Fig. 133 Building 138 Emergency Washroom No 7

Fig. 134 Building 138 Emergency Washroom No 7

4.22 Building 139 ARP Shelter (adjacent to building 138)

This building follows the same configuration as those elsewhere at the Valley, with entrance doors in the south-west and north-east corners. The building is constructed in English bond with a cast in-situ reinforced concrete roof slab.

The reinforced concrete roof slab appears to have never had any bituminous covering and exhibits a certain amount of deterioration particularly along the east side, where the reinforcement is exposed in some areas. The brickwork to the east elevation is also suffering with a number of spalled faces. Significant to this ARP Shelter is the retention of the frame for the entrance curtain with a small amount of the original fabric. The original entrance door and ironmongery to the south-eastern corner also remain in-situ, and in good condition. This is the only one remaining on site, and is therefore quite significant. Internally the lack of bituminous covering on the roof means that the underside of the roof slab is very wet. Consequently the internal space the floor is quite damp and covered in debris.

4.23 Building 146 Wood Waste and Box Room 28

This building forms the northern-most end of a series of buildings linked to the railway platform extending from the south-eastern corner of building 146 to the south linking up with building 149. Building 146 is a single storey brick structure, constructed in stretcher bond with a cavity, surmounted by reinforced concrete roof slab. The building is entered by a projecting porch to the south adjoining the railway platform.

4.23.1 Roofs

The roof to the main building has a replacement bituminous roofing felt much of which is now missing around the perimeter of the roof slab. The slab itself has not started to decay to the extent of some of the others, however, the failure in the roof covering is significant and will be allowing water penetration.

There is horizontal and diagonal cracking a couple of courses below the reinforced concrete roof slab, particularly evident along the south elevation, and along the projecting porch on the south elevation, and particularly on the eastern corner. The roof slab to the porch has also been covered in a replacement felt, this is also failed and cracking.

It was possible at the time of survey to view the top surface of the porch roof, this is covered in reflective chippings also suggesting that this is a replacement covering. The flashing between the porch and the main building was originally lead, however this has been removed allowing water ingress between the main building and the porch.

4.23.2 Walls

The south elevation is plain brick work with a section concealed by the projecting railways platform in the south east corner. There is cracking to the brickwork associated with the distortion in the roof slab at high level, otherwise the brick work is generally in reasonable condition. The east elevation is plain brick with a ventilator approximately one third of the way along from the south, generally this is in reasonable condition and there is retention of the camouflage paint finish, there is however some limited horizontal and diagonal cracking at high level adjoining the roof slab. The west elevation mirrors the east in is in similar condition.

The north elevation is plain brickwork with two ventilators some two metres off the ground, both of which are missing their original louvred vents. There are significantly more spalled bricks on this elevation and there is also evidence of a small enclosure or adjoining structure at low level as there are modifications in the brick work and a small concrete plinth adjacent.

4.23.3 Interior

The building is accessed through the porch on the south elevation. The interior of the porch is in good order, no evidence of significant water ingress and much of the original cementitious plaster and the paint finish remains in-situ. In the main space, to the underside of the roof slab, there is evidence of water ingress, however the slab itself is generally in reasonable condition at the time of survey. To the walls, at high-level in each corner, there is significant cracking at high level as evidenced in each of the buildings of this type. However the walls retain their original cementitious plaster finish, the cream paint and the shift markings. The floor to this building is synthaprufe extending through from the walkway outside and turned up the walls in a coved skirting. This is largely covered in debris but appears to be in reasonable condition. There is evidence of the modification at low level on the north wall internally with a section of modern brick work.

4.23.4 Railway Platform

Extending to the south of the building 146 is the railway platform. This comprises of a brick substructure with a reinforced concrete slab forming the platform top. The whole is then covered in the synthaprufe/anti-spark coating. The slab projects to form a cantilever to the platform edge to the east. Much of the brick structure is badly cracked and delaminating and the synthaprufe is missing along the western edge, causing the reinforced concrete underneath to deteriorate. To the southern end, adjoining building 149 there is a series of four steps also finished in synthaprufe. To the west of the railway platform there is a section of wall and a pier. This section of wall is in quite poor condition with much of the brick coating having failed and many brick having delaminated faces.

