

RAF COLTISHALL

A HISTORICAL APPRAISAL

PART 12

BOMB STORES



PAUL FRANCIS
SEPTEMBER 2013

Front: Signage on the main gate 2006
Photo: Aldon Ferguson

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ABBREVIATIONS

AAGW	Anti-Aircraft Guided Weapons
AMWD	Air Ministry Works Department / Directorate
ARS	Air-raid Shelter
DoE	Department of the Environment
ESA	Explosives Storage Area
EWS	Emergency Water Supply
M&E	Mechanical & Electrical
MPBW	Ministry of Public Buildings and Works
NATO	North Atlantic Treaty Organisation
PSA	Property Services Agency
RC	Reinforced Concrete
RSJ	Rolled steel joist



Plate 1: Fire phone painted poster on lamp column

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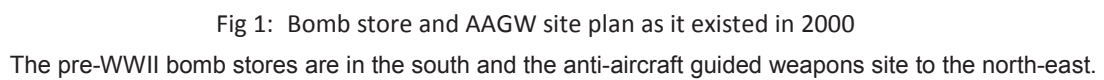
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PREFACE

This is one section of a twelve part report that examines the infrastructure and airfield at the former RAF Coltishall, now owned by Norfolk County Council.

Part 12 is a stand-alone document examining the structures which make up the bomb stores and anti-aircraft guided weapon area. It is based mainly on primary sources such as original drawings preserved at Coltishall, a file at The National Archives as well as fieldwork. Most of the buildings were locked and access was not possible.

The fieldwork was mainly carried out on 24 May 2013.



12.1 Pre-WWII Stores

A well dispersed standard group of pre-war bomb storage structures were built at Coltishall, including a pre-war fuzed-and-spare-bomb store, but this is now demolished. The site also included a WWII dedicated roadway for a tractor and its bomb trollies, together with the associated fuzing sheds – the road survives but the fuzing sheds have also been demolished. The pre-war site at Coltishall has around 75% survival and is considered to be joint best in the UK along with West Raynham and Wattisham, (the finest being at Linton-on-Ouse). When the post-war AAGW site is considered alongside the pre-war one, the ESA as a whole entity is believed to be the most important in the UK.



Plate 2: Bomb stores, view taken on 25 May 1941

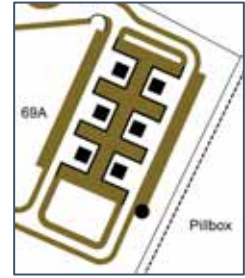


Plate 3: Bomb stores, similar view taken on 17 September 1941

The bomb stores and one component store are now completely hidden by scrim netting, and the two blister hangars camouflage painted.
Photos: English Heritage.

12.2 Bomb Stores (69 and 69A)

Two groups of six storehouses for a total storage capacity of 144 tons were built at Coltishall to drawing 3054/36, designed by the AMWD architect J H Binge. Each group consists of two rows of three brick-built storehouses arranged back-to-back, separated from each other by near full-height earthwork traverses. The traverses also have service brick-lined ducts each storehouse (although these may be a later addition). A typical row thus consists of three storehouses which are served by a service road, so that a set of six bomb stores has a pair of parallel service roads for use of tractors and bomb-carrying trolleys.



A pathway with a drainage channel and a brick dwarf retaining wall surrounds each storehouse on three sides. At the front between the main doors and the service road is a concrete loading apron, so that there is no congestion on the road network during loading operations. Between the earthwork traverses on the opposite side of the service road and the storehouse used to be an RSJ gantry system which supported overhead runways over the road and loading area. The runways are curved at three points to route them into each of the three main doors of each store. Block and tackle units were moved by hand (each one had a hanging handle) to guide it along the runway to take bombs either in or out of the stores. This system became redundant when the weight of bombs increased beyond the capacity of the lifting tackle and runway beams. Unfortunately the overhead gantries have been removed, but it is still possible to see where they were.

