

## Deliverable D3: Roadmap for Reclaimed Water Use

<b>Country</b>	<b>Barbados</b>
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**RESILIENCE**



**INTEGRATION**



**SUSTAINABILITY**

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# EXECUTIVE SUMMARY

This Roadmap sets out a consolidated, sequenced plan to implement reclaimed-water (non-potable) reuse in Barbados. It translates the findings of the Baseline Assessment and the Stakeholder Engagement work into time-bound actions with named institutional leads, structured under the OECD Water Governance Indicator Framework (WGIF).

The scope is strictly reclaimed-water non-potable reuse under the Water Reuse Act, 2023. It excludes any direct potable reuse or indirect potable reuse intended for the drinking-water network. It applies the Act's statutory terminology to avoid ambiguity between wastewater streams, including "black water," "grey water," and "non-potable" reclaimed water.

Sequencing is anchored to the Barbados 2035 Investment Plan for Prosperity & Resilience wastewater commitments that determine national feasibility: tertiary upgrades of the Bridgetown and South Coast sewage treatment plants with reclaimed-water distribution networks, and sewerage expansion including the stated target to "Sewer 25% of Zone A island-wide." These investments define the reclaimed-water supply chain: influent capture (sewer expansion), production (tertiary treatment), and delivery (distribution network). The Roadmap's early actions therefore prioritise the governance and legal instruments needed so that these investments can deliver reclaimed-water outputs that are lawful, safe, enforceable, inclusive and financeable.

Regional standards, including the Trinidad and Tobago Bureau of Standards wastewater reuse protocols, demonstrate established risk-based classification systems (e.g., Classes A-C) with defined permissible limits by end-use. These provide a useful benchmark for Barbados; however, legally binding standards must be prescribed through national Regulations under the Water Reuse Act to ensure enforceability and alignment with local groundwater protection and public health requirements.

The Baseline Assessment confirms that Barbados has a statutory foundation for non-potable water reuse. It also identifies the key implementation gap: although the Act provides enabling powers, the supporting regulations and legally binding reclaimed-water quality standards are not yet in force. The Roadmap treats subsidiary legislation, enforceable standards, and the monitoring and compliance chain as short-term "unlocking" actions that enable permitting, tariffs, and scale-up.

Because Barbados' groundwater protection framework materially affects siting, risk tiering, and permit conditioning, the Roadmap integrates a Zones A–E lens for reclaimed-water decisions and includes a narrative explaining the zoning framework source and how it will be applied in practice by permitting and development control as a groundwater protection tool (distinct from general land-use zoning).

Two quick wins remove immediate blockers. First, an operational coordination function attached to the Office of the Prime Minister chairs a reclaimed-water task mechanism to resolve cross-ministry constraints and keep sequencing aligned with the Investment Plan. This delivery function does not displace statutory regulators. Second, activation of the Water Reuse Committee (WRC) as the permitting decision forum, with operating procedures that separate delivery from regulation and enable consistent enforcement.

Life-safety is treated as an operating requirement, not a narrative add-on. The Roadmap includes a National Reclaimed Water Incident Response Protocol establishing enforceable response duties across operators/permit holders and regulators, including a mandatory two-hour notification rule and defined stop-supply/stop-use triggers to prevent illness and aquifer contamination.

Across the nine OECD-WGIF dimensions, actions are presented as implementation decisions (not general recommendations): each action is paired with a single lead institution, a defined timeframe (short 0–2 years; medium 2–5 years; long to 2035), and explicit legal/policy instruments. The action tables are designed for Government tracking and sign-off, and the combined roadmap visual summarises the critical governance actions from 2027–2035 and their alignment to the Barbados 2035 Investment Plan for Prosperity & Resilience objectives.

Finally, the Roadmap operationalises gender equality through binding governance levers rather than optional participation language, including formalised gender expertise participation in WRC processes and mandatory measures to integrate gender and vulnerable groups into engagement and implementation decisions where reclaimed-water reuse affects exposure or livelihoods.



## List of Acronyms and Abbreviations:

<b>Acronym</b>	<b>Full Term</b>
<b>3R-CReWS</b>	Reduce, Reuse, Recycle for Climate Resilience Wastewater Systems (GCF project)
<b>AECOM</b>	AECOM (engineering and consulting firm)
<b>BA-L1063</b>	Barbados Climate Resilient South Coast Water Reclamation Project (IDB project code)
<b>BADMC</b>	Barbados Agricultural Development and Marketing Corporation
<b>BAS</b>	Barbados Agricultural Society
<b>BHTA</b>	Barbados Hotel and Tourism Association
<b>BNSI</b>	Barbados National Standards Institution
<b>BTSTP</b>	Bridgetown Sewage Treatment Plant
<b>BWA</b>	Barbados Water Authority
<b>CC</b>	Climate Change
<b>CCCC</b>	Caribbean Community Climate Change Centre
<b>CRew+</b>	An Integrated Approach to Water and Wastewater Management using Innovative Solutions and Promoting Financing Mechanisms in the Wider Caribbean Region (GEF project)
<b>EHD</b>	Environmental Health Department (Ministry of Health and Wellness)
<b>EIA</b>	Environmental Impact Assessment
<b>EPD</b>	Environmental Protection Department (Ministry of Environment and National Beautification)
<b>ESIA</b>	Environmental and Social Impact Assessment
<b>FTC</b>	Fair Trading Commission
<b>GAS</b>	Government Analytical Services / Government Analytical Laboratory
<b>GCF</b>	Green Climate Fund
<b>GEF</b>	Global Environment Facility
<b>GOB</b>	Government of Barbados
<b>GSC</b>	Garbage and Sewage Contribution (levy)
<b>IDB</b>	Inter-American Development Bank
<b>IWRM</b>	Integrated Water Resources Management
<b>MENB</b>	Ministry of Environment and National Beautification
<b>MoF</b>	Ministry of Finance, Economic Affairs and Investment
<b>MoH</b>	Ministry of Health and Wellness
<b>MVCR</b>	Minimum Viable Compliance Regime
<b>NAWC</b>	National Advisory Water Committee
<b>NAP</b>	National Adaptation Plan
<b>NDC</b>	Nationally Determined Contribution
<b>NGO</b>	Non-Governmental Organisation
<b>NPR</b>	Non-Potable Reuse
<b>NRW</b>	Non-Revenue Water
<b>OECD</b>	Organisation for Economic Co-operation and Development
<b>WGIF</b>	OECD Water Governance Indicator Framework
<b>PDP</b>	Physical Development Plan
<b>R2RP</b>	Roofs to Reefs Programme

<b>SCSTP</b>	South Coast Sewage Treatment Plant
<b>SCWRP</b>	South Coast Water Reclamation Project
<b>SDG</b>	Sustainable Development Goal
<b>SI</b>	Statutory Instrument
<b>SSA</b>	Sanitation Service Authority
<b>TWG</b>	Technical Working Group
<b>UNEP</b>	United Nations Environment Programme
<b>UWI</b>	University of the West Indies
<b>WAC</b>	Water Adjustment Clause
<b>WRRF</b>	Water Resource Recovery Facility
<b>WRC</b>	Water Reuse Committee
<b>WSRN-S</b>	Water Sector Resilience Nexus for Sustainability
<b>WWTP</b>	Wastewater Treatment Plant

# 1. Introduction and Context

Deliverable 3 provides a consolidated Roadmap for reclaimed water use in Barbados. It translates the baseline governance findings (Deliverable 2.1) and stakeholder evidence (Deliverable 2.2) into a sequenced set of actions with assigned institutional leads, time horizons, and implementation dependencies. The Roadmap is scoped to reclaimed-water (non-potable) reuse and is designed to be operational: it prioritises measures that can be implemented under existing legal powers while sequencing the legal and institutional instruments that are required to make reclaimed-water use safe, enforceable, and investable.

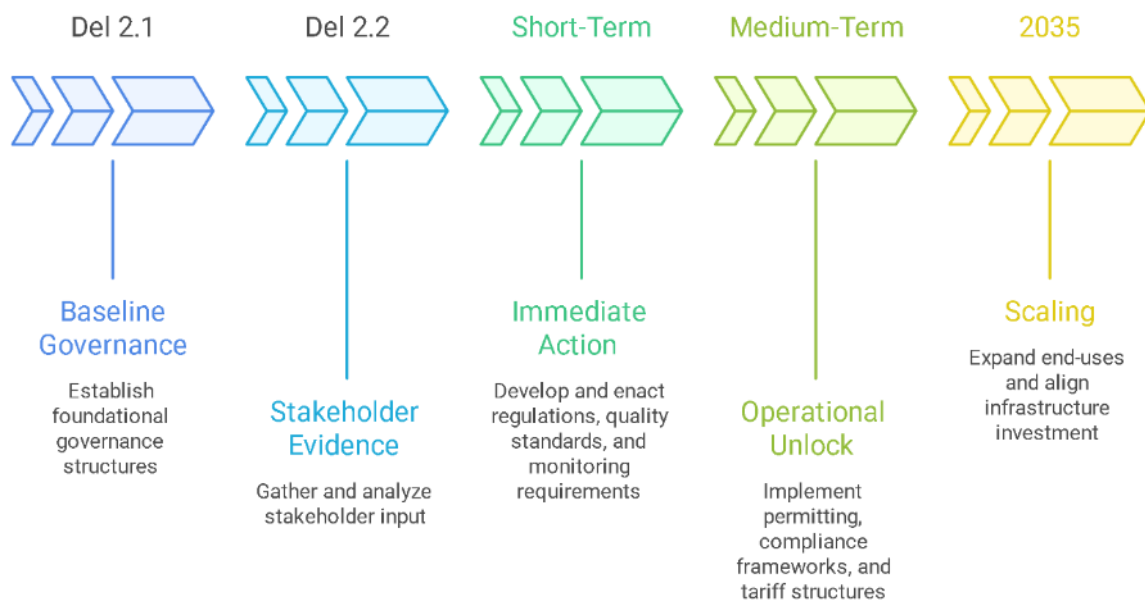


Figure 1 - Strategic Roadmap Overview

## Scope and statutory definitions

This Roadmap addresses reclaimed-water end-uses that are non-potable in nature. It therefore excludes any direct potable reuse or indirect potable reuse intended for the drinking-network. The Roadmap uses the statutory terminology in the Water Reuse Act, 2023 to avoid ambiguity across wastewater streams and end-uses. The Water Reuse Act defines ‘black water’ as wastewater including human faeces or excrement with paper and urine, and ‘grey water’ as wastewater from kitchen, bathroom sinks, showers, and laundry in households or similar buildings. The Act also recognises other sources of reclaimable water, including treated wastewater from sewerage systems and commercial or industrial processes, which may be subject to reuse under prescribed conditions. The Act further defines “non-potable” as water made from reclaimed water which is not treated to a standard to be used as potable water.



