

40 years of the BMW Tower and Museum.

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1. Introduction.



“The biggest four-cylinder in the world – a landmark for the city of Munich alongside the Olympic Park. Ergonomically compact inside and clearly contoured outside, it is a boldly conceived experiment and a milestone in the history of architecture. BMW has created space for its expanding business with an administrative centre of the New Class.” (Internal memo, 1973)

Since its official opening on 18 May 1973, the BMW Group Headquarters has become an indisputable icon of architectural history and a permanent feature both of Munich’s skyline and of the company’s corporate image. In spring 2013, 40 years after its completion, a committee of experts voted the building complex designed by architect Professor Karl Schwanzer one of the 15 most spectacular corporate head offices. Alongside the office block nicknamed the “Four-Cylinder”, only one other company headquarters from Germany made it onto the shortlist drawn up by the EMPORIS web portal for building data and construction projects.

The BMW Tower and adjoining museum complex not only mark the high point of Karl Schwanzer’s architectural career, they also set new benchmarks in the field of modern office architecture in the early 1970s. The Viennese architect’s design combined an impressive façade with an innovative and flexible spatial concept, and in so doing laid the foundations for a new and enduring architectural philosophy at BMW. In accordance with the “built for communication” concept, Munich’s Four-Cylinder uniquely combines the pragmatic benefits of its administrative function with the aesthetics of architecture.

Schwanzer’s tower furthermore epitomises West German architectural design of the 1970s – innovative civil engineering projects which would have lasting stylistic influence. Given its identity as an engineering structure, the tower is one of the outstanding architectural achievements of its period and continues to fascinate and intrigue admirers to this day.

The BMW Headquarters and Museum complex was awarded listed building status in 1999 and for many years it has been considered a landmark of the



city of Munich. And with BMW Welt, designed in 2007 by the internationally renowned architect Prof. Wolf D. Prix, the BMW Group created another must-see example of urban development for visitors to the Bavarian capital with an interest in architecture, technology, design and innovation.

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2. BMW Tower: the “Four-Cylinder”.



Background

During the 1960s, BMW went through a period of unprecedented expansion. Spiralling production figures necessitated extra space for administrative functions in addition to more production facilities. While the manufacturing side was expanded through the acquisition of Glas Automobilwerke in Dingolfing and Landshut in 1966, in Munich there was a shortage of office space for administrative staff. Although the existing office buildings at Plant 1 in Munich/Milbertshofen were added to and more space was created immediately adjacent to the factory, there simply was not enough scope for the requisite expansion. As a result many administrative departments had to be relocated off the plant premises. Office buildings in and around Munich were rented to accommodate staff, which meant that administration was dispersed across the city. This situation ultimately forced the company to recognise the need for a dedicated office building on plant premises in order to recentralise and expand administrative organisation.

Tender and competition

Wilhelm Hermann Gieschen – board member for production from 1961 to 1971 – presented the first plans for a new administration building in Dostlerstrasse to a meeting of the Board of Management on 14 June 1966. Gieschen was therefore the initiator of its construction and from that point on became the board member responsible for all arrangements associated with the new building.

A site for the new administration building was identified to the south of the BMW plant. It had an area of 28,210 m² and was located on Dostlerstrasse and therefore adjacent to the main entrance to the BMW plant. The site earmarked for this new office block was undeveloped at the time of planning and used as a car park for the workforce at the BMW plant until 1970.

The BMW executive management launched a competition with a view to choosing a design for the new head office and invited eight architects with a proven track record in similar projects. The tender document issued in April



1968 specified that the new complex of buildings should include – in addition to the office block – a separate pavilion for an electronic computer centre and a multistorey car park. The architecture of the administration centre, computer centre and multistorey car park was to be closely integrated, in addition to creating an architectural synthesis with the existing administration Buildings 71 and 80 on the periphery of the plant site and outside it.

Spatial planning for the new office building also had to take account of technological advances in administration and production and the continual changes these brought to workflows. So BMW was looking for a design in which usable space could be reconfigured and adapted at any time to meet current requirements. In addition to stipulating conditions for the spatial design of the new BMW building, the executive management was equally concerned that it should have architectural merit. In particular, the promotional appeal of the building was dependent on a generous and visually impressive façade. Moreover, access to the Headquarters, featuring a forecourt, was to be similarly imposing in its layout. The jury appointed to judge the entries was united in the view that the new administrative complex required dimensions and a design that would not only reflect the importance of the company, but also blend in with other architecture around the BMW plant. This consisted of residential buildings, the BMW plant, major traffic junctions and the future Olympic facilities.