The storehouses are tall single-storey structures constructed formally of 13.5 in brick with a concrete slab roof, partly supported by a central concrete beam. Natural light was originally achieved through high-level plate-glass windows in the side and rear walls. In 1974, on all buildings, the set of three original full-height doors were removed, new lintels inserted and a single smaller door fitted; the gap was clad with brick and in more recent times the exterior face of the brickwork has been overclad in concrete block. Many of the concrete pyramid-shaped blocks for supporting the scrim netting are extant.

An outward-facing pillbox of circular form exists at the southernmost corner of 69a, although it is almost completely hidden by bushes. It is constructed of 13 in brick, but has been thickened in concrete; the roof is a concrete slab. It is accessed through a gap at the bomb stores end which is partly filled with earth. Some loopholes have sliding shutters in situ.

- NGR: (69) TG 27119 22169, (69A) 27276 22199, (pillbox) TG 27287 22156



Plate 4: Typical altered bomb storehouse, now with a single large door (69a)



Plate 5: Row of three bomb storehouses (69)



Plate 6: Bomb store, revetment detail separating a pair of storehouses (69)

12.3 Component Stores (70 and 70A)

There are two component storehouses at Coltishall, designed by the AMWD architect Frank Lambert to drawing 5384/40. They are small square-shaped single-storey buildings surrounded by full-height earthwork traversing with a single concrete access path which has a concrete retaining wall at the point where it goes through the earthworks.



They have two rooms, an 'L'-shaped one (max 20 ft by 9 ft 3 and 9 ft 10) storing explosives, fuzes and pistols, and a smaller one (9 ft 4 in by 10 ft) for detonators.

They are constructed of 9 in brick with high-level plate-glass windows. Doors are fire-proof steel. The roof is a concrete slab. The earth traverses have a few scrim netting concrete support pyramids extant. Internal access is not possible.

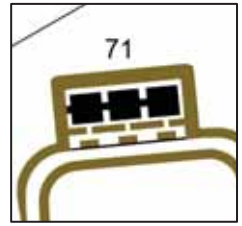
- Footprint (including earthworks): 67 ft 6 in by 71 ft (20.57 by 21.64 m)
- NGR: (70) TG 27295 22280, (70A) TG 27198 22128



Plate 7: Component storehouse (70)

12.4 Incendiary Bomb and Pyrotechnic Store (71)

The version built at Coltishall is a combined incendiary bomb and pyrotechnic store, as distinct from the other common version where the pyrotechnic store was a detached building. The complex was designed by the AMWD architect Frank Lambert to drawing 5244/40. It consists of a terrace of three brick-built windowless but vented storehouses, two of similar size (30 ft by 24 ft) for storing incendiary bombs and smoke generators, and the third smaller (30 ft by 20 ft) storehouse for storing pyrotechnics. Surrounding these are full height traversed earthworks with three entrances, one opposite each of the storehouses. Concrete walls separate each store and a 5 ft-wide path surrounds each one. The roof slab over the two incendiary bomb stores is shared by both, but that over the pyrotechnic store is just for that building. In more recent times, the 9 in thick walls have been over clad with concrete block. Internal access is not possible.



- Footprint (including earthworks): 82 ft 6 in by 147 ft (25.15 by 44.81 m)
- NGR: (71) TG 27067 22289



Plate 8: Incendiary bomb store (71)

12.5 Anti-Aircraft Guided Weapons (AAGW)

12.5.1 History

Coltishall was the first RAF station at which air-to-air guided missiles were trialled and evaluated as well as all of the necessary ground and test equipment. Funds were sought in January 1957 for the provision of the necessary storage, assembly and maintenance facilities which were designed before it was known exactly what was required in the field. The station was therefore used to mount the service trials of Blue Jay Mk.1 (Firestreak) manufactured by de Havilland Propellers Ltd, becoming the prototype anti-aircraft guided weapons (AAGW) site for aircraft carrying air-to-air guided missiles and the facilities formed the basis for all future AAGW sites. The Blue Jay trials were planned to start by March 1959. It was necessary to get as much experience as possible of the operation of the Coltishall installation so that lessons learned in operational techniques could be incorporated in further installations which would be required at the other peace and war airfields. It was requested therefore that the site's construction would commence by 1 March 1958.

