

# **Dudley Zoo Assessment**

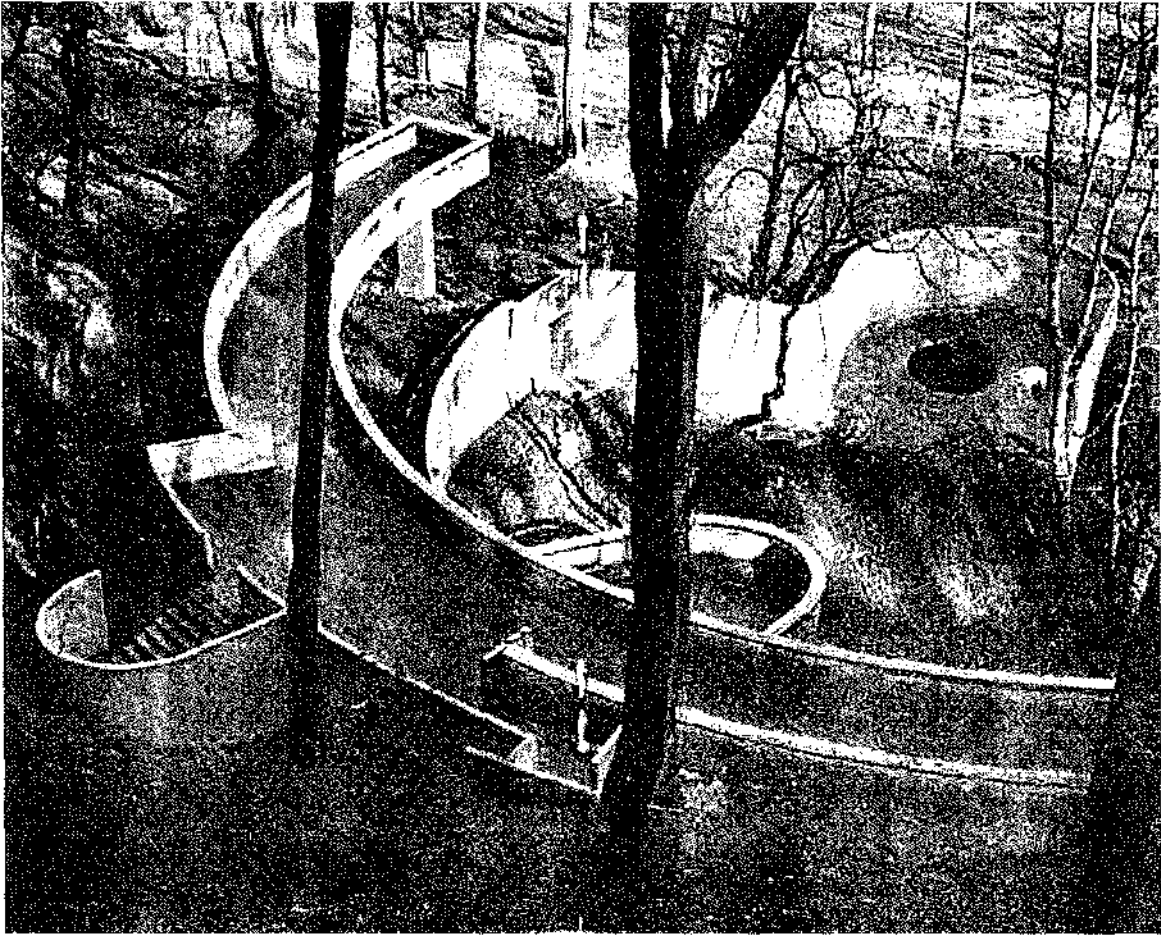
## **Proposed New Elephant House**

Birmingham University Field Archaeology Unit  
**Project No.722**  
June 2000

**Dudley Zoo Assessment**  
**Proposed New Elephant House**

by  
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Bear pit when new (1937).

- Plate 1 The existing direct line-of-sight view of the former Bear Ravine which is to be lost (Dr Paul Collins)
- Plate 2 The revised approach to the Bear Ravine, rising up from a lower level (Dr Paul Collins)
- Plate 3 A view along a revised line of the temporary fencing to protect the Bear Ravine structure (Dr Paul Collins)
- Plate 4 The original Bear Ravine pool was accommodated within the circular projection in the enclosure's perimeter walling. Its circular outline can be seen here (Dr Paul Collins)
- Plate 5 The 'phantom' walling to the rear of the site of the proposed new Elephant House – some of the most intact of the original Castle Grounds' wall (Dr Paul Collins)
- Plates 6 & 7 The heavily breached and patched section of original Castle Grounds' walling it is proposed to retain (Dr Paul Collins)
- Plates 8 & 9 The 'Farmyard' buildings currently occupying the site of the proposed new Elephant House (Dr Paul Collins)
- Plate 10 The route of the proposed new Service Road (Dr Paul Collins)

## **Dudley Zoo Assessment Proposed New Elephant House**

### **An outline history of Dudley Castle, its Grounds and Zoological Gardens**

The area now known as Dudley Castle & Zoo was originally known as the Conigree. The first mention of the Conigree is in 1247, when Roger de Somery obtained a 'right of warren' there. In that period it consisted of Castle Hill and the lands to the east of it, including those across the parish boundary in Tipton. The warren is mentioned in documents throughout the medieval period, normally as an appendage to the castle, but occasionally to that of the Old Park in Sedgley. The park was used as a place to keep and hunt small animals that included rabbits. As a park it would have had a lodge to house a 'parker' who was responsible for the welfare of the animals kept there. The original lodge may have been sited close to the Trindle Road junction with Castle Hill Road, as a moat is marked in that position on an 18<sup>th</sup>-century map.