Following the presentation of the designs on 10 October 1968, the competition shortlist of two comprised a rather conventional “seven-storey high-rise slab block”, submitted by the engineering and planning company Aktiengesellschaft für Industrieplanung, and an almost 100-metre-high, futuristic “suspended structure” with four cylindrical main elements, designed by the Viennese architect Professor Karl Schwanzer. In the jury’s view, both designs had advantages and drawbacks, but BMW sales director Paul Hahnemann recognised in Karl Schwanzer’s technically bold design the potential for it to become an architectural landmark for BMW and for Munich, and he championed its implementation internally. In order to convince the BMW Board of Management, Supervisory Board and major shareholders of the merits of Schwanzer’s design, Hahnemann had a functional model of one complete cloverleaf storey with open-plan office erected on a 1:1 scale at the Bavaria film studios. His efforts were rewarded: in December 1968, BMW



management awarded the commission to build a new Group head office to the Viennese architect Professor Karl Schwanzer.

BMW Tower: architecture and design

Karl Schwanzer's design drafts for the BMW Headquarters reveal the influence of his teacher, the architect Oscar Niemeyer, who in the 1950s had been responsible for urban planning for Brasília, the new capital of Brazil. The BMW Tower site benefited from Niemeyer's architectural landscape and it reveals the extent to which Schwanzer borrowed from the architectural concept of his mentor – the sculptural element of both the BMW Tower and Museum Bowl would have been inconceivable without Niemeyer's spectacular ensemble in South America.

The tower has a cloverleaf floor plan and forms both the high point and centre of the ensemble of new buildings. Its height of 99.5 metres was within the maximum stipulated by Munich's inner city planning regulations in 1968. This restriction was based on the height of the towers of Munich's Frauenkirche, which rise to 98.6 m. The height of a building could not exceed 100 m. Its 22 storeys were divided into 18 office floors, including two for the Board of Management, four technical floors, the ground floor and a basement.

Instead of resting on foundations, the BMW Tower's four cylinders were designed to be suspended from a cruciform steel beam construction on the roof. There were only a handful of examples of this type of "suspended building" worldwide, and none had ever been built to the height of Schwanzer's design for BMW. In construction terms this meant that rather than being built conventionally from the bottom upwards, first the upper floors of the almost 100-metre-high building were completed. The four cylindrical elements were initially constructed at ground level, before being raised hydraulically and completed in several segments. Each cylinder comprising 19 floors – including a technical floor (to provide visual segmentation) – was suspended from four giant "crane arms" positioned in the shape of a cross at the building's central core, a tower shaft made of reinforced concrete and resting on very solid foundations. The huge tensile and compression forces were absorbed by lattice girders made of reinforced concrete on a mezzanine level in the top third of the building and by vertical ties and compression columns running along the exterior façades – lending the entire design



stability. This approach to design and construction gave the BMW Tower a light and distinctive silhouette, despite its impressive height and a suspended weight of 16,800 tonnes.

Moreover, in urban planning terms the cloverleaf tower was very much in keeping with its surroundings and at the same time proved an extremely effective way of promoting the company. Thanks in particular to its distinctive shape, Schwanzer's tower was to become a memorable landmark and important focal point for BMW. The architect himself described it as a modern and unique office tower with a characteristic access road and closed forecourt. The design made use of clearly defined forms that conveyed precision, technical perfection and aesthetically appealing contours. As such, it perfectly represented the successful image and high aspirations of the BMW automotive company.

