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## **Fagus Factory (Germany) No 1368**

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### **Official name as proposed by the State Party**

Fagus Factory

### **Location**

State of Lower Saxony  
Town of Alfeld an der Leine  
Germany

### **Brief description**

Designed from around 1910, the Fagus factory in Alfeld constitutes an extremely complete architectural complex heralding the Modernist movement in architecture. Built and extended by Walter Gropius, it features in particular the innovative use of curtain walls, vast glass panels which are independent of an attenuated load-bearing structure. It bears witness to a major break with the architectural and decorative values of the period, and a determined move towards functionalist industrial aesthetics. Through a scheme which includes the interior furnishings, it paves the way for the birth of industrial design and foreshadows the creation of the Bauhaus school.

### **Category of property**

In terms of categories of cultural property set out in Article I of the World Heritage Convention of 1972, this is a *group of buildings*.

## **1 Identification**

### **Included in the Tentative List**

29 September 1999

### **International Assistance from the World Heritage Fund for preparing the Nomination**

None

### **Date received by the World Heritage Centre**

28 January 2010

### **Background**

This is a new nomination.

### **Consultations**

ICOMOS consulted its International Scientific Committee on 20<sup>th</sup> Century Heritage and a large number of independent experts.

### **Literature consulted (Selection)**

Argan, G. C., *Gropius und das Bauhaus*, Rowohlt, 1962.

Giedon, S., *Walter Gropius, l'homme et l'œuvre*, Paris, 1954.

Isaacs, R. R., *Walter Gropius. An Illustrated Biography of his Life and Work*, Boston-Toronto-London, 1991.

Wingler, H. M., *Das Bauhaus*, Cambridge Mass., 1980.

### **Technical Evaluation Mission**

An ICOMOS technical evaluation mission visited the property from 15 to 17 September 2010.

### **Additional information requested and received from the State Party**

ICOMOS requested additional information from the State Party on 30 September 2010 and 14 December 2010, with regard to the following points:

- Complete and extend the comparative analysis;
- Complete the presentation of the state of conservation of the property, and particularly of the works carried out between 1985 and 1999;
- Document the question of possible urban development in the buffer zone and beyond, in terms of possible visual impact on the property;
- Consider a possible extension of the buffer zone in the north-east of the property, and confirm the promulgation of the Alfeld urban development plan;
- Give details of the policy on vehicle parking;
- Give details of the staffing of the Exhibition Centre;
- Examine the consequences of rail traffic on the conservation of the curtain walls.

The State Party replied on 18 November 2010 and 17 February 2011. An analysis of the additional information provided is included in this evaluation.

### **Date of ICOMOS approval of this report**

10 March 2011

## **2 The property**

### **Description**

The Fagus factory was designed, from 1911, to produce lasts used for the industrial manufacture of shoes. It consists of a homogeneous complex of buildings whose purpose is primarily to fulfil a technical function. The succession of buildings is organised to be conducive to the whole industrial process, from the raw materials stage to manufacture, storage, dispatching and offices.

The overall architectonic is based on a dialogue between strongly asserted parallelepiped volumes with large openings where light is required for work purposes. The buildings have large rectangular surfaces, which are given rhythm by the intersection of long horizontal and vertical lines. The use of yellow-ochre brickwork is coupled with vast rectangular glass panels. The main building is thus almost entirely glazed, with continuous curtain walls on three levels. Their function is purely to provide light, as they are independent of the concrete load-bearing structure, which is kept to the bare minimum. As well as

foreshadowing industrial functionalism and its architectural innovations, the complex has great visual unity, complemented by the quality of its sober interior aesthetics, which point the way forward to the principles of the Bauhaus.

Starting from the north-west of the property, and following the order of the industrial process, the successive buildings are:

1 *The sawmill*: This is a single-storied building, with large, regularly-spaced windows. It was here that trunks of beech wood (*fagus* in Latin) were cut to the appropriate dimensions for future use as workpieces. This was the first workshop of the factory, and was built in 1911. In order to cope with expanding market demand, the sawmill building was extended on two occasions, by Gropius himself in 1921 and then by one of his Bauhaus students in 1938, doubling the initial floor area. The extensions demonstrated total respect for the architectural style and the initial forms. The building later underwent several changes of use, but no alterations were made to its major architectural features.

2 *The storehouse*: Designed in 1911 and completed in 1913, the five-storied storehouse is imposing in its volume, and dominates the sawmill on one side, and the drying house and workshops on the other side. It was used for the natural drying of the sawn workpieces, which were stored for several years. Its massive appearance is reinforced by the vertical line of the smoke stack at its rear. Its technical function required great structural solidity and few openings, unlike most of the other buildings. Its flat facades are given rhythm by fine horizontal lines and cornices, expressing a specific architectural motif which is repeated many times in the other facades. This sober style recalls the function of the building, whilst reinforcing its architectural dialogue with the factory as a whole. From the outset, the storehouse was provided with a ventilation system, a solid brickwork stairway and an industrial lift.

3 *The drying house*: The natural drying process was continued by stove drying. The factory had thirty stoves, each 9 metres high. Dating back to the initial construction works of 1911-1913, this building with a single functional level occupies a vast rectangular surface area at the centre of the factory. Adjacent to the storehouse, it continues the latter's architectural style in a lower-height version. By the use of windows, it externally appears to have two levels. The terrace roof has 15 outlets for vapour from the stoves.

4 *The workroom*: This vast single-storied space is directly connected to the drying house. It is at the heart of the technical process, where the shoe lasts are made using various machines and machine-tools. Designed in 1911, the workroom was almost immediately extended to its present-day dimensions in 1914.

Close to square in shape, the workroom has five similar axes. It has large bay windows and partially-paned shed roofs. The wooden roof construction is supported on cast

iron columns. The south-west facade is a continuous wall of glass, giving an outstanding quality of light, well adapted to the requirements of the work. Above the glass wall is a large horizontal brickwork panel which conceals the inclined lines of the roof. In the basement of the workroom there are large annexes for the use of the personnel.

