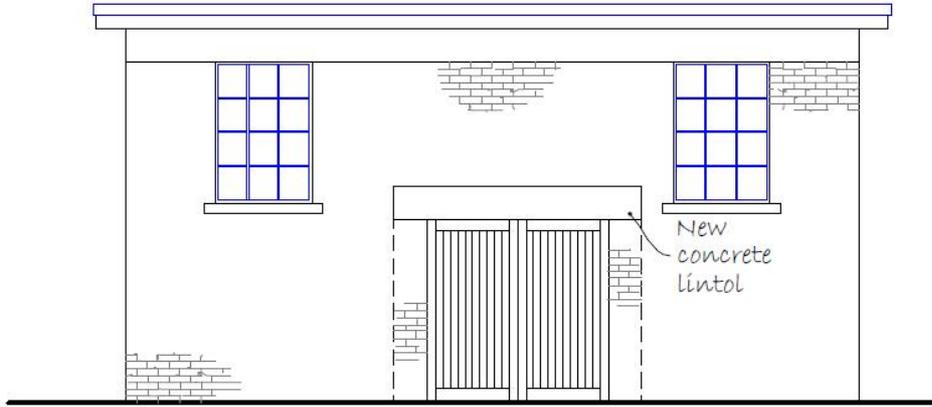
It is also proposed that the existing steps from the ground floor level to the roof be removed. They are clearly a later addition and it would be impossible to make them satisfactory as a means of access. They also make it impossible to walk round the building and appreciate the space around the Tower itself. Instead, it is proposed that a new access be created from the North which would allow straightforward access to both upper levels whilst minimally affecting the principal views of the building. The existing ladder to the Tower would be restored 'as is' and would be readable as part of the original structure, though not usable by the public. It is suggested that the gallery round the tower would not be publicly accessible to remove the need for major strengthening work and balcony upgrading. Access would only be needed for window cleaning.

3.3.2 Generator Building

The Generator Building is to be used as a display area for Aircraft remains as recovered by ARGOS. The doorway will be rebuilt and new doors added.

It is also proposed that the roof be insulated as above. Consideration should also be given to insulation of walls.



