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PARLIAMENT HILL FIELDS LIDO, London

Repair Works to Sun Terraces; Design, Access & Heritage Statement

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Revision 00

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1 Introduction

This Design, Access & Heritage Statement has been commissioned by City of London to accompany a listed building consent application for the proposed repairs to the northern sun terraces at Parliament Hill Fields Lido.

The concrete screed surfacing to the terraces in in poor condition, having been repaired in an ad-hoc fashion since the original construction in 1938. This has resulted in a patchwork appearance that is both detrimental to the presentation of the Grade II listed building and presents a health and safety risk to users.

This report provides some historical background for the Lido and a description of the construction and condition of the terraces in Section 2, followed by an outline methodology of the repair proposals in Section 3.

Section 4 discusses the Impact of the proposals and mitigating measures on the historic fabric of the Lido, and provides additional heritage justification as appropriate. Section 5 provides details on access, with a conclusion in Section 6.

2 Historical Development & Description

Parliament Hill Fields Lido is located within the south-east corner of Hampstead Heath, London. It has been owned and operated by the City of London since 1989.

Opened on 20 August 1938, the Lido was designed by Harry Rowbotham and TL Smithson of the London County Council Parks Department and is nearly identical in design to Victoria Park Lido in east London and Brockwell Park Lido to the south. There was a diving stage (the last diving board was removed in 2003), slides / chutes, areas for sunbathing and spectators and a café. The pool is unheated and measures 200 by 90 feet (61 m × 27 m).

Costing £34,000 to construct, this was the most expensive of London County Council's 13 lidos built in the 1920–39 period.

Refurbishments after the late 1980s included hot showers, cycle racks, a paddling pool and CCTV. Visitors in 2003 were recorded at 49,000. Refurbishment in 2005 included a stainless-steel pool lining, the first of its kind for an outdoor pool in Britain.

The Lido in 1961

A publicity shot outside the café from 1949; the sun terraces (subject of the repairs) are visible in the background

The lido was Grade II Listed in January 1999; the listing description is as follows:

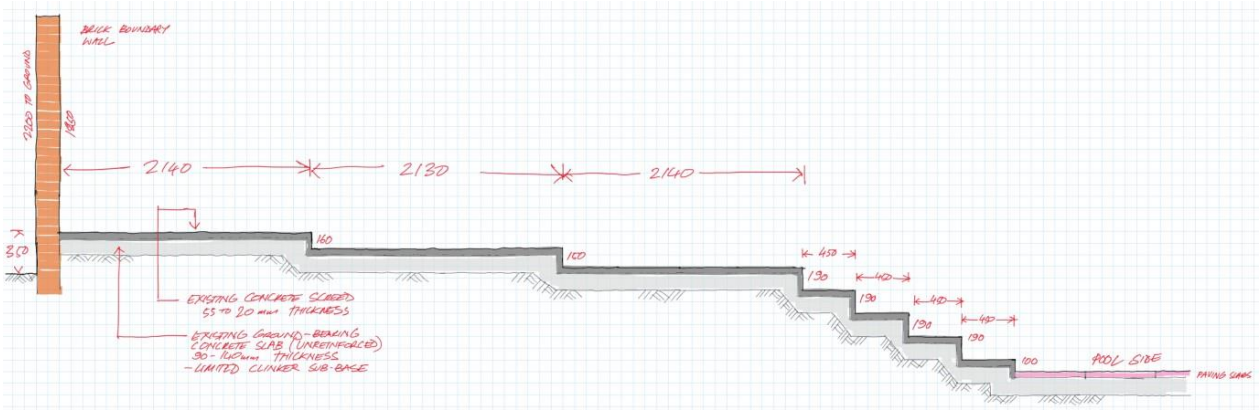
> *Open air swimming baths. 1937-8. By Harry Arnold Rowbotham. For the London County Council Parks Department. Patterned stock brick, flat roofs concealed behind parapets. Rectangular plan, with entrance to south flanked by changing rooms, filtration plant to east and offices to west, all in a single-storey U shaped building. This form continued as walls shielding sun-bathing terraces to north, set either side of single-storey cafe with curved moderne-style front. In the centre is the pool, 60m by 27m, with fountains or aerators to either side. All buildings with small metal windows, except for the cafe which has large glazed panels with horizontal metal glazing bars continued across double doors at centre.*
>
> *HISTORICAL NOTE: included as the most sophisticated of the thirteen lidos constructed by the LCC between 1909 and 1939. No other British city attempted so comprehensive a programme, and Parliament Hill Fields is considered the best representative example of the rectangular pools enclosed by high walls found in urban locations. (The Twentieth Century Society: Farewell My Lido: London: -1990).*

The 2 no. terraces that are the subject of the proposed works are located to the north side of the Lido, either side of the café / gymnasium building and consisting of the rectangular areas between the café and the curved north-west and north-east corners.