At this point in time the squadrons at Coltishall were due shortly to re-equip with Javelins, and as a result the station was undergoing strengthening measures to the airfield pavements which had been approved on 14 September 1956 and plans were going ahead for the extension of the main runway to 7,500 feet.

The layout for the AAGW consisted of buildings for storage of basic components such as motors, initiators, electronic parts and explosives. Other buildings were for the assembly, functional testing and storage of ready-use missiles. These facilities totalling 27,000 square feet were planned to be built in 9 in brickwork. and in some instances 12 in concrete block construction. The AAGW site was estimated to cost £160,000. This compares with £170,500 for Leconfield, £216,500 at Middleton St George and £175,000 at Leuchars.

The costs for Coltishall can be broken down accordingly:

- Civil engineering work of all buildings: £78,500
- External services, including site clearance, water supply, security fencing, roads and paths: £22,000
- Heating and ventilation: £8,600
- Mechanical and electrical services: £17,500
- Motor alternators, compressed air and refrigeration plant: £4,000
- Directly employed labour: £1,500
- Contingencies: £13,200
- Recoverable: £14,700.

The figure of £160,000 was approved by the Treasury on 25 April 1957. The site chosen for the AAGW was already within the station's boundary and occupied the area originally used as the 1943 extension to the 15/33 runway at the south-eastern end. After a year or so in operation a full servicing policy had been worked out and it became apparent that Fighter Command should become responsible for third-line servicing of missile test equipment. In the interests of economy, it was decided that servicing should be concentrated at just two stations, Middleton St George in the north and Coltishall in the south. In the early 1960s the site had a staff of 45 personnel on duty and administrative offices were also required to include a training room, a store for publications, an office for a de Havilland representative and a works department workshop. An existing building was adapted for this task at Coltishall (but it is unknown which one), whereas new buildings were provided at the other stations.

12.5.2 Current Status

About 95 percent of the AAGW site is intact at Coltishall which is similar to Leuchars (Scotland); the site at Middleton St George has been completely erased and those at Leconfield and Wattisham have around 20 and 10 percent respectively remaining. Coltishall is therefore considered to be the most important because of its completeness and the fact that it was the prototype for its type.

There is still quite a bit of wartime archaeology present within this area, including four flare path lights, taxi track lights and the remains of Sommerfeld tracking.

12.6 Missile Preparation Facility (72)

The missile preparation building was designed in 1973 (constructed 1974) by HD Hesketh, working for the Department of the Environment – the project manager was WJ Keast. It occupies the site of the pre-war fuze-and-spare-bomb store. It was constructed by Walter Lawrence Civil & Mechanical Ltd and was completed in December 1975.



It is single storey with a 'T'-shaped planform, but also includes an empty box compound which gives the complex a cruciform shape. It is surrounded on two sides by concrete ramps and paved areas and the entire complex is surrounded by traversed earth banking, some of which was part of the pre-war fuze and spare bomb store. New earthworks involved building vertical concrete retaining walls.

The building consists of a tail unit store in the central section and a missile preparation bay on either side. These have full-width annexes on either side which function partly as ready-use carrier store and a test room on the west side and two equal-sized ready-use stores, plus a smaller one on the east side. The main rooms have roller shutter doors at either end with sloping ramps and there is an overhead gantry system with 1-tonne lifting capacity travelling crane in both missile preparation rooms.

The building is steel-framed with cased steel RSJ stanchions and beams, external walls of windowless 11 in cavity brick in-fill; internal walls are 9 in brick. The roof is supported on downstand cased steel beams and is a 6 in concrete slab clad with asphalt. Internal access is not possible.

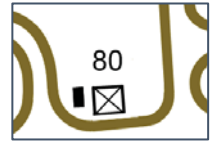
▫ NGR: (72) TG 27182 22294



Plate 9: Missile preparation facility (72)

12.7 Emergency Water Supply (80, 235 and 326)

There are two types of square-shaped EWS tanks, both being partly below ground. One is a brick-lined (13 in) with a capacity of 20,000 gallons (80), and the other is concrete-lined with a capacity of 22,000 gallons (235 and 326); all have concrete slab floors. They have earth-traversed walls and a perimeter of tubular steel railings. They serve a number of water hydrants.



See also Part 9.26.