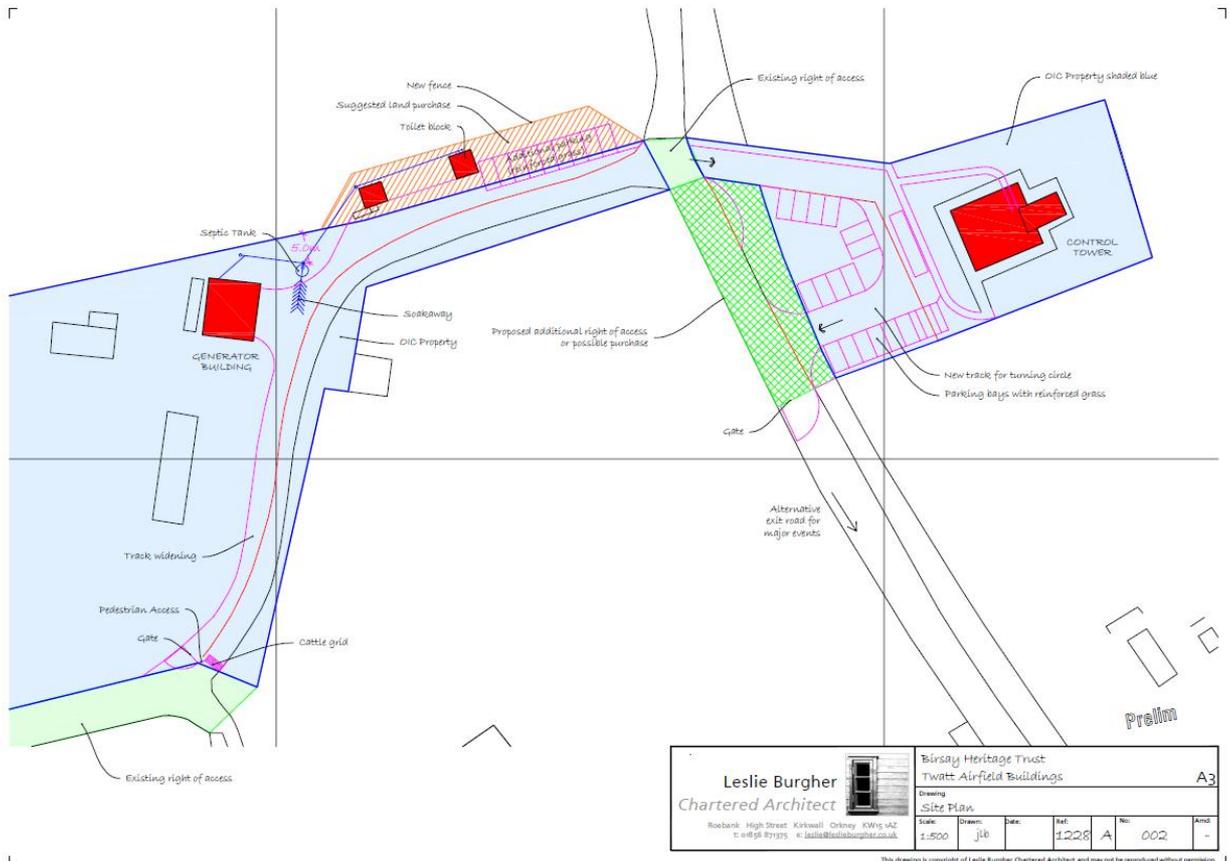


3-3-3 Toilet blocks

Additionally, it has been identified that there is a need for toilets on site if this is to become a viable tourist attraction capable of dealing with large numbers: even if only for special events. There was originally a single toilet within the PCB, but there are uncertainties over drainage and its position at the heart of the building is far from ideal.

There are two small brick structures to the North of the existing site which would be suitable for conversion to form toilets. It is possible although not obvious that this was their original function and there is room within the site for a septic tank and soakaway. These buildings are currently outwith the site, but it is likely that they would be available to add to the site.

A water supply will be required.



3.3.4 Site works

It is proposed that parking space be created adjacent to the Tower. A small area of land between the tower and existing track is part of the site and a right of access over a further area of the adjoining track could be acquired to create an area suitable for turning a bus. It is proposed that parking bays would consist largely of reinforced grass to minimise the impact on the setting.

The track approach to the building would be widened and it would be possible to create further parking alongside the toilet blocks.

It is suggested that the two existing gates be replaced with cattle grids to facilitate public access whilst maintaining security for farm animals.

3.3.5 Services

There are no existing mains services to the site and new supplies of water, electricity and perhaps telecoms will be required. Mains services are readily available in the area.

The use of the buildings as a Museum and for storage of wartime artefacts may create a requirement to provide a controlled environment. The level of control will have implications for both capital and running costs. There are a range of options. One approach would be to produce displays consisting solely of durable materials, which would allow for only enough heating to protect the building fabric, however this would restrict what the building would be capable of providing. To achieve full environmental control would likely be too expensive. It is likely that the best approach will be to provide a simple form of heating which can be readily controlled. This could be supplemented by providing controlled display cases or rooms for particularly sensitive items.

Electric heating will be the best option as mains gas is not available and oil-fired heating would require the installation of oil tanks and flues which would be incompatible with the historic nature of the site. Simple electric radiators are one option and can be obtained in a pattern similar to traditional cast-iron radiators. Storage heaters are an alternative, but are less controllable. Heat Pumps have higher capital costs but use power more efficiently. Air source heat pumps require visually intrusive external units which will require regular maintenance. Ground Source heat pumps can use ground loops, which may require a large area that may be difficult in a site with potential historic remains in it, or boreholes, which are more expensive. Heat Pumps work well with a low-temperature wet radiator system which could reflect the pattern of the original installation, but are less suited to fine control.