Fig. 135 Building 146 Wood Waste and Box Room 28 and adjacent railway platform

Fig. 136 Building 146 Wood Waste and Box Room 28

Fig. 137 Building 146 Wood Waste and Box Room 28

Fig. 138 Building 146 Wood Waste and Box Room 28

4.24 Building 148 Smoke Box Store

This building is a simple square brick structure, of the same configuration as building 136, with a reinforced concrete roof accessed by a porch projecting towards the south. The building is constructed in stretcher bond with a cavity. The reinforced concrete roof retains much of its roof covering, the finish appears to have been replaced with a felt covering. This is however missing to the down stands particularly to the south and east elevations. The brickwork to the building is generally in reasonable condition, minor cracking to each corner at high level adjoining the roof slab. The north elevation has a number of spalled bricks. To the east and west elevations there are two ventilators to each wall. The zinc louvred vents have been removed.

Internally the porch retains much of its original decorative finish however; there is evidence that the flashing has been removed between the porch and the main building allowing water ingress.

To the main space, the underside of the roof slab is quite wet and there is a crack adjoining the central roof vent. Algal staining to the underside of the roof suggests some significant water ingress. The main space is rendered in the cementitious render seen elsewhere and there is some evidence of the original cream wartime paint finish. However, this is failing because the structure is quite wet. The floor is covered in debris, leaf matter and soil. It was not possible to ascertain the original floor covering in the main space, however the synthaprufe from the walk ways extends to the porch area.

4.25 Building 149 M.L. Case and Fuse Box Store 25

This is a single storey brick building constructed in stretcher bond with a cavity. The building is accessed through projecting porch on the north elevation and as referenced, adjoins the railway platform in the north eastern corner. However, this is surmounted by a reinforced concrete roof slab.

4.25.1 Roofs

The roof is a reinforced concrete roof slab of the pre-cast type with down-stand beams. It is missing much of its covering around the perimeter of the roof particularly on the east elevation where there is very little left on the face of the reinforced concrete slab. To each of the four corners of the building there is an area of localized reconstruction to the brickwork below the slab, suggesting that the cracking has been a problem for some considerable time. Projecting from the roof there are four ventilators with cowls, two on the east and two on the western side of the building. The roof slab to the projecting porch is again covered in the replacement roofing felt with chippings. This is in better condition.

4.25.2 Walls

The brickwork to the south elevation, either side of the projecting porch, is generally in good condition, with very few spalled brick faces. There is a chase into the brick work where it adjoins the railway platform allowing the synthaprufe to be turned up to form a flashing. The synthaprufe has since shrunk and cracked away allowing water ingress in this area. At high-level there are two ventilators both of which are missing their original louvred vents. At high-level to each corner of the building there is an area of reconstruction in more modern brick work. Adjoining the projecting porch where there was o

riginally a down pipe, now missing and there is a tree growing out of this area in very close proximity to the building, which needs to be removed. The west elevation is plain brickwork with four ventilators at high level and retains significant proportion of its original camouflage paint. There is a significant diagonal crack some three metres in from the north end running down through the wall.

At the south end of the building there is a timber feature attached to the wall, it is not clear if this is associated with the wild life habitat or if it covers up some other feature. Around this there is also some localized reconstruction at high level. The south elevation of the building is also plain brick with some limited localized reconstruction at high level to each corner but once again the brickwork is largely in good order. There are two vents at high level both missing their original zinc louvred ventilators and another timber feature secured to the wall towards the eastern end of the elevation. The east elevation mirrors the west; however, there are areas of delaminating brick. The water from the roof is discharging down the wall face, evidenced by algal growth and staining on this elevation, at high level there are four holes which would have housed louvered vents which are all missing and to each corner there are two areas of reconstruction in modern brick work.

4.25.3 Interiors

The building is accessed from the porch at the northern end. The porch is generally in reasonable condition and the underside of the roof slab is largely dry. Most of the cementitious render remains in-situ with its original grey paint finish and the delineation around the position for the fire extinguishers. The synthaprufe walkway extends to the porch up to a timber threshold beyond this the floor becomes linoleum, which is badly cracked and failing.

In the main space the underside of the roof slab is generally in reasonable order with limited signs of water ingress, except for an area adjoining the pier in the centre of the east wall where the water ingress is quite severe resulting to failure to the plaster and the paint finishes, and cracking to the underside of the roof slab.

The walls are plastered and finished in the cementitious render and are finished in the early cream paint with the shift markings to the north and south walls. There is evidence of the longitudinal cracking to each corner at high level. However, this is less pronounced than in other buildings. The floor as previously mentioned is linoleum but this is largely obscured by debris and other detritus.