5 *The main building* runs round two sides of the workroom in an L-shape. It has three stories, assigned to the management and control of the industrial process, dispatch, the administrative departments and the senior management of the company.

The facades of the building are made entirely of glass panels. The regular succession of large glass panels is given rhythm by vertical and horizontal lines of brickwork, which conceal the load-bearing structures. The rhythmic regularity is completed by the fine orthogonal metal frames, which are grey in colour. Combined with entirely glazed corners, this confers an exceptional lightness to the building's overall appearance, whilst underlining its industrial functionality. These were structural and architectural innovations destined to be extremely important in the future.

The main building was constructed in two stages, represented by the two wings, but in the same style.

The design of the interior appointments is of very high quality, and many innovations are to be found in the structural and decorative details (lining, paint, flooring, staircase handrails, light fittings, doors, etc.). They foreshadow the aesthetic and social concerns of the Bauhaus.

6 *The cutting die workshop*: This is on the south-east boundary of the factory. Cutting die manufacture was a second line of business. The cutting dies were used for leather working. The workshop is single-storied, with two spans. It includes a forge and a smoke stack 20 metres high. Some features are in keeping with the general aesthetic of the factory, particularly the windows, but otherwise this is a conventional industrial building.

7 *The engine house*: It was decided that another engine house would be required in 1915. A new building behind the drying house was thus designed for this purpose by Walter Gropius. It adopts the vast glass-panel style of the neighbouring buildings, but its structure is entirely metallic. It is completed by a brickwork smoke stack and a water tank.

8 *The chip and coal bunker* is at the northern boundary of the factory site, near the railway line and the engine room. Set up in 1911, it was extended in 1923-24 by Gropius.

9 *The rail-lifting jack / rail-car scales* is a small building next to the railway sidings, which houses scales for weighing railway cargos. Built by Gropius in 1921, it reproduces the main stylistic themes of the main building.

10 The factory entrance comprises the gatekeeper's house, the iron factory gate and the boundary wall. They were constructed in the final building stage, in 1925. They repeat the stylistic features of the factory as a whole, with the use of brickwork and large glass panels.

### History and development

Carl Benscheidt founded *Fagus-Werk GmbH Alfeld* as an extension of previously existing activities on another nearby site (the Behrens/Kappe factory on the other side of the railway line). It was used for the industrial manufacture of shoe lasts and cutting dies used in leatherworking. It was Walter Gropius, a young architect who had worked with Peter Behrens on the AEG factory in Berlin, who directed construction of the Fagus factory as it exists today. In 1911 Gropius took over the initial project of architect Eduard Werner who had established the ground plan and disposition of the buildings in accordance with their complementary industrial roles. Assisted by Adolf Meyer, Gropius reworked the volumes and the overall architectural style. The scheme also included interior arrangements and decoration, taken to an extremely high level of detail (as seen in the doors, lighting, etc.), reflecting a social and industrial idealism which the architect shared with Benscheidt.

Gropius had thus met a factory owner who believed in his modernist and social ideas. Their approach was closely linked to the *Deutscher Werkbund* movement to foster innovation in the applied arts, and their execution in the industrial world. Together they sought to achieve architectural quality which would both rationalise manufacturing processes and focus on ensuring good working conditions in the factory.

Works on the factory took place in three main phases. The first phase (1911-1913) focused on the industrial production infrastructure. Two production lines were very rapidly set up for shoe lasts and cutting dies. The flourishing success of the business meant however that substantial extensions became necessary almost immediately. Gropius took advantage of the extensions to almost double the size of most of the workshops and offices, and also to improve the functional and architectural quality of the whole factory. The smoke stack and the engine house were rebuilt to the rear of the workroom and the drying room; a new entrance was added to the main building; and the workshops and store houses were extended. This was the second construction phase, which took place in 1914 and 1915, and gave the factory its finished form and aesthetic appearance.

Designed before and during the First World War, this industrial project was a manifesto for functionalist industrial architecture and a founding example of the modernist movement. Its complete success led its architect to launch, immediately after the 1914-1918 war, the Bauhaus school, whose influence was to be worldwide both in architecture and in the birth of industrial design.

A third phase followed in 1924-1925, still under the direction of Gropius and his assistants. It consisted of functional additions, with a coal bunker being added to the chip house, and an extension of the main administration building by a second wing of identical style to the rear of the workroom. A final set of works was carried out in 1938 by Ernst Neufert, who had previously worked with Gropius, principally to extend the sawmill and integrate it better within the overall style.

The property was not affected by bombing during World War Two. It was listed as a historic monument in 1946.

In the 1970s, the replacement of wood by plastic as the material used for shoe lasts led to a vast overhaul of the industrial process. The technical buildings were converted for other uses. For example, the drying house was converted into a workshop for the preparation of plastic workpieces, used from 1974 to 2003, and then into an electronic measurement and control workshop. The sawmill was damaged by a fire in 1985. It was rebuilt in the early 1990s, in accordance with the restoration directives of the Historic Monuments Department. It was then occupied by an engineering design office which is still there today. The main building underwent a series of functional reorganisations to adapt it to the changing activities of the company. During this long period of evolution in the uses of the buildings, the architectural and aesthetic basis forming the originality of the complex was generally well preserved by a succession of managers who were all aware of the cultural and historic importance of the Fagus factory, which is furthermore protected as a listed historic monument.

The factory, which is still in industrial operation, required substantial maintenance and repair work from the mid-1980s onwards. This work continued until recently and, in some cases, was accompanied by substantial conversions to new uses. A very significant phase of works was carried out in the 1990s. All the buildings were renovated and some were restored during this phase, respecting the forms, style and materials chosen by Gropius. For example, the store house was converted into a 6-storied 3000 sq. m. exhibition centre, in a spirit of respect for the industrial monument and its external appearance in particular. Since 2005, a large proportion of this exhibition area has been given over to the story of Gropius and the Fagus factory. The engine house and the cutting die workshop have also been converted into visitor areas. However, the initial industrial activities involved in the manufacture of shoe lasts remain in place, particularly in the workroom, the drying room and the main building.