Aerial view showing location of terraces (within red outlines)

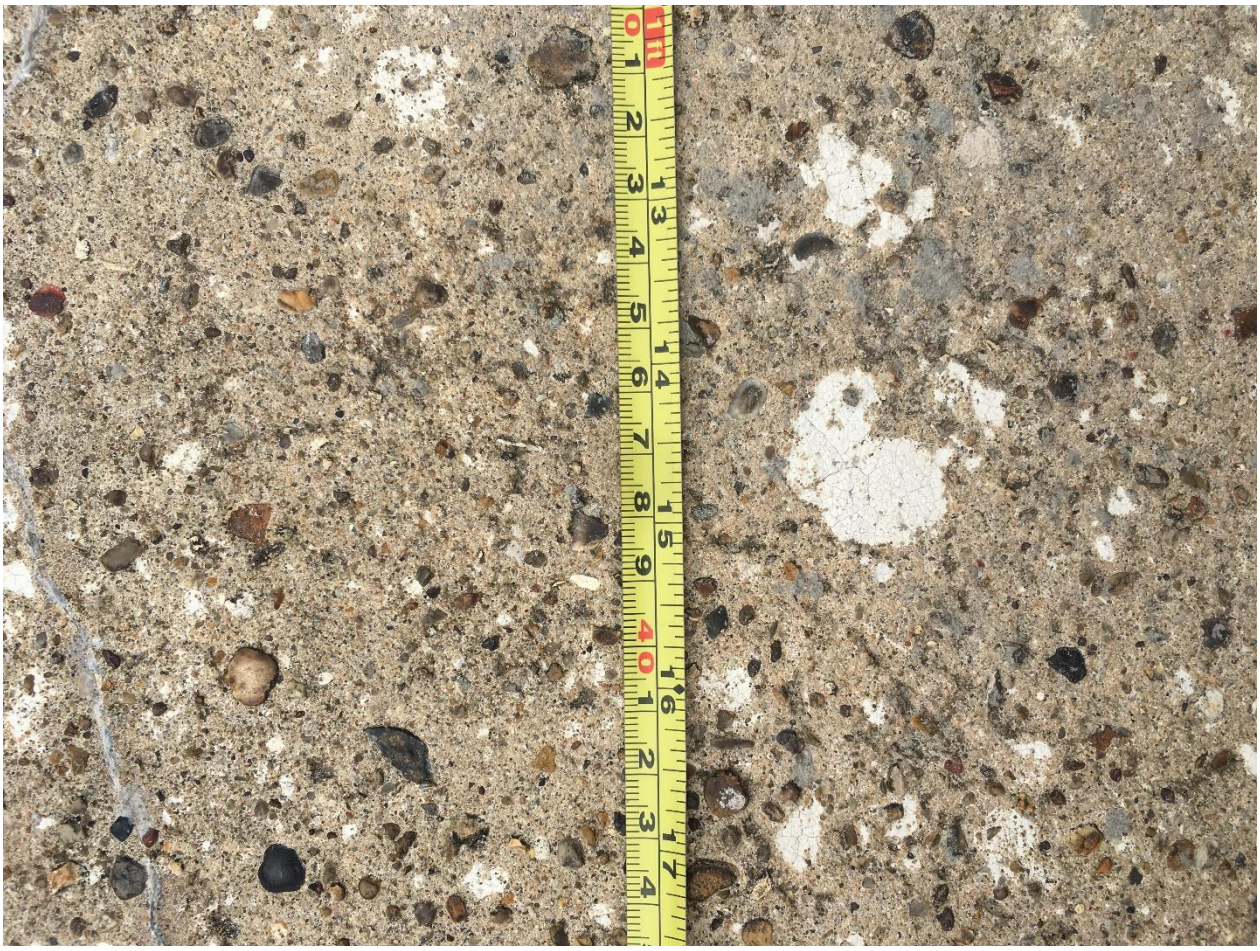
Each area is approximately 18 m length and consists of 3 no. terraces of 2.1 m width at the upper level, the uppermost terrace abutting the boundary wall with steps of approximately 190 mm between. Further steps connect the terraces to the poolside area, 4 steps at 450 mm each with 190 mm risers. The bottom riser is reduced in height to 100 mm where it abuts the poolside concrete paving slab finishes. The slabs abutting the steps appear to be original.