But the building was not all about the appeal of its spectacular exterior: in terms of interior design, Schwanzer accorded a high priority to the issue of functionality. What the directors initially regarded as too futuristic, too far removed from practical applications and too experimental, was ultimately considered the best solution: a circular floor plan of four office segments on each level, created by the four individual suspended columns of the tower. These four circular segments form the cloverleaf shape of the external floor plan of the administration building. The architect himself based his reasoning for the shape of the building exclusively on the compelling logical rationality and functionality of a circular floor plan for the modern organisational approach to office work. One of the determining factors for Karl Schwanzer was to optimise communication flows within a team. In his view the cloverleaf floor plan resulted in the following characteristics for modern office design: short routes to optimise lines of communication and office organisation between the individual departments, and maximum flexibility in configuring available space. Even today the four circular segments of each cloverleaf floor are mainly used for open-plan offices. At the core of each floor are two intersecting corridors which link the individual team offices. This architecture fosters close cooperation through short lines of communication. And this approach to office planning in the tower reflects the BMW principle of a flat hierarchical structure. Virtually every member of the department, from trainees



to head of department, sits in a team office – individual offices are few and far between.

BMW Tower: the construction process

The period of construction for the new Group Head Office and outside areas was scheduled for 26 months. Since 70 per cent of the site was affected by the building work, construction had to be carried out in stages. Excavation work on the site of the former car park for the BMW plant began on 16 July 1970. The official groundbreaking ceremony followed on 28 July 1970. Two and a half months after the start of construction, the foundations of the tower and two floor levels above the basement were in place. Four months after the start of construction, the core of the tower had been raised to the full height of almost 100 m using the Simcrete slipform process. Next came the mighty load-bearing cross at the top of the tower. Even while this work was in progress, the seven uppermost floors and adjoining technical floor were being prepared at ground level. Then these floors were suspended from the load-bearing cross using prestressing steel tendons and raised by a hydraulic press at a rate of four metres per week. In the space vacated beneath these now suspended floors, a new floor could then be prepared each week and hoisted up to the completed ones above, with glazing and façade work progressing at the same time. In this way the four cylindrical segments of the building rose uniformly from the ground at the same pace.

Already protected from the elements, the completed floors were now ready for interior work to begin without delay. Installations were fitted, followed by floor, wall and ceiling linings in a meticulously preplanned rhythm, unimpeded by skeleton construction work at ground level. Thanks to prefabrication, the tower's architecture went up with enormous speed – as an approach to construction it was elegant, efficient and quick. After 16 months, lifting operations on the floor segments came to an end. The shell of the administration tower, the façade and the glazing were complete and work on the interior was already well under way.

The topping-out ceremony to celebrate completion of construction was held on 7 December 1971. By July 1972, just two years after the start of the building programme, the outer profile of the entire complex of buildings, the outside areas and the landscaping were complete. When Munich played host



to the world at the 1972 Olympic Games, the BMW Tower was finished and could be seen in its full glory for the first time. The end of the contractual construction period was 30 September 1972. However, before the move into the building could begin on 22 January 1973, additional work had to be carried out and the interior design needed to be completed. An open day was held in mid-December 1972 to enable staff to see what their future workplace would look like. The official opening ceremony for the new complex of buildings with a price tag of DM 109 million was held on 18 May 1973.

How the logo found its way onto the roof of the tower

Schwanzer's concept proposed the installation of corporate emblems on the load-bearing cross on the roof of the tower. However, the Munich city planning authority considered the impact would be too striking in nature. Effectively, the city planners were saying they were against the installation of a company logo – and a legal dispute ensued. Despite this, to mark the start of the Olympic Games, Eberhard von Kuenheim, chairman of the Board of Management at the time, had BMW emblems printed on canvas screens and displayed at a height of nearly 100 m on the east and west sides of the roof superstructure for “trial purposes”. Mounting the logo on the west side was particularly important for promotional reasons, since the emblem was visible from the Olympic Stadium – the intention being to attract the attention of visitors to the Games. By displaying the company logo in breach of city regulations in this way, BMW incurred a fine of over DM 110,000. But after lengthy negotiations with the city authorities, the Board of Management was finally granted permission in autumn 1973 to display BMW logos permanently on all four sides of the superstructure.

BMW Tower: renovation and modernisation 2004-2006

After over 30 years of service, by the turn of the millennium the BMW Tower was in need of thorough renovation and modernisation. The contract was awarded to Hamburg-based architect Peter P. Schweger and work on structural and technical aspects of the building began in 2004. However, the building's external appearance remained unchanged throughout the renovation: the cleaning of all façade elements, the new insulation and soundproofing, and the replacement of 2,304 windows were only noticeable on closer inspection. The colossal load-bearing construction on the roof was encased in a well-ventilated housing to prevent damp penetration. And the



roof itself was sealed with welded plates of stainless steel. Great thought was given to the updated fire protection system, which used pressure ventilation of the stairwells with airlocks situated at the entrances, and included a specially integrated fire service lift.

