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Report by:

Michael Newton MRICS
 Lapider Limited
 41 High Street
 Penarth
 CF64 1EY

t: 029 2070 6242
 e: m.newton@lapider.co.uk

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Summary and recommendations

Summary

1. The Industrial Building at the former Ifor Works site at Dowlais is Grade 2 Listed structure.
2. The building is the only remaining structure on the former Ifor iron and steel works site and was constructed around the 1920s.
3. The roof covering is present to the upper east end however, only the roof structure remains to the lower west end.
4. The building openings have been blocked up to prevent access and the building is surrounded by secure metal palisade fencing.
5. Internally, the building is unsafe and it is not possible to enter the building.

Findings

Roof

- There is a loose slate on the edge of the east gable.
- The netting over the roof covering has come off.
- The timber purlins and trusses to the west end roof are starting to decay.

Recommendations

6. The survey identified the following repairs:

Roof

- To the east gable end, the loose over hanging slate is removed.
- This work does not require an LBC application.
- To the west gable:
 - The 8 purlins should be mechanically strapped to the gable wall with metal "L" brackets.
 - The tops of the walls are covered with a bed of concrete to protect the gable wall from weathering.
- These works require an LBC application.

Costs of repairs

Para	Works	Cost
91	Repairs to east gable roof	
	Remove over hanging slate	1,000.00
91	Repairs to west gable	
	Strap purlins and cap top of gable wall	8,000.00

Costs do not include professional fees or VAT

Introduction

Background

Purpose of survey

7. Lapidar has been instructed by Mr Andrew Phillips, Facilities Manager, Vinci Facilities, Waterton Training Centre, Waterton Industrial Estate, Bridgend, CF31 3WT to carry out an external inspection of Ifor Works, Dowlais, Merthyr Tydfil, CF48 3NA and produce a Survey Report recommending essential repairs.
8. Vinci Facilities are acting on behalf of the Welsh Government. The Industrial Building at the former Ifor Iron and Steel Works Site, Dowlais is a Grade 2 listed building, owned by Welsh Government, which has been vacant for over 50 years.
9. The four walls of the former industrial building remain and all ground floor accessible openings have been blocked up to prevent access. Some former first floor windows remain.
10. The roof to the main buildings is still present, however, the roof covering to the lower building has been removed and only the timber trusses and purlins remain.
11. The roof had been netted in approximately 2015, however, at the time of the survey, the netting has come off.
12. There is no access to the building or within five meters due to the fencing.
13. The survey inspection consisted of an external inspection of the Industrial Building from ground level beyond the perimeter of the fencing and to the south elevation from a mechanical hoist.
14. A drone survey was also carried out.
15. The survey is to inspect the condition of the building and identify any essential repairs or remedial works required to protect the safety of the public.

Description of the property

16. The Industrial Buildings at the former Ifor Works site at Dowlais is Grade 2 Listed structure. The Ifor works were a former iron and steel works.¹
17. The building is the only remaining structure on the former Ifor works site and was constructed around the 1920s.
18. The property was listed on 12 November 2002 (CADW listing number 27086), the summary of the listing states that the property is *“included for its special historical interest as the last remaining industrial building of the former Ivor Iron Works from the pre-British Steel period, probably a sulphate of ammonia processing plant”*.
19. The building is surrounded by secure metal palisade fencing.

Orientation and location

20. The building is the only remaining structure on the former Ivor Works site.
21. There are the remnants of buildings, tarmac and concrete hardstanding areas and rail tracks on the site.
22. The front elevation faces south, with the taller section to the east and the lower section to the west.

History

23. The industrial building, is the last remaining of the former Ifor Iron Works from the pre-British Steel period. The Ivor Iron Works opened in 1839 as an extension to the Dowlais Iron Works, initially with four blast furnaces. British Steel operated a foundry from the mid C20 which closed in 1987. This building was possibly built as a blast engine house but is more probably the sulphate of ammonia plant completed in 1928 as part of the coke and by-product plants constructed 1922-28. The building is not shown on the OS map of 1900 or a plan of the Ivor Works of 1910 but is marked on a plan of 1928 as a sulphate house. Sulphate of ammonia was one of the by-products of coke production, crude benzyl and tar being others. The building was converted some time between 1930 and 1949 to a general and electrical stores.
24. Locals considered that the building had not been used for over 50 years.