## 3 Outstanding Universal Value, integrity and authenticity

### Comparative analysis

The State Party points out the importance given in Germany to the various movements, known collectively as *Neues Bauen*, which were instrumental in the development of modern architecture. This set of

movements is already recognised on the World Heritage List with properties such as Bauhaus and its sites in Weimar and Dessau (1996, criteria (ii), (iv) and (vi)) and Berlin Modernism Housing Estates (2008, criteria (ii) and (iv)). These properties are however characteristic of the inter-war period. The Fagus factory predates these properties and foreshadows them. From an international viewpoint, it is also an early and emblematic representative of the birth of functionalist modernism, a vast creative movement which aims for attunement with the values of rationalism and contemporary science. This movement developed not only in Germany, but also in the United States and in Europe (Czech Republic, Austria, the Netherlands, France, etc.). Its most significant achievements generally date from after the First World War, and were the work of remarkable architects who were familiar with the pioneering German achievements, such as the Fagus factory and the Bauhaus school. This is a vast international creative movement of which the Fagus factory was a very early and influential landmark.

In terms of examples, the nomination dossier examines Gropius' links with the AEG turbine factory in Berlin, on which he worked under the direction of Peter Behrens. This structure inspired him, but at the same time the Fagus factory constituted a radical criticism of its approach, and a significant conceptual leap forward. Other plants and buildings of lesser importance in Germany are also considered. The State Party refers to the *United Shoe Machinery Corp.* factory in Massachusetts, with which the industrialist Carl Benscheidt had business relations.

In an additional document received on 18 November 2010, the State Party thoroughly examines the connections and differences of the Fagus factory in relation to the following properties, already inscribed on the List, which illustrate 20<sup>th</sup> century modernist architecture: Centennial Hall in Wrocław (Poland, 2008, criteria (i), (ii) and (iv)), Bauhaus and its sites in Weimar and Dessau (mentioned above), Rietveld Schröder House (Netherlands, 2000, criteria (i) and (ii)), Berlin Modernism Housing Estates (mentioned above), White City of Tel-Aviv (Israel, 2003, criteria (ii) and (iv)), *Ciudad Universitaria* de Caracas (Venezuela, 2000, criteria (i) and (iv)), Central University City Campus of the *Universidad Nacional Autónoma de México* (UNAM) (Mexico, 2007, criteria (i), (ii) and (iv)), and Tugendhat Villa in Brno (Czech Republic, 2001, criteria (ii) and (iv)). Most of these properties postdate the Fagus factory, or are contemporary with it; in many cases, they have been influenced by the Fagus factory, and more generally by the Bauhaus movement.

The State Party's analysis is completed by a comparative study of the birth of architectural modernism in Brazil, Finland, France, Great Britain, Japan, Mexico, the Netherlands, Russia and the United States. It continues with an attempt to find direct influence exerted by the Fagus factory, in terms of types of construction or decoration, and in terms of examples.

It remains unquestionable that Walter Gropius, particularly through the early and innovative construction of the Fagus factory, is at the very beginnings of the modernist movement. The factory in particular demonstrates the birth of the "curtain wall" in architecture.

ICOMOS considers that the comparative analysis should, initially, examine the place of the Fagus factory in the transition between two aesthetic, architectural and social movements of the early 20<sup>th</sup> century: the *Deutscher Werkbund* of 1907-1910, and the *Bauhaus*, created by Walter Gropius immediately after the First World War. It is the role of the Fagus factory as an example and model which seems important. The comparison with the AEG turbine factory in Berlin, built in 1910 by Peter Behrens, is particularly relevant from this viewpoint, in terms of the relationship with people that it demonstrates and the criticism of this implicit in the Fagus factory design of Gropius. The Fagus factory is both a continuation and a break with the AEG factory, because of the technical separation between the load-bearing structure and the curtain wall of which the Fagus factory is one of the most important early examples, and more generally because of the break with classical references and the unreserved leap into rationalist modernity.

Seen in a European and international context, the Fagus factory project stems from the creative upsurge which led to rationalism in architecture and functional modernism. These experiments use new building materials brought in by the industrial revolution (glass, steel and concrete); they embody a search for new aesthetics and new building principles; they are in tune with the social movement which accompanies industrialisation; they also express the aim of reconciling humanism with technology. Other constructions and other contemporary architects took part in this movement, and several major constructions were influenced by the Fagus factory; they illustrate comparable values and architectural solutions. Examples which may be given include Albert Kahn and the construction of the first Ford factory in Detroit (1908-1913), Frank Lloyd Wright (United States, Tentative List), and the Hallidie Building in San Francisco by Willis Polk (1917-1918), which followed and took its inspiration from the Fagus factory; in Europe, mention should be made of the Van Nelle factory in Rotterdam (1920s, Tentative List of the Netherlands), and more generally the works of Le Corbusier (Tentative Lists of France, Switzerland, Germany, Belgium, Argentina, Japan and India).

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ICOMOS considers that the comparative analysis justifies consideration of this property for the World Heritage List.

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#### **Justification of Outstanding Universal Value**

The nominated property is considered by the State Party to be of Outstanding Universal Value as a cultural property for the following reasons:

- From 1911, Walter Gropius laid the foundations of modern architecture in his design for the Fagus

factory in Alfeld, particularly in the “curtain wall” combining vast glass panels with steel frames supported by an attenuated load-bearing structure. This is a clear break with earlier styles, and asserts new values with regard to the use of space and light.

- The Fagus factory is a particularly homogeneous and complete architectural ensemble. It bears testimony to the birth of modern functionalist architecture, which is closely related to the industrial world to which it is here dedicated, embodying its concepts regarding the functional analysis of objects. The scheme is at once architectural, aesthetic and social.
- The interior decorative and functional features are closely associated with the architecture and the social project. They form one of the very first manifestations of the industrial design movement, combining in an innovative way creative forces from different worlds.
- The Fagus factory expresses, in the field of architecture and the design of objects, the social revolution which stemmed from the industrialisation of the European and Western world. It bears witness to the determination to achieve humanistic mastery over one of the most radical changes in the human condition.
- The construction of the Fagus factory is one of the most complete early experiments of Walter Gropius, which led him to found the Bauhaus school of architecture and design. It remains the annunciatory symbol of the Bauhaus, and is acknowledged as such in teaching courses on architectural history and design history the world over.