- NGR: (80) TG 27124 22256, (235) TG 27402 22436, (326) TG 27276 22375



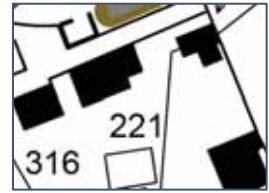
Plate 10: EWS 235, view looking north-east



Plate 11: EWS 80 (on left) and connecting road

12.8 Trolley Servicing Building (221)

Located outside the wire, the trolley servicing building is single storey with a rectangular-shaped planform forming two workshops and a smaller side annexe that is lower than the main part of the building. It provided a workshop servicing and recording facility for all guided weapon ground equipment.



Coltishall was responsible for third-line servicing in the southern part of the UK, and in order to achieve this it was necessary to have a trolley servicing building. It was constructed c.1961 at a cost of £15,000 and was built to drawing number 14386/56 – (there had been a lot of debate in the late 1950s as to whether it was necessary to have such a building). It has three main rooms consisting of a pair of similar sized workshops, the office plus two small ready-use stores (with access only from outside). The workshops each have large metal folding doors and are separated from each other by a fire wall. Internal access is not possible.

Construction is of cement-rendered brick with a concrete slab roof.

▫ NGR: (221) TG 27186 22383



Plate 12: Trolley servicing building (221)



Plate 13: Trolley servicing building (221)

12.9 ESA Initiator Store (222) and Explosive Store (Initiator) (312)

There are two detached initiator stores; one being slightly bigger.

Store 222 is a small single-storey structure with a rectangular-shaped planform. It was used for stocking initiators. It is constructed of 12 in thick concrete walls with a single, narrow high-level 5-pane metal window and is also vented top and bottom. There is a single double-width door. The roof is a concrete slab that projects out from the building and it has a dust-proof concrete floor. The building cost £1,600.

- Footprint: 17 ft by 14 ft 10 (5.18 by 4.52 m)
- NGR: (222) TG 27335 22309



Store 312 is a small windowless but vented square-shaped, single-storey structure; it is arranged open-plan with a small cupboard in one corner with a single entrance accessed from a concrete path. Other details are similar to 222. Internal access is not possible to either building.

- Footprint: 14 ft 10 in by 14 10 in ft (4.52 by 4.52 m)
- NGR: (312) TG 27329 22366

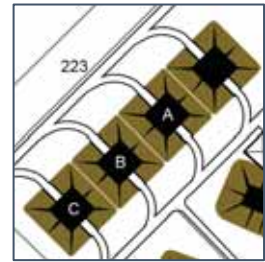


Plate 14: Initiator store (222)

12.10 Ready-Use Store (223 and 223A–C)

12.10.1 Planning

There were a number of different layouts drawn up by Archibald G Gullan which he proposed in 1956 for the whole AAGW site, and one of these is 10334/56 which shows a more compact layout to that actually built. Another site plan, 565B/57 of March 1957, shows that one proposal was to have six storehouses in a line plus an allowance for two others at right-angles to the main group, should the stores be extended at a future date. It was to include patrol paths and have a fence perimeter; the outside safety distance was set at 1,129 feet. By April 1957, it had been decided that only four storehouses were required – also a decision had also been made concerning the site of the other ESA buildings. The architect Gullan drew up drawing 4481B/57 showing the revised layout to reflect these changes and it was that site plan which was used for the construction of the AAGW. It is presumed that the detail architects were EC Godwin and A Beasley (of WWII fame).



12.10.2 As-Built

The as-built store consists of a group of four similar end-opening (both ends) storehouses, earth traverses and access roads. These are arranged as a single row, aligned NE/SW.

The ready-use stores were for the housing of assembled and tested missiles and packaged parts. A typical storehouse is a single-storey structure with a nominally square-shaped planform (55 ft by 60 ft 4 in); it is an end-opening steel-framed shed with stanchions at 10 ft centres which support steel trusses arranged as 6-bays which are clad with corrugated asbestos sheeting. External wall infilling is Hy-Rib clad with 2.5 inches of sand and cement – the reason for this, is that in the event of the accidental detonation of a missile, the thin walls can easily be pierced and the surrounding banking directs the blasts upwards, away from an adjacent store. The buildings were temperature controlled; the concrete floor slab has Aquatherm under-floor heating cables installed in 1959, and the floor surface is dust-proof. Internal access is not possible.