Beyond building 149 there is a section of free standing wall, surmounted by a brick coping. To this feature, there are significant number of spalled and failing bricks due to the inadequacy of the brick coating and the consequential saturation of the wall. Adjoining the wall there is a slab and a further area of raised ground to the south of the wall.

The space to the northern end of the building retains its original toilet cubicles, there is further deterioration to the underside of the reinforced concrete floor structure in this area and there is also cracking to the floor slab, particularly adjacent to the entrance doors.

Fig. 139 Building 149 ML Case and Fuse Box Store

Fig. 140 Building 149 ML Case and Fuse Box Store

Fig. 141 Railway Platform

Fig. 142 Railway Platform

Appendix A

Listed Building Descriptions

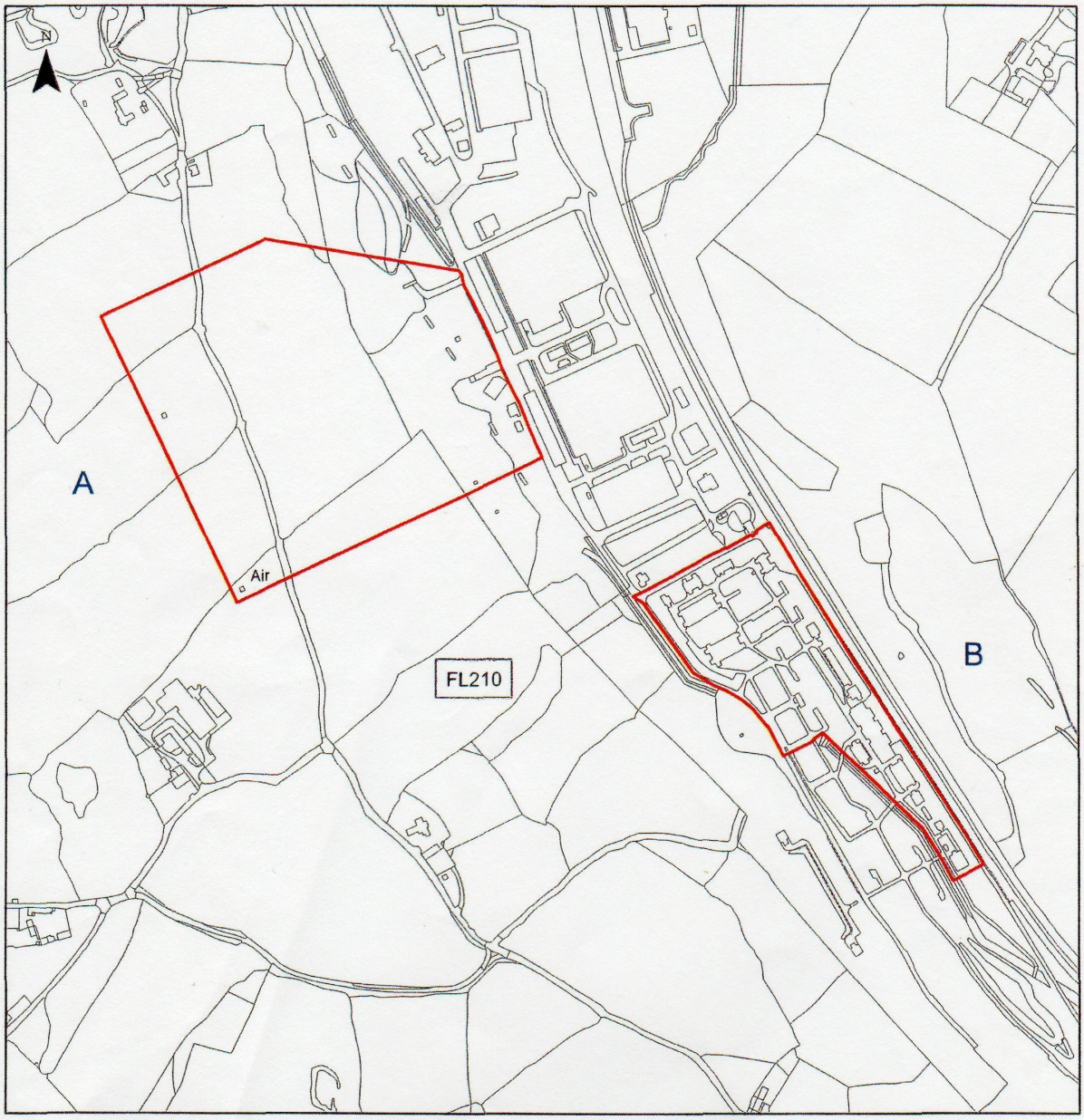
cadw

Llywodraeth Cymru
Welsh Assembly Government

Ancient Monuments and Archaeological Areas Act 1979

Scheduling Maplet for SAM No. FL210(FLT)