Electric heating has been costed. The installation of a ground source heat pump would cost in the region of £20,000. Specialist advice should be sought as part of the design process.



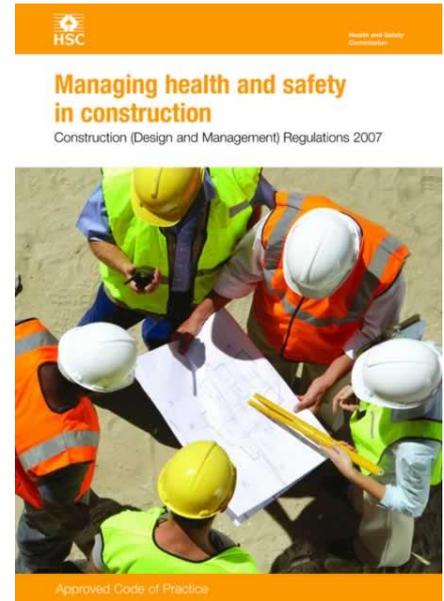
3.4 Risks: Health and Safety

Repair works will fall under the scope of the Construction (Design and Management) Regulations.

The Developer will be required to:

- Check the competence and resources of all appointees with regard to Construction safety
- Ensure suitable management arrangements for the project including welfare
- Allow sufficient time and resources for all stages
- Provide pre-construction information to designers and contractors: This may include commissioning surveys such as an asbestos survey.
- Appoint a CDM Co-ordinator for the duration of project
- Appoint a Principal Contractor for duration of project
- Ensure that construction does not start until there are:
 - Suitable welfare facilities
 - Construction Phase HS Plan in place
- Provide information relating to the Health and Safety File to the CDM co-ordinator

Any ongoing repair or restoration work will require to be suitably self-contained and programmed to ensure safety of visitors and staff. Works involving lime render or pointing will need to be carried out during the summer months when the building is at its busiest with visitors



4 Aims and objectives

4.1 Conservation and Repair

All Conservation work will require to be carried out to the standards laid down by Historic Scotland as laid out in their publication "Advisory Standards of Repair" and relevant Technical Advice Notes.

The general presumption shall be that the existing fabric will be preserved unless this is absolutely unavoidable. Repair will be preferred to replacement even where this would be more expensive.

The programme of works will require to be approved in advance by Historic Scotland's architect under their grant system.

4.2 New Work and Alterations

New works carried out to the existing fabric should be carried out without affecting the original fabric as far as possible. Alterations to the existing fabric should only be carried out where they are essential for structural or safety reasons.

It is recognised that in making the building fit for purpose by, for example, providing adequate modern services, improving thermal performance and providing maximum possible access will require new works but all alterations to existing fabric must be unavoidable by other means, even where this would be more expensive.

Replacement work which is to any degree conjectural must be based on suitable precedents which must be clearly and specifically identified. Precedents should be within the building, failing which they should be taken from similar local or other buildings of the same period.

New work to the building should observe the sentiments of the SPAB manifesto: "that change was of necessity wrought in the unmistakable fashion of the time".

It may make sense in certain circumstances to create new work in a completely modern style to clearly demonstrate what is original fabric rather than create a false antiquity.

All new works and alterations will require Listed Building Consent and the principles of any scheme of alterations should be agreed at the planning stage with Historic Scotland and the Local Authority.



4.3 Access

4.3.1 Introduction

The Disability Discrimination Act (DDA) 2005 makes it unlawful for an organisation to discriminate against a disabled person by refusing to provide (or deliberately not providing) any service which it provides to members of the public or in the standard, manner or terms in which the service is provided or by failing to make '**reasonable adjustments**' to allow a service to be provided.

It is estimated that there are around 8.6 million disabled people in Great Britain. Providing for their needs opens up a large potential market.

However SBSA/Scottish Executive Planning Division Planning Advice Note PAN 78: 'Inclusive Design' advises as follows:

"Alterations: Ensuring the accessibility of existing buildings, particularly those whose built form is of cultural or historic significance, can often give rise to conflicting requirements.