¹ In the C19th the Dowlais was the largest iron and steel producer in the UK.

Exterior

25. The industrial building, is red brick with slate eaves roofs. Two sections both of 2-storeys, the taller E range of 5 bays and the lower W range of 6 bays. Bays divided into sunk panels by raised piers, the E range with panels each floor, the W range with full height panels. Stepped brickwork at top of each panel. Raised plinth broken forward over piers.
26. E range has 5 blocked arched openings to first floor with yellow brick arches, and 3 longer to ground floor in bays 1, 4 and 5, with boarded openings in lower halves, under concrete lintels. Various infills in bays 2 and 3. Right end wall has full-height panels and also 3 to gable, the centre one with blocked roundel. Ground floor flat-roofed building attached to centre and left bays, with 2 similar arched openings on 2-bay end wall, blind arches over long openings with concrete lintels. Rear has 5 square-headed windows with concrete lintels to upper floor and tall blocked arches in bays 1, 2 and 4 with boarded openings under concrete lintels in lower halves, and doors with flat heads in bays 3 and 5, with blocked small openings over.
27. Lower W range has square upper windows with metal small-pane glazing and longer boarded windows to ground floor, except in second bay which has small window. End wall has tall blocked arched openings in outer bays, with boarded openings in lower halves under concrete lintels. Centre bay has narrow door. Three-panel gable has metal roundel. Rear has similar windows above and windows with concrete lintels below, the left bay with broad door.

Listed Buildings

29. The Industrial Building is listed as a Grade II Listed building dating back 1920s although the site dates back to 1839.
30. A listed building may not be demolished, extended, or altered without special permission from the local planning authority, which consults with CADW. Owners of listed buildings are, in some circumstances, compelled to repair and maintain them and can face criminal prosecution if they fail to do so or if they perform unauthorised alterations.
31. As the property is a Grade II Listed Building, Listed Building Consent (LBC) approval will need to be applied for from the local planning authority (Merthyr Tydfil County Borough Council, www.merthyr.gov.uk).
32. A listed Building Consent application will need to be submitted detailing the proposed alterations and explaining why it is required. This will be assessed by the local authority with the purpose of ensuring that historic and important buildings are not damaged. Generally, only sympathetic alterations will be considered for approval.
33. Generally, like for like repairs do not require Listed Building Consent, however when carrying out like for like repairs I recommend that these are discussed with the Conservation Officer prior to commencement.

Construction

- 34. The building is constructed of solid red bricks. The bricks are stamped Ebbw Vale². The walls are constructed with recessed panels. The windows and door openings are within the recessed panels. There is a corbel brick course at the eaves.
- 35. The roofs are supported on timber trusses which span between the front and rear walls and support four purlins.
- 36. The roof is boarded with T&G vertical panels and then covered with natural slates on timber battens.
- 37. The windows and door openings to the ground floor have been blocked up with concrete blocks although the pair of timber doors still remain to the rear elevation.
- 38. A number of first floor openings to the east higher end have been bricked up (some of the window frames remain in front of the blocked openings) whereas, to the lower west end the remains of the original single glazed metal window frames are still present.
- 39. Internally, the first floor appears to be a metal deck probably supported on columns and there are remnants of cast iron balustrades visible to the western end.

Limitations of survey

- 40. It was only possible to inspect the building externally outside the perimeter of the palisade fence, from a mechanical hoist which gained access to the front south, west and east elevations and a drone survey.
- 41. The building was blocked up and there was no access inside the palisade fence or inside the building. We managed to view some of the first floor through openings in the roof covering.
- 42. It is considered too dangerous to enter the building.**

² Probably produced by the Ebbw Vale Iron, Steel & Coal Company which also produced building bricks at the Gantra Brick Works.