## 2035 Investment Plan alignment and infrastructure dependencies

The Roadmap sequencing is anchored to the Barbados 2035 Investment Plan wastewater investment commitments that are directly determinative of reclaimed-water feasibility at national scale. The Barbados 2035 Investment Plan identifies:



- Tertiary-level upgrades of the Bridgetown Sewage Treatment Plant with a distribution re-use network for reclaimed water for agricultural irrigation and non-potable aquifer recharge (and direct discharge compliance where applicable).
- Tertiary-level upgrades of the South Coast Sewage Treatment Plant with a distribution re-use network for the same categories of end-use.
- Sewage system expansion, explicitly including the target to “Sewer 25% of Zone A island-wide.”

These three elements establish the operational “supply chain” for reclaimed-water reuse: influent capture via sewerage expansion, production via tertiary treatment, and delivery via a dedicated distribution network. Accordingly, the Roadmap’s early actions focus on enabling these investments to deliver reclaimed-water outputs that can be legally authorised, safely used, and effectively monitored.

National wastewater upgrades are explicitly being framed to enable reclaimed-water production for two priority non-potable applications: agricultural irrigation and (ii) non-potable aquifer recharge. In the near term, the Roadmap therefore prioritises legal instruments, monitoring capacity, and permitting controls needed to make these two applications operable and enforceable. Other non-potable end-uses recognised by law (e.g., landscape/golf, industrial uses, construction uses, dual-plumbed toilet flushing) remain within scope but are sequenced for later inclusion where demand, distribution routing, and plumbing controls can be validated.

It is understood from discussions that the country intends to prioritise agricultural irrigation and non-potable aquifer recharge, and this Roadmap keeps other non-potable end-uses as potential medium/long-term expansion categories, not as commitments.

### Governance drivers for the Roadmap

Deliverable 2.1 confirms that Barbados has a dedicated legal basis for reclaimed (non-potable) water reuse and that the Water Reuse Act is in force and authorises non-potable reuse. However, the baseline assessment also identifies a critical implementation gap: while enabling powers exist, the supporting regulations and legally binding reclaimed-water quality standards are not yet enacted and remain pending.



The Roadmap therefore treats the development and enactment of reclaimed-water regulations, standards, and associated monitoring requirements as short-term actions that unlock the remainder of the reuse programme (permitting, compliance, tariffs, and expansion of end-uses).

## Zoning relevance and permitting logic

Barbados applies a Zones A–E framework for groundwater protection and land-use/sanitation control. This Roadmap includes a dedicated narrative explaining where the zoning framework comes from (based on the zoning policy document provided by the Client) and how it will be used in practice for reclaimed-water decisions. The zoning narrative is limited to relevance and application: it is used to structure risk-tiering, siting constraints, and permit conditions for reclaimed-water infrastructure and end-uses (including any managed non-potable aquifer recharge applications), and to support consistent interpretation by implementing agencies. The Barbados Water Authority will be requested to validate the zoning interpretation narrative to ensure it aligns with operational practice and existing permitting workflows.



## 2. Methodology and Evidence Base

Barbados already has three things that make a reclaimed-water roadmap feasible: a clear national investment direction to 2035, a statutory foundation for non-potable reuse, and a documented baseline of what is currently blocking implementation. The purpose of the Roadmap is to connect these three strands into a single delivery sequence: investments that create reclaimed-water supply, governance actions that make reuse lawful and enforceable, and stakeholder actions that make implementation workable across institutions and end-users.

### National investment and planning (Barbados Investment Plan 2035)

The Roadmap sequencing is aligned to Barbados' national investment horizon to 2035 and to the wastewater infrastructure programme that enables reclaimed-water reuse. Actions are grouped into short term (0–2 years), medium term (up to 5 years), and long term (to 2035) to match the fiscal and delivery logic of the Investment Plan time horizon. The Roadmap therefore treats reclaimed-water governance as an enabling framework for the Investment Plan's wastewater upgrades, reclaimed-water distribution networks, and sewer expansion, rather than as a standalone legal reform exercise.



## Evidence base from Deliverables 2.1 and 2.2

Deliverable 2.1 provides the baseline diagnosis and identifies the governance constraints that must be addressed before reclaimed-water systems can scale (including unclear or overlapping responsibilities, enforcement and monitoring capacity constraints, and the absence of legally binding supporting regulations and standards in force). Deliverable 2.2 provides the stakeholder mapping and engagement evidence required to validate the Roadmap, manage implementation risks, and sequence consultation and communication steps consistent with OECD stakeholder engagement expectations used in the project.

Indicator	Value (out/level)	Source / justification	Rating
Declared legal basis for reclaimed (non-potable) water reuse	Strong – a specific Water Reuse Act is in force and clearly defines roles and responsibilities	The Water Reuse Act 2023 “provides for the capture, collection, treatment and reuse of wastewater to be used for non-potable purposes”, established a Water Reuse Commission and sets offences and penalties for unsafe use.	●
Supporting regulations and binding quality standards for reclaimed water	None – enabling powers exist but detailed rules/regulations/standards are not yet enacted.	The Act allows regulations on treatment, standards and monitoring, but the draft “re-use rules”, regulations and standards under the Act are still pending, and that draft “re-use standards under the Marine Pollution Control Act (2008) were never given effect.	●
Technical basis for reuse standards (non-potable and aquifer recharge)	Medium – recent draft standards rule from technical studies remains guidance rather than law.	The “Soils, Cores, Shallow Recharge and Feasibility Study (AECCM 2020) recommends reclaimed water quality standards commensurate with BPD for potable and non-potable aquifer recharge and irrigation (Tables 2.1, 2.2 to 2.4), but these are described as “recommendations rather than statutory.”	●
Coverage of all relevant reuse systems (centralised effluent, on-site greywater, stormwater, stormwater reuse etc.)	Partial – covered on-site greywater, stormwater reuse and stormwater reuse standards remain largely unregulated or absent.	The Inception Report and desk review note there is no regulatory regulation for greywater reusing systems in buildings, no specific standards reuse regulations (although treated only as “stormwater” under major Services Act), and that stormwater reuse/recharge is not explicitly regulated with the Water Reuse Act, despite the new Storm Water/Stormwater Management regulation.	●
Coherence and consistency	Partial – key Acts are in place		●

## Scope boundaries and treatment of technical standards

The Roadmap remains within the agreed assignment scope. It does not draft numeric reclaimed-water quality standards. Instead, it specifies (i) the institutional owners for standards development, (ii) the required legal instruments (regulations/SIs and guidance), and (iii) the operational monitoring, reporting, and compliance processes needed to make standards enforceable once adopted. This is deliberate: numeric standards require a dedicated technical standard-setting process and consultation cycle that the Roadmap must initiate and sequence, not replace.



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## OECD WGIF backbone and how to read the Roadmap

To preserve continuity from diagnosis to implementation, the Roadmap is structured using the same nine governance dimensions applied in Deliverable 2.1 under the OECD Water Governance Indicator Framework approach adopted for this project. For each dimension, the Roadmap provides: (a) a brief baseline synthesis (rating and key gap), and (b) a sequenced action table specifying the action, lead/supporting institution, timeframe, dependencies, and legal/policy linkages. Each action table also includes a Zone relevance field where zoning materially affects siting, risk tiering, or permit conditions. Groundwater recharge using reclaimed water is permitted under the Water Reuse Act for non-potable purposes; however, where recharge occurs in aquifers used for potable water supply, this constitutes an indirect potable reuse pathway and requires a higher-grade treatment, monitoring, and assurance regime. Detailed regulatory provisions for such indirect potable reuse are not covered under D3 and would require a dedicated framework.



## Minimum Viable Compliance Regime (MVCR) for any live reclaimed-water pilot

A reclaimed-water distribution pilot must not commence unless the following are in place:

- A permit with enforceable conditions, including non-discrimination and accessibility measures, and any interim operational limits set as permit conditions pending the coming into force of gazetted Regulations.
- An approved sampling plan and chain-of-custody procedure;
- Access to timely laboratory testing with defined turnaround times for compliance parameters;
- Named inspectors for producer-site and user-site compliance, with documented inspection checklists;
- An operational incident response protocol with stop-supply triggers, a 2-hour notification rule, and notification methods designed to reach all affected user groups through multiple channels.
- An accessible public complaints and response channel with multiple entry points and disaggregated reporting, implemented as an administrative service standard and, where relevant, as a condition for access to public funding.

## Gender and inclusion levers (funding criteria and administrative guidance)

The methodology actively integrates gender-responsive and inclusive approaches across the Roadmap. This includes ensuring equitable access to reclaimed water services, consideration of vulnerable and underserved groups in planning and implementation, and the inclusion of gender and social criteria in funding, permitting, and stakeholder engagement processes at all stages:

- **Stakeholder Mapping and Engagement:** Is evidence base informed by comprehensive stakeholder analysis and mapping that identified different groups of men and women? Engagement processes employed in the roadmap ensure that women, persons with disabilities, low-income/underserved communities, and small/micro-enterprises are effectively engaged with meaningful opportunities to participate, influence, and benefit from reclaimed-water initiatives.
- **Disaggregated Data Collection:** All data collection and reporting processes are structured to capture sex and age-disaggregated and vulnerability-disaggregated information, enabling the monitoring of equitable participation and impact.
- **Inclusive Consultation:** Consultation will be continuous and designed to address barriers that affect participation as well as decisionmaking, using targeted outreach and accessible venues, with documented closure of issues raised. This includes integration with formal governance mechanisms, including a grievance redress mechanism (GRM) aligned with the 3R CRew project framework, to ensure issues are formally recorded, addressed, and resolved.