Furthermore, conditions for those working in the BMW Tower were improved. The fresh air supply was optimised and complemented by a system to control window opening. Natural daylight in the workplace was improved thanks to a redesigned louvre system and supported by the use of daylight-controlled circular luminaires. Following the removal of the Tower canteen in the adjoining low-rise building to the west, a replacement was built in the adjoining building to the east, which featured a large cafeteria in high-quality contemporary design. The Four-Cylinder's entire lift system also underwent renovation. Instead of the original eight cars in eight lift shafts, now two cars travelled one above the other in four of the shafts, with a single car in two of the other shafts and a fire service lift.

The BMW Tower today

The BMW Tower was state-of-the-art in 1973, a symbol of cutting-edge architecture and a test site for new, pioneering ideas geared to in-house cooperation. After 30 years of service, the building needed to be adapted to the changing technical and architectural requirements of a global company. Today the Four-Cylinder is virtually unchanged in terms of its external appearance and on the inside remains as spectacular and futuristic as it was 40 years ago. The renovation work preserved its character as a building of innovative, forward-looking technical design and further developed and refined the basic principle of transparency, which had been an aspiration from the outset. Thanks not least to the development of an energy and resource management system, the overhaul also achieved a reduction in operating costs of 50 per cent. In 2013 the BMW Tower provides a unique working environment for 1,500 employees of the BMW Group.



BMW's architectural philosophy: "Built for communication"

With his innovative exterior and interior design for the Four-Cylinder, Professor Karl Schwanzer laid the foundations of an architectural philosophy at BMW that began in the late 1960s and is still regularly applied today. In line with the "built for communication" principle, this philosophy influences internal workflows and helps to convey the public image of the company.

Since then, outstanding architecture with a high degree of functionality has been a trademark of the company. The Research and Innovation Centre (FIZ), built between 1984 and 1990, is a spacious ideas factory, whose interlinking segments were specifically designed to put into practice the guiding principle of team- and communication-based work. All specialist units involved in vehicle development and pre-production are based here. Developed by HENN Architekten of Munich, the project building is integrated into the processes of vehicle production. Here, too, communication between the employees and teams involved in the various projects has been a priority since 2004.

Zaha Hadid Architects of London designed the central building of the BMW Leipzig plant, which opened in 2005. The structure features a unique open spatial concept, designed to support communication and human interaction. It interlinks the key production areas using the shortest possible routes. The design was awarded the 2005 German Prize for Architecture.

The spectacular, award-winning architecture of BMW Welt, designed by the Viennese team of architects Coop Himmelb(l)au and opened in 2007, is now Bavaria's most popular attraction and draws millions of visitors each year. As the brand's "shop window" it surprises visitors both inside and out with its unconventional design aesthetic and functionality.

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3. BMW Museum.



Background

The first museum-type display space for historic BMW products was developed at the BMW Munich plant in the mid-1920s, where from 1925 onwards the company exhibited its products in a purpose-built room on plant premises. Although the focus was on historic exhibits, occasional current products were also displayed. To mark the company's 50th anniversary in 1966, this original exhibition room was given an extensive makeover. The now enlarged BMW plant museum was officially opened on 20 January 1967. For the first time the museum was advertised to the general public and its doors opened to any visitor with an interest in BMW history. Nevertheless, the availability of space and the number of historic exhibits remained modest and the museum's location within the plant premises deterred many potential visitors.

It was not until the early 1970s, with the construction of the new BMW Group Headquarters, that the museum attracted wider public attention for its independent, representative architecture outside the plant premises. Although the jury for the architectural competition of 1968 had not specified the design of an automotive museum, Viennese architect Professor Karl Schwanzer included in his proposal an external and independent building for the display of vehicles, which also featured a circular floor plan. In the view of the jury, the proposal to build a BMW Museum at the intersection of Petuelring and Lerchenauer Strasse in Schwanzer's idiosyncratic design was a felicitous idea, since the form – also based on circular segments – fitted well into the overall ensemble of buildings. The "Museum Bowl" was in perfect harmony with other cylindrical or circular structures in the immediate vicinity – including the television tower, several gasometers and a traffic island. So at a meeting of the Supervisory Board in Bad Homburg on 2 December 1968, Schwanzer was commissioned not only to build the BMW Tower, but also to integrate retrospectively into the building contract his concept for an independent museum.



