CALL FOR APPLICATIONS: Design Study for the Establishment of the Lilongwe Water Fund (LWF)

TERMS OF REFERENCE (TOR)

Title: Design study for the creation of a Water Fund for Lilongwe River Catchment
Entity & Project Name: Palladium Internationally LLC; Growth Poles Project
Location: Lilongwe, Malawi
Type of engagement: Consultancy
Estimated Duration: 7 months
Provisional Start Date: Within 2 weeks of award of bid, Provisional Start Date on or around 25 May 2026
Reporting to: Team Leader
Deadline to Apply: **26th April, 2026, by 17:00hrs CAT**
How to Apply: email proposals to **ProcurementGPMW@thepalladiumgroup.com**
Required Qualifications and Experience: see "Required Qualifications and Experience" below
Proposal Requirements: Interested individuals and/or firms should submit:

- A brief technical proposal describing their approach, examples of relevant past works, including staffing plan if not a single consultant applying
- Financial proposal
- Proposed timeline
- Portfolio or links to previous relevant work

Company Overview:

Palladium is a global leader in the design, development and delivery of Positive Impact – the intentional creation of enduring social and economic value. We work with governments, businesses, and investors to solve the world's most pressing challenges. With a global team and network of experts, we help improve economies, societies and, most importantly, people's lives.

Project Overview:

The Growth Poles Project 2.0 (GPP 2.0) is a five-year initiative (Oct 2023–Sept 2028) led by Palladium International and funded by Ireland's Department of Foreign Affairs. It aims to accelerate inclusive, sustainable, and resilient wealth creation in Malawi by mobilizing private sector investments in agriculture and natural resource management. Its development objective is to advance a more inclusive, diversified, and resilient private sector that drives sustainable wealth creation while enhancing environmental and ecological diversity.

Consultancy Purpose:

The purpose of this consultancy is to support the Lilongwe Water Board and its partners to design the Lilongwe Water Fund (LWF) as a sustainable financing and governance mechanism to implement, scale, and sustain priority actions identified in the Lilongwe River Catchment Management Strategy (CMS).

Specifically, the consultancy will generate a robust, Malawi-contextualised design package—encompassing technical, economic, institutional, and financial analyses—that enables stakeholders to make an informed decision on the establishment of the Lilongwe Water Fund and to move confidently toward its operationalisation.

The Consultancy will position the Water Fund as a locally governed platform that:

- Mobilises long-term and blended finance for catchment protection and restoration;
- Aligns upstream land management incentives with downstream water security benefits;
- Strengthens climate resilience and reduces water supply risks for Lilongwe City and its diverse stakeholders; and
- Delivers measurable economic, social, and environmental returns on investment.

The assignment will build on existing studies, data, and institutional arrangements, ensuring that the proposed Water Fund complements rather than duplicates current initiatives, and that it is firmly anchored in Malawi's policy, institutional, and socio-economic context.

Assignment Abstract:

Lilongwe City's water security depends on the health of the Lilongwe River Catchment, which supplies Kamuzu Dams I and II—the city's primary raw water sources. Increasing land degradation, deforestation, erosion, riverbank encroachment, and pollution within the catchment have contributed to declining raw water quality, rising treatment costs, and greater vulnerability to climate variability.

The Lilongwe Water Board (LWB) has developed and is implementing the Lilongwe River Catchment Management Strategy (2022–2025), which provides a strong, community-driven framework for catchment restoration and protection. However, the Strategy remains largely reliant on short-term, project-based financing and lacks a dedicated long-term mechanism to sustain, prioritise, and scale interventions.

This consultancy will support the design of a **Lilongwe Water Fund (LWF)** as a sustainable financing and governance mechanism to take the Catchment Management Strategy forward beyond its current lifecycle. The assignment will produce a comprehensive design study covering technical catchment analysis, economic and financial business case development, socio-economic and stakeholder assessment, institutional and governance design, and a financial sustainability and resource mobilisation strategy.

The consultancy will enable the LWB and partners to make an informed decision on establishing the Lilongwe Water Fund and to mobilise long-term, blended finance for safeguarding Lilongwe's water security.