To the west of the hill, bordering the lands of the Priory of St. James of Dudley, there was an area of water called Castle Pool, recorded on Harry Court's map of c.1785. This was connected with the Priory streams and pools and may have been a pond to an earlier mill. The later mill site seems to have been where Castle Mill was situated. This had the alternative name of Shirt's Mill, after the Shirt family who resided there in the 17<sup>th</sup> century. The 'Conyngre' was still referred to as a park in 1581, but parks were going out of fashion and it is likely that it was subsequently enclosed for alternative uses.

The earliest evidence of one alternative use was in 1631 in an altercation between Thomas Wilmer (who by an order of sequestration was awarded all the profits coming out of the lands of the barony) and Dud Dudley. It appeared Dud had 'locked' Thomas out of '*one parcel of the premises called the Conyngree.*' This may have been the same parcel that Edward, Lord Dudley granted to William Ward in the following year. The field called the 'Paddock' was 30 acres in size. It is described as '*part of the Parke or ground called the Coneygree on the east side of Castle Hill ... in which a furnace to make iron is erected.*' With this property went the mines and coal in the Coneygree, though Lord Dudley retained the right to take coal for use in his 'house or houses'.

The area where the mines were is possibly Parkmoor Pits, a fieldname shown on Court's map of c.1785. The furnace itself may have been associated with the Castle Mill site, the mill supplying the waterpower to blow the bellows. This conclusion is based on the fact that 'The Paddock' is shown on Court's map as being between the mill and the pits. It would be interesting to know if the process was smelting by coal 'à la Dud' or using the wood on 'Connyngree' Hill to make charcoal?

Generally the flat land of the park initially seems to have become chiefly farmland. Court's Map shows a number of fields called 'piece', with personal names; Bowers, Bradley's, Hardiman's, Baylis, Page's and William's. On the 10<sup>th</sup> January 1704 in a Chancery Proceeding the area was described as Cunnigreave Park '*an old decayed park -in the tenure of Thomas Dudley.*' Dudley may have occupied the Lodge, that is, the farmhouse later known as Castle Mill Farm. The lands of Lodge Farm are shown on Court's map. A separate Lodge was built near the mill site between 1780 and 1835.

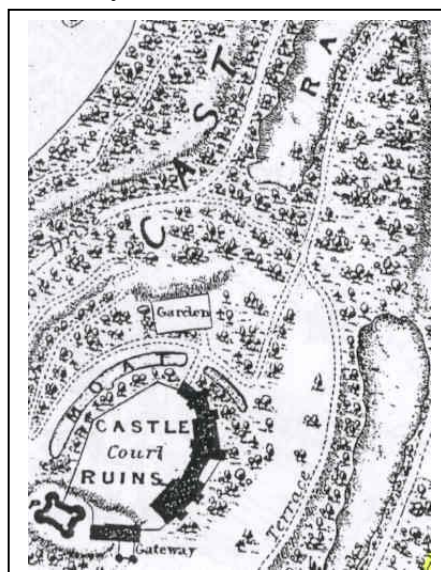
A seam of the ‘thick coal’, close to the surface, however, ran straight through the middle of the Coneygree. This meant that it was not very long before there were coal workings all over the site. After the middle of the 18<sup>th</sup> century, when the use of coal in smelting iron ore became common, there were over fifty within the area of the Black Country Living Museum alone. Two of the early mines have been reopened within the museum.

Limestone quarrying on the hill itself probably began in the 17<sup>th</sup> century but it was not until the 18<sup>th</sup> century, when lime was used in smelting, that it really took off. The Ravine is shown as a huge quarry on John Snape’s map of 1785. A limestone works is also shown, possibly associated with surface quarrying on the east side of the castle. Snape also shows Limepit Lane as a major route to Sedgley, which suggests quarrying on that side of the hill had occurred. By the late 18<sup>th</sup> century other quarries were opened on Kettle’s Hill and Castle Hill and by the next century the hill was pockmarked by holes in the ground.

During the late 18<sup>th</sup> century the surface limestone was exhausted and the miners began to excavate huge caverns; Singing Cavern, Dark Cavern (called Great Cavern in 1839), Mudhole Cavern. Subterranean canals from the mines were built to join the Birmingham Canal east of the hill through Lord Ward’s Arm. Horseshoe shaped limekilns lined the Tipton Portal as this canal went underground. The Dudley Tunnel, joining the canal networks on both sides of the watershed, was built in 1778. A later subterranean canal led off to the Wrens Nest lime workings. The hub of this canal system was Castle Mill Basin; a huge underground basin that eventually had the roof removed to allow access and light in. The same thing was done to Shirt’s Mill Basin to the east of the mill basin.