Ministry of Supply Valley Site



This is the Plan referred to in the Scheduling entry dated

10 September 2008

Signed by Matthew Coward under authority of the Minister for Heritage, one of the Welsh Ministers

Matthew Coward

File Reference: **A-CAM-01-01-7980**

National Grid Reference: **SJ 2052 6609**

Scale: **1:5,000**

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Authority	Flintshire	Record No	87560
		DateListed	10/09/2008
Community	Cilcain		
Locality	Rhydymwyn	Grid Ref	320685 366380
		Grade	II

Name **Pyro Building P4 (Carillion Building 59) at Rhydymwyn Valley Site**

Street No, Name **Nant Alyn Road**

Location

On very large site to the SW of the A 541 at Rhydymwyn. This building is the southernmost of the large Pyro Plant buildings, about 500 metres S of Nant Alyn Road.

History

For full history and analysis of the site and an explanation of the chemical processes see the Birmingham Archaeology report cited below.
The Ministry of Supply Valley Works, Rhydymwyn was built to produce mustard gas for military purposes, and to assemble, charge, and store chemical weapons. Important research took place here in the early development of atomic weapons.
In response to the use by Germany of poison gas in the First World War, Britain developed chemical warfare capacity. As war threatened again in the later 1930s, the Government, in association with industry, developed a series of new plants. Work at MS Valley began in 1939, and the site became operational in 1942. It continued to produce mustard gas until the end of the War. The works were run by ICI on behalf of the Ministry of Supply. After the War, stocks were gradually decommissioned.
The works was developed on a large site with distinct zones for production of mustard products, filling of shells and bombs, arming the weapons, and storage in tunnels in the hillside, as well as laboratories and administration areas. Three plants were built to produce the Pyro variant of mustard gas and and two plants to produce the Runcol variant. Although two of the Pyro plants were commissioned they never went into full production. The third Pyro building was used for research in connection with the enrichment of uranium.
This building, P4 (as well as P5 and P6) was intended to house plant for the production of Pyro mustard, a less stable variant. However, as the threat of invasion receded, none of the buildings was used for production. P5 was used to refine Pyro mustard produced at other factories. Building P4 was a fully-operational back-up plant.

Exterior

A very large building of reinforced concrete frame construction with infill of red brickwork laid in English bond. Seven bays to long (east and west) elevations; on lower level of W elevation each bay formerly had 2 openings (ie 14 in all) now blocked.
The central section of 5 bays has segmental concrete vault over each bay. At each end a bay with flat roof. The N & S elevations have six bays externally. Square concrete tower to N over second bay from W. Much alteration and blocking of original openings. In S elevations, later insertions of two large-vehicle entrances.

Interior

The interior is articulated by reinforced concrete posts; some circular openings to roof. Overhead rails for lifting gear. Building is divided longitudinally into 2 areas; to W the toxic area of 3 bays, and to E the non-toxic area of 2 wider bays.
At N end of non-toxic side, small single-storey divisions for two transformers and switch room. Remains of switchgear and fire-fighting equipment.

Listed

As part of a group of buildings, which along with the Scheduled buildings in the Danger Area and the Scheduled storage tunnels [FL210(FLT)] illustrate the industrial processes behind chemical weapons production to an extent unique in the UK. Group value with the other listed buildings on the site.

Reference

Birmingham Archaeology, The Valley Site, Rhydymwyn, Flintshire. Historic Environment Plan, Vols 1-3, 2007.

Authority	Flintshire	Record No	87561
		DateListed	10/09/2008
Community	Cilcain		
Locality	Rhydymwyn	Grid Ref	320656 366555
		Grade	II

Name **Pyro Building P5 (Carillion Building 50) at Rhydymwyn Valley Site**

Street No, Name **Nant Alyn Road**

Location

On very large site to the SW of the A 541 at Rhydymwyn. This building is about 100m W of the old railway, and about 300 metres S of Nant Alyn Road.