Background and Context

Lilongwe City's water security is critically dependent on the health of the **Lilongwe River Catchment**, which originates in the Dzalanyama Forest and supplies Kamuzu Dams I and II, the primary raw water sources for the city. Over recent decades, the catchment has experienced **accelerated land degradation, deforestation, riverbank encroachment, sedimentation, nutrient loading, and pollution**, leading to rising water treatment costs and increased risks to water supply reliability.

In response, the Lilongwe Water Board (LWB) developed and is implementing a **Catchment Management Strategy (2022–2025)** focused on **community-driven restoration, soil and water conservation, enforcement of buffer zones, livelihood co-benefits, and participatory monitoring**. While this strategy provides a strong operational foundation, it relies heavily on **project-based financing** and does not yet constitute a **long-term, sustainable financing and governance mechanism**.

Globally, **Water Funds** have emerged as effective institutional mechanisms to address such challenges by pooling investments from water utilities, government, donors, and the private sector to finance **nature-based solutions (NbS)** at scale, guided by science and strong governance. The Nature Conservancy (TNC), through its **Water Funds and Nature4Water platforms**, has supported the establishment of more than 40 Water Funds worldwide, including:

- The **Upper Tana–Nairobi Water Fund (Kenya)**, which reduced sediment loads, stabilized dry-season flows, and delivered positive returns on investment for Nairobi City Water;

- The **Greater Cape Town Water Fund**, which demonstrated that catchment restoration could deliver water security benefits at a fraction of the cost of grey infrastructure alternatives.

Drawing on these global lessons, LWB and its partners intend to explore developing a **Lilongwe Water Fund (LWF)** as a locally governed, financially sustainable platform aligned with Malawi's institutional, social, and ecological context.

Purpose of the Assignment

The purpose of this consultancy is to **design the Lilongwe Water Fund** by developing a robust, Malawi-contextualized **technical, economic, institutional, and financial design package** that will enable stakeholders to make an informed decision on establishment and move decisively toward operationalization.

The Design Study will:

1. Quantify the **water security, economic, and social benefits** of investing in catchment protection and restoration in the Lilongwe River Catchment;
2. Define a **portfolio of priority nature-based solutions** that complement and scale the interventions already identified under the LWB Catchment Management Strategy;
3. Propose a **governance, institutional, and financing model** that ensures long-term sustainability, accountability, and local ownership;
4. Produce a **bankable business case** to crowd in funding from public, private, and development partners.

Scope of Work

The consultant shall undertake the following interrelated components, consistent with TNC's Water Fund Design phase methodology but adapted to the Lilongwe context.

Component 1: Technical Catchment and NbS Assessment

- Build on existing data, studies, and the CMS to:
    - Characterize current and future risks to water quantity and quality affecting Lilongwe's water supply system;
    - Identify, spatially target, and prioritize **nature-based solutions** (e.g. riparian restoration, agroforestry, erosion control, restoration of buffer zones, community forest management, sanitation-linked measures);
- Apply appropriate **biophysical modelling tools** (e.g. SWAT, WEAP, InVEST or equivalent) to assess impacts under:
    - Business-as-Usual scenario with existing CMS implementation;
    - Scaled Water Fund intervention scenario;
- Align proposed interventions with ongoing CMS work packages and community institutions

Output Component 1: Technical NbS and catchment investment plan with quantified impacts.

Component 2: Economic and Financial Analysis (Business Case)

- Develop a full **cost-benefit and return-on-investment (ROI) analysis**, consistent with global Water Fund best practice;
- Compare at least three scenarios:
    1. Continuation of CMS with existing funding;
    2. CMS + Water Fund-enabled scaled NbS investments;
- Disaggregate costs and benefits by stakeholder group (LWB, communities, government, downstream users);
- Apply a long-term analytical horizon (up to 30 years).

Output Component 2: LWF Business Case Report suitable for decision-makers and funders.