- **Integration in Governance Mechanisms:** Gender expertise is formally embedded in water reuse decision-making bodies such as the Water Reuse Committee (WRC), ensuring that gender equality disability and social inclusion (GEDSI) considerations and barriers to inclusion inform all governance, permitting, and compliance processes.
- **Capacity Building:** Training and capacity-building activities make provisions for the inclusion of all groups of men and women, especially those often left behind as participants and decision makers to enhance capacity in operations and leadership in reclaimed-water governance, monitoring, and enforcement.
- **Benefit Sharing:** The Roadmap ensures that the benefits of reclaimed-water investments—such as improved irrigation, aquifer recharge, and economic incentives—are equitably distributed, with specific measures to support the most vulnerable such as female farmers, small hoteliers, and small/micro-enterprise proprietors.

### 3. Strategic orientation

This Roadmap is designed to be operational and pragmatic, by establishing a robust, defined regulatory operating model before tertiary upgrades and distribution networks come online. The Roadmap therefore locks a small number of cross-cutting design choices that apply across all governance dimensions and prevent the most common implementation failures observed in non-potable reuse programmes: unclear competent authority, self-regulation by operators, inspection gaps at end-use sites, and absence of incident protocols for treatment failures and cross-connections.

#### Reclaimed-water only, non-potable by design

The Roadmap is scoped strictly to reclaimed-water, non-potable reuse. The statutory distinction is maintained throughout: “non-potable” is treated as water made from reclaimed water that is not treated to potable standard, consistent with the Water Reuse Act.



Figure 2 – Reclaimed Water sequencing, from raw sewage to Reclaimed Water

Where aquifer recharge is referenced in this Roadmap, it means non-potable aquifer recharge; potable aquifer recharge and any indirect potable reuse pathway are out of scope for this Report.

## Investment Plan

Barbados Investment Plan's<sup>1</sup> wastewater investments create the potential supply of reclaimed water, but they do not themselves create a regulated reuse service. The Roadmap therefore treats tertiary upgrades and sewer expansion as necessary prerequisites, while treating standards, permitting, compliance systems, and end-user controls as the enabling conditions that convert infrastructure outputs into lawful and monitored non-potable reuse. Early in the Roadmap actions prioritise enforceable supporting regulations and operating procedures with focus on inclusive access and benefit-sharing.

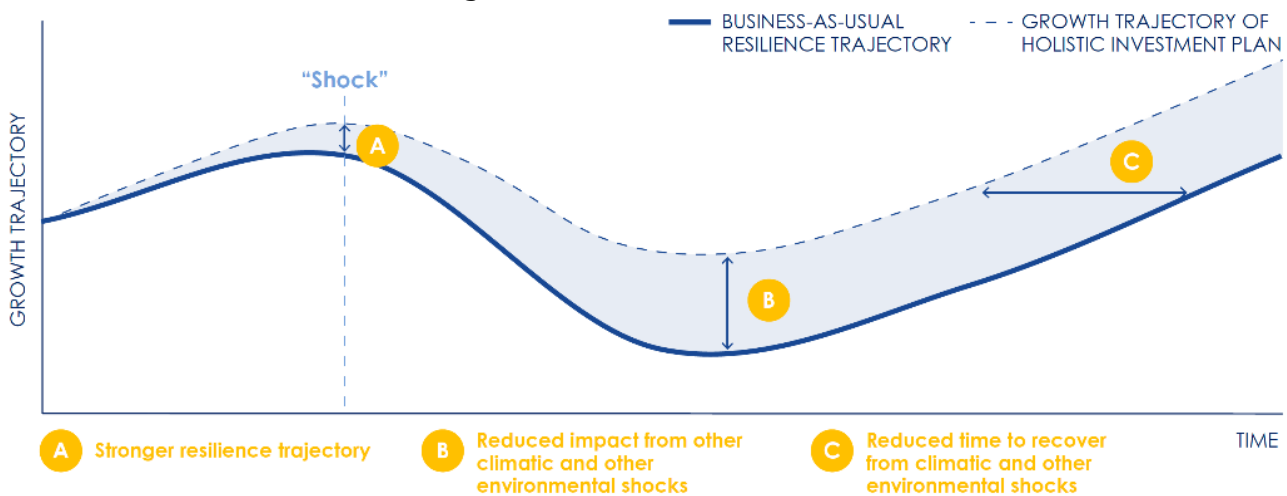


Figure 3 - Resilience and Growth Trajectory, Barbados 2035 Investment Plan

## Regulation and Delivery

To prevent conflicts of interest, promote effectiveness, and ensure equity the Roadmap adopts a clear separation between operators/service providers, and regulators/inspectors. BWA's is responsible for operations and the technical aspects, while regulatory decision-making and compliance oversight are structured to sit outside the operator function. This separation is essential for enforceability and transparency.

The integration of gender and inclusion considerations in the Roadmap promotes equality and mitigates discrimination.

- The integration of gender and social expertise as standing members or advisers on regulatory bodies
- Gender responsive regulatory bodies.
- Inclusive monitoring and enforcement through inspection and enforcement protocols that include procedures for inclusive engaging.
- Inclusive capacity building and leadership development.
- Accessible, inclusive communication and complaint pathways.

<sup>1</sup> <https://pmo.gov.bb/wp-content/uploads/2024/11/Barbados-Investment-Plan.pdf>



Figure 4 - BWA delivers and operates infrastructure

## Operating model

The Roadmap adopts fixed “hard lines” to eliminate the ambiguity flagged in the baseline regarding inspection, monitoring, and compliance responsibilities:

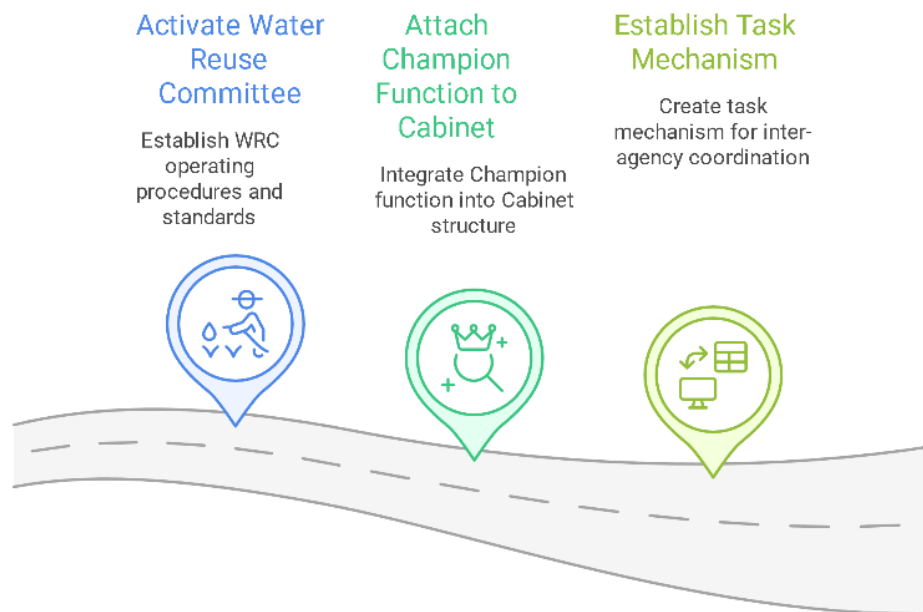
- a. Permit authority chain. Permit decisions are structured around the Water Reuse Committee as the decision forum, supported by a dedicated technical case-management secretariate to ensure applications, conditions, and monitoring obligations are handled consistently.
- b. Inspection and enforcement split. Inspection leadership is determined by asset type and exposure risk: treatment plants and major reuse infrastructure are inspected through environmental permitting compliance, while end-use premises and cross-connection/public exposure risks are inspected through environmental health controls, using one joint protocol and shared escalation triggers.
- c. Standards and monitoring ownership. The Roadmap sequences the adoption of enforceable reclaimed-water standards and a monitoring/reporting system as a short-term prerequisite, without drafting numeric limits inside D3.
- d. Incident and notification protocol. A single incident SOP is treated as mandatory system infrastructure: treatment failure, exceedances, suspected cross-connection, and public notification triggers must be pre-defined, with one public-health lead and one regulatory lead.

These hard lines are the governance “spine” for the action tables and are the basis on which institutional responsibilities will be assigned across all OECD governance dimensions. The operating model in the roadmap also eliminates the gender equality and inclusion gaps identified from the baseline by integrating the mechanism discussed prior - embedding gender and social expertise in governance, requiring inclusive monitoring and reporting, building capacity and leadership among underrepresented groups, ensuring accessible communication and complaint pathways, and mandating equitable benefit sharing and accountability.

## Immediate institutional activation steps

The Roadmap treats two institutional steps as prerequisites for delivery:

- **Water Reuse Committee activation:** The WRC is not yet active, and the Roadmap treats this as a binding constraint. Early actions will establish WRC operating procedures, decision workflow, documentation standards, and technical advisory inputs (including Finance and Gender expertise via lawful mechanisms).
- **Cabinet/OPM delivery function:** It is recommended that the Champion function is attached to the Cabinet of the Prime Minister and chairs a pragmatic task mechanism to maintain inter-agency coordination and budget sequencing discipline across the Roadmap's short- and medium-term actions.



#### 4. OECD WGIF synthesis of Deliverable 2

The baseline work confirms Barbados is not starting from zero. Core statutory mandates exist across wastewater, public health, pollution control and development control, and the Water Reuse Act, 2023 provides an enabling framework for non-potable reuse. The practical constraint is not the absence of laws in general; it is the absence of a fully operational compliance chain for reclaimed water, from permitting through standards, monitoring, enforcement, incident response, and public transparency.

