London Borough of Hillingdon

Hillingdon Water Sports Facility and Activity Centre (HWSFAC): Water Framework Directive Assessment ADDENDUM

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1 INTRODUCTION

1.1 PURPOSE OF THIS ADDENDUM

This Addendum has been prepared in response to the Environment Agency's consultation response (Ref. NE/2023/136465/02 – Objection 3), submitted in support of the planning application for the Hillingdon Water Sports and Activity Centre (HWSFAC) at Broadwater Lake (planning reference: 2382/APP/2023/2906). Its purpose is to clarify how the Proposed Development complies with the Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 and the Thames River Basin Management Plan (RBMP).

It supplements the submitted Water Framework Directive Assessment (Environmental Statement Volume III: Appendix 8.4, dated August 2025).

Specifically, this Addendum:

- clarifies the artificial baseline condition of Broadwater Lake and the implications for WFD assessment;
- responds directly to the hydromorphological and physical habitat risks identified by the Environment Agency;
- distinguishes mitigation and enhancement relied upon for WFD purposes from measures intended to address Broadwater Lake SSSI interests;
- explains and justifies the limited use of engineered elements where necessary;
- assesses the potential effects of long-term recreational activity and sets out the operational controls proposed; and
- demonstrates no deterioration of WFD quality elements and a positive contribution towards Good Ecological Potential.

The Environment Agency's Objection 3 raises three principal matters:

- risk of deterioration in hydromorphological and physical habitat quality elements;
- whether marginal habitat enhancement is secured and deliverable (rather than aspirational); and
- whether WFD mitigation is clearly separated from SSSI mitigation and secured through enforceable mechanisms.

This Addendum confirms that:

- the Proposed Development will not cause deterioration of any WFD quality element;
- the mitigation and enhancement measures relied upon for WFD compliance are secured through the Outline Mitigation, Enhancement and Management Plan (MEMP), the Construction Environmental Management Plan (CEMP) and the Operational Management Plan (OMP), each to be submitted for approval and implemented in accordance with planning condition requirements;
- WFD compliance does not rely on SSSI mitigation measures; and
- monitoring and adaptive management are embedded within the secured management framework to ensure outcomes are delivered and maintained.

The commitment to restoration (including the former Broadwater Sailing Club frontage and wider shoreline) is set out in Sections 1.6–1.7 and secured through the mechanisms described in Section 1.7 and Appendix A (WFD-01 to WFD-10).

Accordingly, this Addendum provides a clear and robust basis for concluding that Objection 3 can be resolved.

Broadwater Lake (Waterbody ID GB30641907) is classified as an **artificial waterbody** under the Thames RBMP and is therefore assessed against Good Ecological Potential (GEP), rather than Good Ecological Status.

Under Regulation 13 of the WFD Regulations, competent authorities must ensure that development does not:

- cause deterioration of the waterbody; or

- prevent achievement of GEP.

Assessment must therefore be undertaken relative to the existing artificial baseline and the realistic enhancement potential of the waterbody.

1.2 SUMMARY OF RISKS IDENTIFIED BY THE ENVIRONMENT AGENCY

The Environment Agency has identified a series of potential risks to the Water Framework Directive (WFD) quality elements of Broadwater Lake, ID GB30641907, arising from both physical works and operational activity associated with the proposed development. These relate in particular to:

- alterations to shoreline morphology, including loss or modification of existing lake margins;
- changes to lakebed structure and substrate composition resulting from localised dredging and installation of in-lake infrastructure;
- reduction in the availability of marginal and shallow water habitats, which currently provide important ecological functions for aquatic invertebrates, fish and birds;
- modification of erosional and depositional processes, particularly in areas subject to increased boat movements or shoreline disturbance;
- potential effects on biological quality elements arising from long-term recreational pressures, including physical disturbance, vegetation loss and sediment mobilisation; and
- cumulative impacts on hydromorphological processes when considered alongside existing pressures affecting the lake.

These potential effects arise primarily from the following components of the scheme:

- localised dredging and reprofiling works required to facilitate safe access to the water and installation of limited in-lake infrastructure;
- the introduction of slipways, pontoons and associated edge treatments, which have the potential to introduce artificial elements into the lake margin and lakebed environment;
- increased recreational activity, which may result in localised disturbance of sediments, marginal vegetation and shallow water habitats if not appropriately managed; and
- the risk of bank erosion in areas subject to concentrated access or wave action.