North-west terrace and steps with café / gymnasium to left



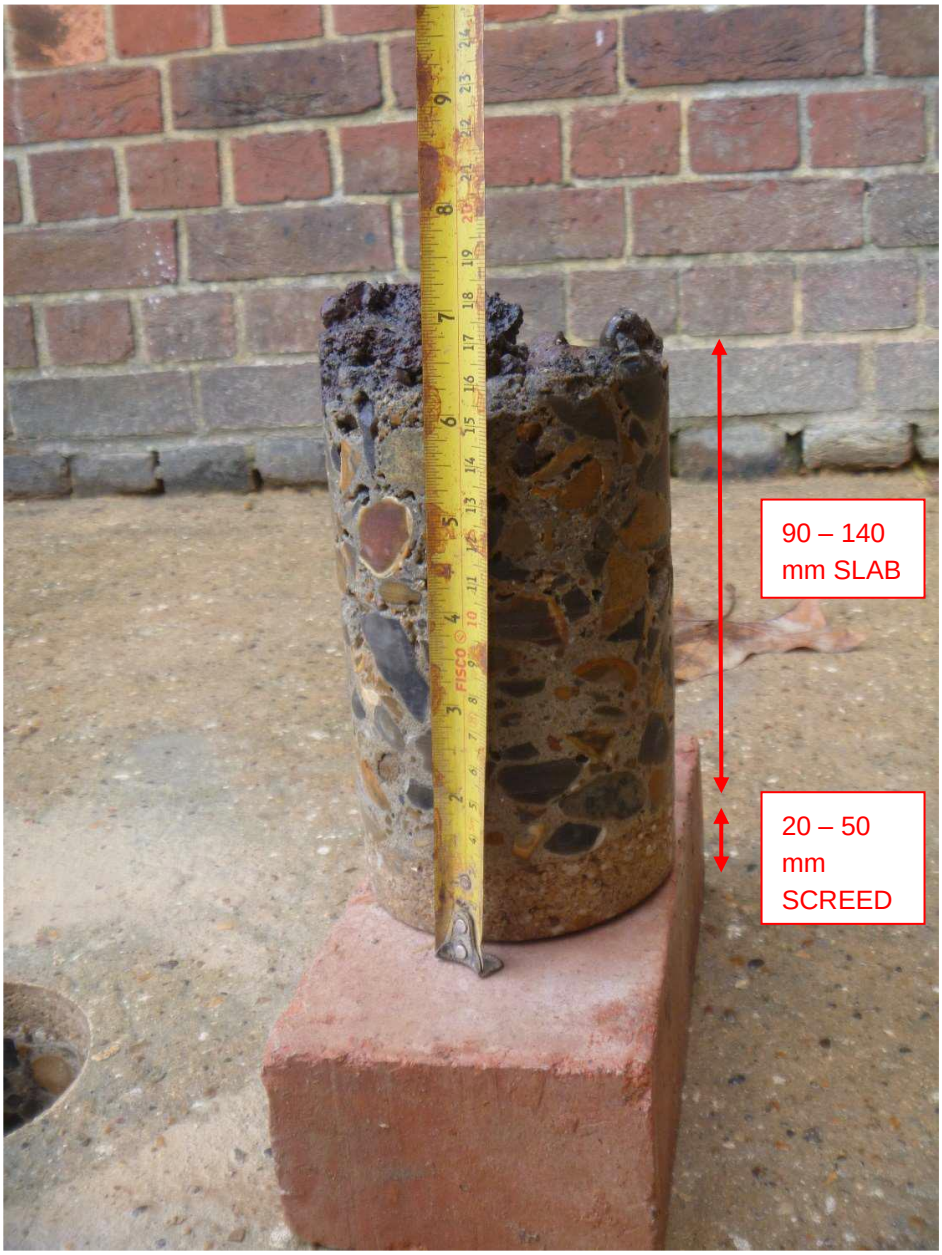
Section through terrace

Isolated areas of the terraces have been cleaned with a hot water / steam clean to determine the original appearance. The surface of the screed is of an exposed aggregate finish, with aggregate consisting of particles of small brown, orange and white stones, flint and chert generally of 3 to 5 mm size but with some inclusions of up to 10 mm. The binder is light beige in colour.



Cleaned surface of terrace showing aggregate and binder

Concrete core samples extracted in 2019 indicate that the construction of the terraces is of an unreinforced concrete slab with a thickness varying between 90mm-140mm. Directly over this is an additional concrete screed thickness of between 20mm-55mm. Inspection of the core void in the concrete slab indicated a thin layer of clinker subbase above a soft clay of unknown depth. A steel bar of approximately 25mm diameter could be pushed by hand into the clay up to 500mm depth.



Core sample from concrete slab (from Patrick Parsons report, January 2020)

3 Existing Condition & Issues

The Lido terraces are therefore founded directly onto soft London Clay with a limited sub-base. Variation in ground water will lead to swelling and shrinkage of the bearing strata. London Clay has a high plasticity and, when saturated, is prone to a high-volume change potential. Given that extensive leakage of the pool was recorded until 2005 when the stainless-steel liner was installed, it is likely that the ground would have been permanently saturated during all seasons. Since the repairs and lining of the pool, the clay will dry and shrink during the summer with swelling occurring during the winter months. This is likely to introduce some movement to the terrace slabs, resulting in cracking to some degree.

There is a general lack of movement joints within the screed, reflecting the general lack of understanding of the behaviour of concrete at the time of construction in 1938, when concrete technology was in its infancy. This inability to accommodate thermal expansion is also likely to lead to cracking. The original day joints are at approximately 9 metre centres, with subsequent self-determined cracking occurring at approximately 2 to 2.5 m centres where a pattern can be detected.

Aerial detail (left) and terrace image showing self-determined cracking occurring at approximately 2 to 2.5 m centres