Component 3: Socio-Economic and Stakeholder Analysis

- Assess:
  - Land tenure and implementation feasibility of NbS;
  - Community willingness, incentives, and capacity to participate;
  - Livelihood co-benefits and potential trade-offs;
- Evaluate willingness-to-pay and potential contributions from key stakeholders, including public and private water users.

Output Component 3: Socio-economic analysis and stakeholder engagement roadmap.

Component 4: Institutional and Governance Design

- Map existing institutions involved in catchment and water management, including LWB, local government, ministries, community structures, and NGOs.
- Develop and assess **alternative governance models** for the LWF, clarifying:
  - Roles of LWB, government, communities, private sector, and donors;
  - Legal form and hosting arrangements;
  - Accountability, fiduciary oversight, and decision-making structures;
- Recommend a **preferred institutional model** with implementation steps.

Output Component 4: Institutional and governance design report.

Component 5: Financial Sustainability and Resource Mobilization Strategy

- Develop a **financial model** projecting:
  - NbS implementation costs;
  - Operational and administrative costs of the LWF;
  - Potential revenue streams (utility contributions, government allocations, donor funding, CSR, PES mechanisms);
- Assess financing gaps and options for blended or repayable finance, where appropriate.

Output Component 5: Financial sustainability and resource mobilization strategy.

Deliverables

1. **Inception Report and Detailed Work Plan**
2. **Technical Catchment and NbS Assessment Report**
3. **Economic Analysis and Business Case**
4. **Socio-Economic and Stakeholder Analysis Report**
5. **Institutional and Governance Design Report**
6. **Financial Sustainability Strategy and Integrated Financial Model**
7. **Final Integrated Design Study and Executive Summary**

All datasets and models shall be provided in editable formats.

Duration

The assignment is expected to last **approximately 7 months**, inclusive of stakeholder consultations and validation workshops.

Management and Reporting Arrangements

- The consultancy will be **commissioned and managed by Palladium, in close consultation with the Lilongwe Water Board under current MOU**.

- A Committee comprising LWB, relevant government ministries, community representatives, and development partners may be convened to provide additional input.
- **The Nature Conservancy (TNC)** may participate **as a bidding consultant or consortium partner**, providing technical services and global Water Fund expertise, but **will not act as the client, manager, or procuring entity**, nor hold decision-making authority over the TOR or consultant selection.

Required Qualifications and Experience

The consulting team should demonstrate:

- Proven experience designing **Water Funds or NbS financing mechanisms;**
- Strong expertise in **hydrological and ecosystem services modelling;**
- Experience developing **bankable business cases** for environmental investments;
- Institutional and governance analysis experience in the water or natural resource sectors;
- Familiarity with **sub-Saharan African catchment contexts**; Malawi experience is an asset.

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- Financial proposal
- Proposed timeline
- Portfolio or links to previous relevant work

Use of Results

The outputs of this consultancy will be used by LWB and partners to:

- Decide on establishment of the Lilongwe Water Fund;
- Mobilize capital from public, private, and development finance sources;
- Transition from project-based catchment management to a **long-term, locally governed Water Fund platform**, building directly on the CMS foundation.

Appendices:

Appendix I: Background to Water Fund Design and Business Case Development
Appendix II - Donor Justification Note
Appendix III: Technical Tools for Predictive Modelling and Watershed Analysis
Appendix IV: Additional Terms and Requirements for the Economic Analysis
Appendix V: Indicative Bibliography

Appendix I: Background to Water Fund Design and Business Case Development

Sustainable human development and livelihoods depend fundamentally on reliable access to clean and sufficient water resources, as well as protection from water-related hazards. In urban areas, these challenges are especially pronounced due to rapid population growth, expanding informal settlements, increased water demand, and growing exposure to climate-related risks such as flooding and drought. Urban water security has therefore become a central concern in the context of rapid urbanisation and climate change.

Water Funds are institutional, financial, and governance mechanisms designed to address these challenges by convening **public, private, and civil society stakeholders** to collectively invest in actions that safeguard water resources at the source. Water Funds strengthen integrated catchment management by mobilising long-term financing for **nature-based solutions (NbS),** including reforestation, sustainable agricultural practices, restoration of river buffers, erosion control, improved land management, education, monitoring, and applied studies relevant to water security.