The survey

External

Roof to east end

43. The roof to the higher east end is still covered with the original (1920s) slates to both pitches. The roof has previously been netted with green netting to prevent slates from blowing off the roof, however, the netting has come off the roof to both pitches and remnants are still fixed at the eaves.
44. The roof is supported on trusses and purlins (as the left-hand roof) and is close boarded. The boards are visible at openings.
45. There is a gentle deflection in the roof covering which appears to be between the trusses, but this is likely to be due to the original construction rather than any movement within the roof structure.
46. Close boarding has generally kept the original roof covering intact.
47. The roof is holed in several locations to both pitches, mainly to the front south elevation and on the east end verge. Where the slates have slipped, the boarding below has decayed and exposed the timber purlins. These appear to have started to decay.
48. Ridge tiles and slates are starting to come off around the ridge to the east end. There is a slate hanging over the rear east verge. (We were unable to remove this from the mechanical hoist at the time of the survey).
49. One slate has slipped and the roof is open to the middle of the front pitch.
50. It appears that once the slate covering is holed, then the timber structure below deteriorates quickly and the close boarding and battens decay.
51. It should be noted that in comparison with photographs taken by Lapidar in March 2020, the roof to the southern end does not appear to have deteriorated significantly.

Roof to west end

- 52. The roof to the west end is lower and again was originally covered with slates on timber trusses.
- 53. However, the roof covering has been removed and is lying on the first floor structure below and only six trusses and purlins spanning between are still in place. (The roof covering was still in place although in poor condition in 2009 Street View). The trusses sit on the front and rear walls, and the purlins tie into the west end gable wall and the wall to the east end roof.
- 54. The roof has previously been netted with green netting; however, the netting has come off the roof to both pitches and remnants are still fixed at the ridge and eaves. It would appear that the roof covering, close boarding and battens were removed and pushed through the roof structure and the trusses and purlins were then covered with netting possibly to prevent vermin ingress.

Roof structure

- 55. The roof structure was inspected from the front elevation from the mechanical hoist and from drone footage to the rear.
- 56. The trusses are still in place and are upright and do not appear to be twisting or bowing, however there are signs of decay where the top chords of the truss are bolted to the lower chord and the foot of the trusses. Water is likely to be penetrating the bolt fixing which is causing the timber to decay.
- 57. There are signs of decay to the feet of the six trusses.
- 58. Between the trusses are four purlins (which span horizontally). The purlins differ in size and the lower purlin to the front elevation has started to decay and there are signs of decay and splits in the timber. Once the timber splits it harbours rainwater which then perpetuates decay.
- 59. The purlins to the rear elevation are in worse condition and there is decay to the length of all four purlins.
- 60. The ridge beam is still covered with the netting and this could not be inspected, however, it is likely that this is suffering from decay.
- 61. The purlins span between the two end walls and across the six trusses and support the rafters and roof structure (which have now been removed) but also tie the trusses and west gable wall together. The purlins are an integral method of supporting the trusses and the west end gable wall.

- 62. It is likely that within the next five years some of the purlins will decay to an extent that they collapse. (The weak points are bolt fixings).
- 63. Once the purlins collapse, then the trusses are likely to twist and collapse.
- 64. If the purlins and trusses collapse they will fall into the building.
- 65. However, the purlins also tie the west end gable wall and once they collapse, the west end gable can start to twist and is vulnerable to wind movement. It is possible that the collapse of the trusses will bring down the gable end.
- 66. If the gable collapses away from the building this could pose a danger to the public outside the perimeter of the palisade fence.

Flat roof east end

- 67. To the east end of the building there is a concrete flat roof over a single storey annex, possibly a former boiler room.
- 68. The bitumen water proof coating is coming off and vegetation is growing on the roof. However, the roof appears in solid condition and does not warrant repair.

Walls

- 69. The brick walls to the whole building are in satisfactory condition.
- 70. Openings at ground floor level have been crudely blocked up from inside with concrete blocks. These all appear to be intact and are securing the building correctly.
- 71. There are signs that original windows openings have been blocked up with brick and signs of historical repairs around some window openings, but these works appear to have been carried out when the building was occupied.
- 72. There are no significant signs of movement to the walls and the top west end gable (referred to above) appears true and is not leaning.
- 73. There is a vertical crack to the top section of the higher wall to the front elevation which runs through the arch of the window below.