The WFD Addendum recognises that these pressures, if unmanaged, could contribute to deterioration of hydromorphological and physical habitat quality elements. The addendum therefore focuses on ensuring that such effects are avoided where possible and otherwise minimised, mitigated and offset through a coordinated package of design measures, habitat restoration, activity zoning and long-term management. Importantly, these impacts are geographically limited in extent, reversible in nature, and balanced by a wider programme of lake edge restoration and habitat enhancement. These are separate and in addition to avoidance, reduction, mitigation measures associated with Broadwater Lake SSSI.

1.3 BASELINE AND IMPACTS CONTEXT

Broadwater Lake is a former gravel extraction void dating from the 1960s, created to maximise mineral recovery rather than ecological function. The lake occupies a constrained footprint between the River Colne and the Grand Union Canal and subsequently flooded with groundwater, forming a steep-sided artificial basin.

The resulting baseline condition is characterised by near-vertical margins, abrupt depth changes (typically reaching 4–5 m within 1–2 m of the bank), a uniform gravel substrate, and an absence of shallow littoral zones or transitional habitats. There is almost no marginal or emergent vegetation, sediment is dominated by coarse gravels and sands, and natural erosional or depositional processes are effectively absent due to the engineered geometry of the pit.

Physical disturbance of the shoreline is currently limited and highly localised, associated almost entirely with existing recreational infrastructure and angling access points. Approximately 226 m of exposed or degraded margin has been identified, compared with an overall shoreline length exceeding 3,500 m (excluding islands), equating to around 6.5% of the lake edge.

Of this disturbed frontage, approximately 140 m is linked directly to the existing Broadwater Sailing Club facilities. Under the proposed scheme, sailing activity will be relocated to a newly formed eastern channel access zone, allowing the current Sailing Club shoreline to be decommissioned and restored through naturalisation and management. This results in the removal of over 50% of the presently exposed margins, delivering a net reduction in degraded shoreline at the lake-wide scale.

All construction and operational activity is confined to the eastern channel. Works within the waterbody are limited to:

- localised dredging to provide safe operational depths;
- reprofiling of a single approximately 60 m wide shoreline section to form a gently sloping beach; and
- installation of discrete slipways and pontoons for access.

The shoreline selected for reprofiling currently comprises a steep artificial gravel face associated with former processing activities, with no marginal habitat, shallow water zone, or ecological transition. In its present form it has no natural character or functional ecological value.

Beyond the eastern channel, no physical works are proposed to the lakebed or shoreline. The south and west margins remain largely inaccessible due to steep gradients, while the peninsula edge is predominantly concrete. Use of the wider lake will be limited to a maximum of six dinghies at any one time, representing only a modest change from existing recreational activity.

Overall, the scheme consolidates activity into a single managed access area while enabling recovery of the most degraded existing frontage. Impacts are geographically limited, reversible, and offset by the removal of current disturbance and the introduction of the lake's only shallow graded margin.

At the scale of the whole waterbody, the development delivers:

- a net reduction in exposed and degraded shoreline;
- creation of the first shallow marginal habitat;
- removal of existing artificial disturbance along the Sailing Club frontage; and
- concentration of future activity within a tightly controlled eastern channel.

This represents a net improvement to baseline hydromorphological condition and supports Water Framework Directive objectives by preventing deterioration and contributing positively toward Good Ecological Potential for this artificial waterbody.

In accordance with Regulation 13 of the WFD Regulations 2017, the relevant test is whether the Proposed Development will cause deterioration of any WFD quality element. Assessment is therefore undertaken relative to the existing artificial baseline condition.

1.4 HYDROMORPHOLOGICAL IMPACTS AND PHYSICAL HABITAT CHANGE

Against the highly modified baseline described above, the proposed development introduces a very limited number of targeted physical interventions. These are confined to the eastern channel and are designed to enhance, rather than diminish, hydromorphological condition.

Localised dredging will be undertaken solely within the operational footprint of the eastern channel to achieve safe water depths of approximately 2 m (excluding channel edges). These works do not extend across the wider lakebed and do not alter the overall basin form. Dredging is accompanied by shoreline reprofiling, which introduces gentler transitions between the lakebed and margins and increases structural diversity relative to the existing uniform gravel substrate.

A single approximately 60 m wide section of shoreline will be reprofiled to create a gently sloping beach. The current condition in this location comprises a near-vertical artificial gravel face with no shallow water habitat or ecological function. The proposed beach will, for the first time anywhere around Broadwater Lake, establish a shallow littoral zone. This represents a substantial

enhancement to physical habitat availability, providing suitable conditions for aquatic macroinvertebrates and marginal and emergent vegetation to establish over time where light and depth permit.