The storehouses are fully traversed up to eaves height, with concrete retaining walls and earth revetments; a narrow gap between the building and the retaining walls functions as a drainage system around all four sides.

- NGR: (223) TG 27380 22470, (223A) TG 27358 22449,
(223B) TG 27336 22428, (223C) TG 26315 22406



Plate 15: Ready-use store (223)



Plate 16: Ready-use store (223), view looking west



Plate 17: Ready-use store (223C), view looking north-west

12.11 Unclimbable Fencing and Street Lighting

12.11.1 Unclimbable Fencing

AAGW site fencing, amounting to around 3,000 feet, is in the form of single and double rows of standard precast concrete 8 ft-high posts at 9 ft centres with 2 ply, 4-point barbed wire underground to a depth of 1 ft, and 2 ply, 4 point barbed wire fixed to 45-degree cast bracket arms (extending outwards). Inner posts also have steel brackets supporting inwards facing barbed wire. Between posts is a 2 in-mesh chain link fencing and straining wires. Gates are 10 ft wide although these are not original. In addition, where the site adjoins civilian property, 4,000 feet of post and wire fencing was provided in order to leave a space between both fences as a patrolling area. The cost of the fencing was £3,500.

12.11.2 Street Lighting

The bomb store and AAGW area street lighting which was controlled from building (232) is based a series of Concrete Utilities 15 ft-high columns with cut-off type lanterns fitted having porcelain BC-type lamp holders and 100 watt tungsten filament lamps. Each one has a painted sign in green, red and white showing a phone symbol, the wording 'Fire Phone' and an arrow pointing the direction of the nearest phone. Amongst many others there are seven of these aligned (one or two have been replaced) along both sides of the ready-use stores and three at the north-east end.

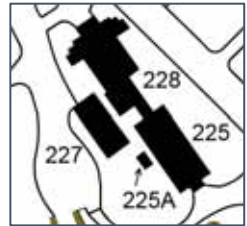


Plate 18: Fencing and Concrete Utilities lamp standard

12.12 ESA Systems Test / Sidewinder Servicing Facility (224), Assembly Bay and Electronics Test (225) with Corridor and Plant Rooms (228)

Buildings 224 and 225 are the main working parts of the explosive test and servicing facility; these are joined together by a connecting corridor which has a heating and ventilating plant room annexe on one side and this has been extended to include a mechanical and electrical plant room c.1960, (this is building 228).

All three parts are single storey and link-detached, forming a complex of buildings which also includes the detached buildings (225a and 227). Internal access to these structures is not possible.



The missile assembly and functional test is at the northern end of the complex – it consists of two main rooms (each 37 ft 5 in by 14 ft 5 in) separated by a 10 ft-wide corridor and two smaller rooms (each 19 ft by 12 ft). It may have been extended or modified during construction at the extreme northern end to include small earthwork traverses on either side of the smaller pair of rooms (the sidewalls here are deliberately weak being constructed of 2.5 in Hy-Rib and thin concrete) set within retaining walls and separated from the main building by an area or well so that in the event of an explosion the blast is directed upwards. Adjacent to these blast walls is an external airlock and at the extreme northern end is a plant room annexe.

The systems test and servicing bay is at the opposite end of the corridor at the south end of the complex. It contained an open-plan large room (40 ft by 74 ft) with a small offices, one each on either side of the airlock for storing servicing records and an office. The main entrance is partly an external porch at the extreme southern end, it is also an airlock (10 ft 6 in by 20 ft).

Construction is of 12 in-thick reinforced concrete panels internally lined with 3 in thermolite blocks and a 2 in cavity. The roof is a 6 in reinforced concrete slab, screeded and covered in asphalt, but it has now been over clad with Styrofoam 'Roofmate' insulation boards held in place by extruded aluminium angle and straps, installed c.1986.