The area of the castle grounds is about 60 acres. *‘It was unenclosed, and nearly bare of trees, and the noble ruin itself unprotected, until about 20 years since (c.1817); when the whole extent, with the exception of a portion sufficiently guarded by hedging, was most judiciously fenced round with a handsome limestone wall, and planted throughout with choice trees of various kinds. Within this wall a circuitous drive has since been formed round the hill, and walks laid out, traversing the grounds in different directions. In their disposition, advantage has been skilfully taken, not only of the natural features of the hill, but also of the open lime quarries, which had been excavated on its summit, and round its sides.’* [Rev. E. Scrivens, 1837, 22]

### Dudley Castle Grounds, 1835



By the mid 19<sup>th</sup> century the limestone in the underground workings beneath the hill was starting to run out. In a map of Dudley in Bentley's Directory of 1839, Castle Hill is shown as a wooded area that was called 'The Wilderness'. A number of north-south walks ran along the hill, the two main ones are marked 'Carriage Drives.' According to Rev. E. Scrivens in 1837 these walks were around 20 years old: *'The area of the castle grounds is about 60 acres. It was unenclosed, and nearly bare of trees, and the noble ruin itself unprotected, until about 20 years since (c.1817); when the whole extent, with the exception of a portion sufficiently guarded round with a handsome limestone wall, and planted throughout with choice trees of various kinds. Within this wall a circuitous drive has since been formed round the hill, and walks laid out, traversing the grounds in different directions. In their disposition, advantage has been skilfully taken, not only of the natural features of the hill, but also of the open lime quarries, which had been excavated on its summit, and round its sides.'* [Rev. E. Scrivens, 1837, 22] The limestone wall still exists, its continuation north is made up of blocks of slag.

Although Stores Cavern was still being worked in this period, Dark Cavern had been abandoned. As a curiosity, however, this latter cavern still had its value. Gas lighting was installed by courtesy of Lord Dudley and it was used for concerts, balls and lectures. One of the most famous events was a lecture by the eminent geologist Sir Roderick Murchison in 1849 on the geology of Castle Hill and Wrens Nest.

The Tipton Road had been turnpiked with a gate at the bottom of Castle Hill in the late 18th century and in the 1834 OS map, the castle foot pottery and Burnt Tree Works are shown to be in business. The casualty list in limestone working was greater than in coal mining and Lord Dudley erected almshouses as a blind asylum in 1859 for his limestone workers. This did not have much use and was reopened as The Guest Hospital, (5MR 7063) in 1871. The dedication was to Joseph Guest of Dudley who donated £20,000 to the hospital fund.

Limestone working continued at a greater depth further away from the hill, but most of it still went to Lord Dudley's lime works by the Tipton Portal, particularly when the giant draw kilns were built in 1842. With the advent of the Oxford, Worcester & Wolverhampton Railway in the 1850s a further series of kilns was built at the East Castle Works. This railway had been joined by other tracks by 1880 and comprised: a goods station, passenger station and sidings. The Castlemill Works, which began as a group of buildings to the north of Castle Mill, graduated to a locomotive workshop for the Earl of Dudley's Pensnett Railway. It used the main railway line, (renamed The Great Western Railway by 1887) to get its locomotives to the main Pensnett system. The site is now occupied by British Federal.

With the exhaustion of the coal, fireclay and limestone, the eastern area became wasteland, with the Guest Hospital in the middle of it. It was not until after the First World War that it began to be developed and this was partially due to the creation of the Wolverhampton Road. The western area remained wasteland and railway till the mid 20th century. Castle Mill Farm, Castle Mill and The Lodge fell into disuse in the 1950's. The hill was also an overgrown waste ground used by the more adventurous walkers and courting couples. An early 20<sup>th</sup> century postcard proclaimed a path along the west part of the hill as 'Lovers' Walk.'

*[The above was based upon notes compiled and supplied by John Hemmingway, Dudley MBC]*

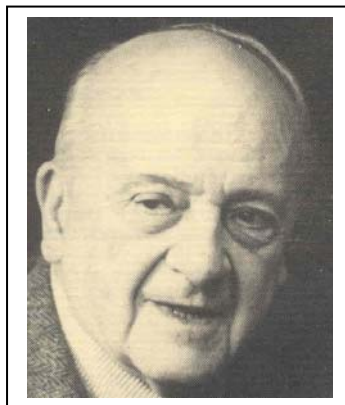
### **Dudley Zoological Gardens**

The proposal to develop a zoo in the environs of Dudley Castle originated in 1935, and was promoted by the Earl of Dudley, Mr Ernest Marsh (director of Marsh & Baxter, a local meat producer) and Captain Frank Cooper (director of the jams and preserves manufacturers in Oxford). These three founded the Dudley Zoological Society with Messrs W. and F. Marsh as fellow directors. In April 1936 Sir Herbert Humphries, ex City Engineer of Birmingham, was made a director.

The project appears to have stemmed from a desire on the part of Lord Dudley to exploit the ancestral castle hill, until then still in its natural state; from Mr Marsh's interest in developing a commercial leisure attraction in a locality so short of open-air recreational amenities; and from Captain Cooper's wish to dispose of his existing animal collection at Oxford Zoo, of which he was proprietor. This fortunate combination of circumstances enabled a comprehensive stock of zoological species to be transferred to a mature but unspoilt site with splendid scenic possibilities.

However, the project had a direct linkage to London Zoo, inasmuch as Captain Cooper was also a Fellow of the Zoological Society and had enlisted as adviser Dr Geoffrey Vevers, who in turn had recommended the employment of Tecton. Indeed, the early meetings of the Dudley Board of Directors took place in the Council offices at Regents Park.

