

RCAHMS

Former Barclay Curle North British (Diesel) Engine Works, 739 South Street, Glasgow

NS56NW 52



North elevation with giant cantilever crane in background (DP171994, RCAHMS, 2013)

Miriam McDonald

2014

Background

The former Barclay Curle North British Engine Works in South Street, Glasgow (1) was probably built in 1913 to manufacture marine diesel engines. A large giant cantilever crane by Sir William Arrol and Co. Ltd (NS52NW 52.01) was added in 1920 to enable the diesel engines to be lowered into ships being fitted out.

The form of this building closely relates to its function but manages to exhibit an industrial aesthetic reminiscent of the German electrical industry and buildings of companies like Osrams, AEG and Siemens in Berlin with an emphasis on modernity, new combinations of building materials, design and the use of electrification.

This building was visited by RCAHMS's Threatened Buildings programme as the owners of the site were applying to remove the southernmost of the two Electric Overhead Travelling (EOT) cranes which are original to the engine works.



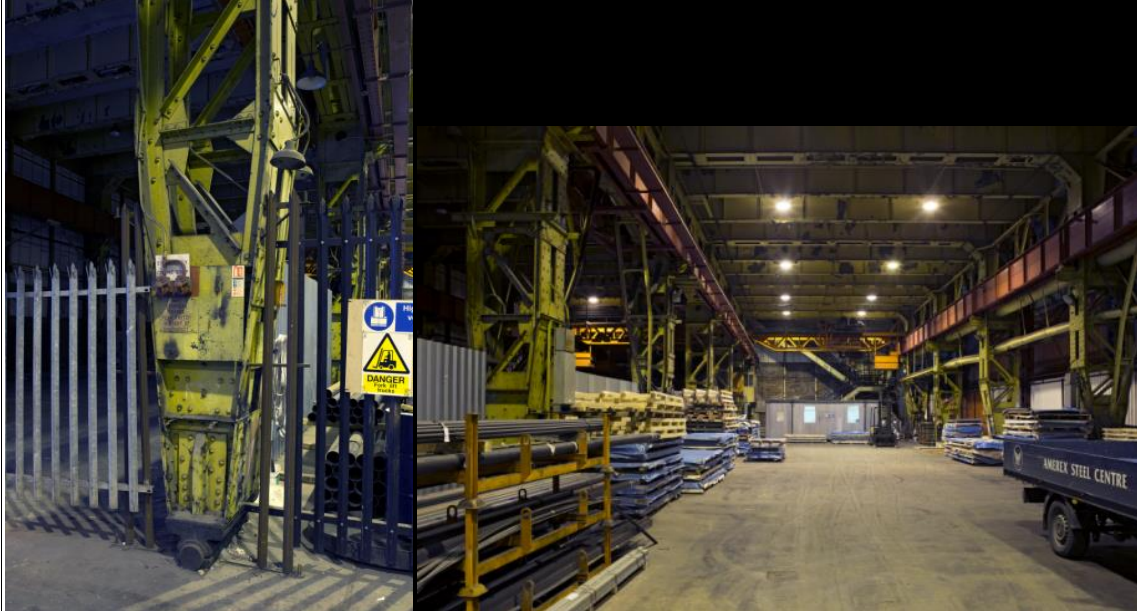
Above left: General view, north elevation (SC581133, JR Hume Collection, RCAHMS, 1978). Above right: Oblique aerial view from south. (SC1269446, Aerofilms, RCAHMS, 27/3/1950)

Map Evidence

The Ordnance Survey (OS) maps give an overview of the development of the whole South Street area in which Barclay Curle is located. The 1st edition of the OS 6-inch plan (2) shows that South Street has not yet been laid out. Clyde Street is shown with the later Park Shipyard, another Shipyard, the Whiteinch Shipbuilding Yard and the Clydeholm Shipyard at Whiteinch, but the land to the west is shown as not yet built upon.