ICOMOS considers that this justification is appropriate. Through the construction of the Fagus factory in Alfeld, Walter Gropius expresses, for the first time in such a complete way, the principles of a functionalist architecture whose values are resolutely modern. In addition to its architectural dimensions, the project was extended to include the interior functional and decorative features, forming one of the first examples of industrial design as formally expressed by Gropius shortly afterwards at the Bauhaus school. This is one of the most comprehensive, emblematic and consummate testimonies to the origins of this radical change in 20<sup>th</sup> century architectural and aesthetic values, pointing the way forward to functional modernism.

### **Integrity and authenticity**

#### **Integrity**

The general structure of the buildings of the present-day Fagus factory is very close to that of the industrial site constructed by Walter Gropius, from 1911 to 1916. The supplementary works carried out by Gropius himself in 1925, and the final extension works of 1938 directed by one of Gropius' students, confirmed the earlier design options. The strong visual integration of the set of buildings has been conserved and indeed reinforced.

Since the origins of the factory, there has been no demolition or conversion affecting the layout of the premises. No new buildings have been added. The exterior visual appearance of the factory has been preserved. The rebuilding of the sawmill after its destruction by fire, the adaptations to new uses (drying house, workroom), and the restorations (main building, etc.) have not affected the original external architectural fabric, whose historic importance has always been kept clearly in sight, particularly during the works carried out from 1985 until 1999.

The factory is still in use, and still produces shoe lasts. The industrial process has however changed considerably, with the replacement of wood by plastics, which gave rise to alterations and conversions in the use of rooms (see History). These necessary works have generally been carried out with careful attention to the conservation of the decorative elements and furniture. The machines used for the initial industrial process have however disappeared, as a result of technical changes to the production process. The die cutting activity has been discontinued, and the room used for this purpose converted to another function.

ICOMOS, in light of the additional documentation provided in November 2010, considers that the major interventions on the buildings have consisted primarily of adapting the interiors to technical changes, without any notable impairment of their architectural qualities, while care has been taken to conserve particular stylistic features. The recent restoration works have consisted of reroofing, and restoration of the facades and curtain walls, with no alterations to volumes or surface textures. In terms of integrity, the interior conversion of the store house into an exhibition centre is the most significant change. The integrity of the buildings is therefore good, and has been reinforced by the fact that the initial industrial function is still present.

#### **Authenticity**

The maintenance and restoration works on the Fagus factory from 1985 to 1999 were carried out with careful attention to the architectural values of the buildings, in accordance with the conservation principles applied by the State of Lower Saxony. The replacement of the glass panels, for example, was carried out in accordance with the original factory construction plans, and was only carried out after a colloquium of architectural experts and historians had discussed the matter.

The volumes and exterior surfaces have retained their original appearances. The original materials were retained or restored to an identical condition (yellow-ochre brickwork, glass panels with painted steel frames, ironwork, etc...). The same applies to respect for the interior functional and decorative features (wall paint, floors, staircases, doors, lighting, etc.).

ICOMOS, in light of the additional documentation supplied in November 2010, considers that the changes resulting

from the industrial adaptation of the factory in the course of its history have had few effects on its architectural structure. Additional building and interior alterations affecting conditions of authenticity were of minor importance, and did not impair the value of the most significant individual components. The early recognition (in 1946) of the value of the buildings for the history of contemporary architecture meant that from the outset there has been great attention to detail and care in the conservation of the original forms and materials.

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ICOMOS considers that the conditions of integrity and authenticity have been met.

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#### **Criteria under which inscription is proposed**

The property is nominated on the basis of cultural criteria (i) and (ii).

*Criterion (i): represent a masterpiece of human creative genius;*

This criterion is justified by the State Party on the grounds that the Fagus factory in Alfeld constitutes an outstanding and innovative architectural and decorative synthesis. Its rational combination of aesthetic, psychological, social and technical qualities makes it a masterpiece of human creative genius. On the threshold of a new era, this complex is the first manifestation of the theoretical bases for the development of 20<sup>th</sup> century architecture. The structural possibilities of steel and glass are used to embody an artistic project of a radical new conception. The outer wall of the main building is a flat surface made of glass and steel; it is continuous and totally transparent, even at the corners. It marks the invention of the curtain wall.

ICOMOS considers that the Fagus factory bears witness to an important moment in the history of construction, linked to architectural, aesthetic and social advances. However, a complex set of interactions and initiatives gradually gave rise to modernist rationalism in 20<sup>th</sup> century architecture. Furthermore, only part of the factory illustrates the radical innovation of the large-scale curtain wall; the other parts and the factory as a whole are important from the viewpoint of the history of architecture, but are of lesser significance. Finally, while the humanist values inherent in industrial architecture and the adoption of a new industrial aesthetic are concepts which are present in the property, this does not exclusively apply to the Fagus factory, and the property is not the first unquestionable expression of them. The qualities inherent in the property remain, but they are more clearly and precisely expressed by other criteria.

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ICOMOS considers that this criterion has not been justified.

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*Criterion (ii): exhibit an important interchange of human values, over a span of time or within a cultural area of the world, on developments in architecture or*

*technology, monumental arts, town-planning or landscape design;*

This criterion is justified by the State Party on the grounds that the construction of the buildings of the Fagus factory in Alfeld is based on a thorough functional analysis of each of its elements, which implies a reformist vision of the human and social aspects of industrial labour. It bears witness to a radical change in working conditions in industrial society, which implies both an analysis of the sequence of operational processes and attentiveness to the need to humanise the industrial world. The aesthetic and architectural quality of the constructions and their interior style are essential factors for improving the social conditions of work, which is at the heart of the Fagus factory project.

ICOMOS considers that the Fagus factory illustrates a moment of considerable interchange between different generations of German, European and North American architects, which gave rise to a rational and modernist architecture. It was a site of synthesis of these influences, which were technical, artistic and humanist; it influenced many subsequent architectural works; it was the starting point of the Bauhaus movement, which was founded by the property's creators Walter Gropius and Adolf Meyer.