### **Berthold Lubetkin (1901-1990)**



### **Berthold Lubetkin & Tecton**

Tecton was a group of architects, led by the Russian-born architect Berthold Lubetkin, which exploited the aesthetic potentialities of modern architecture in the 1930s. Lubetkin was undoubtedly one of the outstanding architects in England during the thirties. He was born Berthold Romanovich Lubetkin in Tiflis, Georgia, southern Russia, on 14<sup>th</sup> December 1901, and he went to study in Moscow. In 1922 Lubetkin went to Berlin to assist in the organisation of the first exhibition of the 'New Soviet Art' at the Van Diemen Gallery there. He stayed on in Berlin to study further with the Art Historian Worringer, and to assimilate the advanced constructional techniques then being used by German Architects. This was a crucial period in the development of Lubetkin's approach to Architecture. In his mind there was forged a clear link between the purpose of Architecture and his rapidly-developing command of the techniques of building, especially in the use of reinforced concrete.



In 1925 Lubetkin went to Paris to work on the Soviet Pavillion for the Exposition des Arts Décoratifs, realising the designs of Melnikov. It was at this time that he met the Architect Le Corbusier, and through him that he came to know the work of the 'Purist' painters such as Léger. This growing band of contacts left a lasting mark on Lubetkin, and contributed greatly to the 'sculptural qualities' that were the hallmark of his work. Between 1926 and 1929 Lubetkin remained in Paris to design exhibitions for a series of Soviet trade delegations. Whilst there he also studied with the famous French architect Auguste Perret, the so called 'Father of Modern French Architecture', under whom Le Corbusier had trained.

The climate that allowed creative people so much freedom in Paris in the late 1920s changed abruptly in October 1929 with the consequences of the Wall Street Crash on the French economy. Although he remained in Paris until 1931, Lubetkin began to make regular and increasingly frequent visits to London between 1929 and 1931. With the new contacts he made in England he began to formulate the idea of forming a collective architectural practice that would address the most pressing social needs of the time. Moving to London in 1931, early in 1932 Lubetkin realised this ambition and recruited six young Architects – Anthony Chitty, Lindsay Drake, Michael Dugdale, Valentine Harding, Godfrey Samuel and Francis Skinner – to join his 'collective', for which the name Tecton was adopted, this being derived from the Greek for 'builder.' Their first important commission was Highpoint One flats in Highgate, London, which Le Corbusier described as '*an achievement of the first rank, and a milestone that will be useful to everybody.*' This white multi-storey block constructed of reinforced concrete became a rallying point of the emergent English Modern Movement in architecture. However the Tecton buildings that captured the public imagination were two commissioned by London Zoo: The Gorilla House (1934) and the Penguin Pool (1935). The latter was designed with the aid of the engineer Ove Arup, as a shallow pool with interlacing curved ramps that were a structural 'tour de force' for the time. Tecton was subsequently asked to design 13 structures for the new Zoo, which was opened at Dudley on 6<sup>th</sup> May 1937.

Tecton's work petered-out during World War II, and although the partnership survived the conflict, internal divisions, caused in part by the growing maturity of the once young partners, caused rifts to form. The partnership effectively split in November 1947, but it was not formally wound-up until November 1948. Lubetkin's outstanding contribution to British modern architecture was marked by the Royal Institute of British Architects when he was awarded the Gold Medal in 1982. He retired to live in Bristol and took an active interest in the restoration of the Tecton structures at Dudley. Berthold Lubetkin died on 23<sup>rd</sup> October 1990.

### **The Dudley Zoological Gardens Project**

Difficulties of at least three kinds confronted Tecton from the start of the Dudley Zoological Gardens project. For the client, the overriding priority was to open the complex for the 1937 summer season, which gave barely eighteen months to design, construct and commission the project from scratch. According to Lubetkin, the programme became un-systematic as the emphasis of the several directors switched from one exhibit to another in the scramble to '*get as many goods as possible into the shop window.*'

Added to pressure from the client was the task of negotiating approval for the development from the Office of Works (Ancient Monuments Department), which was concerned to preserve the integrity and setting of the Castle, a scheduled Ancient Monument dating from the 11<sup>th</sup> to the 15<sup>th</sup> century. Lubetkin recalled that the Department, and indeed the client, took some persuading that a modern scheme would achieve as harmonious a relationship with the existing ruins as building zoo enclosures in the form of medieval castles and mock ramparts. Nonetheless, specific limitations on heights and the use of limestone facing were placed on buildings in the immediate context of the castle -the Restaurant, Sea Lion Pool and Elephant House.

Over and above these difficulties were the technical and logistical problems presented by the site topography and the organisation of the building contract. Lying at the southern edge of the South Staffordshire basin, Castle Hill and its environs were rich in limestone and coal measures, and had been the scene of more or less continuous mining and tunnelling activity since 1750. Though Ordnance Survey maps from 1884 to 1919 show Castle Hill still in a wholly 'natural' state, extensive underground workings were known to exist, but their exact extent and location were uncertain and there was neither time nor resources for a comprehensive survey.

The combined effect of the hectic programme and subterranean 'unknowns' was to shift much of the detail design and decision-making from the office to the site itself. In this regard Tecton were much assisted by the now familiar contractors, J.L. Kier & Co, and their experienced resident engineer, Michael Sheldrake. But the burden on Tecton was also considerable, particularly for Francis Skinner, who as job architect made weekly site visits from London over the duration of the contract. The use of pile foundations and column structure enabled groundwork investigations to be localised, while the standardisation of repeating details such as parapet walls and handrails also made for economy and efficiency -as well as imposing an aesthetic discipline on the development as a whole.