International experience demonstrates that Water Funds can deliver significant benefits by complementing conventional ("grey") infrastructure with investments in natural capital. By improving ecosystem services such as water regulation, sediment retention, and water quality protection, these investments often provide **cost-effective, resilient and adaptive solutions** to urban water security challenges.

Globally, the development of Water Funds has been guided by a structured, phased approach that reflects international best practice. This approach typically follows a **five-phase cycle:**

1. **Feasibility Phase**

This phase assesses whether a Water Fund is an appropriate mechanism for a given catchment. It involves identifying water security challenges, reviewing existing management arrangements, and determining whether a Water Fund could meaningfully address these challenges.

2. **Design Phase**

During this phase, the Water Fund is designed as a platform for collective action. Technical, socio-economic, institutional, and financial analyses are undertaken to define priority interventions, governance arrangements, and financing strategies based on scientific evidence.

3. **Creation Phase**

The Water Fund is formally established, including legal registration, governance structures, operational policies, and initial resource mobilisation.

4. **Operation Phase**

The Water Fund implements its agreed work programme, monitors results, reports on performance, and adapts interventions to improve effectiveness and efficiency.

5. **Consolidation and Maturity Phase**

The Water Fund focuses on long-term sustainability, financial resilience, institutional strengthening, and scaling of impact.

Mobilising investment for a Water Fund depends critically on the development of a **robust business case** that demonstrates the value of catchment investments relative to alternative options. This requires showing that NbS-based interventions can deliver measurable and economically justified benefits when compared with business-as-usual or grey-infrastructure-only scenarios.

A sound Water Fund business case is therefore typically based on a **return-on-investment (ROI) analytical framework,** combining:

- Ecosystem service production functions;
- Benefit production functions;
- Economic valuation; and
- Comparative scenario analysis (with and without interventions).

This approach enables stakeholders to understand how catchment investments translate into tangible economic, social, and environmental outcomes over time.

Appendix II - Donor Justification Note

Establishing a Water Fund to Sustain and Scale the Lilongwe River Catchment Management Strategy

Executive Rationale

Lilongwe City's water security—and the reliability, affordability, and safety of its water supply—is directly dependent on the health of the Lilongwe River Catchment. Over the past decade, land degradation, deforestation, riverbank encroachment, and pollution in the catchment have driven rising water treatment costs, increased operational risks, and heightened vulnerability to climate variability.

The **Lilongwe River Catchment Management Strategy (CMS, 2022–2025)** represents a strong, locally owned framework for addressing these risks through community-driven conservation, soil and water management, and ecosystem restoration. However, without a **long-term financing and governance mechanism**, the CMS risks remaining dependent on short-term projects and fragmented funding.

Establishing a **Lilongwe Water Fund** offers donors a proven, scalable, and sustainable mechanism to **translate the CMS from a strategy into a lasting system—**one that protects water security while delivering climate resilience, livelihood benefits, and strong returns on investment.

The development challenge: why current approaches are insufficient

Despite strong stakeholder commitment and technical foundations, three systemic barriers constrain effective catchment management in Lilongwe:

1. **Short-term and fragmented financing -** Catchment investments are predominantly project-based, leading to funding gaps and discontinuity once donor cycles end.
2. **Weak incentive alignment -** Upstream communities bear opportunity costs of conservation, while downstream benefits accrue city-wide—without a mechanism to bridge this gap.
3. **Limited prioritisation and scalability -** While the CMS identifies multiple interventions, it lacks an economic framework to prioritise investments based on impact and cost-effectiveness.

These challenges are common in urban catchments across Africa and are the primary reasons why catchment degradation persists despite technically sound strategies.

Why a Water Fund is a compelling donor investment

A Water Fund directly addresses these systemic barriers and aligns closely with donor priorities on **sustainability, resilience, and value for money.**

(a) Converts donor support into long-term impact - Rather than financing isolated activities, donor contributions to a Water Fund:
- Capitalise a long-term platform with multi-year planning horizons;
- Reduce dependency on future aid by mobilising local and utility co-finance;
- Ensure continuity of restoration and conservation interventions.