By the 2nd edition of the 25-inch OS map (3) Hill Street has been foreshortened on its south end and the new South Street (joining with the length or road parallel to the Scotstoun Shipyard to the west of the current Barclay Curle site) is shown. The group of shipyards in this area have extended to the north with the removal of Clyde Street. The plot in which Barclay Curle was to be built is shown as surrounded by shipyards to the west and to the east. The Lanarkshire and

Dunbartonshire Railway has been constructed to the north. The Park Shipyard is shown as disused and Whiteinch Shipyard is now the British Hydraulic Iron Foundry showing that this area was developing and changing. It is not until the OS 1935 edition of the 25-inch OS map (4) that we see the North British Engine Works depicted as such. The area in which is located has developed greatly since the OS 1913 edition of the 25-inch OS map. (5)



Above left: Bay A, a sample stanchion showing hinged bearing which allows lateral flexing of the steel frame. (DP 171995, RCAHMS, 2013). Above right: General view of Bay B looking south. Bay A to left and Bay C to right. The 15 Ton electric overhead travelling crane visible. (DP171998, RCAHMS, 2013)

The Buildings (see DC33224)

The Barclay Curle North British Diesel Engine Works consists of several buildings, the main block being Bays A to G depicted on the OS 1935 edition of the 25-inch OS map (6)

Originally built of [steel frame with brick walls](#), wooden floors (latterly replaced with concrete) and, in part, large areas of [glass](#) (now mostly removed with some surviving sections in Bays A and C), this constitutes an important example and unique in Scotland as exemplified by its Category 'A' List status. (7) Bays A to C, particularly, exhibit the European or International style, although in form and spirit its internal form mirrors the general development of the galleried machine shops of the mid - 19th century on. (8)

Bays A to C

The two-storey Bays A and B constitute the former steel-framed and brick engineering and machine shop with a reinforced concrete roof at 1st floor level (originally with glass roof-lights, now removed).

This is a two-storey structure in which machine tools were used to make or repair parts or machinery. The floors (originally wood on all levels) was concreted



Above left: General view of Bays A-C (centre) showing extent of original glazing and Bays D-G (right). (SC581133, JR Hume Collection, RCAHMS, 1978) Above right: General view of Bay A and B upper level (originally light engineering 'gallery' from south). On the left, the columns show the 'hinged' bearing which site on the gallery's concrete floor. The beam that can be seen running the length of the Bay is the east rail for the three Electric Overhead Travelling cranes. (DP172002, RCAHMS, 2013)

in the late 1970s (9). Here all the preparation work would be carried out to make the parts required for marine engines made on electrically driven machine tools. The upper galleries of Bays A and B also contain two, 3 Ton EOT cranes (the tonnage refers to maximum load the crane can support). There is a gantry which overhangs Bay C. This allowed the ingress and egress of the machine tools on the upper galleries of Bays A and B.

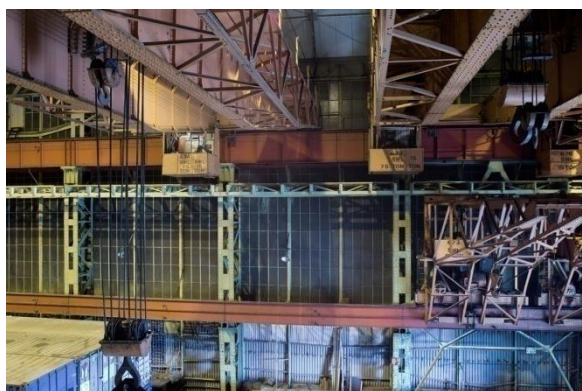


Above left: Bay C, main workshop from north showing the original fenestration, west wall, jib cranes and both 75 Ton electric overheat travelling cranes and the upper open gallery Bay B on the left. (SC1021309, RCAHMS, c.1914) Above right: Site from south. From left, Bay C, Bays A and B in middle, and 15 Ton gantry crane and yard on right (SC603744, JR Hume Collection, RCAHMS, 1978)