These aspects of Dudley's implementation are important in demonstrating how, by a mixture of motivation and systematic thought, Lubetkin and Tecton - then a small practice with only three partners, two of whom, Skinner and Drake, were still in their twenties - were able to master such a multifarious and potentially chaotic project, while keeping sight of their architectural objectives. It is precisely this sort of organisational discipline that would be brought to bear on the Finsbury work, in particular their ARP proposals. The success of the project, measured in terms of popular response, can only be described as overwhelming. On the opening day, 6<sup>th</sup> May 1937, an estimated quarter of a million visitors arrived, of whom only 50,000 could be admitted on grounds of public safety. By the end of its first summer season an estimated 700,000 people had visited Dudley Zoo, which by then was the largest open-air zoo in prospect in the country, apart from Whipsnade. Although these extraordinary attendance figures inevitably declined after the war, with subsequent changes in ownership and management, for the town of Dudley the Zoo remains an object of local pride and affection to this day.

The considerable range of building work at Dudley may be broadly categorised as comprising infrastructure (i.e. ground works, route systems and services), animal exhibits and social facilities. Though the original legend numbers some three dozen scattered individual items the reality is experienced as a sequence of loosely-linked building groups, the interrelationship of which is maintained by concentric orbital pathways and the powerful presence of the castle acting as a magnet at the summit of the hill.

The matching of individual buildings to the detailed circumstances of their setting is acutely sensitive, and in some cases - such as the Bear Ravine - spectacular, due to the precipitous gradients involved. This exploitation of indigenous features made the most of Dudley's unique advantage over more conventional zoos, where the 'natural' scenic effects are constructed artificially. Moreover, unlike Tecton's prior zoo work at Regents Park and Whipsnade, which being designed on flat sites tends to focus on their elegance of planning, the Dudley pavilions demonstrate their imaginative ingenuity in section. In several key buildings - Polar Bear Pit, Bear Ravine, Elephant House, and Aviary - major changes of level are incorporated, or are used to connect successive tiers of the orbital route system.

The difficulties imposed by the terrain are nevertheless reflected in the uneven distribution of buildings. At the main entrance only an adjacent cafe and the Penguin Pool could be sited, so treacherous is the eastern side of the hill both in its slope and also in the vast 180m long by 18m wide by 12m high 'Stores Cavern' running parallel with the contours. Further north the Bear Ravine, itself placed on the edge of another huge (165m long) cavern, leads up to the Aviary which is perched like a belvedere on the edge of the escarpment with distant views across the industrial plain.

The western side of the hill is more densely developed with the large Polar Bear complex and serpentine Moat Cafe. Meanwhile, from the nearby arrowhead-shaped Restaurant, the summit crossing bisects the Sea Lion Pool and leads back through the Castle arena to issue from the main gate over a wide plateau defined by the Reptile Pit and Elephant House respectively. A standardised kiosk is used at the two points farthest from the restaurants.

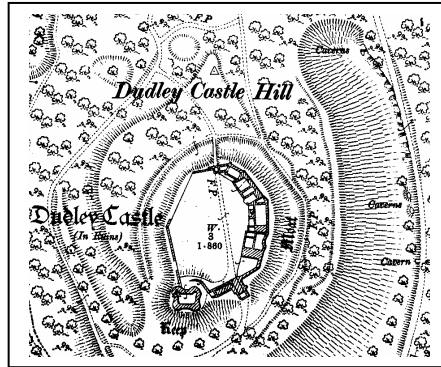
It seems that the severity of the site constraints prevented a greater formality in the buildings' interrelation than the architects might have wished. This meant that (with the exception of the axially-arranged restaurant and sea lion pool) the sense of unity is almost wholly dependent on the stylistic consistency or 'family kinship' of the buildings. The pavilions add up to make a sort of lexicon of geometric figures. While each is a customised solution to its own site and brief, as a group they share a common identity in being highly abstract interventions in the otherwise 'untamed' surroundings of the Castle. This primordial setting with its dense canopy of forest trees differed to a significant degree from the more manicured settings of the other zoo work, allowing Lubetkin an unequalled opportunity to express his ideal of contrived contrast between man-made and natural order.

Inevitably in such a project there were defects in design and workmanship and also some omissions. One item in the latter category that Lubetkin especially regretted was a system of signposting he conceived in the form of 3ft-high concrete letters. This was intended both to give directional guidance to the various exhibits at pathway intersections and also to act as an open balustrade.

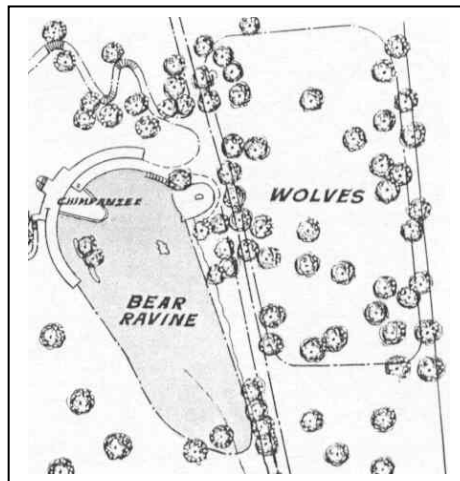
[The above is extracted from Allan, J., 1992, *Berthold Lubetkin – Architecture and the Tradition of Progress*, London: RIBA, 219-223, 226; supplemented with information from *The Tecton Trail*, Dudley MBC, undated; and Coe, P., 1981, *Lubetkin & Tecton*, London: Arts Council of Great Britain]

## The Bear Ravine

The Bear Ravine, itself placed on the edge of another huge (165m-long) cavern, leads up to the Aviary which is perched like a belvedere on the edge of the escarpment with distant views across the industrial plain. It was designed to fit precisely into the contour of a natural ravine, which is seen clearly by comparison between the 1901 25" OS map and the first plan of the Zoo drawn in March 1937



1901 OS map



1937 Zoo Plan

Excavation for the foundations revealed an unexpected cavity at least 16m deep, and the whole design had to be radically altered. This structure shows the typical free planning which utilises the natural features of the site. The boldly-cantilevered lower terrace over the bear ravine serves the double purpose of a viewpoint for the public and of a stage where chimpanzees sit down to tea while the public looks on from the curved terrace above. The latter gives it number of views of the bears, including one from the south end into a subterranean cavern in the trough of the ravine.