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ICOMOS considers that this criterion has been justified.

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*Criterion (iv): be an outstanding example of a type of building, architectural or technological ensemble or landscape which illustrates (a) significant stage(s) in human history;*

The State Party has not proposed this criterion.

ICOMOS considers that the arguments put forward by the State Party, particularly in its justification of criterion (i), are more relevant with regard to criterion (iv).

Acclaimed as a manifesto of modernity in architecture, the construction of the Fagus factory won Gropius an international reputation. The factory exemplifies the innovation of the curtain wall in steel and glass, separate from the load-bearing structure, optimising both luminosity and lightness. It is a concrete expression of the functionality of the industrial complex in the interest of productivity and the humanisation of the work environment. It incorporates in both the architecture and interior decoration concepts of industrial aesthetics and design.

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ICOMOS considers that this criterion has been justified.

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ICOMOS considers that the nominated property meets criteria (ii) and (iv) and conditions of authenticity and integrity and that Outstanding Universal Value has been demonstrated.

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### Description of the attributes

- The Fagus factory in Alfeld explicitly illustrates several of the most important founding principles of modern functionalist architecture in the 20<sup>th</sup> century, in particular the curtain wall combining vast glass panels with steel frames supported by a separate and attenuated load-bearing structure.
- It constitutes a homogeneous and rationally-built complex designed to serve an industrial project; each building expresses values associated with its technical function.
- The scheme is at once architectural, aesthetic and social, and bears witness to a determination to achieve humanist control of the social and aesthetic changes coming out of the industrial revolution.
- The interior decorative and functional elements are attuned with the architecture and the social project. They represent one of the first consummate manifestations of industrial design.
- The construction of the Fagus factory is one of the most complete founding experiments of Walter Gropius, which led him to found the Bauhaus school. It remains the annunciatory symbol of the Bauhaus, both in terms of architecture and the birth of industrial design.

## 4 Factors affecting the property

### Development pressures

In the view of the State Party, the existence and the conditions of integrity of the Fagus factory are not threatened by economic development pressures. The factory's industrial evolution and the successive conversions have demonstrated the care taken from a conservation viewpoint, and the ability of the various players to mobilise the necessary funding and expertise.

The process of evolution of the industrial processes at the factory is still taking place, particularly with regard to advanced technology in physical measurements and industrial testing. But the impact on the property of the current developments, and probably of developments in the future, remains relatively slight. If extensions were to be considered, they would be located on plots outside the boundaries of the property, within the framework of urban development control in Alfeld, inside the buffer zone and subject to the local development plan.

Following ICOMOS' proposals with regard to better protection of the former Behrens/Kappe factory site, located near the property on the other side of the railway line, the State Party proposed an extended buffer zone. This was ratified and included in the local development plan in a decision taken by the municipal authority on 8 February 2011.

### Tourism pressures

The number of visitors to the Fagus factory has remained relatively constant since the 1990s, at around 10,000 a

year. When the World Exhibition Expo 2000 was held in Hanover, the site demonstrated its capacity to handle a doubling of visitor numbers, without any particular problems arising, and without any disruption of the industrial process, which is kept separate from the areas open to visitors. The property thus seems well equipped to cope with the probable increase in visitor numbers over the coming years.

Following a request by ICOMOS for clarification with regard to the parking zones, the State Party provided details in its reply of 17 February 2011: the number of parking spaces available is sufficient at present. If additional demand arises because of a sharp rise in visitor numbers, it will be possible to create additional parking spaces close to the property.

### Environmental pressures

Damage to brickwork, roofing and glass panels, caused partly by industrial pollution in the past, have been remedied in the recent restorations. Today there is no specific environmental pressure linked to water or air pollution, beyond that normally accepted for a town which is today much less industrialised than it was in earlier times.

The main environmental issue was, over a long period, the close proximity of the railway line. The question of the vibrations generated in the glass panels has been dealt with during the recent restorations.

Notwithstanding the recent technical work on the new glass panels, ICOMOS asked the State Party in its letter dated 14 December 2010 to provide information about the impact of a possible increase in railway traffic and/or train speed on maintaining the conditions of integrity of the property, particularly with regard to the glass panels. The State Party provided the following details:

- There is no perceptible transmission of vibrations through the ground, due to the nature of the soil and because the glass panels are at a sufficient distance from the railway line.
- Since the first restoration of the glass panels in the 1990s, no glass panel breakage has been observed.
- The railway line was recently relaid, using welded steel rails complying with European standards which ensure that vibrations generated by railway traffic are kept at low levels.
- The railway line is used for local and intercity trains which operate at moderate speeds; a dedicated high-speed train line exists approximately ten kilometres away from the property.

### Natural disasters

The main risk identified is that of fire. The River Leine could also be a threat to the property in the event of heavy flooding.

Impact of climate change

This point is not raised in the dossier. It seems that no impact on the property has been identified to date.

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ICOMOS considers that there are no major threats to the property.

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## 5 Protection, conservation and management

### Boundaries of the nominated property and buffer zone

The surface area of the property is 1.88 ha. The site is uninhabited.

In accordance with the suggestion made by ICOMOS, the buffer zone has been enlarged to include the railway annexes and the site of the former Behrens/Kappe factory, following a decision by the municipal authority, and the inclusion of the enlarged buffer zone in the urban development plan, on 8 February 2011.

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ICOMOS considers that the boundaries of the nominated property and of its buffer zone are adequate.

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### Ownership

The factory belongs to a privately-owned company. It has always belonged to the same company, whose name today is *Fagus-Grecon Greten GmbH & Co.KG*, whose registered office is located on the property's premises.

ICOMOS recommends that one or more scenarios should be considered, to allow for the possibility of a change of owner or a change in use.

### Protection

The property has been listed as a historic monument since 1946, which is a very early date for heritage protection of an industrial complex. It was thus protected against the sometimes overhasty process of rebuilding industrial facilities after the war.