(b) Leverages blended finance and cost-sharing - Donor funding acts as a catalyst, unlocking:
- Contributions from Lilongwe Water Board;
- Government co-financing;
- Private sector and corporate social responsibility funding;
- Future climate and environmental finance.

This leverage effect significantly improves the efficiency and reach of donor resources.

(c) **Delivers measurable water security and climate resilience outcomes -** Water Funds prioritise **nature-based solutions (NbS)** that:

- Reduce sedimentation and treatment costs;
- Buffer climate shocks such as floods and dry spells;
- Enhance ecosystem services critical to long-term water supply.

These outcomes align strongly with donors' climate adaptation, resilience, and infrastructure protection objectives.

(d) **Anchors investments in science and evidence -** The Water Fund design requires:

- Biophysical and economic modelling;
- Cost-benefit and return-on-investment analysis;
- Transparent, data-driven prioritisation of interventions.

This ensures donor funds are directed where they deliver the highest impact per dollar.

Comparison with alternative financing approaches

Option	**Donor value**	**Key limitation**
Standalone CMS project funding	Quick gains	Ends with project; limited sustainability
Continued NGO-led implementation	Flexible delivery	Fragmented scale; weak system ownership
Enforcement-only regulation	Necessary complement	High cost; low community buy-in
Water Fund model	**Sustainable, leveraged, measurable**	**Requires upfront design effort**

Conclusion: The Water Fund is the only option that transforms donor finance into a durable system rather than a temporary intervention.

Strategic alignment with donor priorities

A Lilongwe Water Fund directly supports donor objectives related to:

- **Climate adaptation and resilience** (NbS, ecosystem restoration);
- **Urban service sustainability** (protecting water infrastructure investments);
- **Inclusive development** (livelihood co-benefits for upstream communities);
- **Institutional strengthening** (locally governed, accountable platforms);
- **Value for money** (avoided costs and long-term returns).

The model has been successfully applied in comparable African contexts, demonstrating its feasibility and replicability.

Role of donor support

Donor support is most impactful during the **design and early capitalisation stages**, where it can:

1. Finance the Water Fund Design Study and business case;
2. De-risk early investments in priority sub-catchments;
3. Signal credibility and attract additional co-financing;
4. Support governance set-up and monitoring systems.

Importantly, donor funds **do not replace local responsibility**—they enable it.

Key Take-aways:

> The Lilongwe Catchment Management Strategy defines the solution.

> The Water Fund ensures that the solution is financed, prioritised, and sustained.

Investing in a Lilongwe Water Fund allows donors to move beyond incremental projects and instead support a **systemic, long-term approach to urban water security and climate resilience** in Malawi.

Appendix III: Technical Tools for Predictive Modelling and Watershed Analysis

1. Role of Predictive Modelling in Water Fund Design

Predictive modelling is a central component of Water Fund business case development. Because Water Fund analyses are conducted **ex ante,** they compare future outcomes **with** catchment interventions to future outcomes **without** such interventions (the "business-as-usual" or BAU scenario). As neither scenario can be observed directly in advance, predictive modelling is required to construct credible and evidence-based projections.

Previous Water Fund design studies have demonstrated the value of using **integrated modelling approaches**, typically combining:

- Spatial models to target priority interventions;
- Biophysical models to estimate impacts on water quantity and quality; and
- Economic valuation tools to assess benefits to upstream and downstream stakeholders.

For the Lilongwe Water Fund, the selection of modelling tools must be justified based on data availability, scale, and relevance to watershed processes. While a long-term analytical horizon of up to 30 years is considered best practice, the final time horizon may be refined during the study period to balance realism and analytical feasibility.

At a minimum, modelling should ensure:

- Clear and transparent assumptions;
- Empirical or evidence-based causal linkages; and
- Consistency with established international best practices.