Concerns regarding adverse changes to shoreline morphology or shallow habitat are not applicable in this context. The works do not remove or degrade natural features; instead, they replace an industrial shoreline with a more naturalistic profile. The direction of change is therefore unambiguously positive.

The scheme avoids continuous hard edging. Slipways and pontoons are restricted to discrete access points and are separated by long stretches of unmodified shoreline. No continuous revetments or engineered margins are introduced, ensuring that physical modification remains highly localised and reversible.

In hydromorphological terms, the proposals:

- increase shoreline heterogeneity;
- create the lake's only shallow water habitat;
- improve substrate diversity at the margins; and
- enhance the interface between terrestrial and aquatic environments.

The works do not remove or degrade any existing functional shallow or marginal habitat. Given the absence of natural littoral zones under baseline conditions, the limited reprofiling proposed does not constitute deterioration of hydromorphological or physical habitat quality elements.

Taken together, these changes represent a clear net improvement to physical habitat quality and hydromorphological condition. The development does not risk deterioration of Water Framework Directive quality elements; instead, it delivers measurable enhancement relative to the existing artificial baseline.

1.5 SHORELINE REVEGETATION AND LAKE EDGE RESTORATION

Revegetation and restoration of degraded lake margins forms a core component of the scheme's Water Framework Directive (WFD) mitigation and enhancement strategy and is secured through the Outline Mitigation, Enhancement and Management Plan (MEMP).

Two priority shoreline zones are identified for intervention:

- the former Broadwater Sailing Club (BSC) frontage on the northern shore, which will be decommissioned following relocation of activities; and
- the eastern channel margins adjacent to the new access beach and operational zone.

These areas currently comprise steep artificial gravel banks with limited marginal habitat and localised erosion. Under the proposals, shoreline works will include reprofiling of selected margins to create shallow graded edges, installation of biodegradable bank stabilisation (e.g. coir rolls where required), and planting with native marginal and emergent species.

Initial restoration will focus on increasing light availability at the lake edge through selective cutting back of overhanging branches, enabling establishment of emergent vegetation such as reed and yellow flag iris in naturally occurring shallows. Up to 25% of the lake edge will be managed in any one year on a rotational basis, creating a mosaic of shading conditions and progressively expanding marginal habitat.

Longer-term restoration will comprise reprofiling additional sections of shoreline to increase the extent of shallow water habitat. As set out in the MEMP, this will involve reshaping gravels beneath the water surface using floating plant and forming gently sloping ramps or shallow ledges retained by discreet underwater structures where necessary. Works will be undertaken outside sensitive ecological periods (mid–late September to early October).

These measures are designed to:

- stabilise eroded margins;
- increase habitat heterogeneity;

- establish marginal and emergent vegetation; and
- improve the physical naturalness of the lake edge relative to the existing engineered baseline.

The locations of shoreline restoration, ecological reinstatement of the former Broadwater Sailing Club frontage, eastern channel gravel shallows, floating reedbeds, submerged willow planters and island removal are shown on Figure 5.1 of the ES (Ecological Mitigation and Enhancement Plan, Drawing HWSFAC-COL-00-XX-DR-L-1010 Rev 28). These define the spatial extent of initial restoration works, with further progressive lake edge enhancement delivered through the detailed MEMP.

1.6 LONG-TERM LAKE EDGE RESTORATION AND ROLE OF THE MITIGATION, ENHANCEMENT AND MANAGEMENT PLAN

The MEMP provides the delivery mechanism for progressive restoration of Broadwater Lake's margins and is fundamental to achieving long-term improvement in hydromorphological condition.

The MEMP commits to:

- restoration of water fringe habitats through rotational branch cutting and marginal planting;
- phased reprofiling of suitable lake edges to create shallow shelves;
- ecological reinstatement of the former BSC site, including grassland enhancement, native scrub and tree planting, retention of marginal vegetation, and removal of degraded hardstanding;
- creation of gravel banks and shallow margins within the eastern channel to support aquatic invertebrates and fish;
- installation of floating reedbeds to improve water quality and provide habitat;
- removal of redundant shoreline features and islands where these constrain ecological function; and
- adaptive management informed by structured monitoring.