The OECD Water Governance Indicator Framework (WGIF)<sup>2</sup> is an internationally used governance diagnostic tool that tests whether water policies can be implemented in practice across nine governance dimensions; we retained it to ensure full continuity between the Deliverable 2 baseline ratings and the sequenced actions in this Roadmap.

<sup>2</sup> [https://www.oecd.org/content/dam/oecd/en/topics/policy-sub-issues/water-governance/oecd\\_water-governance-indicator-framework\\_en.pdf](https://www.oecd.org/content/dam/oecd/en/topics/policy-sub-issues/water-governance/oecd_water-governance-indicator-framework_en.pdf)

Deliverable 3 therefore treats Deliverable 2 as a “delivery diagnosis” under the OECD WGIF lens: each governance dimension identifies (i) what already exists and can be used immediately, (ii) what is weak or missing in binding or operational terms, and (iii) what must be sequenced in the Roadmap so that reclaimed-water schemes can scale without self-regulation and without institutional overlap.

## Dimension-by-dimension synthesis (OECD WGIF)

- 1) Policy coherence and strategic recognition of reuse. 1.14  

The direction exists (policy intent and projects), but the Roadmap must translate intent into time-bound actions, institutional accountabilities, enforceable instruments (not only studies and pilots), that integrate responses to address the needs of women, young persons, persons with disabilities and other vulnerable and underserved groups.
- 2) Legal and regulatory framework. 0.67  

The legal base is present, but supporting regulations and gender neutral or gender blind provisions are decisive gaps: the framework is “partial” in practice because binding reuse standards and the detailed regulatory instruments required to implement them are not yet fully in force or consolidated into a predictable rule-set for operators and users. The Roadmap must ensure that gender and social inclusion are systematically incorporated into all governance, permitting, and compliance processes, moving beyond symbolic gestures to binding requirements.
- 3) Institutional roles, coordination, and the Water Reuse Committee. 0.73  

Mandates exist, but the governance centre-of-gravity is not functioning as the WRC is not operational, stakeholders’ reports overlap, while there is ambiguity on where inspection, monitoring, and enforcement responsibilities sit for reclaimed water schemes. The Roadmap must ensure that all-key decision-making bodies are in place (e.g., Water Reuse Committee, technical panels, steering groups) and equipped with gender and social expertise as standing members or advisers.
- 4) Permits, licensing pathways, and compliance processes. 0.75  

The Roadmap must lock the end-to-end workflow (permit → operating conditions → monitoring → inspection → enforcement → escalation), embedding pathways that are inclusive and gender-responsive, ensuring that reclaimed water governance in Barbados benefits all stakeholders equitably).

- 5) Standards, monitoring, and data. 0.50  
Standards are only partially codified and monitoring is not yet reuse-scheme-specific; enforcement is weak for smaller systems and monitoring transparency is insufficient to build user confidence. The Roadmap must sequence the statutory instruments and the operational monitoring/reporting system that makes standards enforceable, inclusive and visible to users.
- 6) Financing, tariffs, and economic incentives. 0.60  
Barbados lacks a reclaimed-water tariff/market structure and the law is silent on who sells reclaimed water and at what price; meanwhile, BWA's financial sustainability constraints risk undermining O&M of reuse infrastructure. The Roadmap must define the minimum economic rules required for implementation (tariff principles, cost recovery, incentives, and how these sit alongside existing levies), as well as design financial incentives, subsidies, and support mechanisms to promote equality and inclusion.
- 7) Stakeholder engagement, communication, and social acceptance. 0.60  
The barrier is not "lack of interest"; it is mistrust, the demand for guarantees, and the absence of institutionalised transparency and incident notification for reclaimed water quality. The Roadmap must establish a practical trust architecture: routine publication, clear responsibility statements, and a reuse-specific notification/escalation protocol. Stakeholder engagement and communication architecture must mandate inclusive stakeholder engagement in all water reuse planning and decision-making processes
- 8) Risk management, health protection, and emergency response. 0.70  
Large projects have strong ESIA-based risk assessment, but system-wide reuse risk governance is weak on two points: (i) standards not yet in force in reuse-specific regulations, and (ii) no explicit reuse-specific incident response/notification protocol evidenced in the reviewed legal instruments. The Roadmap must operationalise risk management beyond project documents into standing regulatory practice that is inclusive and gender responsive.
- 9) Institutional capacity, human resources, and inclusion. 0.55  
Regulatory capacity and laboratory capacity are documented bottlenecks; without targeted resourcing and a workable division of labour, enforcement will remain largely nominal. Inclusion gaps are structural (gender-neutral laws, weak requirements for disaggregated data and representation), and should be addressed through committee composition,

reporting requirements, and targeted engagement actions rather than aspirational statements.

This synthesis is the Roadmap’s “problem statement. It is the sequenced plan to make reclaimed-water reuse governable in day-to-day practice—by activating the WRC, fixing the permitting/compliance workflow, putting standards into binding instruments, creating opportunities for all staff on gender equality for regular training, on gender equality and inclusion, , monitoring/reporting and incident response system, providing regular training for and aligning financing and tariffs so the Investment Plan infrastructure can be operated and regulated credibly.

The radar chart below provides an at-a-glance picture of how Barbados’ enabling environment for reclaimed water reuse performs across the main OECD WGIF governance dimensions: it shows that foundational elements are largely in place (policy recognition, a dedicated Water Reuse Act, core institutions and permitting systems), but that weaknesses remain in the “plumbing” of the system, particularly around standards, monitoring, reporting and accountability , financing and economic incentives, gender and social inclusion considerations, and other cross-cutting capacity will need to be addressed in the roadmap phase.

Overall OECD WGIF-Based Governance Profile – Reclaimed Water Reuse in Barbados



Across the nine dimensions we assessed, we identified relatively stronger performance on high-level policy coherence and the existence of a dedicated legal and policy framework (Water Reuse Policy 2018, Water Reuse Act 2023, integration in the PDP/R2RP and climate/water strategies), and on the presence of major investment programmes (3R-CReWS, R2RP, SCSTP upgrades, ESIA and pre-feasibility work). However, the chart also confirms stakeholder feedback that implementation remains incomplete and uneven: detailed reuse regulations and standards

are not yet enacted; roles between EPD, EHD, BWA and the Water Reuse Committee are not fully operationalised; enforcement and laboratory capacity are strained; tariff and incentive mechanisms for reclaimed water are still under development; and gender, equity and broader social inclusion are only weakly reflected in current projects but not institutionalised outside of these projects in the wider operational mechanisms and practices of the sector.

Overall, the ratings in the radar charts align closely with these perceptions: the enabling framework exists on paper, but its practical functioning, inclusiveness and social licence are still under construction.

### Roadmap for each dimension

Roadmap actions are presented per OECD WGIF governance dimension to keep a straight line from the Deliverable 2 diagnostic to an implementable action plan: for each dimension, we set out concrete actions, lead/supporting institutions, timing (0–2 years / up to 5 years / to 2035), dependencies, legal hooks, and (where it changes siting/permit conditions) Zone relevance. This follows the OECD WGIF intent that traffic-light/radar diagnostics should translate into a forward-looking action plan with named actors, time horizons, linkages to existing strategies, and an accountability mechanism with scheduled monitoring and periodic re-assessment.

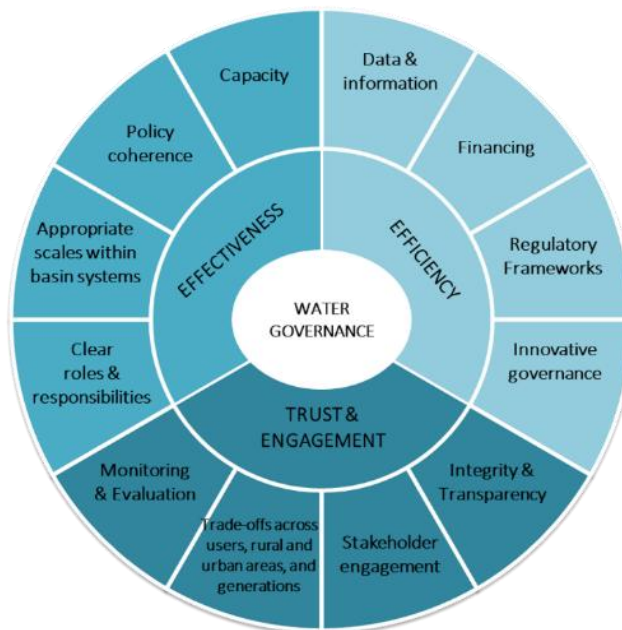


Figure 5 - OECD Principles on Water Governance

Each roadmap action assigns one Lead Institution that is accountable for delivery. Other entities are listed as Supporting Institutions.

## Regulatory separation of roles (who inspects and who enforces):

- BWA (Operator/Service Provider): operates treatment and distribution; must monitor, keep records, and immediately report exceedances.
- MoH/EHD (Public Health Regulator): sole lead for health-based compliance and enforcement (inspections of reuse users/sites, stop-use orders, public health directives).
- EPD (Environmental Regulator): sole lead for environmental protection functions (source protection conditions where relevant, environmental performance oversight, coordination on standards content).
- CMO: trigger authority for public health emergency escalation (advisory/directive), not routine inspection lead.