## **The Later History of the Tecton Buildings at Dudley Zoological Gardens**

Tecton designed 13 structures at the Zoo, most of which were listed as Buildings of Special Architectural or Historic Interest in 1970. In the late 1970s the Zoo was almost forced to close because of financial difficulties but was rescued by the joint action of Bristol Zoo and Dudley Metropolitan Borough Council. The Penguin Pool by then had deteriorated to such an extent that it had to be demolished in 1979. Since then a major programme of repairs has commenced for the remainder of the Tecton buildings, to be funded by the Dudley Zoo Development Trust, Dudley Metropolitan Borough Council and English Heritage. The seminal influence of Dudley Zoo in the history of the Modern Movement is now recognised and the preservation of this unique collection of Tecton structures is of national importance.

English Heritage's Register of Buildings at Risk 2000 includes the '*Brown bear pit at Dudley Zoo, Castle Hill, Dudley*' as a Grade II\* listed building, and gives it a Priority 4/Grade C assessment of risk, which is moderate. This is the third year running that the Bear Ravine has been included on the register.

## Findings

The following findings and recommendations are based upon the understanding gained of what is proposed for the works surrounding the construction of the proposed new elephant house and enclosure at Dudley Zoo from Peter Suddock and Derek Grove. No clear plan of these proposals, in the form of a proposed over-existing drawing, was made available. The drawings provided were:

<i>Title</i>	<i>Prepared by</i>	<i>Date</i>
• Outline Landscape Plan	Hyland Edgar Driver	22 <sup>nd</sup> May 2000
• Plan, Section & Elevation	Temple Cox Nicholls	May 2000
• Topographical Survey	Derek H. Longdon	March 2000
• Preliminary Sketch Layout	Temple Cox Nicolls	undated

The last of these was the most useful for understanding how the proposed development impinged upon the existing buildings and site, but it was not drawn to scale or proportion, and it did not distinguish between items that were to remain and those that were to be added in any clear or consistent manner. Understanding of these matters was mainly gained through talking to Derek Grove on site on 15<sup>th</sup> June 2000, and in checking certain points arising from this visit with Peter Suddock by telephone on 16<sup>th</sup> June 2000.

**Disclaimer: The findings and recommendations reported and made below are only valid if the final scheme for the proposed new Elephant House and Enclosure at Dudley Zoo is as outlined and described to Dr Paul Collins on his visits there on 15<sup>th</sup> & 16<sup>th</sup> June 2000. If ground or other plans are changed, then further assessment and preliminary archæological work will be necessary.**

### Findings - Existing Features

#### *Bear Ravine*

So far as can be determined the proposed new Elephant House and Enclosure does not materially affect the structure or fabric of the 'Bear Ravine', one of the original 13 Tecton-designed reinforced concrete structures on the Zoo site. The same cannot be said for the setting of the Bear Ravine, because the rerouting of the existing road through the site will deny visitors a direct line-of-sight view of the structure and its dramatic setting as they approach it [Plate 1]. The revised approach to the Bear Ravine will be one that rises up from a lower level, and thus the structure will be revealed from the top down. It will also be an approach from the eastern side of the structure, rather than from head on as before [Plate 2]. This change is to be regretted, but it is a minor consideration in comparison to the generally poor condition of the structure as a whole, which, if not repaired, will cease to be a problem to anyone in a few years' time.

There seems to be some disagreement regarding the line of the 'temporary' fencing to be erected at the northern extremity of the proposed Elephant Paddock 2. On the undated Temple Cox Nicholls 'Preliminary Sketch Layout' drawing, it is shown as running from the end of the viewing area fence to a point just south of the overhang of the Bear Ravine's

viewing platform, whereas Derek Grove indicated that it may be rerouted along a diagonal line which shadows both ends of the said platform [Plate 3]. This is to allow elephants using the paddock to have access to a new pool to be created around the area of the original one. The consequence of this is that it will expose original fabric of the Bear Ravine to potential damage from elephants. In addition to this it will also require changes to the original pool (see below).

### ***Original Bear Ravine Pool***

The original Bear Ravine Pool was a small, circular one, which was wholly accommodated within the eastward-facing ‘U’-shaped projection of the ravine wall [Plate 4]. Its ‘replacement’, as indicated on the above-mentioned undated Temple Cox Nicholls ‘Preliminary Sketch Layout’ drawing, is shown as covering a much larger area. Consideration of the impact its construction will have on the original pool, and the walls of the Bear Ravine itself, will have to wait until details of how this new pool is to be formed, its depth, etc., are decided.

### ***Line of Protective Fencing to Reinforced Bank***

It is proposed to erect a protective fence to prevent elephants in the new paddocks from climbing up an existing reinforced bank to the western side of the new enclosure. No indication is given of the nature of, and materials to be used in, the construction of this fence. Its erection will require the sinking of a series of post-holes.