A detailed MEMP will be secured by planning condition and prepared in consultation with statutory stakeholders. The MEMP will be required to be submitted, approved and implemented prior to relevant works and will include spatially defined restoration layouts, species palettes, implementation methods and programmes, establishment criteria, monitoring protocols and adaptive management triggers. The Environment Agency will be consulted on, and invited to participate in, the approval of the detailed MEMP and associated lake edge restoration proposals.This approach ensures that lake edge enhancement is delivered progressively and responsively, allowing restoration to be refined over time in accordance with observed ecological outcomes.

1.7 SEPARATION OF WFD AND SSSI MITIGATION

The Environment Agency has correctly identified that mitigation proposed to address SSSI bird disturbance cannot be relied upon to satisfy Water Framework Directive (WFD) requirements. Accordingly, this Addendum clearly distinguishes between measures intended to mitigate impacts on SSSI interest features and those specifically designed to address WFD hydromorphological and physical habitat quality elements.

WFD mitigation is secured independently through a defined package of physical interventions and long-term management commitments set out within the Outline Mitigation, Enhancement and Management Plan (MEMP). These include ecological reinstatement of the former Broadwater Sailing Club frontage (Measure 1), incorporating removal of hardstanding, grassland enhancement, native scrub and tree planting, retention of marginal vegetation and cutting back of overhanging branches to enable progressive revegetation of degraded lake edges; creation of shallow gravel banks within the eastern channel to provide new littoral habitat (Measure 17); installation of floating reedbeds to support aquatic ecology and water quality (Measures 8 and 11); and longer-term rotational shoreline management and reprofiling of suitable lake edges to expand marginal and shallow water habitats (Section 3.1 of the MEMP). Recreational pressure is managed through consolidation of activity within the eastern channel and establishment of bird refuge areas (Measure 12), alongside operational controls set out in the Outline Operational Management Plan.

Collectively, these measures directly address the WFD pressures identified by the Environment Agency, including shoreline morphology, physical habitat availability, sediment disturbance and recreational impacts.

While certain measures (such as floating reedbeds and marginal planting) provide ancillary benefits for bird usage, compliance with WFD objectives does not rely on SSSI mitigation such as bird refuges or visual screening. Instead, WFD compliance is delivered through targeted physical habitat enhancement, net reduction in degraded shoreline, removal of existing artificial disturbance in the northern sector, creation of the lake's first shallow marginal zones within the eastern channel, and a monitoring-led adaptive management framework secured through the detailed MEMP.

Wider lake edge restoration and marginal habitat enhancement will be delivered progressively through the detailed MEMP, which commits to rotational shoreline management, phased reprofiling of suitable lake edges, and adaptive restoration informed by monitoring outcomes. This approach allows enhancement to be spatially targeted and ecologically responsive, rather than constrained by fixed upfront engineering, while ensuring continued progression toward improved hydromorphological condition.

The mitigation and enhancement measures set out in Appendix A therefore address each identified WFD pressure affecting Broadwater Lake. Physical impacts associated with the development are geographically limited and outweighed by a coordinated programme of shoreline restoration and habitat creation. Operational disturbance is managed through activity zoning, seasonal controls and adaptive monitoring. Engineered elements are localised, reversible and integrated within a wider nature-based framework, ensuring no net increase in permanent artificialisation of the lake edge.

Compliance with WFD objectives does not rely on bird refuge areas, disturbance mitigation or screening measures associated with the Broadwater Lake SSSI. WFD compliance is achieved independently through shoreline reprofiling, marginal habitat creation, lakebed heterogeneity improvements, removal of degraded artificial structures, activity zoning and monitoring-led adaptive management secured through the MEMP, CEMP and OMP.

1.8 JUSTIFICATION OF ENGINEERED FEATURES

The scheme incorporates a limited number of engineered elements, including submerged willow planters and discrete retaining features, only where necessary to facilitate safe operational access and stabilise steep gravel margins in locations where reprofiling to shallow gradients is constrained by existing lake geometry and safety requirements. Engineered elements are limited to the minimum necessary intervention required to ensure safe and inclusive access in constrained areas of steep gravel margin. These elements are discrete, reversible and do not prevent future reprofiling or enhancement. Continuous hard revetments have been expressly avoided.

Nature-based solutions are prioritised across the Site. Engineered components are employed solely where softer approaches alone cannot provide stable margins or safe, inclusive access to the water, particularly within the eastern channel where abrupt depth profiles and repeated operational use necessitate a predictable land–water interface. Continuous hard revetments have been explicitly avoided due to their adverse implications for hydromorphology and habitat connectivity. The adopted design therefore represents the minimum necessary intervention, with structural elements confined to discrete locations and integrated with marginal planting and floating habitats.

