

List Entry

List Entry Summary

This building is listed under the Planning (Listed Buildings and Conservation Areas) Act 1990 as amended for its special architectural or historic interest.

Name: Submarine Escape Training Tank (SETT), HMS Dolphin

List Entry Number: 1414020

Location

Submarine Escape Training Tank (SETT), HMS Dolphin, Fort Blockhouse, Haslar Road, Gosport, Hampshire, PO12 2AB
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The building may lie within the boundary of more than one authority.

| County | District | District Type | Parish |
|-----------|----------|--------------------|------------------|
| Hampshire | Gosport | District Authority | Non Civil Parish |

National Park: Not applicable to this List entry.

Grade: II

Date first listed: 26.06.2013

Date of most recent amendment:

Legacy System Information

The contents of this record have been generated from a legacy data system.

Legacy System: Not applicable to this List entry.

Legacy Number: Not applicable to this List entry.

Asset Groupings

This List entry does not comprise part of an Asset Grouping. Asset Groupings are not part of the official record but are added later for information.

List Entry Description

Summary of Building

Submarine Escape Training Tank and support accommodation, designed 1950-1, operational 1954. Tower re-clad and windows altered circa 1995 (these alterations are not of special interest.)

Reasons for Designation

The Submarine Escape Training Tank, HMS Dolphin, Gosport, designed 1950-1 and operational from 1954, is listed at Grade II for the following principal reasons:

* Rarity: this is the only escape training tank in the country and one of only a handful internationally;

- * Technological and historic interest: designed following an Admiralty review of safety training for submariners it has been used to train every Royal Navy submariner from 1954 to 2009, which is a testament to the success of its original design. As such it represents a development of national significance;
- * International influence: the SETT has also been used to train foreign military personnel and their trainers and was used as a model for other SETTs such as that in Turkey;
- * Intactness: while it is acknowledged that there have been some alterations, as is to be expected in a facility with such a long life span, these are of a minor nature and the fundamental original form of the building remains legible and this is particularly true of the tank at the core of the facility;
- * Architectural interest: a substantially intact, purpose-designed military training facility. The tower is also a striking feature on the Gosport sky-line.

History

The SETT was constructed in the 1950s as an additional facility for the Submarine Service which had been based at Fort Blockhouse since 1905. Fort Blockhouse is situated in a highly strategic location at the western mouth of the entrance to Portsmouth Harbour. The Fort itself has early origins with a blockhouse or fortified tower here from at least 1417. Significant modifications and additions were made in the Tudor period, again in 1674 (given the threat posed by the Dutch Fleet), in the early C18 (during the War of Spanish Succession) and in the early C19 (with the threat from Napoleon).

Haslar Submarine Depot developed rapidly from its establishment in 1905 with facilities for docking and refuelling (such as the 'petrol' pier) as well as accommodation for the submariners constructed to the south-west of Fort Blockhouse. It was to remain the national submarine headquarters from inception despite the growth in the use of this kind of vessel necessitating the construction of other bases elsewhere. When in 1907 an old hulk called HMS Dolphin was brought to site for additional accommodation it gave its name to the establishment.

In the 1930s and '40s Submarine Escape Training was conducted in a 15 foot tank at HMS Dolphin although not all submariners were trained in it. Following a number of submarine accidents and also the Ruck-Keene report of 1946 (Captain Ruck-Keene had been appointed the chair of a committee to investigate escape arrangements from Royal Navy submarines), the Admiralty Board decided that safety training should be given to all submariners and the SETT was constructed as part of the facilities for this purpose. Design drawings (by the Civil Engineer-in-Chief's department, Admiralty, Fareham District) survive dated variously 1950 and early 1951. The first training session took place in July 1954.

As built, the tower had a different arrangement of fenestration from that of today indicating that there has been a phase of alteration (believed to have been in circa 1995 when the tower was also re-clad). The design drawings and photographs of the tower under construction show that originally the south-west and north-east elevations were lit by elongated triple lights (the central ones being of a greater width than the flanking ones) running continuously from the second to the ninth floors in the manner of a stair light. The windows appear to be steel-framed. Similar elongated single lights lit the north-west and south-east elevations. The tenth floor was also lit by triple and single lights to match.

The SETT is a training facility to teach submariners how to escape from the pressurised environment of a submarine in a safe manner (known as 'compartment rush escape'). Students would be sealed in a watertight compartment at the base of the tank, the compartment would then be flooded and the student would make his escape. Training allowed the student to build up tolerance, repress any instinct to panic and to instinctively, in an emergency, respond to commands with appropriate actions. Observation ports in the tower allowed instructors to monitor the students and escape compartments were located at 9 and 18 metres depth. A rescue team would be on stand-by at the top of the tank and medical officers were also always in attendance. In its early days of use it is understood that research and development work was also undertaken here such as the evolution of escape suits. The tank was also used for 'tap signal' training, preparing submariners for the eventuality where a submarine's communication systems failed.