"It is recognised that the cultural or historic significance of a building or structure is a relevant factor in determining reasonableness under the terms of the DDA. Preservation of the character of a building may be a valid reason for not making certain physical adjustments to remove barriers to access. This does not mean a building cannot be altered in a sensitive fashion, or prevent the owner or operator of such a building circumventing barriers through appropriate policies, practices and procedures. Historic Scotland will support imaginative proposals which complement the special character of historic buildings and improve access for everyone.

"Scottish Ministers seek to ensure that the special interest of historic buildings and ancient monuments is protected. In the case of listed buildings, an active reuse is desirable through a process of managed change. The long-term management of scheduled ancient monuments is similarly desirable, although their nature may mean that there is less flexibility.

"Improving access: The special architectural and/or historic importance of listed buildings, conservation areas and scheduled ancient monuments may mean that a balance has to be struck between accessibility and the preservation of the structure and its interest. However, with careful thought, sensitive solutions to provide appropriate access can almost always be found.

"In a small number of cases, the form of the physical barriers to access may contribute significantly to the cultural and historic importance of a building to the extent that their removal or alteration will be inappropriate. If the preferred access option is not possible, every effort should be made to find an acceptable alternative. Although works that could be removed at a later date without damage to the historic fabric



are often desirable, reversibility must not be used to justify development which relates poorly to the building."

4.3.2 Physical Access

The following issues need to be addressed in proposals for altering or upgrading the building:

Access to Buildings:

Car Parking:

The Proposals allow for the creation of new parking spaces close to the building.

Approach to Buildings:

The access routes can provide reasonable level access and a hard surface path should be provided from accessible parking spaces.

Length of Access Route:

Vehicles can be driven to the door of the Building.

Principal / Accessible Entrances:

Access ramps can be provided to the Control Building, Generator building and toilets.

Access within Buildings:

Access between Storeys:

It will not be practical to economically provide wheelchair access to the upper floors, however the principal displays will be at ground level and the main purpose of providing access to upper levels is simply to provide a higher viewpoint for viewing the airfield. This can be achieved to some extent by photographic or other graphic means within the displays.

Internal doors:

Should provide minimum clear width of 800mm where possible.

Changes of level:

Should be ramped at 1:20 wherever possible or at a maximum of 1:12.



4.3.3 Sensory Access

Hearing loop systems are expected at reception areas and should be in good working order.

Interpretation materials should be provided in different formats and the use of online technology considered where appropriate.

Consideration should be given to visual impairment in colours and signage.

4.3.4 Access Plan

It is recommended that a detailed Access Audit is carried out in partnership with the local Access Panel.

Any access problems identified should be considered whenever work is proposed to the Building to see if alterations are feasible.

Any proposed alterations, installation of equipment or furniture or temporary displays will require consideration of access to ensure that accessibility is maintained. This should be incorporated into the wider Access Plan for the building.

4.3.5 Applicable Standards and References:

BS 8300: 2001, as amended – *Design of buildings and their approaches to meet the needs of disabled people – code of practice.*

Conversion of Traditional Buildings: Application of the Scottish Building Standards; Historic Scotland, Guide for Practitioners 06.

Access to the Built Heritage; Historic Scotland, Technical Advice Note 07



4.4 Sustainability, Climate Change and Environment

4.4.1 Sustainability

Within the limitations of the existing fabric every effort should be made to reduce energy consumption. This should not however, compromise the historic fabric and should take particular care to avoid problems with condensation, which is a particular problem in our damp maritime climate.

In recent years Building Standards have dramatically tightened the energy consumption of new and converted buildings. Generally redeveloped buildings must meet standards current at the time of construction, which are likely to be more onerous than at present. However, in a Listed Building some leeway will be granted.

There is currently a reasonable amount of loft insulation. It will generally be straightforward to upgrade this and in this instance it will be possible to provide floor insulation, however the provision of wall insulation will be difficult.