▫ NGR: (224) TG 27258 22346, (225) TG 27281 22312, (228) TG 27281 22312



Plate 19: Buildings 224 /225 and 228, viewed from front

With the main entrance airlock and the concrete wall revetments on either side (shown as dark concrete).
Note the new roof strapped on with brackets



Plate 20: Buildings 224 /225 and 228 with new Arcton chamber (225a) and compressor house (227)



Plate 21: Buildings 224 /225 and 228, view looking west

12.13 New Arcton Chamber (225a)

Arcton is a refrigerant, used to cool the electronics within the missile while being ground tested and this building housed plant associated with it; it was constructed c.1962. The building is a small single-storey structure with a rectangular-shaped planform and has a single room (10 ft by 12 ft). It is windowless constructed of 11 in cavity brick with a single double-width doorway, timber doors with louvered air vents above, and a concrete access ramp. The roof is a reinforced concrete slab, screeded to fall in one direction and covered in asphalt. The floor is quarry tiles with a central concrete base to house the Arcton plant. Internal access is not possible.

▫ NGR: (225a) TG 27272 22309

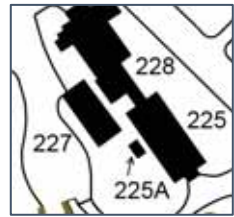
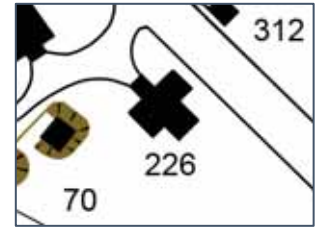


Plate 22: New Arcton chamber (225a), front elevation

12.14 Components Testing and Assembly Building / Functional Test Bay (226)

This is a single-storey building which in its original form, had a rectangular-shaped planform, but also having a heating and ventilation plant room as a side annexe as well as a slightly narrower projecting airlock annexe. The main part of the building is an open-plan large room (40 ft by 20 ft) with a 10 ft-wide airlock that is 14 ft long (for a vehicle trailer). Either during construction or just before, a deviation drawing included a 26 ft by 12 ft mechanical and electrical annexe which was built against the opposite side elevation to the original plant room. Internal access is not possible.



▫ NGR: (226) TG 27320 22287



Plate 23: Component test and assembly building (226)



Plate 24: Component test and assembly building (226)

12.15 Compressor House (227)

Building 227 is single storey, with a rectangular-shaped planform, it housed two 6,000 psi compressors, motors, dryer units and starter control panel but all of this plant has since been removed and in more recent times it has been used for storage. It consists of the main building and a lower level annexe on one side running full width; there is no dividing wall inside between these two parts and the taller section has a 2-ton capacity travelling crane. The walls have a number of narrow windows at high level and the building is vented top and bottom. Construction is of a steel frame with Hy-Rib and concrete rendering (2.5 inches thick) infilling. The roof is a concrete slab and has an air-raid siren in one corner.

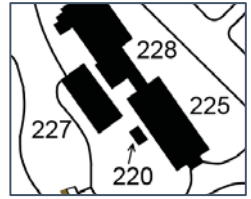


Plate 25: Compressor house (227)

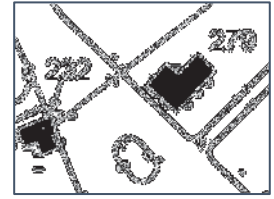
Note the air-raid siren on the roof and the low level large slatted air vents



Plate 26: Interior view of compressor house (227)

12.16 Technical Store (229)

The technical store is single storey, and originally had a rectangular-shaped planform with three rooms, but in 1962 it was extended and now has an 'L'-shaped planform. This was because Coltishall was responsible for third-line maintenance of guided weapon test equipment which meant that it had to be extended by around 500 square feet to take serviceable electronic spares for use by all stations within the station's geographical area of responsibility.



Originally having a flat concrete slab roof, it was modernised by having a shallow pitch roof clad with Robertson's profiled metal sheeting which was added from June 1988; also at this time the exterior walls were over-rendered with insulated render. It has a single double-width and full-height steel door arrangement with wicket door and a concrete access ramp. Internal access is not possible.