Above left: East wall of Bay A from south east showing original fenestration, beam which supported the 15 Ton Gantry crane which operated in the open yard (SC557091, JR Hume Collection, RCAHMS, 1978). Above right: Bay A from south showing original fenestration, steel stanchions and beam supporting the two 15 Ton electric overhead travelling cranes (SC518165, JR Hume Collection, RCAHMS, 1978)

Bay C, a one by 15-bay erecting shop has a gambrel roof in profile. The roof is of a two-hinged arch flat-truss construction (no cross-tie beam) reaching the second hinge at the apex of the arch measuring internally 24.32m in height, 107.44m in length and 23.31m in breadth. The walls are essentially formed by a hinged portal frame with crane tracks at the 'wall head' (supporting two, 75 Ton electric overhead travelling cranes) and jib cranes which can be swung through 180 degrees at a lower level attached to the lower stanchions on the west wall. There are 14 stanchions with hinged bearing where they meet the engine shop floor. The gables, roof and upper portion of the west wall were glazed. Original glazing survives from stanchions 1-9 in the upper part of the west wall. The addition of Bay D at a later time has meant that the west fenestration has survived because it was enclosed within Bay D, the portions of the brick west wall running up to below the fenestration level has been removed to allow access between Bays C and D.

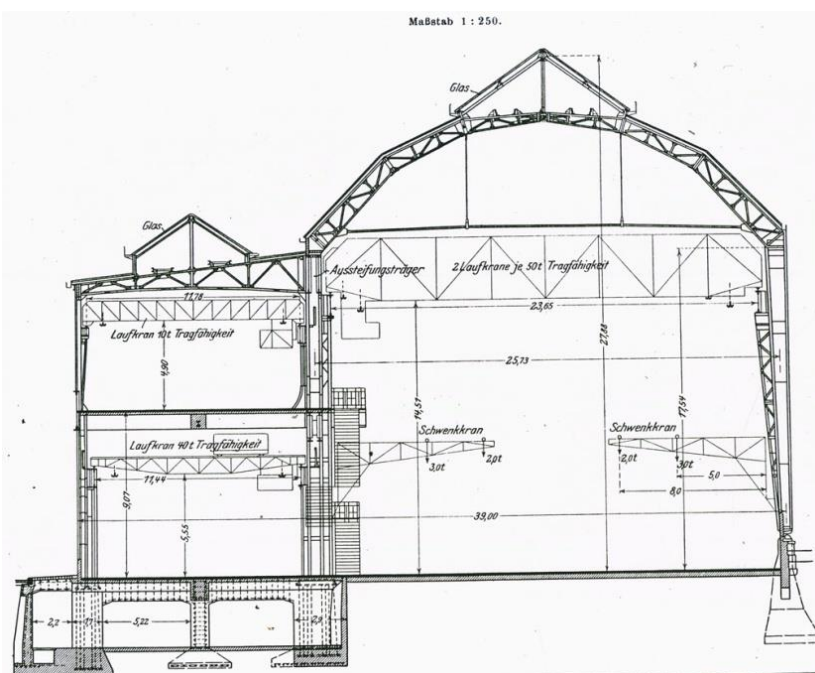


Left: General view of west wall, Bay C showing surviving original fenestration, monorail for 6 Ton jib cranes (right) and west rail for two 75 Ton Electric Overhead Travelling cranes and 15 Ton Electric Overhead Travelling crane. (DP172002, RCAHMS, 2013)

The North British Diesel Engine Works engine hall (Bay C) roof profile and other details is reminiscent of the concrete, steel and glass Montagehalle der [Allgemeinen Elektrizitäts-Gesellschaft \(AEG\) Turbine Hall](#) [turbinenfabrik], Huttenstrasse, Berlin (1909, 25.6m in length,

12.5m in width, 25.0m in height) designed by Peter Behrens (architect and corporate designer for AEG: Walter Gropius was influenced by Behrens) and Karl Bernhard (engineer). There is also the AEG Montagehalle für grossmaschinen, (Hussitenstrasse, Wedding (Gesundbrunnen), Berlin, 1912) which has the 'flattened mansard' roof shape and is built of brick rather than concrete.