The BMW Museum and the Summer Olympics

Work began on the BMW Museum in spring 1971, nine months after the start of construction of the BMW Tower. Located in the immediate vicinity of the Olympic Stadium with its light and airy roof structure, the BMW Museum was designed as a crowd-pulling flagship for the BMW brand during the Summer Olympic Games. The summer of 1972 was an opportunity for the young Federal Republic of Germany to endear itself to the world – and the BMW Museum was one element in this new, forward-looking, international orientation. Although its silvery, shimmering form assumed a compact and closed exterior, its interior was designed to welcome in the general public. The shell of the BMW Museum was completed at the same time as Munich's Olympic Stadium, right on schedule for the start of the 1972 Summer Olympic Games.

BMW Museum: architecture and design

Alongside the Tower, the bowl-shaped museum was a second architectural highlight in the complex of buildings designed for BMW by Professor Karl Schwanzer. The architect developed an interior framework of circular columns, space-filling ramps and platforms apparently suspended in mid-air. The outer shell of relatively thin concrete was designed in line with the automotive principle of the self-supporting body. Its roof measured 40 metres in diameter. The interior structure, on the other hand, rested on six solid columns rising to varying heights within the space created by the bowl.

Schwanzer's museum building enabled him to integrate the car's "natural habitat" – roads, bridges and car parks – within a relatively restricted space. His basic concept was to bring the road environment into the converted exhibition space; on no account was he going to give BMW a conventional, static museum in the form of a repository for exhibits. The goal was to achieve spatial breadth combined with dynamics and movement as a design counterpart to the actual site of the building at a major traffic intersection.

At the same time, in combination with the education centre situated in the adjacent low building, the museum was to become a main focus of BMW's public relations programme. The building's bowl shape – seemingly impenetrable from the outside – was enough to provoke interest, and only its glazed pedestal at the entrance area permitted the occasional glimpse inside.



The museum was to form the spiritual lynchpin between plant, product and public, and through specially organised events become a permanent institution in the cultural life of the city of Munich.

Once inside the museum, the visitor followed a route from top to bottom. Before reaching the uppermost platform via an unusually long, yellow escalator, the visitor was afforded surprising glimpses of elements of the exhibition. Images projected onto the inside wall of the bowl served to create an initial illusion of movement. Thereafter, a spiralling ramp guided the visitor downwards from platform to platform, past cars, motorcycles, racing vehicles and engines, all representative of the diverse range of products that make up the BMW heritage. More detailed technical exhibits were presented in apparently floating, spherical Plexiglas containers – highly innovative at the time – which enabled visitors to look at all aspects of an engine, for example, by walking around it. Accompanying texts explained the historical relevance and technical details. Cars and motorcycles were not only displayed on all five circular platforms, they were also fixed to the wall of the bowl at ever-steeper angles to represent cornering. Narrow window slits in the lower part of the outer wall provided a link to the world outside.

The museum's colour scheme of silver, white and dark blue served not only to convey elegance and quality, it also subtly represented the world-famous colours of the BMW logo, which additionally appeared as monumental 40-metre-diameter graphic element on the museum's roof – visible only from above.

BMW Museum: exhibition concept

At the time of its official opening in 1973, the BMW Museum was a unique design. It combined outstanding architecture with an entirely new concept of knowledge transfer, making the BMW Museum a model for countless other museums all over the world. Since its opening, the BMW Museum has regarded itself as a place which not only reflects the history of the BMW brand but also places the past in the context of the present and future. When it opened its doors in 1973, the BMW Museum's objective was not to impress visitors with an endless collection of historic exhibits, but rather to enthrall them through lively confrontation with themes linked to mobility, communication and structural changes in society.