## Institutional Responsibility Matrix

Function in the reclaimed-water chain	Lead institution	Supporting institutions	Hard rule
Treatment and distribution operations (including SCADA/operations, field maintenance, customer connections)	Barbados Water Authority (BWA)	Licensed operators/contractors; permitted end-users	BWA is the Operator/Service Provider and a regulated entity under permits; it must not be the primary regulator of its own compliance.
Public health inspection and enforcement (end-use sites, dual plumbing, cross-connection prevention at premises, health orders)	Ministry of Health & Wellness – Environmental Health Department (MoH/EHD)	Chief Medical Officer (CMO); Police (as needed)	MoH/EHD is the Health Regulator for compliance actions that protect public health; it must not delegate routine enforcement to BWA.
Environmental and social oversight and compliance for the establishment and operations of reclaimed-water schemes	Environmental Protection Department (EPD)	MoH/EHD; WRC; Planning and Development Department	EPD is the Environmental Oversight and compliance authority for reclaimed-water schemes; it must not be displaced by

Function in the reclaimed-water chain	Lead institution	Supporting institutions	Hard rule
(environmental conditions, environmental and social impacts, monitoring and reporting, mitigation planning, compliance actions, administrative penalties)			operational entities. For projects with significant social implications the Town and Country Development Planning Office (Planning and Development Department) plays a key role.
Permit decision-making for wastewater treatment permits to produce non-potable reclaimed water for sale	Water Reuse Committee (WRC)	EPD (technical secretariat support as required); MoH/EHD; BWA; Planning Development Dept; Bureau of Gender Affairs	The WRC is the statutory decision-maker for permit issuance/variation/suspension/revocation; it must apply gender sensitive standard decision templates and recorded reasons.
Planning and development control integration (siting constraints, development permissions, zoning conditions)	Planning and Development Department (Director Planning and Development, Planning function)	EPD; BWA; MoH/EHD; MOA	Planning must apply Zones A-E as a siting/conditioning lens for developments that create reclaimed-water schemes or high-risk end-uses. The MOA as a key stakeholder and technical source in decisions around planning and zoning for agricultural land use and safe water reuse for irrigation.
Public health emergency escalation and public advisories	Chief Medical Officer (CMO)	MoH/EHD; EPD; BWA; WRC; Government Information Service	CMO leads health emergency escalation and public advisories; CMO is not the routine inspection lead. The WRC when

Function in the reclaimed-water chain	Lead institution	Supporting institutions	Hard rule
			established will be the multi-agency knowledge holder.
Tariff policy oversight and fiscal sequencing	Ministry of Finance	BWA; WRC; Bureau of Gender Affairs; FTC; NOW and MENS (where applicable)	Finance leads the tariff/economic model and budget sequencing; BWA supplies cost inputs; regulators do not set tariffs for the operator. The WRC, NOW and MENS and Bureau of Gender Affairs as advisory point sources to ensure tariffs are fair and support incentives for equal and inclusive participation.
Gender equality integration (authority levers, mandatory reporting, barrier removal)	Bureau of Gender Affairs	Ministry of Finance; WRC; MoH/EHD; BWA; NOW and MENS	Gender equality measures must be embedded in decision outputs (permits, tariffs, training requirements), not treated as voluntary participation.

#### 4.1 OECD WGIF Dimension 1 — Policy coherence and strategic recognition of reclaimed-water reuse

Baseline signal (from D2.1): strong formal recognition and investment-pipeline relevance; gaps are weak measurable targets/monitoring, fragmented cross-sector decision rules, incomplete trust architecture, and weak in the integration of gender considerations as well and social equity and integrity safeguards. Scale-fit implementation will be handled through Zones A–E as a risk-tiering and siting lens (not basin institutions).

Action description	Lead / supporting	Timeframe	Legal / policy linkage	Zone relevance
To enhance executive commitment and ensure high-level visibility.	Lead: Cabinet Office. (attached delivery	Short (0–2y)	Cabinet decision / minute; Barbados 2035 Investment	Indirect

Action description	Lead / supporting	Timeframe	Legal / policy linkage	Zone relevance
	function under Cabinet of the Prime Minister) Support: Ministry of Finance; BWA; EPD; MoH/EHD; WRC		Plan for Prosperity & Resilience	
Publish a national reclaimed-water end-use policy statement that includes requirements to assess and addresses gender and social impacts for all groups permitted and potential end-users, ensuring equitable access and benefit-sharing (permitted end-uses, exclusions, public risk posture) consistent with statutory definitions	Lead: EPD. Support: WRC; MoH/EHD; BWA; Ministry of Agriculture; Tourism stakeholders	Short (0–2y)	Ministerial policy statement under the Water Reuse Act framework	Indirect
The Champion: Establish a Cabinet-attached Reclaimed Water Delivery Function to chair an operational task mechanism for sequencing and resolving cross-ministry delivery blockages.	Lead: Cabinet/OPM. Support: BWA; MoH; EPD; Finance; Planning; Agriculture	Short (0–2y)	Barbados 2035 Investment Plan (wastewater/reuse investment commitments).	Indirect (ensures consistent application of zoning constraints across projects)
Adopt a single Government scope statement confirming non-potable reclaimed-water reuse only (no DPR/IPR) and requiring consistent use of statutory definitions and gender/social equality	Lead: MoH. Support: Cabinet function; BWA; EPD; GIS/Comms; Bureau of Gender Affairs	Short (0–2y)	Water Reuse Act, 2023	Indirect

Action description	Lead / supporting	Timeframe	Legal / policy linkage	Zone relevance
guidelines/criteria in programme decisions and communications.				
Set quantified national reclaimed-water targets and an annual reporting frame tied to Investment Plan milestones (volumes, connections/end-uses, compliance indicators) with public reporting responsibility assigned to facilitate reporting that is informed by data that is disaggregated by gender, age, disability and social/economic status.	Lead: MoH + BWA. (technical). Support: EPD; Finance; Planning; Bureau of Gender Affairs	Short to Medium (0–5y)	Policy anchor: Barbados 2035 Investment Plan. Supporting legal hook for transparency: Water Reuse Act, 2023 (Wastewater Register; publication in Official Gazette of permit holders).	Yes (targets and reporting should be disaggregated where zoning changes siting/permit conditions)
Issue a cross-sector Priority Uses and Decision Criteria Note that standardises screening and routing of reuse proposals into the relevant permitting pathways, with mandatory screening for gender/social screening for all permit applications.	Lead: MoH + EPD. Support: BWA; Planning; Agriculture; Tourism; Bureau of Gender Affairs	Short (0–2y)	Water Reuse Act, 2023 (permit regime; Water Reuse Committee functions to consider permit applications and monitor permit holders). Policy anchor: National Water Reuse Policy (2018).	Yes (criteria must state where zoning elevates conditions)
Formalise groundwater protection zoning <sup>3</sup> (Zones A–E) “scale-fit” implementation through a Zones A–E decision tree used by permitting and development control,	Lead: Planning + MoH. Support: BWA (validation); EPD.	Short (0–2y)	2020 Water Protection and Land Use Zoning Policy (Zones A–E framework).	Direct

<sup>3</sup> In this Roadmap, “zoning” refers only to the groundwater protection zones (A–E) used for water protection and sanitation controls, not to general land-use zoning categories under the planning framework.

Action description	Lead / supporting	Timeframe	Legal / policy linkage	Zone relevance
validated by BWA and EPD, to apply risk-tiered siting screens and permit conditions consistently.				
Establish a minimum trust architecture as an implementation requirement that includes: routine publication of monitoring summaries, clear incident communications triggers, and a predictable user feedback channel that is accessible to all groups of men and woman especially to the most vulnerable and underserved. linked to enforcement.	Lead: MoH (EHD) + EPD. Support: BWA; WRC (once active), GIS	Medium (0–5y)	Water Reuse Act, 2023 (register obligations and oversight; Committee monitoring role; Wastewater Register and Gazette publication of permit holders)	Indirect (higher-protection zones increase sensitivity and the need for visible compliance)
Embed equity screening as a decision requirement: reclaimed-water tariff/incentive and siting decisions must document affordability and /distributional impacts for different groups for stakeholders before Finance/Cabinet approval. This should be aligned with the 3R CReW RAFF framework to ensure consistency with project-level financial and social inclusion criteria	Lead: Finance + MoH. Support: BWA; Bureau of Gender Affairs (advisory).	Medium (0–5y)	Administrative instrument: Cabinet/Ministerial decision on appraisal template (non-statutory). Evidence base: D2.1 gender/inclusion findings	Yes (zoning-driven requirements can shift costs/benefits)

Action description	Lead / supporting	Timeframe	Legal / policy linkage	Zone relevance
Adopt a standard “zoning relevance” application note for reclaimed-water schemes and high-risk end-users, requiring assessment of gender and social inclusion impacts in all zoning and siting decisions, using Zones A–E as screening and conditioning lens	Lead: Planning and Development authority. Support: MoH/EHD; BWA; WRC	Medium (0–5y)	Physical Development Plan zoning framework; 2020 Water Protection and Land Use Zoning Policy	All zones.

#### 4.2 Dimension 2 — Legal and regulatory framework

The Water Reuse Act, 2023 provides a clear legal basis for non-potable reuse, but the binding instruments that make reuse operational (regulations, enforceable quality standards, and unambiguous compliance architecture) remain the main legal gap to close. This is explicitly reflected in the baseline findings: enabling powers exist, but detailed reuse regulations/standards are still pending; draft effluent standards under the Marine Pollution Control Act, Cap. 392A were not given legal force; and inspection/compliance responsibilities under the Water Reuse Act, 2023 remain legally ambiguous.

A stark observation from the baseline findings was the absence of explicit gender equality provisions in the Water Reuse Act or related policies and associated legislation. Gender and diversity clauses are missing, risking continued exclusion of women, youth, and marginalized groups. The Act has been passed but the review is still timely as the regulations have not been drafted, creating an opportunity for evidenced based identification of entry point for gender mainstreaming during the drafting of the regulations. These entry points are highlighted in the Roadmap.