Karl Bernhard produced the concept drawing for the main shop at 739 South Street which was taken to fruition by Barclay's in-house architect, John Galt. The South Street building is similar in broad terms such as the profile of the roof of the main engine hall, the use of glazing, the galleries opening onto the main engine shop, and its exposed steel frame. This was a Scottish example of early 20th century European 'rationalism' in architecture, where the building was seen to create space without the need for decoration. The structural elements of the building frame, brickwork and engineered construction are not obscured.



Above: Cross section drawing of Berlin AEG Turbine Factory, Huttenstrasse, Berlin showing similar roof structure and use of hinged bearing clearly seen right hand stanchion. This building dates from 1909/10 (Copyright: 102666-cp dom mit edu)



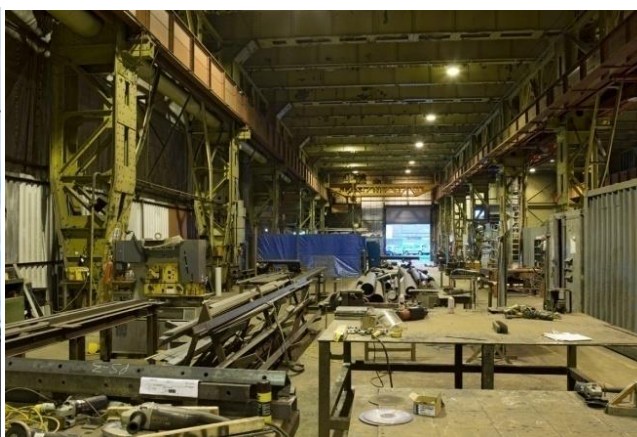
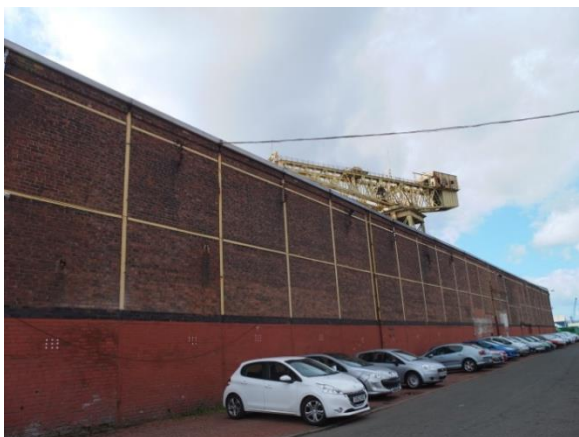
Left: Detail of street frontage of AEG Turbine Factory, Huttenstrasse, Berlin showing wall construction and stanchion hinged bearing. This building dates from 1909/10 (Copyright: 102666-cp dom mit edu)

The frame of the South Street has hinged bearings where it reaches the upper gallery of Bay B and the ground floor level of Bays A, B and C. This is a European practice although there are several examples in the UK. (10)



Above left: Hinged bearing, Bilston Glen Viaduct, Midlothian. This is the same type as used at Barclay Curle and is a German/European practice. (Image: Mark Watson, 1999). Above right: Former fabrication shop showing the original glazed roof. The west wall can be glimpsed on the right. (SC518201, JR Hume Collection, RCAHMS, 1978)

Bays E, F and G were the original Fabrication and Machine Shops. These are not the same construction as Bays A-C although are of brick with a steel frame in the European/German style.