Importantly, the introduction of new access infrastructure within the eastern channel is offset by removal of existing artificial shoreline disturbance at the former Broadwater Sailing Club frontage (Measure 1) and removal of redundant islands and structures elsewhere within the lake (including Island #7). The scheme therefore achieves net parity in artificial structures within the waterbody, alongside delivery of the lake's first shallow marginal habitats (Measure 17).

Alternative wholly soft-engineered approaches were considered, including fully vegetated margins and floating-only access arrangements. These options were discounted in constrained access locations due to operational safety requirements, rescue provision and inclusive access needs, combined with the existing steep gravel margins and abrupt depth transitions. The selected approach applies engineered measures only where unavoidable and in a form that remains permeable, vegetated where practicable, and reversible.

All engineered features are designed to be adaptable and capable of modification or removal, enabling further reprofiling and habitat enhancement to be undertaken over time. Their role is to enable initial restoration in constrained areas while facilitating longer-term lake edge naturalisation secured through the Mitigation, Enhancement and Management Plan (MEMP).

These interventions do not compromise future enhancement or progression toward Good Ecological Potential. Instead, they support delivery of wider shoreline restoration by stabilising priority areas, enabling marginal vegetation establishment, consolidating recreational pressure into a managed zone, and creating conditions for progressive habitat recovery. The detailed MEMP will provide a framework for ongoing review, monitoring and refinement of these measures, ensuring that engineered features act as catalysts for ecological improvement rather than constraints.

The Proposed Development provides a clear impetus for ecological enhancement of Broadwater Lake that would not otherwise occur. The lake has remained in a largely static, steep-sided and ecologically simplified condition since its formation as a gravel pit in the 1960s, with no active programme of shoreline restoration or habitat creation. The scheme introduces, for the first time, a funded and managed framework for progressive lake edge naturalisation, shallow habitat creation and long-term ecological stewardship through the MEMP. Enhancement is therefore not deferred or aspirational, but embedded within the development proposals and secured through condition. In this way, the project actively accelerates delivery of physical habitat improvements and supports earlier progression toward Good Ecological Potential than would be achieved under the existing baseline.

1.9 RECREATIONAL PRESSURE AND OPERATIONAL MANAGEMENT

Existing use of Broadwater Lake takes place within a highly artificial gravel pit environment characterised by steep engineered margins, abrupt depth profiles and an almost complete absence of shallow littoral habitat. There is no naturally functioning shoreline and only a very small number of isolated shallow areas of limited extent. As such, current recreational activity does not interact with marginal vegetation or natural banks, because these features are effectively absent. The primary baseline constraint on hydromorphological and ecological function is therefore the historic construction of the lake itself, rather than ongoing recreational pressure.

The proposed development introduces a formalised and controlled operational framework which represents a substantial improvement over baseline conditions (refer ES Volume II Appendix 5.3: Operational Management Plan). For the first time, activity will be actively managed rather than informal, with defined spatial controls and environmental oversight.

The vast majority of water-based activities will be confined to the eastern channel through buoyed zoning and defined sailing corridors. Sensitive areas including bird refuges, wet woodland and restored lake edge sections will be subject to exclusion. Shoreline access will be restricted to designated launch locations only, preventing diffuse access and ensuring that interaction with the lake margin is limited to a small number of purpose-designed areas.

Seasonal restrictions will be applied during key ecological periods. In-lake construction works will be limited to the agreed seasonal window (typically October–December), in order to avoid the breeding season and periods when moulting birds are present in high numbers, as advised by Natural England.

During operation, daily activity hours, intensity of use and spatial zoning of water-based activities will be controlled through the Operational Management Plan to ensure recreational use remains within environmentally sustainable limits.

Recreational activity will be governed through a monitoring-led adaptive management framework. Baseline and ongoing surveys of shoreline condition, habitat extent, bathymetry and water quality will inform annual reviews by the Steering Group. Predefined trigger thresholds (relating to sediment disturbance, habitat condition, turbidity or biological indicators) will enable timely modification, reduction or suspension of activities should unacceptable effects be detected.

This adaptive approach ensures that operational activity remains responsive to observed environmental conditions and that hydromorphological and biological quality elements are actively protected over time. Taken together, the combination of spatial zoning, seasonal controls, defined access points and adaptive management provides a robust mechanism to prevent deterioration and supports progressive improvement toward Good Ecological Potential in accordance with the Thames River Basin Management Plan.