Action description	Lead / supporting	Timeframe	Legal / policy linkage	Zone relevance
<p>Draft, consult, and bring into force the first Water Reuse Regulations (Statutory Instrument) to operationalise non-potable reclaimed-water reuse under the Water Reuse Act, 2023, covering at minimum: permitted uses by risk/end-use class; treatment and performance standards pathway; monitoring, reporting and laboratory requirements; cross-connection prevention and plumbing identification (colour coding, signage, commissioning tests); storage and distribution controls; mandatory operating procedures, contingency planning and incident notification; training/certification requirements; prescribed forms, fees and an administrative penalties framework to support compliance. As a technical drafting starting point, use the 2006 draft regulations package only as reference material and align the final instrument to the 2023 Act structure and the agreed competent-authority split. The first Regulations should explicitly require gender and social inclusion as a foundational principle in all aspects of reclaimed water governance:</p> <ul style="list-style-type: none"> <li>• Include gender equality and social inclusion provisions.</li> </ul>	<p>Lead: Ministry of Health. Support: Attorney General / Chief Parliamentary Counsel; WRC; MoH/EHD; BWA</p>	<p>Short (0–2 yrs)</p>	<p>Water Reuse Act, 2023 (regulation-making power)</p>	<p>All zones - with particular attention to areas where vulnerable groups are concentrated or where zoning decisions may have disproportionate negative or positive impacts</p>

Action description	Lead / supporting	Timeframe	Legal / policy linkage	Zone relevance
<ul style="list-style-type: none"> <li>Promote legal protection for vulnerable and underserved groups (including women, youth, persons with disabilities (PWDs), ethnic and social minority groups, low-income households, informal settlers, landless farmers, small and medium enterprises (SMEs), small hoteliers, and operators in the creative industries), ensuring equitable access and protection from disproportionate impacts.</li> </ul>				
<p>Issue standard permit templates and decision reasons templates that embed enforceable conditions and stop-supply triggers (predefined, enforceable conditions that require the operator/permit holder to immediately cease supplying reclaimed water). It should also include:</p> <ul style="list-style-type: none"> <li>Enforceable conditions for gender equality and social inclusion, including equitable access and benefit-sharing</li> <li>Requirements for inclusive training and capacity-building on reclaimed water use, safety, and permitting processes,</li> </ul>	<p>Lead: WRC gender expertise on the committee will have a mandatory advisory role Support: EPD; MoH/EHD; BWA</p>	<p>Short (0–2 yrs)</p>	<p>Water Reuse Act, 2023 (permit functions)</p>	<p>All zones</p>

Action description	Lead / supporting	Timeframe	Legal / policy linkage	Zone relevance
<p>ensuring accessibility and participation of all stakeholder groups</p> <ul style="list-style-type: none"> <li>Tariff and incentive to mandate documented gender and social impact assessments before approval</li> </ul>				
<p>Gazette a Ministerial Order amending the WRC Schedule to include Ministry of Finance and Bureau of Gender Affairs participation (mandatory seats). The later as is a statutory advisor in all relevant decision-making bodies, including the Water Reuse Committee (WRC).</p>	<p>Lead: Minister responsible for environment Support: WRC; Ministry of Finance; Bureau of Gender Affairs; AG/CPC</p>	<p>Short (0–2 yrs)</p>	<p>Water Reuse Act, 2023 (Schedule amendment by Order)</p>	<p>Indirect</p>
<p>Codify reclaimed-water quality standards in the new Regulations for the non-potable end-uses that will be authorised under the first implementation phase (priority: agricultural irrigation and non-potable aquifer recharge; additional non-potable end-uses added by schedule only where demand and plumbing/cross-connection controls are validated). The development and validation of these standards should be undertaken in coordination with the Barbados National Standards Institution to ensure alignment with national standardisation processes.</p>	<p>EPD (standards technical lead) with MOH/EHD (public health review); BWA (operational feasibility)</p>	<p>Short– Medium (0–5 yrs)</p>	<p>Legal basis: Water Reuse Act, 2023 (regulation-making power and permit/condition enforcement). Implementing instrument: Water Reuse Regulations (Statutory Instrument) prescribing reclaimed-water quality schedules by end-use/risk class. Technical source: reclaimed-water</p>	<p>Zone-sensitive where non-potable aquifer recharge is pursued (Zones A–D) and where irrigation siting intersects groundwater protection requirements. Zoning decisions to assess and mitigate gender and social equity impacts, with</p>

Action description	Lead / supporting	Timeframe	Legal / policy linkage	Zone relevance
			quality values currently set out in technical studies (e.g., AECOM 2020 recommendations) are non-binding guidance unless incorporated into the SI schedules or made enforceable through permit conditions pending gazettal.	targeted outreach and consultation for affected communities.
Legally reconcile the “reuse production” regime with the “effluent discharge” regime to avoid parallel/duplicative approvals and enforcement gaps: (i) align permit conditions and definitions; (ii) specify when a facility moves from discharge-only compliance to reuse compliance; (iii) ensure discharge standards and reuse standards do not conflict.	EPD (marine pollution/discharge interface) + MOH (reuse Act administration) + AG (legal drafting); BWA (WWTP operator inputs)	Medium (3–5 yrs)	Marine Pollution Control Act, Cap. 392A (effluent/discharge controls) + Water Reuse Act, 2023 (reuse controls); baseline notes draft effluent standards were not given legal force and harmonisation remains partial.	Higher priority for Zones A–C where tighter groundwater protection conditions should be reflected consistently across discharge and reuse permissions
Remove legal ambiguity on inspections/compliance by hard-coding the compliance architecture into subsidiary	Minister responsible for the administration of the	Short (0–2 yrs) for Regulations;	Water Reuse Act, 2023 (permits and roles) — baseline records legal	All zones; explicit “enhanced compliance”

Action description	Lead / supporting	Timeframe	Legal / policy linkage	Zone relevance
<p>legislation (and, only if required, targeted amendment): specify competent authority for (i) facility inspection, (ii) reclaimed-water quality compliance, (iii) user-site compliance (e.g., dual plumbing/cross-connection), (iv) enforcement actions and stop-use powers, and (v) incident reporting/notification chain.</p> <p>Requiring that all inspection, compliance, and enforcement protocols incorporate gender and social inclusion criteria and authorities are mandated to consult with the Bureau of Gender Affairs and other relevant bodies/actors when developing and implementing compliance procedures and advising on disaggregated reporting (by gender, age, disability and different groups of stakeholders).</p>	<p>Water Reuse Act (making of Regulations/SI) Attorney General / Chief Parliamentary Counsel (drafting); EPD; MoH/EHD; BWA; WRC (technical validation)</p>	<p>Medium (3–5 yrs) if Act amendment is required</p>	<p>ambiguity on inspection/monitoring/compliance allocation between PS Health/CMO, Director EPD and WRC.</p>	<p>conditions for Zones A–B where risk tolerance is lowest, bearing in mind that where zoning decisions may have disproportionate impacts on different affected groups</p>
<p>Embed Water Zones A–E into development control and sanitation/reuse permitting triggers as standard conditions: require planning authorities to “have regard to” the Water Zones Order and related BWA orders/regulations when granting permissions; make zoning a mandatory screen for siting of reuse infrastructure, large onsite systems, and high-flow developments.</p>	<p>Planning authority (Chief Town Planner / Planning &amp; Development) with BWA + EPD + MOH</p>	<p>Short–Medium (0–5 yrs)</p>	<p>Amendments linking planning controls to the Barbados Water Authority (Water Zones) Order, 2021 (as reflected in the amendments package); zoning policy document provides the</p>	<p>Directly zone-driven (A–E); apply differentiated conditions by zone</p>

Action description	Lead / supporting	Timeframe	Legal / policy linkage	Zone relevance
			technical basis for zone conditions.	
<p>Create a clear economic-legal architecture for reclaimed-water service delivery: define who may sell/supply reclaimed water; tariff setting approach; cost recovery; treatment of large self-supplying operators; and enabling incentives (where existing fiscal tools are under-used). At minimum, the tariff workstream must define:</p> <ul style="list-style-type: none"> <li>• tariff basis (volumetric and/or fixed charge; connection fee policy; metering requirements)</li> <li>• differentiated tariff classes by end-use (irrigation vs MAR vs other non-potable uses) and by quality class where relevant</li> <li>• treatment of strategic users (e.g., small farmers) and any subsidy principle (explicit and budgeted, not implicit)</li> <li>• cost allocation rules for WWTP O&amp;M, reuse pumping/storage, and distribution network O&amp;M</li> <li>• compliance cost recovery (sampling/testing, inspections) and whether these are</li> </ul>	<p>Ministry of Finance (economic policy) with BWA (service model) + MOH/EPD (public interest safeguards)</p>	<p>Medium (3–5 yrs)</p>	<p>Baseline identifies silence/fragmentation on who sells reclaimed water and at what price, and under-use of fiscal incentives; Utilities Regulation Act not actively applied to water services (as per baseline).</p>	<p>Not zone-specific, but prioritise pricing/incentives in Zone A demand centres where supply constraints and infrastructure sequencing are most acute</p>

Action description	Lead / supporting	Timeframe	Legal / policy linkage	Zone relevance
<p>embedded in tariffs or charged as regulatory fees</p> <ul style="list-style-type: none"> <li>governance (who proposes, who approves, and review cadence).</li> <li>Create fiscal incentives to promote equal participation</li> <li>Embed the Bureau of Gender Affairs to have a statutory advisory role in all tariff, subsidy, and incentive related decisions, and mandate disaggregated reporting) on uptake and impact</li> </ul>				
<p>Establish an explicit appeal/review mechanism for Water Reuse permitting decisions (administrative review + escalation route), to reduce investor/operator uncertainty and improve procedural fairness. If the Act is silent, implement through Regulations as a first step. To create a transparent, accessible, and equitable appeal and review mechanism for Water Reuse permitting decisions, procedural fairness, accountability, and the systematic - gender and social equality considerations will be embedded at every stage,</p> <ul style="list-style-type: none"> <li>In Codifying the process</li> </ul>	<p>MOH (administrative owner)</p>	<p>Medium (3–5 yrs)</p>	<p>Baseline indicates no clear appeal/review mechanism identified for Water Reuse Act permitting decisions in reviewed texts.</p>	<p>Not zone-specific, but ensure heightened outreach and support in Zones A–C where vulnerable groups may be concentrated and where zoning decisions may have disproportionate and unequal impacts (negative and positive).</p>

Action description	Lead / supporting	Timeframe	Legal / policy linkage	Zone relevance
<ul style="list-style-type: none"> <li>• Embedding gender and social equality safeguards</li> <li>• In requirements for the collection and publication of sex-disaggregated and vulnerability-disaggregated data on appeals, outcomes, and participation rates</li> </ul>				
<p>Close regulatory coverage gaps for non-BWA and decentralised systems that produce reclaimed water (e.g., hotels, private WWTPs), including interface with sludge handling and septic-related responsibilities, so “small plants” are not left to voluntary self-regulation:</p> <ul style="list-style-type: none"> <li>• Mandate gender and social inclusion criteria in all regulations and compliance protocols.</li> <li>• Institute - targeted outreach and consultation with affected communities; collection and publishing of disaggregated data on participation and outcomes; capacity building on GESI for operators and regulators; and mechanisms for equitable transition for all operators.</li> </ul>	<p>EPD + MOH/EHD (regulatory coverage) with BWA (system interface)</p>	<p>Medium (3–5 yrs)</p>	<p>Baseline notes partial coverage and “grey area” on responsibility for monitoring septic tanks/private sludge haulers; also notes fragmented monitoring where smaller plants rely on voluntary self-regulation. Water Reuse Act 2023; D2.2 stakeholder engagement framework; Gender Affairs statutory advisory role</p>	<p>Zone-sensitive where onsite systems interact with groundwater protection conditions (especially Zones A–C)</p>

### 4.3 Dimension 3 — Institutional roles, coordination, and decision architecture

Statutory mandates exist, but institutional execution is weak because roles overlap/are ambiguous for reuse permitting, inspections and compliance, and the Water Reuse Committee (WRC) is not yet operational.