74. The crack has been repaired and filled with cement and two metal straps have been bolted across the cracks above and below the arched window opening.
75. However, the repairs appear to be over 50 years old and although the crack has opened, this seems to be historical.
76. There is not a corresponding cracking on the opposite wall in the same location.
77. The circular window to the east end gable has been infilled with brick, (this appears to be historical rather than part of the securing works). There is a crack through the head of the window and some of the bricks in the reveals are loose and have come out, however, this appears to be historical expansion cracking.
78. There is vegetation growing at the top of the walls and around the walls especially at ledges or cills in the brick work.
79. The pointing is the original black ash mortar which is mainly recessed but is not in dangerous or poor condition.
80. The heads to the former arched windows and circular window to the east end are formed of brick, whereas the heads (lintels) to the square window openings are formed of pre-cast concrete lintels.
81. In places to all elevations the steel work in the lintels has corroded and expanded causing the face of the concrete lintels to come away, however, this does not yet appear to be causing the lintels to deflect or fail.
82. Around the building individual bricks have come out of the walls in places, probably caused by loose pointing. These are sporadic and again are not detrimental to the wall. As the building is protected by fencing, any bricks that do fall, land in the enclosed area.
83. To the rear north elevation there is an opening in the wall to the side of one of the upper windows which probably accommodated a flue. The brickwork is loose around the opening.

West gable wall

- 84. As the roof covering to the west end is removed, the top of the west end gable wall is exposed. The wall is 350mm thick (referred to as a 1½ brick wall). The bricks are cut at an angle to form the pitch of the gable. The timber purlins are built into the wall. The wall is finished with mortar.
- 85. The top of the wall is suffering from weathering, the cement pointing is loose, and a number of bricks are loose. Further, the purlins are not tied into the walls.
- 86. As the top of the wall is exposed to the elements, it will absorb rainwater. Overtime bricks will become loose and the wall will expand and will start to deteriorate. This will escalate the decline of the gable wall.

Palisade fencing

- 87. The building is surrounded by 2m high metal palisade secure fencing supported by metal posts. The fencing is approximately 5m away from the building.
- 88. It was not possible to gain access inside the fencing, but there is graffiti and tagging on the building suggesting that access has been gained.

Predicted deterioration of the buildings

89. Google earth images show the roof to both areas was complete in 2001. However, the roof to the northern end has significantly deteriorated by 2013 and appears to have been removed in 2018 and netted.

90. Lapider visited the site in 2020 (not to inspect the building) and looking at photographs we took in March 2020 the roof is still netted, however, the main roof appears to be in a similar condition as it is when inspected in 2022.

91. If no repairs works are carried out, we anticipate the following timescale for decline:

- In the next 5 years, the purlins and trusses to the west end will collapse.
- In the next 5 – 7 years the west end gable will deteriorate and the top section will become unstable.
- In the next 10 years the roof slate covering to the upper south end will have come off to expose the timbers below.
- Within the next 15 years the roof structure to the upper south end will start to collapse.

Recommend repairs

92. We recommend that the following repairs are carried out.

Essential repairs within the next 3 months.

- The loose slate on the edge of the east gable is removed. This will require a long reach mechanical hoist to gain access.
- The estimated cost of these works is £1,000 plus Vat.
- These works do not require an LBC application.

Programmed repairs over the next 12 months.

- To the wwest end gable, the 8 purlins are mechanically strapped to the gable wall with metal angle twisted “L” brackets screwed to the purlin and bolted to the top of the will to mechanically tie the purlins to the gable wall.
- To prevent the tops of the gable walls deteriorating further, I recommend that loose bricks on the top of the walls are re-fixed to the top of the walls (or removed) and the top of the wall is covered with a bed of concrete trowelled onto the wall and over the purlins and finished with a slight curve. These works can be carried out from a mechanical hoist and will tie the brickwork and purlins at the top of the wall together and form a weather cap to the top of the wall. This will prevent deterioration of the top of the wall.
- These works can be carried out from a mechanical hoist, although some of the palisade fencing may need to be removed to gain access.
- The estimated cost for these works is £8,000 Plus Vat.
- These works will require an LBC application.
- The use of concrete is not a traditional material however, I consider that it would be suitable to cap the top of the walls and it will offer better weather protection than lime mortar or cement, and can be easily removed.

Survey Report

M D Newton MRICS

18th February 2022

Lapider

41 High Street

Penarth

CF64 1EY