1.10 CUMULATIVE EFFECTS ASSESSMENT

The cumulative WFD assessment considers both adverse and beneficial effects of the scheme in combination with existing pressures on Broadwater Lake.

Adverse effects include limited in-lake infrastructure, short-term construction disturbance, and ongoing recreational activity. However, these are outweighed by positive interventions including extensive shoreline restoration, creation of shallow habitat, removal of degraded structures, reduction of informal access, and introduction of long-term ecological management.

When synthesised, the proposals result in a net improvement to hydromorphological condition. Physical modification is reduced overall, habitat diversity is increased, and disturbance is actively managed rather than uncontrolled. The scheme therefore supports, rather than undermines, achievement of WFD objectives.

1.11 COMPLIANCE WITH RIVER BASIN MANAGEMENT PLAN ENVIRONMENTAL OBJECTIVES, NO DETERIORATION AND CONTRIBUTION TO GOOD ECOLOGICAL POTENTIAL

No WFD quality element will deteriorate as a result of the Proposed Development. Enhancement measures described herein are additional to, and not relied upon to offset, deterioration.

In response to the Environment Agency's consultation comments, this Addendum has assessed the Proposed Development against RBMP objectives, drawing on the physical design of the scheme together with the mitigation and enhancement measures secured through the MEMP, CEMP and OMP. The relationship between identified WFD risks, mitigation measures and outcomes is set out in Appendix A.

The assessment confirms that no WFD quality element will deteriorate as a result of the Proposed Development. Physical interventions are confined to the eastern channel, are localised and reversible, and are offset by removal of degraded shoreline elsewhere, creation of the lake's first shallow marginal habitats, increased habitat heterogeneity, and consolidation of recreational activity within a managed access zone.

Potential construction-phase risks relating to sediment mobilisation, lakebed disturbance and water quality are controlled through the CEMP, which restricts dredging to defined operational footprints, applies pollution prevention measures and timing constraints on in-lake works, and provides for ecological oversight. Operational pressures, including recreational disturbance and erosion risk, are managed through the OMP, which introduces activity zoning, capped use levels, defined access points, seasonal controls and a monitoring-led adaptive management framework.

Longer-term enhancement is delivered through the MEMP, which commits to ecological reinstatement of the former Broadwater Sailing Club frontage, phased reprofiling of suitable lake edges, creation of gravel shallows and floating reedbeds, removal of redundant islands and structures, and rotational shoreline management. These measures directly address hydromorphological and physical habitat pressures identified in the original WFD Assessment and provide a structured framework for progressive lake edge naturalisation.

Crucially, the Proposed Development provides a clear impetus for enhancement that would not otherwise occur. Broadwater Lake has remained in a largely static, steep-sided and ecologically simplified condition since its formation as a gravel pit, with no active programme of restoration. The scheme introduces, for the first time, a funded and secured mechanism for delivering physical habitat improvements and long-term ecological stewardship. Enhancement is therefore front-loaded and embedded within the proposals, rather than deferred or aspirational.

Taken together, the scheme prevents deterioration, contributes positively toward Good Ecological Potential, and actively accelerates delivery of ecological enhancement in accordance with the Thames RBMP.

Appendix A provides a consolidated schedule mapping each identified WFD risk to secured mitigation measures, delivery mechanisms and outcomes, demonstrating compliance with Regulation 13 and the Thames River Basin Management Plan.

1.12 MONITORING AND ADAPTIVE MANAGEMENT

Monitoring secured via planning condition will include shoreline condition surveys, vegetation establishment checks, erosion indicators, recreational pressure assessment, and water quality parameters. Monitoring requirements and methodologies will be defined within the detailed Mitigation, Enhancement and Management Plan (MEMP), to be approved by the Local Planning Authority in consultation with the Environment Agency and Natural England.

Clear trigger thresholds will be defined within the detailed MEMP to enable early intervention if adverse trends emerge. Water quality monitoring is intended to evidence no deterioration and will include predefined trigger thresholds and remedial actions (see Appendix A, WFD-09).

Monitoring results will be reviewed annually by the Steering Group. Where trigger thresholds relating to erosion, vegetation establishment, turbidity, chemical parameters or biological indicators are exceeded, the Applicant will:

- undertake an investigation to confirm the extent and likely cause of the change;
- submit a Water Quality Remediation Plan (or relevant corrective action plan) to the Local Planning Authority for approval within 8 weeks of the trigger being confirmed (unless otherwise agreed in writing); and
- implement the approved corrective measures in accordance with the agreed timetable and report outcomes to the Steering Group and the Local Planning Authority.