Above left: West wall of Bay G, former fabrication/machine shop showing the wall construction. (Image: Miriam McDonald, 2014). Above right: View of Bay B from south. Bay C off to left. This would have been an open area originally with access across Bays A-C. (DP171755, RCAHMS, 2013)

Bay C: Cranes

Bay C of Barclay Curle contains two 75 Ton electric overhead travelling (EOT) 'fish bellied' cranes (1, north and 2, south both by Alexander Chaplin and Co.). (11) Crane 2 has been modified by the

introduction of a steel frame bolted onto the topside of the crane portals added within the last 40 years to enable the manhandling of engines to outside the Bay into the area where the giant cantilever crane operated. (12) Both 75 Ton Cranes 1 and 2 are original to the building (1913) and have Westinghouse motors which will have maintained and upgraded over the years. Crane 1 (north) is intact and has not been modified other than maintenance upgrading during its working life. Both are part of the Category A Listing of Bays A-C. (13)



Left: Detail of south 75 Ton EOT crane, Bay C showing later structural amendments (1970s). (DP172012, RCAHMS, 2013)

Bays A and B contain four smaller EOT cranes (15 Ton). In all cases these original cranes are in use/ complete and are maintained.

There are also two 6 Ton jib cranes have different motors although appear to be contemporaneous with the 'fitting out' of the Bay c.1913. (14) The north crane (no. 672) has a contact switch design which has a longer jib and south crane (no. 673) has a circuit breaker design. Both are disconnected. These cranes run on a monorail along the west wall below the EOT monorail. There is a smaller 15 Ton EOT crane (no. 673) which is parked hard by the north entrance to Bay C which is very like the crane in Bay A. The makers of the job cranes and 15 Ton EOT crane are not known.

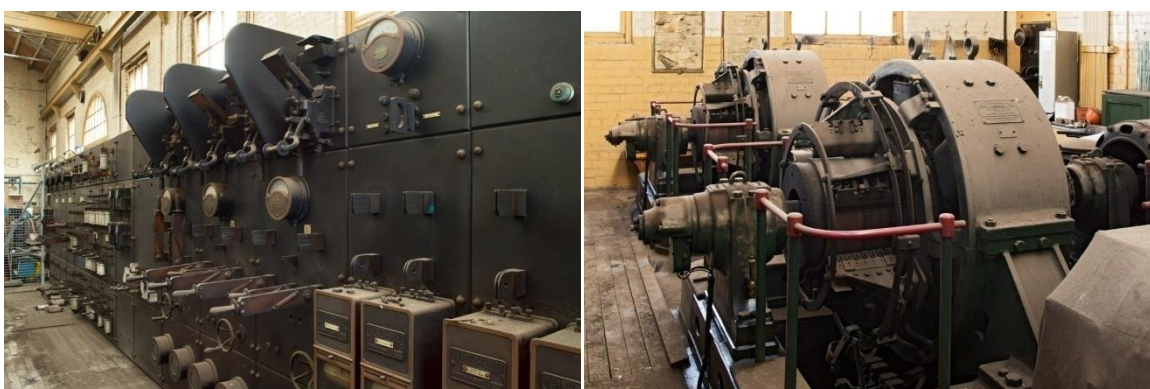
The Power House

The Power House dates from 1914. The original switchgear panels survive. This is a two by five-bay, brick-built building with cast-iron windows and concrete lintels. The double wooden door with glazed arch above is original. The boiler house adjacent was not accessible on day of survey. The

main control panel switching was by Kelvin, Bottomley and Baird Ltd (late Kelvin and James White Ltd). (15)



Above left: Power House with Boiler House on right. (DP171755, RCAHMS, 2013). Above right: Interior of Power House. Control panel for the works from south east. (DP171755, RCAHMS, 2013)



Above left: Interior of Power House. Control panel for the works and workers' housing from north west. (DP171715, RCAHMS, 2013). Above right: Interior of Power House. Rotary Converters No. 2 and No. 1 (furthest from camera). (DP171720, RCAHMS, 2013)



Left: Interior of Power House. Log recorder on main panel for workers housing on Scotstoun Street. (DP171732 RCAHMS, 2013)



Above left: Interior of Power House; Small chain driven manual overhead travelling crane, ground floor, south end. (DP171747, RCAHMS, 2013) . Above right: Upper floor, view of transformer house switchgear (oil switches) made by Fergus Pailin Ltd Manchester - feeder units and ammeters (DP171755 , RCAHMS, 2013)

Conclusion

This is an almost complete c.1913 purpose-built, electrically driven engineering shop with later accretions. It retains its original internal cranes which were intact and working on the date of survey. The building represents an early 20th century European inspired industrial aesthetic.