To prevent regulatory rivalry from stalling implementation, it is recommended that the allocation of responsibilities between the competent authorities (WRC for permit decisions, MoH/EHD for public-health inspections and stop-use orders at end-user sites, EPD for environmental compliance oversight and scheme enforcement, and BWA as the regulated operator) be operationalised through a single joint inspection protocol and a single incident-handling chain, while preserving the statutory mandates of each authority.

Action description	Lead / supporting	Timeframe	Legal / policy linkage	Zone relevance
Constitute the WRC and adopt its operating procedures that mandate gender and social equity expertise as standing advisers, require conflict-of-interest disclosures, and guarantee representation from marginalized groups; decision register, and conflict-of-interest recording/recusal rules	Lead: Minister responsible under the Water Reuse Act. Support: EPD; MoH/EHD; BWA; Ministry of Finance; Bureau of Gender Affairs.	Short (0–6 months)	Water Reuse Act: establishment of WRC and Schedule governance provisions; D2.1 consultation record notes WRC “not yet operational / haven’t met yet”. Bureau of Gender Affairs advisory role	Not zone-specific.
Adopt an EHD–EPD Joint Inspection & Case-Handling Protocol for reclaimed-water systems (inspection scopes, evidence standards, referral rules, and enforcement handoffs), with mandatory gender and social equity integration, inclusive engagement and	Water Reuse Committee (WRC) Secretariat approved by the WRC and used as the common operating procedure across Government.”	Short (0–2 years)	Water Reuse Act, 2023 (roles; administration; compliance); Government administrative direction via WRC operating procedures with Bureau if Gender Affairs advisory role.	All zones; enhanced focus Zones A–B.

Action description	Lead / supporting	Timeframe	Legal / policy linkage	Zone relevance
communication, disaggregated data collection, accessible complaint mechanisms, joint training, and transparent decision-making.				
Adopt and publish the Institutional Responsibility Matrix (Operator vs Regulators) as binding operating doctrine for reclaimed-water reuse	Lead: OPM. Support: EPD; MoH/EHD; BWA; WRC; Planning and Development authority.	Short (0-2 years)	Policy directive note; Roadmap governance section	Not zone-specific. Provisions to enhance and promote inclusion provisions apply island-wide and should be prioritised in areas with vulnerable groups.
Issue a WRC Operating Procedure (decision workflow and recordkeeping), with provision for gender and social equity: application intake, technical review routing, decision templates, permit-condition drafting protocol, complaint handling using existing GRM, and time limits for decisions.	Lead: WRC (once constituted). Support: EPD Director; MoH/EHD; BWA; Planning and Development authority; Bureau of Gender Affairs.	Short (0-2 years)	Water Reuse Act, 2023: WRC functions (permit determinations, suitability of premises, monitoring permit holders, complaints).	Indirect (procedure must require zoning screen where relevant).
Formalize the allocation of responsibilities between the competent authorities and document it in writing (one-page institutional allocation note	Lead: Cabinet/OPM delivery function + MoH. Support: EPD; BWA; Planning.	Short (0-2 years)	Water Reuse Act, 2023 establishes the WRC as permit decision forum and assigns administrative	Indirect.

Action description	Lead / supporting	Timeframe	Legal / policy linkage	Zone relevance
<p>used across Government): the WRC is the permit decision forum; BWA is the operator/permit holder for treatment and distribution where applicable; MoH/EHD is the lead public-health regulator for exposure controls (end-user inspections, cross-connection prevention, stop-use orders, public advisories via the CMO); and EPD is the lead environmental regulator for scheme compliance casework (permit compliance monitoring, enforcement actions, and coordination of standards drafting), with mandatory incident handoffs between MoH/EHD and EPD. In addition, the document will formularise the integration of social and gender expertise, equality, inclusion and anti-discriminatory practices, and the advisory role of the Bureau of Gender Affairs in all relevant procedures and operation.</p>			<p>functions to the EPD Director; public-health exposure control and inspections fall within MoH/EHD’s statutory public-health mandate; D2.1 records overlap/ambiguity requiring a written split to avoid self-regulation and responsibility gaps.</p>	

Action description	Lead / supporting	Timeframe	Legal / policy linkage	Zone relevance
Establish a standing Technical Review Panel mechanism supporting WRC decisions (not a new body): formalise which agencies must provide technical concurrence for specific permit types (e.g., BWA for network interfaces; Planning for development control; EPD for environmental risk; MoH/EHD for public health).	Lead: WRC Secretariat (hosted through EPD administration). Support: BWA; MoH/EHD; Planning; Agriculture; Tourism reps as relevant.	Short (0–2 years)	Water Reuse Act: WRC powers to require documents/reports and make inquiries; D1 institutional table supports multi-agency routing.	All zones
Develop, adopt, and publish robust (inclusive of integrating gender, inclusion, social, and anti-discriminatory provisions) conflict-of-interest and confidentiality controls for WRC decisions (mandatory disclosure recording in minutes; recusal; confidentiality handling using existing GRM; publication rule for non-sensitive outputs).	Lead: WRC Chair/Secretariat. Support: AG/Chief Parliamentary Counsel (legal drafting and review, Bureau of Gender Affairs (statutory adviser and reviewer). Department of Family Services (advisory input on vulnerable groups), Ministry of People Empowerment and Elder Affairs (advisory input on anti-discrimination)	Short (0–2 years)	Water Reuse Act, 2023: disclosure of interest + obligation to secrecy + Minister’s directions, National Gender Policy.	Not zone-specific. but enhanced confidentiality and anti-discrimination safeguards should be prioritised in areas (zones) where vulnerable or marginalised groups are concentrated or where zoning decisions may have disproportionate impacts.

Action description	Lead / supporting	Timeframe	Legal / policy linkage	Zone relevance
<p>Agree to the use of a client validation protocol (integrated with gender, inclusion, social and non-discriminatory provisions) for: (i) zoning interpretation narrative for reuse permitting, and (ii) the institutional allocation note. Obtain written BWA technical confirmation of factual/engineering accuracy and operational feasibility; this confirmation is a technical verification only and does not create a veto or override any regulator’s statutory mandate or decision authority.</p>	<p>Lead: BWA (technical concurrence) + MoH/EPD (issuance).</p> <p>Support: Bureau of Gender Affairs (statutory adviser and reviewer), Department of Family Services (advisory input on vulnerable groups), Ministry of People Empowerment and Elder Affairs (advisory input on anti-discrimination), Attorney General/Chief Parliamentary Counsel (legal drafting and review)</p>	<p>Short (0-2 years)</p>	<p>Project governance requirement (client sign-off on zoning narrative and institutional allocations) + Water Reuse Act 2023 (roles (EPD administration; WRC functions, compliance)</p> <p>National Gender Policy.</p>	<p>Yes (zoning narrative is zone-driven). Prioritised in zones where vulnerable or marginalised groups are concentrated or where zoning decisions may have disproportionate impacts.</p>

#### 4.4 Dimension 4 — Permits, licensing pathways, and compliance processes

The Water Reuse Act, 2023 creates a dedicated wastewater treatment permit regime, but it is not yet fully operational because the WRC is not functioning, competent authority lines for permits/inspections/compliance are contested, and there are no published permitting guidelines or codified linkages to environmental discharge licensing and planning/EIA approvals; end-user access and transition arrangements for existing operators are also unclear. Further it is silent on provisions to facilitate inclusion, equality and non-discrimination provisions.

Action description	Lead / supporting	Timeframe	Legal / policy linkage	Zone relevance
Bring the permit regime “online” by issuing the statutory permitting guidelines required by the Act that standardise application forms, required documents, processing steps, inspection triggers, permit conditioning template, and renewal process) and integrate provisions that promote inclusion, equality and non-discrimination.	Lead: Director, EPD (issue guidelines) with approval of WRC; Support: MoH/EHD, Planning, BWA, key representative bodies on WRC Bureau of Gender Affairs, Department of Family Services (advisory input on vulnerable groups), Ministry of People Empowerment and Elder Affairs (advisory input on inclusion and anti-discrimination).	Short (0-2 yrs)	Water Reuse Act 2023 (permit workflow), National Gender Policy	Indirect (guidelines must embed mandatory zoning screen where relevant and with enhanced equity and inclusion safeguards prioritised in zones where vulnerable or marginalised groups are concentrated or where zoning decisions may have disproportionate impacts.
Integrate Zones A-E screening into every permit file with requirements that each permit application, review and decision is technically and legally sound as well as actively protects and promotes gender equality, social inclusion, and non-discrimination.	Lead: WRC (inclusive of the Bureau of Gender Affairs as the statutory advisor and reviewer). Support: Planning and Development authority; EPD; MoH/EHD; BWA.	Short (0-2 yrs)	2020 Water Protection and Land Use Zoning Policy, Water Reuse Act, 2023; PDP zoning framework	All zones.