Corrective measures may include modification of activities, additional stabilisation works, enhanced pollution prevention controls, accelerated habitat enhancement, or other proportionate actions necessary to restore conditions and ensure continued compliance with WFD no-deterioration and Good Ecological Potential objectives.

This adaptive management framework ensures that unforeseen impacts can be addressed promptly and transparently, maintaining compliance with WFD objectives throughout the operational life of the development.

1.13 **CONCLUSION**

This Addendum demonstrates that the Proposed Development will not cause deterioration of Broadwater Lake and will contribute positively toward achieving Good Ecological Potential in accordance with the Thames River Basin Management Plan.

The scheme delivers a coordinated package of physical habitat enhancement, shoreline restoration, controlled recreational management and long-term monitoring that directly addresses the hydromorphological and physical habitat pressures identified by the Environment Agency. Localised access infrastructure within the eastern channel is outweighed by removal of degraded shoreline elsewhere, creation of the lake's first shallow marginal habitats, increased habitat heterogeneity, and consolidation of recreational activity within a managed zone.

Crucially, the development provides a clear impetus for ecological enhancement that would not otherwise occur. Broadwater Lake has remained in a largely static, steep-sided and ecologically simplified condition since its formation as a gravel pit, with no active programme of restoration. The Proposed Development introduces, for the first time, a funded and secured framework for progressive lake edge naturalisation and habitat creation through the Mitigation, Enhancement and Management Plan. Enhancement is therefore front-loaded and embedded within the scheme, rather than deferred or aspirational.

The Proposed Development will not cause deterioration of any WFD quality element. Physical impacts are localised, reversible and offset by secured shoreline restoration and habitat creation. All mitigation and enhancement measures relied upon for WFD compliance are secured through enforceable management plans subject to approval by the Local Planning Authority in consultation with the Environment Agency. The scheme therefore complies with Regulation 13 of the Water Environment (WFD) Regulations 2017 and contributes positively toward Good Ecological Potential.