#### Legal Protection

The 1978 Lower Saxony Monuments and Historic Buildings Act redefined the factory's legal protection status. It applies to all the buildings and the land, defining the property both as a group of architectural structures and a cultural monument. Furthermore, each of the buildings is considered and listed as a historic monument in its own right. The Act defines the duties of protection and conservation.

The property must comply with the Lower Saxony Building Regulations, which means that a building permit is required for construction or alteration works.

The property must be protected and managed in accordance with the following regional and municipal plans:

- Regional Development Plan of Lower Saxony (2008);
- Regional development plan for the district of Hildesheim (2002);
- Land Utilisation Plan, Alfeld (1976);
- Urban Development Plan of the Town of Alfeld (in preparation).

Furthermore, the urban planning authorities have taken measures to ensure that any development projects inside or beyond the buffer zone should not have any effect on the visual perspectives of the Fagus factory from the outside.

In accordance with the request made by ICOMOS, the urban development plan of the Town of Alfeld, providing for the protection of the property and its buffer zone, was promulgated by a municipal authority decision of 8 February 2011.

#### Effectiveness of protection measures

In the Federal Republic of Germany, the protection of historic monuments and cultural sites is the responsibility of the regional states.

The Lower Saxony Historic Monuments Preservation Department, under the control of the government, exercises public authority in protection matters. Because of the special significance of the property, all measures affecting it are taken in coordination with the Lower Saxony Science and Culture Ministry. All measures proposed by the regional state must be examined and approved by the Town of Alfeld.

The 1978 Act makes it compulsory for the owner to maintain, repair and, if necessary, restore the property. The owner can for its part request both technical and financial help from the Historic Monument Preservation Department. No interior or exterior alterations, and no change of use, may be carried out without the submission of a detailed technical dossier and the approval of the Historic Monuments Department. In view of the nature of the property, this protection is extended to include the interior architecture and its functional and decorative elements. If any proposed works are rejected by the Department, they are immediately suspended. If works have already been carried out, the owner is compelled to restore the building to its original condition. Representatives of the Historic Monuments Department are guaranteed permanent access to all the buildings in the property. Any failure to comply with legal obligations results in immediate legal action by the Lower Saxony authorities.

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ICOMOS considers that the legal protection in place is adequate.

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## Conservation

Inventories, recording, research

The Fagus company has its own archives, which include detailed information about the property's architecture and technical history. The archives thus provide a basis for the ongoing compilation of records of maintenance and restoration works as they are carried out.

The Fagus company maintains scientific cooperation links with the archives of the Bauhaus in Berlin.

The many collaborative projects with universities, and the preparation of exhibitions and the production of documents (about the Fagus factory, Walter Gropius and his students, the Bauhaus and more generally the history of modern architecture and industrial design) are conducive to continuing research in the academic field and in conservation, and for enhancement of the experience for the general public.

Present state of conservation

Sawmill: The reconstruction in 1985, and the subsequent adaptation works, preserved the original layout of the three-axis hall, and the external appearance was carefully restored.

The storehouse was refurbished and renovated in 1998-99 (load-bearing structure, roof, light- fixtures, etc.). A new concrete interior staircase was added to comply with current standards for areas open to the public.

Drying house: Its roof and brickwork were restored in 1997. The exterior forms of the lamella openings through which vapour escaped from the former stoves were maintained. In 2007, the introduction of new machines required the transformation of part of this building and new openings. They were carried out in accordance with the original style.

The workroom was restored in accordance with historic data, between 1989 to 1993. In particular, work was carried out on the roof, the wooden truss frame, the glass panels and the parapet brickwork. The workroom is still used for its initial purpose of making shoe lasts.

The main building underwent substantial exterior and interior restoration programmes from 1985 to 1996. The vast glass panels forming the curtain walls were replaced, with careful attention to conditions of authenticity. The roof was also restored and stiffened to reduce the structural fragility of the building, which was partly responsible for the deterioration of the condition of the glass panels. The entrance staircases were restored, followed by the entrance as a whole. The lighting was modified and brought into conformity with the original boxlights.

The roof and brickwork of the cutting die department were restored from 1995 to 1997, in accordance with the original forms and materials.

The boilers were removed from the engine house in 1994, so that this building could be converted into a cafe and store house, whilst conserving its external forms and appearance. The 50-metre high smoke stack has been conserved, following restoration in 1987-1988.

The chip and coal bunker was refurbished in 1997.

The rail-lifting jack and rail-car scales underwent maintenance works in 1991-1992.

Gatekeeper's house: The roof of the gatekeeper's house was repaired in 1997, and the boundary wall in the approach area was renovated in the same year. Replicas of Bauhaus boxlights were installed. The metal gate system and the door of the gatekeeper's house were also renovated.

In conclusion, the general state of conservation of the property is considered to be good.

Active Conservation measures

Conservation of the property is the responsibility of its owner, with assistance from the Historic Monuments Preservation Department and the property's Steering Committee. This has led to regular maintenance and a series of concerted programmes for the conservation of the property, particularly during the 1990s.

ICOMOS considers that it would be useful to establish a medium-term conservation programme, which should stipulate the need for the participation of professionals specialising in conservation of 20<sup>th</sup> century architectural heritage.

Maintenance

Routine maintenance of the property is carried out by the owner, *Fagus-Grecon Greten GmbH & Co.KG*.

Effectiveness of current management

The conservation measures implemented, particularly in the 1990s ahead of the World Exhibition Expo 2000 in Hanover, have been effective.

ICOMOS considers that the property is in a satisfactory state of conservation, thanks in particular to the very substantial renovation and restoration programmes implemented from 1985 to 2001. However, a medium- and long-term vision of conservation needs to be established, in the form of a multiannual property conservation plan. The hypothetical possibility that the existing owner could pull out, and the possible consequences this would have on the future of the property, need to be considered.

ICOMOS considers that the conservation of the property is satisfactory. However, a medium- to long-term vision of conservation should be established, which will involve the setting up of a multiannual conservation plan, the participation of specialists in the conservation of 20<sup>th</sup> century architecture, and reflection about the

hypothetical possibility that the existing owner could pull out.