History

For full history and analysis of the site and an explanation of the chemical processes see the Birmingham Archaeology report cited below.
The Ministry of Supply Valley Works, Rhydymwyn was built to produce mustard gas for military purposes, and to assemble, charge, and store chemical weapons. Important research took place here in the early development of atomic weapons.
In response to the use by Germany of poison gas in the First World War, Britain developed chemical warfare capacity. As war threatened again in the later 1930s, the Government, in association with industry, developed a series of new plants. Work at MS Valley began in 1939, and the site became operational in 1942. It continued to produce mustard gas until the end of the War. The works were run by ICI on behalf of the Ministry of Supply.
After the War, stocks were gradually decommissioned.
The works was developed on a large site with distinct zones for production of mustard products, filling of shells and bombs, arming the weapons, and storage in tunnels in the hillside, as well as laboratories and administration areas.
Three plants were built to produce the Pyro variant of mustard gas and and two plants to produce the Runcol variant. Although two of the Pyro plants were commissioned they never went into full production. The third Pyro building was used for research in connection with the enrichment of uranium.
This building, P5 (as well as P4 and P6) was intended to house plant for the production of Pyro mustard, a less stable variant. However, as the threat of invasion receded, none of the buildings was used for production. P5 was used to refine Pyro mustard produced at other factories.

Exterior

A very large building of reinforced concrete frame construction with infill of red brickwork laid in English bond.
Seven bays to long (east and west) elevations; on lower level of W elevation each bay formerly had 2 openings (ie 14 in all) now blocked.
The central section of 5 bays has segmental concrete vault over each bay. At each end a bay with flat roof. The N & S elevations have six bays externally. Square concrete tower to N over second bay from W. Much alteration and blocking of original openings. In S elevations, later insertions of two large vehicle entrances.

Interior

The interior is articulated by reinforced concrete posts; some circular openings to roof. Overhead rails for lifting gear. Building is divided longitudinally into 2 areas; to W the toxic area of 3 bays, and to E the non-toxic area of 2 wider bays.
At N end of non-toxic side, small single-storey divisions for two transformers and switch room.

Listed

As part of a group of buildings, which along with the Scheduled buildings in the Danger Area and the Scheduled storage tunnels [FL210(FLT)] illustrate the industrial processes behind chemical weapons production to an extent

unique in the UK. Group value with the other listed buildings on the site.

Reference

Birmingham Archaeology, The Valley Site, Rhydymwyn, Flintshire. Historic Environment Plan, Vols 1-3, 2007.

Authority	Flintshire	Record No	87562
		DateListed	10/09/2008
Community	Cilcain		
Locality	Rhydymwyn	Grid Ref	320508 366538
		Grade	II

Name **Pyro Building P6 (Carillion Building 45) at Rhydymwyn Valley Site**

Street No, Name **Nant Alyn Road**

Location

On very large site to the SW of the A 541 at Rhydymwyn. This building is the westernmost of the large Pyro Plant buildings, about 300 metres S of Nant Alyn Road.

History

For full history and analysis of the site and an explanation of the chemical processes see the Birmingham Archaeology report cited below.
The Ministry of Supply Valley Works, Rhydymwyn was built to produce mustard gas for military purposes, and to assemble, charge, and store chemical weapons. Important research took place here in the early development of atomic weapons.
In response to the use by Germany of poison gas in the First World War, Britain developed chemical warfare capacity. As war threatened again in the later 1930s, the Government, in association with industry, developed a series of new plants. Work at MS Valley began in 1939, and the site became operational in 1942. It continued to produce mustard gas until the end of the War. The works were run by ICI on behalf of the Ministry of Supply. After the War, stocks were gradually decommissioned.
The works was developed on a large site with distinct zones for production of mustard products, filling of shells and bombs, arming the weapons, and storage in tunnels in the hillside, as well as laboratories and administration areas. Three plants were built to produce the Pyro variant of mustard gas and and two plants to produce the Runcol variant. Although two of the Pyro plants were commissioned they never went into full production. The third Pyro building was used for research in connection with the enrichment of uranium.
This building, P6 (as well as P4 and P5) was intended to house plant for the production of Pyro mustard, a less stable variant. However, as the threat of invasion receded, none of the buildings was used for full production. At P6 plant was not installed. From 1941-43, and again in 1946, it was used for experiments in the enrichment of uranium by gaseous diffusion in connection with the development of the atomic bomb. The project was code named "Tube Alloys". In 1943, following an agreement by Britain and the USA to concentrate research in America, development was stopped on this site, and most of the scientists from the British project were transferred to the USA. The building was adapted with the insertion of offices and laboratories in the E side.