2. Construction of BAU and Intervention Scenarios

The BAU scenario entails forecasting expected changes in land use, land cover, population pressure, and climate-related variables over the study horizon, and assessing how these changes affect outcomes such as sediment loads, streamflow, and water quality.

The intervention scenario then evaluates how proposed catchment measures modify these parameters and alter outcomes relative to BAU. This requires establishing quantitative relationships between:

- Changes in ecosystem structure and function;
- Provision of ecosystem services; and
- Downstream benefits to human systems, including water supply reliability and treatment costs.

Together, these models should support analysis of the following core questions:

1. Which investments, and in which locations, yield the greatest returns across multiple objectives?
2. What changes in ecosystem services are attributable to these investments?
3. How do these outcomes compare to alternative allocation of resources?

3. Indicative Modelling Tools

Depending on data availability and analytical needs, appropriate tools may include:

- **Biophysical and hydrological models** such as SWAT, WEAP, InVEST, AGWA, MODFLOW, or comparable tools;
- **Spatial prioritisation tools** such as RIOS, ROOT, ARIES, or similar platforms.

These tools may be used iteratively to refine intervention packages, prioritise sub-catchments, and inform economic valuation.

The following footnotes provide indicative local assumptions intended to guide bidders. They are not intended to constrain methodological choice, provided that alternative assumptions are clearly justified and supported by evidence.

Indicative Lilongwe-Specific Modelling Assumptions:

1. **Hydrological focus areas** - For modelling purposes, priority shall be given to the Lilongwe River Catchment upstream of Kamuzu Dam I and II, including key tributaries (Likuni, Lisungwi, Chankhandwe and Chaulongwe), as these directly influence raw water quality and availability for Lilongwe City.
2. **Key water security variables** - Bidders are expected to prioritise modelling of variables most relevant to Lilongwe's water security system, including but not limited to sediment yield, total suspended solids (TSS), seasonal flow variability, nutrient loading, and runoff dynamics, recognising their implications for treatment costs and supply reliability.
3. **Data sources and baselines** - Models should, where feasible, draw on existing datasets held by Lilongwe Water Board, including water quality records, abstraction data, SCADA data (where available), dam operation records, and GIS datasets, complemented by national data sources and openly available satellite products.
4. **Land use and degradation trends** - Business-as-Usual scenarios should reflect observed and projected trends within the catchment, including population growth, expansion of informal settlements, agricultural intensification, deforestation, riverbank cultivation, sand mining, and climate variability, as documented in existing studies and the LWB Catchment Management Strategy.
5. **Climate considerations** - Modelling assumptions should explicitly consider climate variability and change, including projected changes in rainfall intensity and seasonality relevant to central Malawi, and their implications for erosion, runoff, and dam sedimentation. Downscaled climate scenarios may be used where justified.
6. **Scale and resolution** - Spatial resolution should be sufficient to meaningfully differentiate sub-catchments and priority intervention areas, particularly those already identified under community-based management arrangements (e.g. EPAs and VNRMC areas). Excessively coarse national-scale modelling should be avoided.

Appendix IV: Additional Terms and Requirements for the Economic Analysis

1. Overview of the Economic Analysis

The economic analysis shall quantify the monetary value of selected benefits and costs associated with Water Fund-supported interventions. The analysis shall distinguish impacts across key stakeholder groups, which may include upstream land managers, communities, Lilongwe Water Board, local and national government, and the Water Fund entity itself.

This approach enables:

- Stakeholder-specific assessment of costs and benefits;
- Identification of cases where incentives or compensation mechanisms may be required; and
- Calculation of both stakeholder-level and aggregate returns on investment.

2. Benefits Assessment

The types of benefits to be included in the analysis shall be drawn from prior studies and refined through stakeholder consultation. These may include, inter alia, reductions in sedimentation, improved water quality, avoided treatment costs, improved agricultural productivity, enhanced resilience, and livelihood co-benefits.

Benefits must be identified and quantified spatially and temporally, recognising that:

- Different stakeholders benefit at different locations and times;
- Some interventions produce delayed impacts; and
- Not all benefits accrue uniformly.