### ***Line of Existing Road***

A portion of the existing road through the proposed new Elephant House and Enclosure will be stopped up. Map and other historical evidence suggests that this road is likely to be part of the: ‘*circuitous drive formed round the hill and walks laid out traversing the grounds in different directions*’, which the Rev. Scrivens cites as having been constructed between c.1817 and 1837. Supporting this view, in reporting on the difficulties associated with the construction of the Zoo in 1936/7, the *Architectural Review* noted that: ‘*It was decided to use the existing roads and paths on site as far as possible.*’ It is understood from Derek Grove that it is intended merely to cover this road with a foot or so of topsoil, and otherwise to leave it undisturbed.

### ***Historic Boundary Wall***

Construction of the proposed new Elephant House, and the associated new Service Road, will require changes to, and possibly the loss of, a portion of the historic boundary wall erected around the Castle grounds c.1817, as described by the Rev. Scrivens in 1837: ‘(The Castle Grounds were) *unenclosed, and nearly bare of trees, and the noble ruin itself unprotected, until about 20 years since; when the whole extent, with the exception of a portion sufficiently guarded by hedging, was most judiciously fenced round with a handsome limestone wall.*’ Unfortunately, it is not possible to determine the precise impact of the proposed development upon this wall from the evidence available. The undated Temple Cox Nicholls ‘Preliminary Sketch Layout’ drawing fails to show this wall as existing immediately west of the back of the proposed new Elephant House, yet it is still there [Plate 5]. Consequently its fate is not referred to. On this same sketch the portion of wall immediately south of the above is marked as ‘Existing Wall to Remain’, yet this is one of the least intact, most-breached and patched sections of the original boundary wall on the entire Zoo site [Plates 6 & 7]. The proposals with regard to this wall, in the sections referred to above, require clarification before an assessment of the impact of the proposed development can be made.

## **Findings - New Works**

### ***Elephant House***

The proposed new Elephant House will occupy the site of the existing Farmyard, which comprises an 'L'-shaped single-storey range built from concrete blocks, plus a second single-storey range in timber [Plates 8 & 9]. Available map evidence suggests that the present buildings are the first to have been built on this site. They were not part of the original Zoo. The first plan of the Zoo, prepared in March 1937, ahead of the opening that May, shows the northern portion of this site to have been an enclosure for wolves, and the southern portion to have been just a wooded area leading down to 'Aviary No.4.'

Excavations for the Dudley Castle Archaeological Project 1983-1993, capitalised upon a programme to totally refurbish the gas, water and electrical services in 1988, and looked at the ground disturbed by the trenching associated with this work. One trench, which formed the basis of Watching Brief No.4 in this programme, ran along the lower path to the east of the Castle, which forms the road through the proposed new Elephant Paddock Enclosures. Observation and recording of these works showed there to be a brick foundation to the road, laid in a herringbone pattern, which suggests that this was a former path surface. Below this was a deep deposit of greasy black loam, with occasional deposits of dirty yellow clay beneath. It was concluded that: *'All the material seen in this Watching Brief was of modern provenance. No further information gained.'*

### ***HaHa Wall***

It is understood from Derek Grove that the new HaHa wall, which is to be constructed to form the western boundary of the viewing island and pedestrian route to the proposed new Elephant House, will have foundations of c.3m in depth. This wall is to be constructed on ground that has not previously been built upon, and which is close to that disturbed by Watching Brief No.4 in 1988, referred to above.

### ***Pedestrian Route***

It appears that the proposed new pedestrian route, with its associated viewing platform, is to be built upon existing hard-standing that currently forms part of the Farmyard area.

### ***New Service Road***

A service road for the proposed new Elephant House and Enclosure is proposed to be formed using part of the existing car park to the east of the historic boundary wall. This will utilise the existing impacted surface, with minimal surface treatment [Plate 10]. Its southern access will be by means of an existing gateway; its northern access will be by means of another existing gateway to the rear of the Geochron.

## **Recommendations - Existing Features**

### ***Bear Ravine***

That the line of the 'temporary' fencing to be erected at the northern extremity of the proposed Elephant Paddock 2 sticks to the alignment shown on the undated Temple Cox Nicholls 'Preliminary Sketch Layout' drawing to prevent damage to the original Tecton structure.



### ***Original Bear Ravine Pool***

That the original circular Bear Ravine pool be excavated and incorporated into whatever new pool is constructed on site.

### ***Line of Protective Fencing to Reinforced Bank***

As outlined, this protective fence will have minimal impact upon the site, and the sinking of the post-holes required for its erection should not disturb sufficient material to merit the holding of a watching brief on the works. Where the protective fence keeps the elephants away from the listed Bear Ravine structure it is recommended that it be as 'transparent' as possible, so as not to prevent sight of the original building.

### ***Line of Existing Road***

If the existing road through the proposed paddocks is merely to be covered with a foot or so of topsoil and otherwise be left undisturbed, this should not require any level of archaeological intervention. However, if the final plans for the proposed new Elephant House and Enclosure are different from this, again this matter will have to be re-evaluated.

### ***Historic Boundary Wall***

Specific recommendations concerning this wall cannot be made at this stage, for the reasons cited under Findings above. In general terms, whilst the loss of any portion of this wall is to be regretted, if this becomes necessary a detailed photographic record, with appropriate scales to view, should be made of all sections of the wall that are to be lost, and consideration be given to repairing the adjoining, less intact, portions of the wall with the materials thus gained.