Exterior

A very large building of reinforced concrete frame construction with infill of red brickwork laid in English bond. Similar to Pyro buildings P4 and P5, but reversed by 180 degrees. Seven bays to long (east and west) elevations; on lower level of E elevation each bay formerly had 2 openings (ie 14 in all) now blocked.
The central section of 5 bays has segmental concrete vault over each bay. At each end a bay with flat roof. Six bays externally to short elevations Square concrete tower to S over second bay from E. Much alteration and blocking of original openings.

Interior

The interior is articulated by reinforced concrete posts; some circular openings to roof. Overhead rails for lifting gear. Building is divided longitudinally into 2 areas; to W an area of 2 wide bays, and to E an area of 3 more narrow bays; this area has been subdivided to make laboratory/ office areas. Marks in floor from bases of gaseous diffusion machinery. At S end of W area, small single-storey division probably for switch room. At upper level against N and S walls, steam air heating ducts.

Listed

As part of a group of buildings, which along with the Scheduled buildings in the Danger Area and the Scheduled storage tunnels [FL210(FLT)] illustrate the industrial processes behind chemical weapons production to an extent unique in the UK. This building has additional historic interest as the site of the experiments connected with the enrichment of uranium for weapons purposes. Group value with the other listed buildings on the site.

Reference

Birmingham Archaeology, The Valley Site, Rhydymwyn, Flintshire. Historic Environment Plan, Vols 1-3, 2007.

Authority	Flintshire	Record No	87563
		DateListed	10/09/2008
Community	Cilcain		
Locality	Rhydymwyn	Grid Ref	320623 366327
		Grade	II

Name **Runcol Building R3 (Carillion Building 65) at Rhydymwyn Valley Site**

Street No, Name **Nant Alyn Road**

Location

On very large site to the SW of the A 541 at Rhydymwyn. This building is to the SW of the large Pyro Plant building P4, and about 650 metres S of Nant Alyn Road.

History

For full history and analysis of the site and an explanation of the chemical processes see the Birmingham Archaeology report cited below.
The Ministry of Supply Valley Works, Rhydymwyn was built to produce mustard gas for military purposes, and to assemble, charge, and store chemical weapons. Important research took place here in the early development of atomic weapons.
In response to the use by Germany of poison gas in the First World War, Britain developed chemical warfare capacity. As war threatened again in the later 1930s, the Government, in association with industry, developed a series of new plants. Work at MS Valley began in 1939, and the site became operational in 1942. It continued to produce mustard gas until the end of the War. The works were run by ICI on behalf of the Ministry of Supply. After the War, stocks were gradually decommissioned.
The works was developed on a large site with distinct zones for production of mustard products, filling of shells and bombs, arming the weapons, and storage in tunnels in the hillside, as well as laboratories and administration areas. Three plants were built to produce the Pyro variant of mustard gas and and two plants to produce the Runcol variant. Although two of the Pyro plants were commissioned they never went into full production. The third Pyro building was used for research in connection with the enrichment of uranium.
This building, R3, was built for the production of the Runcol variant of mustard
Another building, R4 to the same design formerly stood further north. Both buildings produced large quantites of Runcol.

Exterior

Rectangular building with concrete frame with infill panels of red brickwork laid in English bond. Flat roof. Facing roadway, six bays; the first and fourth (from SE) are broader. At SE end, a doorway (narrowed) and at upper level a window with small-pane glazing. SW elevation has 2 low rectangular blocks which were pump room and syrup room; stairs between. NW end has at upper level a window (reduced in size).

Interior

Divided into 2 areas. Longer SE area (reaction section) has raised platform on SW side which formerly bore production equipment. At NW end, doorway through to acid generator section. Overhead crane and some internal details remain.

Listed

As part of a group of buildings which along with the Scheduled buildings in the Danger Area and the Scheduled storage tunnels [FL210(FLT)] illustrate the industrial processes behind chemical weapons production to an extent unique in the UK. Group value with the other listed buildings on the site.

Reference

Birmingham Archaeology, The Valley Site, Rhydymwyn, Flintshire. Historic Environment Plan, Vols 1-3, 2007.