Redesign and expansion of the BMW Museum

Along with the renovations to the adjoining administration building on Petuelring, the technical systems and concept of the BMW Museum underwent a complete overhaul at the start of the new millennium. The relocation to other areas of the Tower canteen and event rooms of the western low building created an opportunity for generous expansion of the now severely cramped facilities of the BMW Museum. From 2002, the Stuttgart firm of architects and exhibition designers Atelier Brückner and the Berlin-based media agency ART & COM worked with the relevant specialist departments at BMW to create a new exhibition concept which reflected and developed further the original principles of the museum.

The floor area of the BMW Museum was increased fivefold to 5,000 m² by the addition of the adjacent low-rise building. This structure, two thirds of which is underground, was completely gutted and its interior converted into seven partially transparent “houses” on three floors, linked by a series of bridges, roads and squares. Each of these houses is dedicated to a key aspect of BMW corporate and product history, with a large central plaza available as a flexible events venue. The additional low-rise building now accommodates the permanent exhibition of the BMW Museum in its various houses and rooms covering 4,000 m², while the Museum Bowl displays temporary exhibitions on specific themes.

The fascination of the BMW brand remains at the heart of the museum concept since its reopening on 21 June 2008. At the same time, the new museum positions itself as the authentic reflection of the brand, conveying to visitors through a variety of approaches its spirit of innovation, power and dynamism. Particular attention has been paid to new presentation techniques, which turn the spotlight on the 130 original exhibits while at the same time highlighting the building’s new architecture. A central museum route in the form of a road establishes an urban setting, guides visitors on a thematic journey through time and space, and offers a wide range of displays, themed presentations and individual facets of the BMW brand.



With over 500,000 visitors per year, the new BMW Museum is the second most visited museum in the cultural city of Munich – and as such one of the most popular museums in Germany.

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4. Dossier: facts & figures.



Chronology

14 June 1966	Presentation of plans for the construction of a new administration building at a Board of Management meeting
14 May 1968 – Nov. 1968	Tender and competition
December 1968	Contract awarded to Prof. Karl Schwanzer
December 1968 – July 1970	Adaptation of the design and detailed planning
16 July 1970	Laying of foundation stone and start of excavation work in Dostlerstrasse
28 July 1970	Official groundbreaking ceremony
April 1971	Start of construction of the museum
7 Dec. 1971	Topping-out ceremony
July 1972	Building shell and park areas completed
August 1972	For the Olympic Games: canvas logos appear on the east and west façades
30 Sep. 1972	End of contractual construction period
Oct. 1972 – Jan. 1973	Interior design
Dec. 1972	Open day for employees
22 Jan. 1973	Start of occupation of the building
18 May 1973	Official opening ceremony for Tower and Museum
November 1973	Installation of company logo
from 29 Oct. 1999	Tower awarded listed building status
April 2004	Start of renovation work on the BMW Museum and Tower
August 2006	Reoccupation of the Tower following renovation
21 June 2008	Opening of the new BMW Museum following renovation and expansion
April 2013	BMW Headquarters voted one of the world's most impressive corporate head offices



Facts & figures

BMW Tower

Built (exterior completed):	1970 – 1972
Topping-out ceremony:	7 December 1971
Official opening:	18 May 1973
Architect:	Prof. Karl Schwanzer
Architect of renovation:	Peter P. Schweger
Cost:	approx. DM 100 million
Height:	99.5 m = approx. height of Munich's Frauenkirche
Floors:	22 (18 office floors in Tower)
Aluminium façade window elements:	2,304
Weight (Tower):	16,800 t
Building plot:	14,730 m ²
Useful area:	approx. 53,000 m ²
Jobs:	approx. 1,500

BMW Museum

Built (exterior completed):	1971/1972
Opening:	18 May 1973
Architect:	Prof. Karl Schwanzer
Architect of renovation:	Atelier Brückner
Design of museum expansion:	ART & COM
Diameter of Museum Bowl:	40 m
Area of Museum Bowl:	1,000 m ²
Area of low building:	4,000 m ²
Total exhibition space:	5,000 m ²
Net total area:	10,000 m ²
Gross floor area:	12,200 m ²
Number of floors:	3 in the permanent exhibition area, 5 in the Museum Bowl
Total number of rooms:	25
Length of tour:	approx. 1 km
Number of exhibits:	approx. 130
Annual visitor numbers:	over 500,000