The SETT has been used not only for Royal Navy training but also for Special Forces, submariners from other countries including from fifteen foreign and Commonwealth navies, submarine escape instructors for the American, French, Italian, South African and Canadian navies, as well as SETT staff from the Australian, German and American SETTs. It has, therefore, had an international role in the field of submarine escape training and is understood to be a facility which was replicated in other countries such as Turkey. It has also been used by leisure diving clubs. At its peak of operation in the 1960s and '70s in the region of 4,500 students per annum were trained here. In recent decades the figure was closer to 2,500 per annum. Due to increased safety mechanisms inherent in modern submarine design, that submarines now operate in areas where escape of this nature would not be possible, and health and safety concerns, Royal Navy training

ceased in 2009 although staff maintained the capability to demonstrate using the tank. The SETT continued to operate as a training facility for dive clubs until late 2012 and still (2013) has a very occasional use.

SETTs are known in other countries also. Two decommissioned pre-Second World War examples survive in Hawaii, United States; a functioning example has been built more recently. Others are known in Germany, Norway, Sweden, Turkey and at HMAS Stirling, Australia for the Royal Australian Navy.

Details

The SETT is aligned north-west to south-east and comprises a vertical escape training tank encased in a rectangular tower surrounded at ground floor by a broadly rectangular arrangement of support accommodation and offices.

MATERIALS

Design drawings and photographs of the building under construction indicate that piles support a concrete base slab and that it is of steel-framed construction. The tower has always been clad in corrugated sheet (now a modern re-cladding) and the ancillary structures are encased in red brick. The tank is made-up of welded steel panels.

PLAN

The escape tank is situated broadly at the centre of the SETT building. The main entrance is to the north-west opening onto a spinal corridor flanked, to its north-east, by an administration office and a group of medical rooms including a sick bay, also a small classroom, and to its south-west by offices, WCs and a large classroom. To the north-east of the tank is a garage. To the south-west of the tank is the staff entrance. A lift and stairs, providing access to the tower, are located to the west and north of the tank respectively. In the south-eastern part of the building is a large plant room with a suit store to its north-west and a laundry in the south-west corner. To the north-east of the plant room is the Submarine Escape Immersion Equipment (SEIE) store.

EXTERIOR

The flat-roofed support building - which is a utilitarian structure made up of a number of component parts of differing heights - is in red brick Stretcher bond with continuous concrete plat bands forming the headers and cills of its windows. These have been replaced with modern uPVC units within the original openings. Concrete is also used in the coping to its parapet. The main entrance elevation is to the north-west where a central bay, slightly set forward, houses the pedestrian door; this is flanked by triple lights.

The rectangular tower, which rises to ten storeys broadly central to its support building, is steel-framed and clad in replacement corrugated sheeting (understood to have been re-clad in circa 1995). It has replacement double-glazed windows (also circa 1995) centrally placed in each elevation on every floor from 2-9. Those to the north-west and south-east elevations are triple lights with the flanking lights fixed and the central, larger light an opening hopper. In the other elevations are single-light hoppers. The tenth floor projects such that its elevations stand proud from the line of the main tower. This has a flat replacement corrugated sheet roof and a more complex window design of triple lights in each elevation.

INTERIOR

The garage has an external access in its north-east elevation as well as pedestrian access to the SETT. Both the SEIE store and laundry have exposed ceilings of concrete beams. The floor in the south corner of the building (which is circa 30cm thick) hides a water tank below.

TOWER

On the tenth floor is the top of the circular tank, also a decompression chamber. The steel construction is exposed with cross bracing to the walls and a high ceiling of large steel girders; hoists here allow the lifting of equipment in and out of the tank. Floor 9 houses a tank containing air for the decompression chamber above. Floor 7 contains the first air lock at 9m depth. Floors 6 & 5 contain offices. Floor 4 houses the 18m air lock. Floor 3 houses offices. The students' rest room with WCs and changing facilities is on Floor 2 and similarly for the staff on Floor 1. Floor 2 also houses a blister air reservoir allowing instructors to stay at depth rather than having to constantly rise to the surface.

TANK

The circular tank is free-standing within the tower, supported by its own weight and that of the (warm and chlorinated) water it contains. Descending depths are painted on the side of the tank every five metres. There are small circular observation windows within the wall of the tank, also wall mounted short ladders and

access hatches. At the top of the tank, on the 10th floor, are steps, hand rails and further ladders allowing access in and out of the water.

Selected Sources

Donnithorne, C, 2008, A Brief Introductory History of Fort Blockhouse

Map

National Grid Reference: SZ6231899021



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The above map is for quick reference purposes only and may not be to scale. For a copy of the full scale map, please see the attached PDF - 1414020_1.pdf