Dated:- 10 September 2008

Signed by Laurence Burr under authority of the Minister for Heritage, one of the Welsh Ministers

L H BURR
Head of Designations Section
Cadw
Welsh Assembly Government

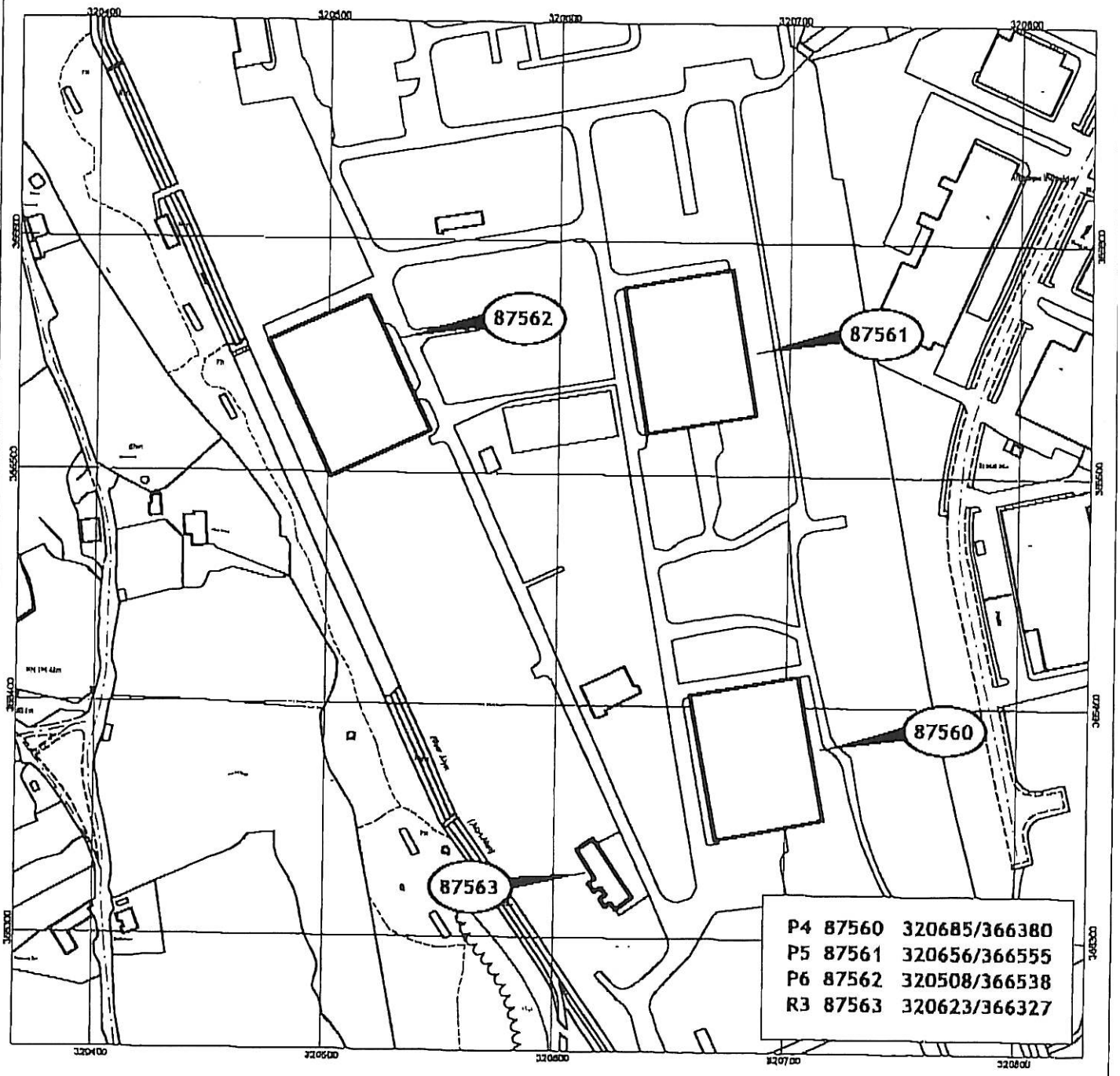
Listed Building

Pyro Building P4 -6 (Carillion Buildings 59,50,45)
Runcol Building R3 (Carillion Building 65)
Rhydymwyn Valley Site

Plas Carew, Unit 5/7 Cefn Coed
Parc Nantgarw,
Cardiff CF15 7QQ
Tel: 01443 336000
Fax: 01443 336001
Email: cadw@wales.gsi.gov.uk
Web: www.cadw.wales.gov.uk