Traditional building materials generally have low embodied energy and greater longevity with long maintenance cycles. Stone walls, provided that they are dry, hold a degree of heat which helps to stabilise building temperatures. Continuous background heating, as in this situation, is generally more efficient than intermittent heating.

4.4.2 Environment and Climate Change:

Increasing severity of rainfall is proving more testing on building detailing. Sizing of rainwater goods and flashing details should take account of this. Consider providing additional downpipes for larger roof areas.

There are no known issues of flooding in the vicinity.



4.5 Management and Maintenance

There is no such thing as a maintenance-free building. All buildings require maintenance throughout their life. It is always the case that the earlier a problem is dealt with, the easier it is to solve. The longer a problem is left unattended the more likely it is for serious damage to occur. Society members, staff and users have an important role to play in observing and reporting problems as soon as they occur. Visual inspections of roofcoverings should be carried out after any gales or severe weather.

The Society will need to commission a suitably qualified and experienced architect or other professional to inspect the building at regular intervals to report on problems and arrange general repairs. On these occasions Society members and/or staff will be consulted on any problems.

A contractor or maintenance operative will be required to carry out regular maintenance checks on the building to ensure that gutters and drains are kept clear, door hinges and catches maintained etc.

Budgets for maintenance works will need to be established to include:

- Annually: external works, gutter cleaning, lubrication of door ironmongery, maintenance of heating and electrical systems etc. and minor general maintenance or repairs.
- Over a 5 year cycle: external redecoration, electrical safety checks.
- A sinking fund should also be established to set aside funds for more major works at longer intervals of say 15-20 years.



5 Action plan and costs

5.1 Action Plan

The building requires action if it is to be saved to help future generations to understand this pivotal time in Orkney and World history.

Before work can begin to bring about this restoration, funding will need to be obtained and a clear and demonstrable business plan established for the site.

5.1.1 Future Use

The use of the buildings will be to provide interpretation of Orkney's wartime heritage, through display of artefacts and providing a visitor experience.

5.1.2 Sources of Funding

Sources of funding for the work may include Heritage Lottery Fund, Historic Scotland, Orkney Islands Council and a range of private Trusts.

5.2 Priorities

The preservation of the existing, surviving fabric must be the highest priority in any works to the buildings ahead of any new works. New development should not compromise the existing building: either its fabric or its setting.

5.3 Costs

The Project Costs have been assessed by Orkney Surveying services (Jan 2014) as follows:

Control Tower	£231,400.00
Generator Building	£48,520.00
Toilet Blocks	£35,375.00
Sub-Total:	£315,295.00
10% Prelims:	£31,529.50
Sub-Total:	£346,824.50
10% Contingencies:	£34,682.45
TOTAL:	£381,506.95

To this must be added an allowance for Professional fees of 15% or £57,226.04 and for statutory fees of approximately £2,000 giving a total of £440,750 (rounded)

5.4 Delivering the Project

The restoration of the building will require the appointment of a design team which should comprise the following individuals or firms:



- Architect
- Quantity Surveyor
- CDM Coordinator
- Structural Engineer
- Services Engineer

All of these consultants must be experienced in work to historic buildings. The team should include individuals in each discipline accredited as conservation professionals under a scheme recognised by Historic Scotland.

It will also be necessary to appoint:

- Exhibition designer

This may be a separate appointment or as part of the above team.

Further specialisms may also be required as part of the project, depending on the skills of the team members. Teams should be invited to propose appointments for any sub-consultants.

It will be normal for consultants to be appointed as a team by competitive tender but this should be by a process which takes account of experience and ability and not just on cost grounds alone.

The CDM Coordinator should be appointed at the outset to provide advice on the appointment of the other consultants.



6 Adoption and review

6.1 Adoption

The Conservation Management Plan was adopted at the meeting of Orkney Natural History Society on

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6.2 Review

Progress in relation to the plan will be reviewed regularly at meetings of the Trust under the following headings:

- Condition of the Site
- Works carried out in the previous period
- Works proposed in the coming period
- Maintenance Budget
- Access to the Site