## Management

Management structures and processes, including traditional management processes

Management is carried out by the company which owns the property. In this task it is assisted by the regional monument conservation authorities (Lower Saxony and the Town of Alfeld), by experts, and by specialist companies and craftsmen, depending on the programmes to be carried out. Management is an ongoing process, which is guided and controlled by the property's Steering Committee.

In addition to the owner and the regional monument conservation authorities, the Steering Committee includes representatives of the various local and regional political bodies (regional state, district, municipality of Alfeld), and administrative officials. The Committee meets regularly. Depending on the issues raised, architects, planners, and historic monument restoration specialists may be involved.

Policy framework: management plans and arrangements, including visitor management and presentation

In the context of the Steering Committee, the owner is responsible for research, and the drawing-up of sectorial conservation programmes and development projects relating to the property. The owner is assisted by the relevant regional authorities. It calls on experts and advisors as necessary. All the programmes and development projects combined form the management plan, which is regularly updated and completed. It is validated simultaneously by the Steering Committee and by the historic monument conservation authorities.

The Fagus-Gropius Cultural Centre has been installed inside the factory, in the vast five-storied building previously used for the storage of wood (2). Together with the visitor reception building (6) and the cafeteria (7), this group of buildings forms an effective set of facilities for visitor reception, and for interpreting the property's significance and demonstrating its value. The cultural centre has drawn up and is implementing a "Living Monument" plan. The other main buildings are used for industrial activities.

The management of the Fagus factory undertakes public relations activities, in order to raise awareness of the property in a number of tourism, cultural and economic development programmes. The public relations department takes charge of cultural partnership arrangements, such as temporary exhibitions.

### Risk preparedness

The fire prevention system complies with the standards in force in Germany and Lower Saxony for industrial and public buildings. The premises are equipped with an alarm system and automatic fire extinguishers. If a fire occurs,

protection of the property forms part of the local firefighting plan.

The River Leine, which is liable to flood, is embanked, and extensive flood-water retention areas have been created upstream of the town and the property.

Involvement of the local communities

The Municipality of Alfeld is a permanent member of the Steering Committee. Its technical departments are regularly consulted (planning and construction, culture, etc.).

Resources, including staffing levels, expertise and training

The owner provides most of the financing for maintenance and conservation of the property.

Provided that it manages the property effectively, the owner may apply for public funding from the regional state of Lower Saxony, the district and the Town of Alfeld, to top up its own funding. If a major programme is planned, funds from the Federal Republic of Germany and European funds may also be solicited.

For example, for the period of major works from 1985 to 2001, total expenditure amounted to 6.65 million euros, of which just under half was paid for by the owner, with the rest being funded by the federal government and by Lower Saxony.

The monument conservation authorities can call on a set of specialists in different fields of building conservation and restoration, and on historians.

Fagus regularly uses the services of an architect specialising in the restoration of 20<sup>th</sup> century architecture. Within the company, there is a group of skilled workers with experience of the normal maintenance and repair tasks.

In addition, Fagus can call on a large number of external specialists and tradesmen at both local and regional level. The company also has partnership agreements with specialist university departments (Hamburg, Hildesheim, Göttingen), and the Regional Chamber of Architects.

The Fagus-Gropius Cultural Centre has full-time staff: four guides, and four other staff who guard the exhibitions during opening hours. It is possible to bring in additional guides on an occasional basis, and to hire additional personnel if there is a large increase in visitor numbers. The personnel receive training to familiarise them with the values of the property and the history of contemporary architecture. Training initiatives and broader partnership arrangements have been set up with the Bauhaus Archives in Berlin, particularly for the international exhibitions organised at the property since 2000. The Centre is also equipped with multilingual audio-headsets.

Effectiveness of current management

ICOMOS considers that the current management of the property is effective and satisfactory.

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ICOMOS considers that the management system for the property is adequate.

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## 6 Monitoring

Monitoring of the property's conservation and management is carried out by the Steering Committee. The Committee is overseen by the Historic Monument Conservation Department of Lower Saxony.

Very general indicators have been established, and are applied once a year. They constitute a technical, social and financial appraisal of the management and conservation of the property. The appraisal includes the updating of the Management Plan.

ICOMOS considers that more precise technical indicators must be established, particularly for the monitoring of the conservation of the exterior architecture, the load-bearing structures and the roofs, and the interior architecture and its decorative and functional elements.

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ICOMOS considers that the monitoring of the property consists of an annual activity appraisal and the updating of the Management Plan of the property, which is satisfactory. However, it would be advisable to establish more precise technical indicators to be monitored on a regular basis.

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## 7 Conclusions

ICOMOS recognises the Outstanding Universal Value of the Fagus factory in Alfeld, Germany, as an early and influential testimony to modern functionalist architecture and industrial aesthetics at the very beginning of the 20<sup>th</sup> century.

### Recommendations with respect to inscription

ICOMOS recommends that the Fagus Factory, Germany, be inscribed for the World Heritage List on the basis of **criteria (ii) and (iv)**.

### Recommended Statement of Outstanding Universal Value

Brief synthesis

Designed in around 1910, the Fagus factory in Alfeld constitutes an architectural complex which foreshadows the modernist movement in architecture. Built by Walter Gropius, it is notable for the innovative use of walls of vast glass panels combined with an attenuated load-bearing structure. It bears testimony to a major break with the existing architectural and decorative values of the period,

and represents a determined move towards a functionalist industrial aesthetic.

The Fagus factory in Alfeld establishes several major fundamental aspects of modern functionalist architecture of the 20<sup>th</sup> century, in particular the curtain wall. It constitutes a homogeneous, territorial and built complex, rationally and completely designed to serve an industrial project. It expresses great architectural unity. The scheme is at once architectural, aesthetic and social, and bears witness to a determination to achieve humanist control of the social and aesthetic changes linked to industrialisation. The interior decorative and functional elements are attuned with the architecture and the social project. They represent one of the first consummate manifestations of industrial design.

**Criterion (ii):** The Fagus factory in Alfeld illustrates a moment of considerable interchange between different generations of German, European and North American architects, which gave rise to a rational and modernist architecture. It was a site of synthesis of these influences, which were technical, artistic and humanistic; it went on to influence many other architectural works; it was the starting point of the Bauhaus movement.