The Main Shop (Bays A-C) has a European-inspired roof profile and the main stanchions have hinged bases, a construction reminiscent to slightly earlier German examples designed by Peter Behrens.

The site also possesses a 1920 giant cantilever ship fitting out crane, one of the few remaining the River Clyde (such as at James Watt Dock, Greenock and Crosstobbs/Finniaston, Glasgow).

The Barclay Curle Diesel Engine Works buildings are a striking remnant of a pre-First World War industrial landscape in Glasgow.

References

(1) Barclay Curle and Co Ltd became a subsidiary of Swan Hunter and Wigham Richardson, Wallsend on Tyne in 1912, forming North British Diesel Engine Works to develop the marine engine capacity added with Barclay Curle's acquisition of North British Engine Company of Scotstoun) (University of Glasgow, Records of Glasgow, NBDEW (1922) Ltd, engine manufacturers, Glasgow Scotland, Administrative/Biographical History:

<http://cheshire.cent.gla.ac.uk/ead/search?operation=search&fieldidx1=bath.corporateName&fieldrel>

- [1=exact&fieldcont1=north%20british%20diesel%20engine%20works%20ltd](#): retrieved 17 February 2014)
- (2) Lanarkshire, survey date 1858 (published 1864), sheet V
- (3) Lanarkshire, 1895, sheet 5.08
- (4) Lanarkshire, 1935, sheet 5.08
- (5) Lanarkshire, surveyed 1909, sheet 5.08
- (6) Lanarkshire, 1935, sheet 5.08
- (7) 739 South Street, North British engine Works (Ref: 32280) <http://data.historic-scotland.gov.uk/pls/htmldb/f?p=2200:15:0:::BUILDING,HL:32280,South Street> (retrieved: 07/08/2014)
- (8) See Monuments of Industry
- (9) Information from Mr John Somerville worked at BC from 1972 until closure.
- (10) Information from M Watson, Historic Scotland, 17 February 2014; see RCAHMS DP 171995
- (11) Alexander Chaplin and Co., Cranstonhill Engine Works, Port Street, Anderson, Glasgow makers of locomotives, cranes etc., established 1849, built Cranston hill works 1852, 1890s moved to Helen Street, Govan noted as building a three motor EOT crane for Glasgow Shipbuilding and Engineering Co., archives now in Leicester and Rutland Record Office as Chaplin's acquired by Herbert Morris of Loughborough.
- (12) Info. from Mr John Sommerville, former Barclay Curle employee, 2013
- (13) 739 South Street, North British engine Works (Ref: 32280) <http://data.historic-scotland.gov.uk/pls/htmldb/f?p=2200:15:0:::BUILDING,HL:32280,South Street> (retrieved: 07/08/2014)
- (14) Information from John Somerville, 31 July 2014
- (15) Kelvin, Bottomley and Baird, 16/20 Cambridge Street, Glasgow. Origin in partnership between William Thomson (Professor of Nat. Phil. at Glasgow University) and James White, a Glasgow optical instrument maker in the 1870s. The company survived making the compass that Thomson had designed. In 1880s the company making electrical apparatus. Became Kelvin and James White Ltd in 1900 and eventually Kelvin, Bottomley and Baird Ltd in 1913 (until 1941) specialising in instrument making, including electrical measuring instruments. see Grace's Guide for the company history outline at http://www.gracesguide.co.uk/Kelvin,_Bottomley_and_Baird: retrieved 07/08/2014