▫ NGR: (229) TG 27246 22407



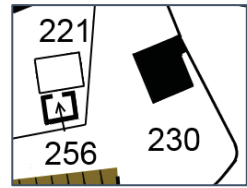
Plate 27: Technical stores (229)



Plate 28: Technical stores (229)

12.17 Ammonia Store (230)

Designed by Archibald G Gullan to drawing number 14388A/56, this building was for storing ammonia bottles which were used for cooling the missile's thermionic valve guidance system during the armed period in flight. It also included a water supply, necessary to kill off ammonia fumes. It had a large room (22 ft by 31 ft) for storing bottles, a servicing room (accessible from outside only), another for decanting and a bulk store which could only be accessed from outside (extension).



The building was originally windowless, relying instead for fresh air by having large low-level louvered ventilators panels to each of the rooms and revolving cowl ventilators fixed to the roof. In more recent times a series of multi-pane casement have been inserted into two elevations and most of these are boarded up.

Construction is of cement-rendered 9 in brick (English bond) with external piers (internal walls are also 9 in brick) with concrete beams supporting a reinforced concrete slab roof which projects out from the building slightly. The building is partly surrounded by vertical blast walls which were added after 1960. The structure cost £3,000. Internal access is not possible.

▫ NGR: (230) 27217 22364



Plate 29: Ammonia stores (230)



Plate 30: Ammonia stores (230)

12.18 AAGW / ESA Picket Post (232)

Located inside the wire, with its north elevation forming part of the perimeter wire, the picket post is single storey, with 'T'-shaped planform. Constructed of 9 in concrete block with a concrete slab roof, it controlled the entry and exit gate to the AAGW site as well as the fire alarm and lighting. The building has two main working rooms, accessed from outside the wire, and an internal lobby – one with a full height counter, the other a rest room. The remaining rooms located in the tail of the 'T' and accessed from inside the wire and from the porch are toilets and ablutions.

▫ NGR: (232) TG 27209 22392



Plate 31: AAGW / ESA picket post (232)



Plate 32: AAGW / ESA picket post (232)

12.19 AAGW / ESA Toilet Block (311)

Located outside the wire is the AAGW / ESA toilet block which is a small single storey, brick-built and cement rendered block with a rectangular-shaped planform. It has a concrete slab roof that projects out from the building. It is vented and has small galvanised steel windows. Internal access is not possible.

▫ NGR: (311) TG 27159 22379

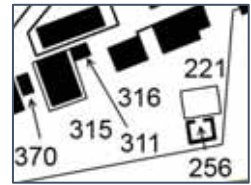


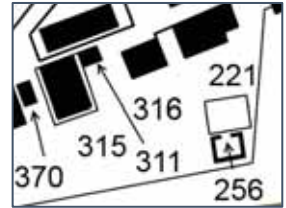
Plate 33: AAGW / ESA toilet block (311)



Plate 34: AAGW / ESA toilet block (311)

12.20 ESA Crew Room (315)

Located outside the wire, the crew room was constructed c.1981, to a PSA design; it is single storey with a rectangular-shaped planform. It has an entrance hall, locker and changing room, a drying area, toilets, a store, plant room plus a large crew room. The crew room has examples of artwork painted on the walls.



The building is constructed of brick and concrete block cavity walls; windows are timber frames. The roof is a steep-pitch timber-truss rafter system at 13 in centres, clad with Redland Stonewold slates.

- Footprint: 31 ft by 46 ft 6 in (9.45 by 14.17 m)
- NGR: (315) TG 27152 22370



Plate 35: ESA crew room (315)



Plate 36: ESA crew room (315)

12.21 ESA Garages (316)

The ESA garage block is a brick-built triple garage arrangement, originally having three up-and-over doors, but one of these has been replaced with plywood-faced studwork and a conventional door. It is windowless but vented; the roof is timber joists, boarded and felted. It was used to store general tools.

▫ NGR: (316) TG 27173 22377

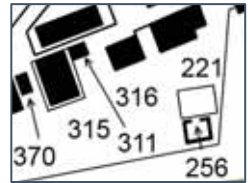


Plate 37: ESA garages (316)



Plate 38: ESA garages (316)

12.22 Field Kitchens (317 and 317A)

Located outside the wire are two old deployable field kitchens of unknown type and age. They are steel-framed (box section) arranged as five equal bays and clad with galvanised and painted corrugated iron sheeting. They sit on concrete slabs and were not present at this location in 1984.