APPENDIX A – WFD MITIGATION AND ENHANCEMENT MEASURES

Ref	WFD Quality Element	Identified Risk / Pressure (from ES Appendix 8.4)	Baseline Condition	Scheme Impact	Mitigation / Enhancement Measures	Delivery Mechanism	Outcome
WFD-01	Hydromorphology – shoreline morphology	Localised alteration of shoreline morphology and loss of marginal habitat arising from reprofiling, access works and legacy degraded Sailing Club frontage	Steep artificial gravel banks with ~226 m degraded shoreline and almost no marginal vegetation	Localised reprofiling at eastern channel access	Ecological reinstatement of former Sailing Club frontage (MEMP Measure 1); shallow graded shelves; marginal/emergent planting; soft stabilisation where required; rotational shoreline management	Detailed Lake Edge Restoration Strategy secured by planning condition; implemented through the detailed MEMP with spatial layouts approved by LPA in consultation with EA; works programmed post-construction with ongoing rotational management; monitored annually with remedial actions triggered if erosion or vegetation failure occurs	No deterioration of shoreline morphology; net reduction in degraded shoreline extent and measurable improvement in marginal habitat availability contributing toward Good Ecological Potential.
WFD-02	Hydromorphology – physical habitat	Reduction in shallow and marginal habitats due to access infrastructure and substrate alteration	Near-complete absence of littoral zones and low habitat heterogeneity	Small localised loss at access points	Creation of shallow gravel banks (Measure 17); restoration of northern shoreline (Measure 1); floating reedbeds (Measures 8 & 11); marginal planting	Delivered via detailed MEMP secured by condition; habitat creation implemented during construction completion phase; establishment monitored through MEMP performance criteria; adaptive enhancement brought forward where establishment is sub-optimal	No deterioration of physical habitat quality elements; net gain in shallow and marginal habitat exceeding impacted area, supporting progression toward Good Ecological Potential.
WFD-03	Lakebed structure	Disturbance to lakebed and benthic habitats from dredging, island removal and in-lake infrastructure	Uniform gravel substrate with limited structural diversity	Highly localised dredging within eastern channel	Dredging confined to operational footprint; reprofiling to naturalistic gradients; avoidance of continuous hard edging; removal of Island #7 (Measure 10); reshaping of Island #2 (Measure 3)	Construction Method Statement and CEMP control dredging extents, timing and sediment handling; ecological supervision during works; restoration measures implemented via MEMP following construction; lakebed condition reviewed through post-construction monitoring	No deterioration of lakebed structure; localised enhancement of substrate diversity and physical heterogeneity relative to baseline conditions.
WFD-04	Erosional / depositional processes	Increased erosion and sediment mobilisation from shoreline access and recreation	Localised erosion at existing Sailing Club frontage	Potential disturbance at launch area	Defined access points; activity zoning; submerged willow planters (Measures 5 & 7); vegetated buffers; shoreline monitoring with trigger thresholds	Access locations fixed through approved drawings; operational controls enforced via OMP; willow planters installed under MEMP; shoreline condition monitored annually with trigger thresholds enabling activity modification or additional stabilisation	vNo deterioration of erosional or depositional processes; stabilised margins and controlled sediment mobilisation maintained within acceptable thresholds through monitoring and adaptive management.
WFD-05	Biological quality elements	Disturbance to aquatic ecology (fish, invertebrates, macrophytes, diatoms) from sediment disturbance, noise and physical activity	Existing unmanaged angling and access	Managed recreation introduced	Shallow shelves; marginal planting; floating reedbeds; removal of degraded structures; seasonal restrictions; adaptive management	Habitat delivered through MEMP; activity restrictions embedded in OMP; seasonal controls enforced operationally; biological indicators reviewed through monitoring with adaptive management actions where thresholds exceeded	No deterioration of biological quality elements (including aquatic invertebrates, macrophytes and fish); improved habitat complexity and reduced unmanaged disturbance supporting progression toward Good Ecological Potential.
WFD-06	Recreational pressure (long-term)	Cumulative disturbance affecting hydromorphology and physical habitat	Informal, uncontrolled baseline use	Formalised activity	Eastern channel zoning; capped boat numbers; defined corridors; bird refuge areas (Measure 12); seasonal controls; monitoring-led adaptive management independent of SSSI mitigation measures	Detailed OMP secured by condition sets spatial zones, caps and operating periods; compliance overseen by Steering Group; annual review informed by monitoring results with scope to amend operations	Recreational activity maintained below ecological thresholds with no deterioration of hydromorphological or biological quality elements.
WFD-07	Artificial structures	Introduction of engineered elements contributing to physical modification	Existing hard edges locally	Discrete slipways / planters	Structures limited to access points; permeable and vegetated design; continuous hard margins avoided; parity achieved through removal of Sailing Club frontage and Island #7	Detailed design approved by condition; installation controlled through CEMP; removal works delivered via MEMP; ongoing review through Steering Group	No deterioration of physical modification status; no net increase in permanent artificialisation of the lake margin, with new structures offset by removal of existing degraded shoreline features.

WFD-08	Future enhancement potential	Risk of locking-in modified shoreline preventing future restoration	No active restoration baseline	New development	Restoration of the former Broadwater Sailing Club frontage and wider lake shoreline embedded within the development proposals and relied upon to demonstrate compliance with Regulation 13. All structures reversible; lake edges safeguarded for reprofiling; restoration delivered through a phased Lake Restoration Strategy secured within the MEMP with EA involvement in approvals.	Detailed MEMP secured by condition with EA consultation; five-year review cycle; Steering Group empowered to bring forward further reprofiling or habitat works based on monitoring	Development actively enables and accelerates future enhancement potential; no risk of locking-in modified shoreline and clear progression toward Good Ecological Potential.
WFD-09	Water quality	Sediment plumes, spillages and runoff causing increased turbidity and chemical deterioration	Variable baseline quality	Construction and operation	Pollution prevention; controlled dredging; timing of in-lake works; foul drainage to mains sewer; controlled boat washing; floating reedbeds; water quality monitoring	CEMP governs construction pollution controls; drainage strategy secures foul connections; OMP controls boat washing; MEMP delivers reedbeds; water quality monitored with triggers for corrective action	No deterioration of chemical or physico-chemical status; long-term water quality monitoring secured with defined triggers and remedial actions to address any detected deterioration.
WFD-10	Cumulative impacts	Combined effects of physical works and recreation causing significant localised impacts to WFD receptors	Degraded margins and unmanaged access	Multiple interventions	Integrated shoreline restoration, habitat creation, island removal, zoning and adaptive monitoring assessed cumulatively	Cumulative performance reviewed annually by Steering Group using MEMP/OMP monitoring outputs; ability to modify operations or accelerate restoration if adverse trends detected	No cumulative deterioration of WFD quality elements; integrated restoration, management and monitoring deliver a net positive hydromorphological outcome and contribution toward Good Ecological Potential.