Quantification of benefits shall:

- Use **benefit-relevant indicators (BRIs)** that directly link ecosystem services to human welfare;
- Apply empirically grounded production or cost functions where available;
- Use defensible assumptions and clearly document uncertainty where data gaps exist.

3. Cost Assessment

The economic analysis must include the full range of costs, including:

- Capital and maintenance costs of interventions;
- Opportunity costs borne by land users or communities;
- Transaction, monitoring, enforcement, and administration costs; and
- Any costs incurred by third parties.

Costs must be identified by stakeholder group and over time. Where possible, empirical cost data shall be used; otherwise, second-best local or regional estimates are acceptable.

4. Discounting, Time Horizon, and ROI

Discount rates shall reflect the perspective of different stakeholders, based on available economic literature or national benchmarks. Where stakeholder-specific rates are unavailable, appropriate proxy rates shall be clearly justified.

The analysis should ideally adopt a **30-year time horizon,** recognising the long-term nature of ecosystem investments.

ROI shall be calculated:

- Annually and cumulatively;
- In net present value (NPV) terms; and
- At stakeholder and aggregate levels.

The following footnotes provide indicative local assumptions intended to guide bidders. They are not intended to constrain methodological choice, provided that alternative assumptions are clearly justified and supported by evidence.

Lilongwe Specific Economic Assumptions

1. **Primary downstream beneficiary** - The primary downstream economic beneficiary for valuation purposes is assumed to be Lilongwe Water Board, through avoided or reduced water treatment costs, improved operational reliability, deferred capital expenditures, and reduced risks to service continuity.
2. **Treatment cost metrics** - Where treatment cost savings are assessed, bidders should base estimates on current and historical LWB treatment cost structures, including chemical usage, sludge management, energy consumption, and operational disruptions associated with poor raw water quality.
3. **Upstream stakeholder context** - Upstream stakeholders are predominantly smallholder farmers and peri-urban communities, often operating under customary or mixed tenure systems. Economic analyses should assume limited upfront capital, sensitivity to opportunity costs, and the importance of livelihood co-benefits when evaluating incentive requirements.
4. **Opportunity costs of land use change** - Opportunity costs should reflect locally relevant cropping systems, yields, and market prices in the Lilongwe River Catchment, rather than national averages where these would over- or under-state local economic realities.
5. **Labour valuation** - Where community labour contributions are included or implied, valuation should reflect prevailing rural and peri-urban wage rates and recognise that community contributions may represent real opportunity costs even when unpaid.
6. **Discount rates** - In the absence of stakeholder-specific rates, bidders may apply a social discount rate consistent with Malawi public investment practice, supplemented by sensitivity analysis to illustrate the effect of alternative reasonable discount rates.
7. **Time horizon realism** - While a 30-year analytical horizon is encouraged, bidders should explicitly model intervention ramp-up periods and ecological lag times, recognising that benefits from reforestation, riparian restoration, and soil conservation accrue progressively rather than immediately.
8. **Non-monetised benefits** - Where benefits such as improved public health, biodiversity conservation, flood risk reduction, or social cohesion cannot be robustly monetised, they should still be clearly identified, described, and qualitatively assessed alongside monetised benefits.

Appendix V: Indicative Bibliography

This bibliography is indicative and not exhaustive. The Client may provide additional datasets, studies, or documents during implementation of the assignment.

- *Lilongwe River Catchment Management Strategy* (2022)
- Kroeger, T. et al. (2019). *Returns on investment in watershed conservation*. Science of the Total Environment, 657.
- Rural Focus Ltd. (2020). *Lilongwe Water Fund – Pre-Feasibility Study*.
- UNEP, IUCN, TNC, WRI (2014). *Green Infrastructure Guide for Water Management*.
- Vogl, A.L. et al. (2017). *Valuing investments in sustainable land management in the Upper Tana River basin, Kenya*. Journal of Environmental Management, 195.
- The Nature Conservancy. *Water Funds Toolbox*. https://resilientwatershedstoolbox.org/