▫ NGR: (317) TG 27128 22369, (317A)TG 27139 22365

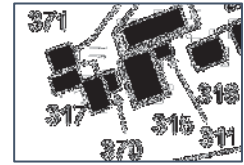


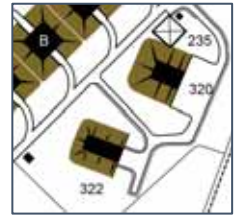
Plate 39: Field kitchens (317)



Plate 40: Field kitchens (317)

12.23 British Box Igloo (320–322)

The original drawings for these structures are dated February 1978, two were constructed c.1979 although bldg 322 was the first to be built, possibly by McTay Building & Civil Engineers Ltd. The igloos at Coltishall were a USAF requirement, not RAF, and were probably NATO-funded. They are standard box design, similar to others built elsewhere. Building 320 was completed by July 1986 and is slightly wider but not as deep as the original two.



They are basically rectangular-shaped windowless monolithic concrete boxes, set inside an earth mound. Electric heating is provided and ventilation is via an air shaft set into the rear wall. The front elevation becomes a triangular-shaped projecting retaining wall which holds back the earth traverses. There is a central entrance, the perimeter of which is formed by concrete piers, and a cast door head with a sliding steel door supplied by John Booth & Sons (Bolton) Ltd. Internal access was not possible.

Building 320 was designed by the PSA (WE Shelton), and the design engineers were Leonard and Partners.

External walls are 13 in thick and the roof varies between 1 ft 2 in and 1 ft 6 in; the earth covering above the store is 2 ft 3 in deep.

- Internal footprint: (320) 52 ft 6 in by 30 ft 6 in (16.00 by 9.30 m)
(321 and 322) 60 ft by 25 ft 4 in (14.17 by 7.72 m)
- NGR: (320) TG 27401 22410, (321) TG 27416 22516, (322) TG 27368 22373



Plate 41: British box igloo (322)



Plate 42: British box igloo (321)



Plate 43: British box igloo (320)

12.24 Miscellaneous Structures



Plate 44: Electrical switchgear enclosure



Plate 45: WWII 'Drem' C.5 flare path light fitting
This is one of four similar fittings inside and outside the wire



Plate 46: Fire alarm station



Plate 47: Monolithic concrete 'L'-shaped blast wall outside the wire
It was built to protect an electrical sub-station (part of 256 sub-station 'K')



Plate 48: Typical WWII camouflage scrim netting tie-down block



Plate 49: Wash-down compound (416)



Plate 50: Building number painted sign



Plate 51: Building number painted sign

Note the original AAGW numbering system whereby all buildings were numbered by type, regardless of where the station is located.

DRAWING SOURCES

TNA, AIR 20/8542	Lands and accommodation finance matters: Coltishall 1938–70
565B/57	Site Plan
CLG/5	Site Plan
CLG/8	Site Plan
481/37	Danger Buildings Component Storehouses (70)
1005/37	Incendiary Bombs and Pyrotechnics Storehouse (71)
AK7/1	New Missile Preparation Facility (72)
AB7/1	New Missile Preparation Facility (72)
AD7/2	New Missile Preparation Building (72)
AL1/1	Improved Facilities for Explosives Stores
2579/61G	System Test Details of Mirrors
M&E 7461/59/Q	Ready-Use Store (223)
ELG/1	Ready-Use Store (223)
??	Systems Test Building
14389/56/B	Explosives Stores Buildings
GMN-72/89/1	ESA Building (221)
M&E 4985A/59	Trolley Servicing Building
M&E 11980/58	Igniter and Flare Test Building
COL/E/724A	Explosives Stores Various Buildings
11964/59/C	Systems Test Building
850122	Buildings (224 and 72)
85005/CD11	British Box Igloo
85005/CB1	British Box Igloo
85005/CL2	British Box Igloo Site Plan
NAO-27/79/2	New Crew Room
NAO-27/79/3	New Crew Room