**Criterion (iv):** A manifesto of modernity in architecture, the Fagus factory won its designer, Walter Gropius, an international reputation. It exemplifies the innovation of the curtain wall, which optimises both luminosity and lightness. It is a concrete expression of the functionality of the industrial complex in the interest of productivity and the humanisation of the working environment. It incorporates into the scheme the concepts of industrial aesthetics and design.

Integrity

All ten buildings constituting the Fagus factory have been conserved in their entirety, in their initial ground plans and architectural forms. The factory corresponds with the programme set out by its designers around 1910. No buildings have been added or demolished. The conditions of integrity in terms of layout and exterior architecture have been preserved.

Authenticity

Major repairs and restorations were carried out from 1985 to 2001. They were carried out with great respect for the property with regard to its outstanding testimony to 20<sup>th</sup> century industrial architecture, which has contributed to the preservation of the conditions of authenticity both as regards architecture and decoration.

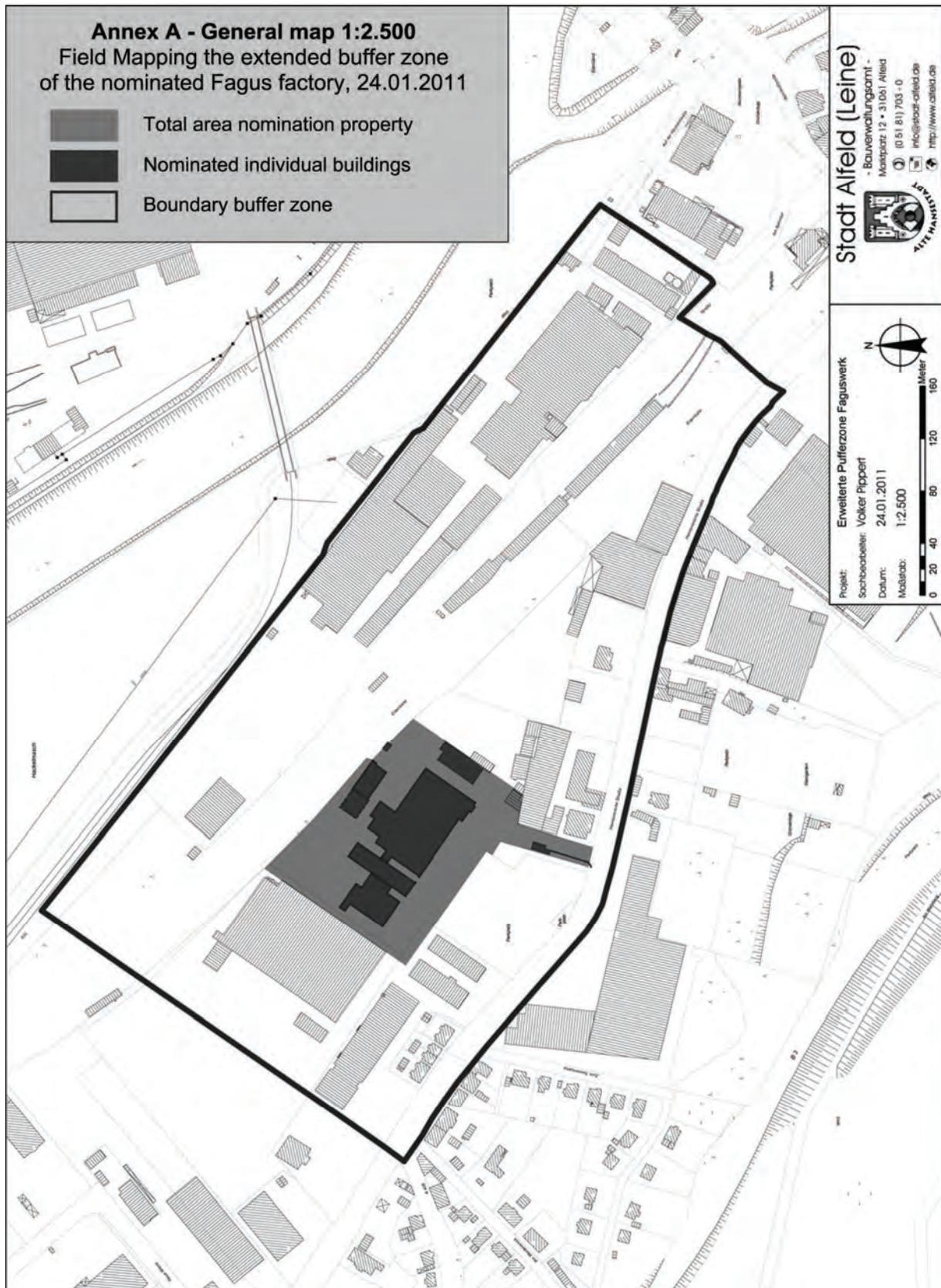
Management and protection requirements

The property has been listed as a historic monument since 1946, which is a very early date for an industrial complex. The 1978 Act of the Regional State of Lower Saxony on Historic Monuments and Buildings redefined the terms of its legal protection.

The property is managed under the responsibility of its owner, *Fagus-Grecon Greten GmbH & Co. KG*. The owner acts in concert with the regional and local historic monument conservation authorities, via the property's Steering Committee, which exercises authority with regard to project control and coordination between the various partners involved. The management system consists of a set of maintenance and conservation measures which is regularly updated by the Steering Committee. If major works are required, joint funding is set up between the private sector owner and the regional and national public authorities.

ICOMOS recommends that the State Party give consideration to the following:

- Consider one or more possible scenarios which could be implemented in the event of a change of owner and/or a change in use of the buildings;
- Set out a medium-term conservation programme, including the participation of professionals specialising in the conservation of 20<sup>th</sup> century architecture;
- Consider establishing more precise technical indicators for the monitoring of conservation.



Map showing the revised boundaries of the nominated property



Aerial view of the nominated property



South-western view of the main building



General south-eastern view



Main building foyer, staircase