Plas Carew, Uned 5/7 Cefn Coed
Parc Nantgarw,
Caerdydd CF15 7QQ
Ffôn: 01443 336000
Ffacs: 01443 336001
Ebost: cadw@wales.gsi.gov.uk
Gwefan: www.cadw.wales.gov.uk

BUILDINGS OF SPECIAL ARCHITECTURAL OR HISTORIC INTEREST



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		Ordnance Survey Grid Reference :	see above
Scale 1:2500	Community : CILCAIN	Ordnance Survey Sheets :	SJ 2066

+Cadw

Llywodraeth Cynulliad Cymru
Welsh Assembly Government

Cadw yw cyfarwyddiaeth amgylchedd [illegible] Llywodraeth Cynulliad Cymru
Cadw is the historic environment Directorate of the Welsh Assembly Government

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Appendix B

Photographic Schedule

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13-003

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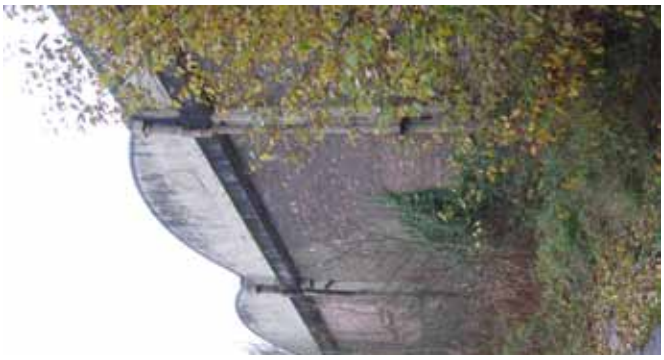

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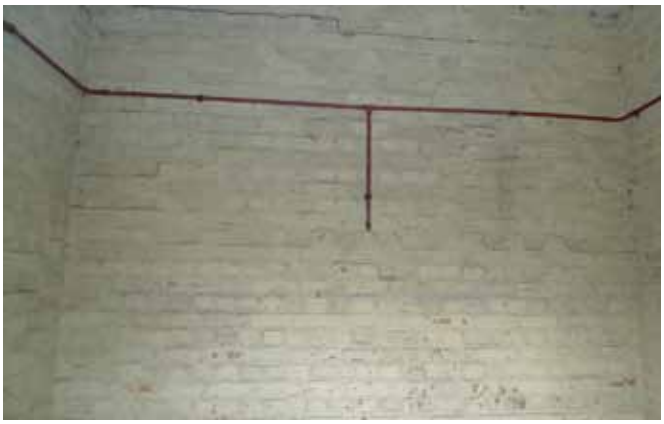
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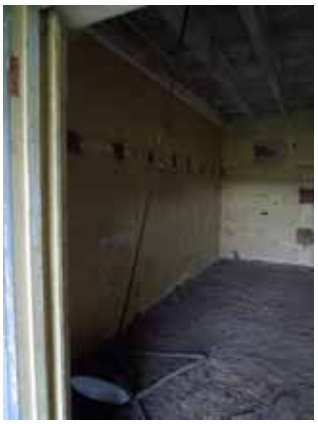
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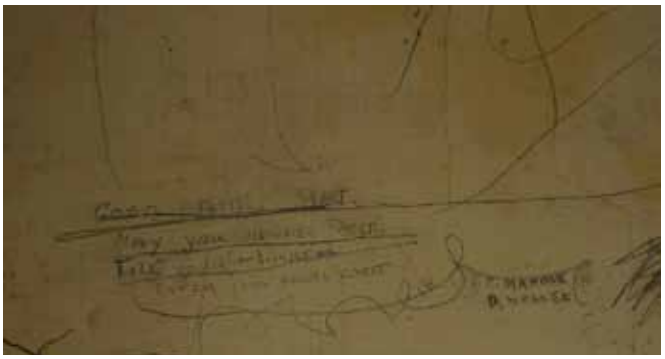

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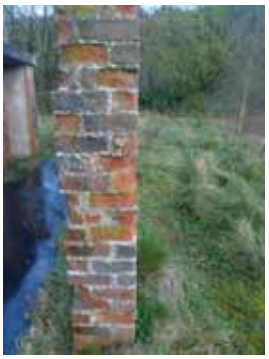
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