The concrete terracing has suffered from extensive surface and increased depth cracking over an extended period. Some spalling of the terracing has occurred, particularly to the step risers and nosings.

Over the majority of the terracing, the surface is crazed with no specific cracking pattern or direction. Cracking within the steps occurs both perpendicularly and longitudinally along the treads and risers, where it appears to allow water to seep through from the sub-base.

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Patch repairs on an ad-hoc basis using unsympathetic repair materials that are a poor match to the original screed have resulted in a patchwork appearance. This is detrimental to the overall presentation of the site and presents a health and safety risk through delamination and spalling of surfaces, creating sharp edges in an area where a high proportion of users have bare feet.

Poor previous repairs to steps and terraces resulting in a patchwork appearance. This is detrimental to the overall presentation of the site and presents a health and safety risk through delamination and spalling of surfaces, creating sharp edges in an area where a high proportion of users have bare feet.

4 Proposals

Ground drains have been introduced adjacent to the north boundary wall to control and limit the amount of ground water beneath the terrace slabs. However, due to the high incidence of ground water and the location of the Lido at the bottom of the slope of Parliament Hill, resulting in a high level of run-off, it is not possible to halt the seasonal ground movement due to variations in moisture content.

It has been advised that the only way to completely avoid further cracking due to ground movement is to remove the terraces and steps, introduce an adequate sub-base and rebuild with suitable reinforcement. However, this is not considered to be commercially viable or sympathetic to the historic structure, the object in this instance being to retain the maximum amount of historic fabric possible, or to repair on a like-for-like basis.

Consequently, it is proposed to replace the screed by removing the existing repairs and top layer of existing screed to expose the substrate, cleaning down and removing all loose material. Dependent on the condition of the substrate, repairs will be carried out using a like-for-like concrete mix.