## **Recommendations - New Works**

### ***Elephant House***

Given the absence of previous building on this site, other than the existing single-story cement-block and timber structures, construction of the proposed new Elephant House will constitute the breaking of new ground. Its foundations and services are likely to run deeper than the existing structures. Previous archaeological work in an adjoining area suggests that the material disturbed will be 'of modern provenance.' Against this background it is recommended that:

- the existing Farmyard buildings are recorded photographically, with appropriate scales to view, whilst still in use, and in advance of their demolition, and;
- an archaeological Watching Brief be put upon all work preparatory to the construction of the proposed new Elephant House that involve breaking the ground.

The purpose of this Watching Brief should be to:

- examine the material disturbed in the construction works;
- record photographically, and note the position of, any finds so uncovered, and;
- bag and appropriately number any such finds to be removed from the site for later examination.

This work should be timetabled to coincide with the construction works on site.

### ***HaHa Wall***

Similar to the proposed new Elephant House referred to above, the construction of this feature will disturb new ground. It is therefore recommended that an Archaeological Watching Brief be put upon all work preparatory to the construction of the proposed HaHa

Wall that involve breaking the ground. As above, the purpose of this Watching Brief should be to:

- examine the material disturbed in the construction works;
- record photographically, and note the position of, any finds so uncovered, and;
- bag and appropriately number any such finds to be removed from the site for later examination.

Again, this work should be timetabled to coincide with the construction works on site.

#### ***Pedestrian Route***

If the new pedestrian route is to be built upon an existing area of hard-standing, without a requirement for ground to be broken, its construction will not require any archaeological intervention. If the above is not the case, this will have to be reviewed.

#### ***New Service Road***

As described and outlined the new service road will have minimal impact, and will not require Archaeological intervention. Again, if this is not the case, this viewpoint will have to be reviewed.

### **Summary of Recommendations for Archaeological Works**

#### **No Archaeological Works Required:-**

- Bear Ravine
- Original Bear Ravine Pool
- Protective Fencing to Reinforced Bank
- Existing Road
- Pedestrian Route
- New Service Road

#### **Archaeological Works Required:-**

##### ***Historic Boundary Wall***

A detailed photographic record of any sections to be lost.

##### ***Elephant House***

A photographic record of the existing 'Farmyard' buildings, plus an Archaeological Watching Brief on below-ground works.

##### ***HaHa Wall***

An Archaeological Watching Brief on all below ground works

**Dr Paul Collins**

22<sup>nd</sup> June 2000



Plate 1 The existing direct line-of-sight view of the former Bear Ravine which is to be lost (Dr Paul Collins)



Plate 2 The revised approach to the Bear Ravine, rising up from a lower level (Dr Paul Collins)





Plate 3 A view along a revised line of the temporary fencing to protect the Bear Ravine structure (Dr Paul Collins)



Plate 4 The original Bear Ravine pool was accommodated within the circular projection in the enclosure's perimeter walling. Its circular outline can be seen here (Dr Paul Collins)



Plate 5 The 'phantom' walling to the rear of the site of the proposed new Elephant House – some of the most intact of the original Castle Grounds' wall (Dr Paul Collins)





Plates 6 & 7 The heavily breached and patched section of original Castle Grounds' walling it is proposed to retain (Dr Paul Collins)





Plates 8 & 9 The 'Farmyard' buildings currently occupying the site of the proposed new Elephant House (Dr Paul Collins)



Plate 10 The route of the proposed new Service Road (Dr Paul Collins)



## Appendix

### Consultant's Brief

This Consultant was engaged by the Birmingham University Field Archaeology Unit (BUFAU) to provide 2 or 3 days consultancy work on an assessment of the implications of the building of a new Elephant House at Dudley Zoo - particularly its impact on:

- 1) a listed Tecton Polar Bear Pit (actually a 'Bear Ravine')
- 2) below-ground archaeology
- 3) an 'historic' boundary wall
- 4) any other impact thrown up by the study.

The work was conducted as follows:-

### Preparation

#### *12<sup>th</sup> June 2000*

Contacted by Email re. the contract.

#### *13<sup>th</sup> June 2000*

Collected brief and plans from BUFAU.

#### *14<sup>th</sup> June 2000*

Telephone contacts with Peter Suddock, Dudley Castle & Zoo, and Peter Boland, Dudley MBC

### Meetings & Visits

#### *15<sup>th</sup> June 2000*

- |               |  |
|---------------|--|
| 10.00 – 10.30 | Peter Boland – Principal Planning Archaeologist & Conservation Officer, Dudley MBC |
| 10.30 – 11.30 | John Hemmingway, Archaeologist, Dudley MBC   |
| 14.10 – 14.30 | Peter Suddock, Manager, Dudley Zoo & Castle  |
| 14.30 – 15.30 | Derek Grove, Curator, Dudley Zoo & Castle  |
| 15.45 – 16.15 | John Hemmingway, Peter Boland, Dudley MBC  |

#### *16<sup>th</sup> June 2000*

- |               |  |
|---------------|--|
| 14.00 – 15.00 | Photography and site inspection: Bear Ravine and site of New Elephant House, Dudley Zoo & Castle |
| 15.15 – 16.30 | Dudley Archives, Mount Pleasant, Coseley   |

### Telephone Contacts

#### *16<sup>th</sup> June 2000*

Peter Suddock, Dudley Castle & Zoo

#### *19<sup>th</sup> June 2000*

Claire Tonner, English Heritage, Swindon – Register of Buildings at Risk 2000

#### *21<sup>st</sup> June 2000*

Michael Taylor, English Heritage, West Midlands Office, Birmingham

### Report Writing

21<sup>st</sup> – 22<sup>nd</sup> June 2000