Bonding between the new screed and the substrate will be enhanced through the application of a bonding primer prior to relaying the screed using a bespoke mortar to match the existing in terms of colour, texture, aggregate size and type. The screed will be washed down whilst the concrete is still ‘fat’ to expose the aggregate finish to match the original, or the same effect achieved by treating the surface with a mild abrasive TORC system as widely used on historic buildings to clean stone and masonry.

The bespoke mix is to be determined though carrying out of a number of sample panels of 600 mm2, each employing a 1:3 cement:sand ratio but with different variation of sands and aggregates to obtain the best possible match to the original. Cement type will also be varied in the samples between Ordinary Portland Cement (OPC) and white cement to determine the most appropriate type in terms of appearance and robustness.

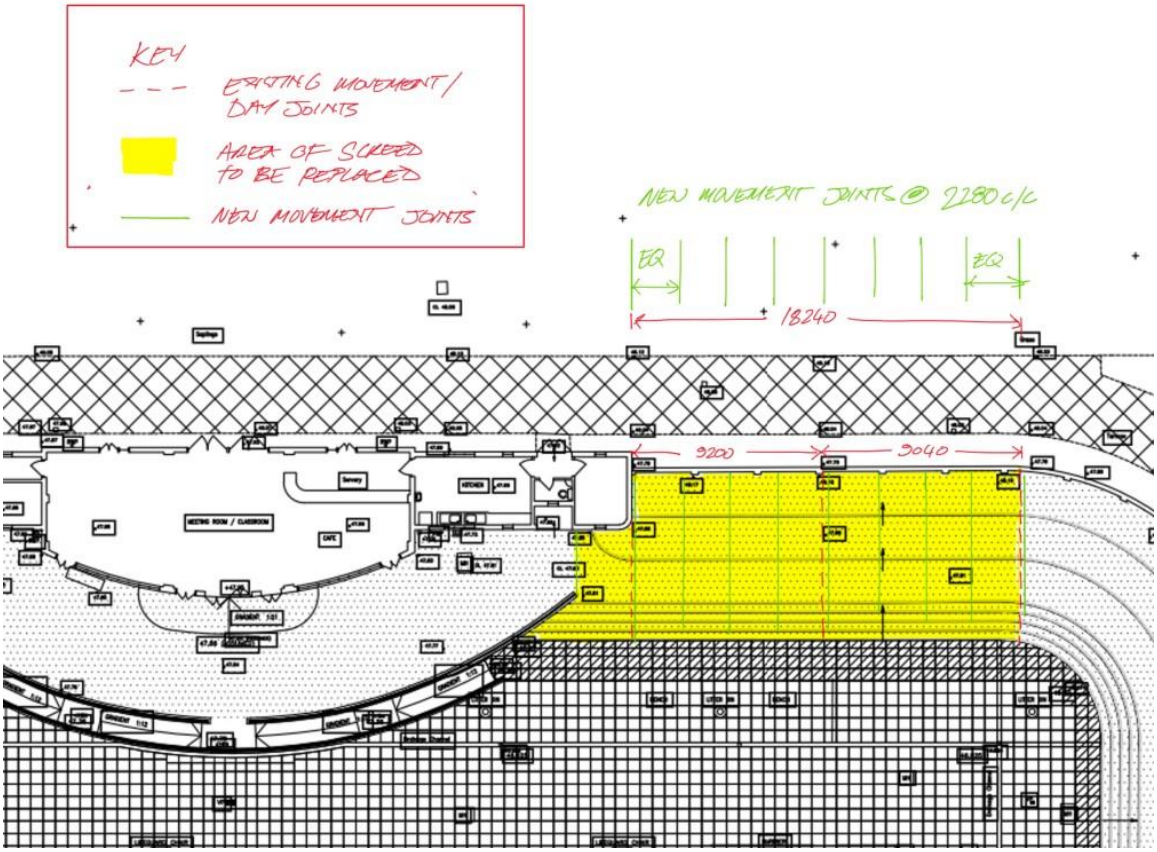
The thickness of the new screed will be to match the existing to ensure that the existing profile, falls and overall appearance are maintained.

Movement / stress relief joints are proposed to be introduced to the new areas of screed. As a general rule, cracking within screeds takes place in ‘squares’; the bay length is roughly equivalent to the width. Advice is that this can be extended, but that bay length should preferably not exceed bay width by more than a multiple of 3:2. Bay proportions exceeding 3:2 are at increasing risk of stress relief cracking when the difference becomes greater.

Movement / stress relief joints will be formed by laying separate bays. Ultimately the frequency of joints will be determined by the requirement to provide joints over cracking in the existing substrate, to accommodate movement. This will be determined once the screed has been removed. Movement joints will also be provided longitudinally at the junction between risers and treads following the existing joint pattern of every other step. Movement joints will be finished with a polysulphide mastic joint, colour-matched to the adjacent screed.

The screed will also be reinforced through the addition of polypropylene fibres 6 mm long. Whilst these will not prevent cracking per se, they will help to regulate and control crack width where it may occur.

The line of concrete paving slabs adjacent to the bottom stair, which are presumed to be original, will be carefully lifted to enable the stairs to be re-screeded. The slabs will be reinstated on completion.



Plan of north-east terrace showing location of existing movement joints and proposed joints @ 2 m c/c approx. (final location and frequency of joints to be determined following removal of screed to expose slab)

5 Impact Assessment & Justification

Repairs to the historic concrete screed surfacing are necessary and becoming urgent to prevent further degradation of the surface and avoid health and safety issues. Due to its age and condition, it is inevitable that some of the concrete will have to be removed where it is damaged by cracking and spalling. Failure to do this will result in operational issues at the Lido and areas cordoned off where the surfacing is unsafe, as has already happened in the past.

This will ultimately jeopardise the future of the Lido, resulting in reduced capacity and questions of its fitness for purpose and future viability. The best use for a historic building is the use for which it was originally intended; for this continue at Parliament Hill Lido and for the site to provide its' invaluable role in promoting health and well-being in the community, some intervention and replacement of materials is required.

Although the proposals will result in the loss of some fabric, the majority of the historic structure and the existing terrace profiles and levels will undergo negligible change and will be protected for the future. The sub-base will be retained, and the like-for-like approach adopted through the use of a bespoke concrete screed mix will maintain the character and appearance of the Lido, as well as its material and constructional characteristics. As such, even following the proposed repairs, there will likely be an ongoing maintenance requirement, albeit less frequent than that currently undertaken.

Introduction of movement joints reflects a heightened understanding of materials technology and the behaviour of concrete, the understanding of which was in its infancy when the lido was built. The introduction of movement joints will ensure the longevity of the repairs and, as part of a wider programme of repairs, ensure that the lido has a sustainable future.

During the refurbishment works, it is understood that movement joints were introduced in the brickwork walls surrounding the Lido to allow for natural movement and expansion / contraction, with the result that there is some precedent for this.

The introduction of movement joints is consistent with conservation best-practice, representing a modern-day materials technology understanding. Article 10 of the ICOMOS Venice Charter states that:

> *Where traditional techniques prove inadequate, the consolidation of a monument can be achieved by the use of any modern technique for conservation and construction, the efficacy of which has been shown by scientific data and proved by experience.*

Overall, it should also be noted that the replacement screed is proposed to 2 no. Isolated areas only. Elsewhere the screed will remain extant and will be subject to future repair proposals. Where possible, it is intended that areas of the original screed will be retained in situ. Consequently, there will remain sufficient fabric to preserve the historic record after the proposed works.

6 Access

The Lido is accessed via a stepped and ramped approach to the south. The north terraces which are the subject of this application are stepped in profile, with the lower level accessed via ramps in front of the central café building.

The ramps and stepped arrangement will remain as existing.

7 Conclusion

The screed to the terraces flanking the Lido café/gymnasium has had significant repairs carried out over an extended period, such that it is considered to have outlived its serviceable life and represents a health and safety risk, as well as being unsightly and having a detrimental impact on the presentation of the listed Lido.

The proposed replacement of the screed maintains the sub-base in situ and uses like-for-like bespoke materials such that the character and appearance of the lido is maintained and re-presented. All steps, falls and profiles will be maintained as original, with the result that the impact of the proposed works will be negligible.

Failure to enact the works will present health and safety issues at the Lido, jeopardising operations and future viability. The repairs are required to give the Lido a sustainable future. Any harm is substantially outweighed by the mitigating measures (maximum retention wherever possible and like-for-like techniques) and wider public benefit of the continued use of the Lido by a substantial number of visitors and the health and well-being role that it performs.