Action description	Lead / supporting	Timeframe	Legal / policy linkage	Zone relevance
Establish a one-stop permit workflow (process, not a new entity) that formally integrates: (i) Water Reuse Act wastewater treatment permit, (ii) EPD effluent discharge licensing where discharge remains/continues, and (iii) Planning/EIA conditions for new/expanded facilities and distribution infrastructure, to prevent duplication, inequalities, discrimination and gaps.	Lead: WRC Secretariat (administration through EPD) + Planning; Support: EPD (marine pollution/discharge), MoH/EHD, BWA	Short-Medium (0-5 yrs)	Water Reuse Act 2023 (permit workflow, regulation-making powers), National Gender Equality Policy (draft, not yet formally approved)	Direct where siting and conditions vary by zone (especially A-C). Mindful that zoning decisions may have disproportionate impacts
Commissioning gate for reclaimed-water pilots: no reclaimed-water distribution pilot may go live until the producing WWTP demonstrates stable compliance with the applicable reclaimed-water quality thresholds for the intended end-use(s) over a defined validation period, supported by an approved sampling plan and accredited testing results. The commissioning certificate becomes a condition precedent within the reuse permit.	Water Reuse Committee (WRC)	Short (0-2 years)	Water Reuse Act, 2023 (permits/authorisations and conditions); Water Reuse Regulations/SIs (once gazetted); interim permit conditioning using AECOM thresholds (see CA-3 bridge action already in D3 tables).	Zone-sensitive where managed aquifer recharge is pursued (Zones A-D). For irrigation pipelines and storage sited within groundwater protection areas, apply enhanced validation frequency for Zones A-B.

Action description	Lead / supporting	Timeframe	Legal / policy linkage	Zone relevance
Introduce risk-tiered permit classes and standard permit conditions inclusively tailored to all in-scope end-uses (e.g., micro, small and large operators in the formal and informal sector in irrigation/landscape, industrial, construction/dust, toilet flushing/dual plumbing, managed non-potable aquifer recharge), so permitting is predictable and proportionate rather than ad hoc.	Lead: WRC (permit conditions, Bureau of Gender Affairs ) with EPD technical drafting; Support: MoH/EHD (health conditions), BWA (operational feasibility). Ministry of Agriculture, Tourism stakeholders, Small Business Association, Attorney General/Chief Parliamentary Counsel (legal drafting and review), Ministry of People Empowerment and Elder Affairs (advisory input on anti-discrimination)	Short-Medium (0-5 yrs)	Water Reuse Act, 2023 (permit issued subject to terms/conditions specified by the Committee), National Gender Policy.	Yes (permit class and conditions must tighten where zoning increases groundwater protection sensitivity). Equity and inclusion safeguards to be tailored where vulnerable or marginalised groups are concentrated
Create a clear end-user pathway that does not require each end-user to “apply as an operator”: standard purchase/use agreements, end-user compliance obligations (storage, signage, cross-connection controls), and	Lead: MoH/EHD (end-user health compliance) + WRC (standard conditions); Support: BWA (service agreements), EPD	Short-Medium (0-5 yrs)	Water Reuse Act 2023 (service agreements, compliance obligations, inspection protocols), National Gender Policy	Indirect (zoning affects where certain end-uses and onsite practices are acceptable and what safeguards apply).

Action description	Lead / supporting	Timeframe	Legal / policy linkage	Zone relevance
a compliance inspection protocol for user sites (especially dual plumbing).				
Develop, formalise, and publish transition arrangements for existing or emerging reuse operators, including micro, small, and large operators in agriculture, tourism, industry, and other sectors to migrate into the Water Reuse Act regulatory regime: interim recognition, compliance milestones, and a cutover date after which operation/sale without a permit is enforced.	Lead: WRC (statutory advisers on Gender, Agriculture, Tourism, Small Business). + EPD Director; Support: MoH/EHD, Ministry of People Empowerment and Elder Affairs (advisory input on inclusion and anti-discrimination).	Short-Medium (0-5 yrs)	Water Reuse Act 2023 (transition arrangements, permit regime), National Gender Policy	Zone-sensitive for onsite/private systems in Zones A-C. Enhanced safeguards where there are disproportionate impacts
Formalise service standards for permitting administration (processing times, completeness checks, inspection scheduling, re-inspection triggers, and decision notice templates) so the regime is accessible and predictable for applicants and investors.	Lead: WRC Secretariat (admin) through EPD; Support: MoH/EHD, Planning	Short (0-2 yrs)	Water Reuse Act 2023 (transition arrangements, permit regime), National Gender Policy.	Not zone-specific.
Operationalise compliance tools already in the Act: (i) Wastewater Register and publication of permit holders; (ii) seller	Lead: EPD Director (registers/inspection) + WRC (use in oversight);	Short (0-2 yrs)	Water Reuse Act, 2023: purchaser register and inspector access;	Indirect (supports targeted oversight)

Action description	Lead / supporting	Timeframe	Legal / policy linkage	Zone relevance
registers of reclaimed-water purchasers and intended uses; and (iii) inspection access to registers to support enforcement and traceability.	Support: MoH/EHD (end-user enforcement interface)		Wastewater Register; Gazette publication of permit holders.	where zoning increases consequence of failure).
Embed zoning as a mandatory permitting trigger and conditioning variable (not discretionary): every permit decision file must show the zone, the zone-based siting acceptability check, and any enhanced conditions triggered by the zone.	Lead: Planning + WRC (decision file requirement); Support: BWA (technical concurrence on zoning narrative), MoH/EHD, EPD	Short (0-2 yrs)	2020 Water Protection and Land Use Zoning Policy (Zones A-E framework) + Water Reuse Act, 2023 (WRC suitability determinations and permit conditioning).	Direct (A-E is the basis for differentiated conditions).
Managed Aquifer Recharge (MAR) control module: require a MAR permit annex (hydrogeologic suitability confirmation; delineation of recharge area; injection well design/operations plan; monitoring wells plan; baseline groundwater quality; continuous/periodic monitoring parameters and frequency; trigger thresholds; automatic stop-supply and shutdown rules; and public reporting of monitoring summaries). The MAR annex is mandatory where reclaimed	Water Reuse Committee (WRC)	Short-Medium (0-5 years)	Water Reuse Act, 2023 (permit conditions; competent authority powers); Water Zones A-E framework (as embedded in national planning / zoning instruments); 2020 Water Protection and Land Use Zoning Policy technical basis for recharge protection controls.	Directly zone-driven. Highest control intensity for recharge-related proposals in Zone D (Recharge Contributing Area) and for any interface with public supply well protection areas. Apply enhanced conservatism in Zones A-B given lowest risk tolerance.

Action description	Lead / supporting	Timeframe	Legal / policy linkage	Zone relevance
water is injected or infiltrated for aquifer recharge. Incorporate any existing wellhead inspection requirements applied by the Environmental Health Department as mandatory MAR permit conditions.				

#### 4.5 Dimension 5 — Standards, monitoring and data

Enabling legal basis exists but reclaimed-water standards are not yet fully in force as binding instruments; monitoring and laboratory capacity are not yet configured for routine scheme compliance; and data transparency is insufficient to support enforcement and user confidence.

Action description	Lead / supporting	Timeframe	Legal / policy linkage	Zone relevance
Adopt interim permit conditions that make AECOM-recommended thresholds enforceable through permits pending statutory standards, including mandatory monitoring frequency, accredited laboratory requirements, public reporting minimums, and automatic operational shut-down triggers for exceedances.	Lead: MoH/EHD (health permits) or the legally designated permit issuer; Support: EPD; BWA; WRC.	Short (0–2 yrs)		

Action description	Lead / supporting	Timeframe	Legal / policy linkage	Zone relevance
<p>Adopt legally binding reclaimed-water quality and use standards through subsidiary legislation (Schedules to the Water Reuse Regulations) for the first implementation phase: (i) irrigation (including edible food crops where authorised), (ii) non-potable aquifer recharge, and (iii) a direct discharge compliance class. Any additional non-potable end-uses (e.g., toilet flushing, industrial process water) must not be authorised in the first phase unless and until they are explicitly added through an amending Statutory Instrument that updates the Schedules with the required quality limits and operating conditions.</p>	<p>Lead: EPD (technical drafting) + MoH/EHD (health review). Support: WRC (approval as permit authority); BWA (operational feasibility).</p>	<p>Short-Medium (0-5 yrs)</p>	<p>Water Reuse Act, 2023 (permit conditions/oversight) + Water Reuse Regulations (standards codified).</p>	<p>Direct where end-uses intersect groundwater protection sensitivity; enhanced conditions in Zones A-C; MAR-specific conditions in recharge-related zones.</p>
<p>Until Water Reuse Regulations are gazetted and standards are prescribed in law, the WRC must make the AECOM 2020 recommended reclaimed-water quality thresholds enforceable through wastewater treatment permit conditions, including: (i) mandatory</p>	<p>Lead institution: Water Reuse Committee (WRC) Supporting institutions: EPD; MoH/EHD; BWA; accredited laboratories</p>	<p>Short (0-2 yrs)</p>	<p>Water Reuse Act, 2023</p>	<p>All zones. Apply zone-tiered conditioning: Zones A-B require the most conservative permit conditions (highest monitoring intensity; tighter</p>

Action description	Lead / supporting	Timeframe	Legal / policy linkage	Zone relevance
<p>monitoring frequency and accredited laboratory requirements; (ii) standard reporting formats to EPD and MoH/EHD; and (iii) automatic stop-supply triggers for any exceedance, consistent with the National Reclaimed Water Incident Response Protocol.</p>				<p>operational triggers; immediate stop-supply on exceedance; restrictions on higher-risk end-uses). Zones C-E apply standard conditions unless the end-use elevates risk (notably any non-potable aquifer recharge, large public-access uses, or proximity to sensitive receptors), in which case the Zones A-B safeguard package is applied.</p>
<p>Establish a “fit-for-purpose monitoring framework” embedded in permits: define standard sampling points, minimum sampling frequency, analytical suite per end-use class, chain-of-custody and QA/QC, reporting format, and corrective-action triggers (all as standard permit annexes) , with</p>	<p>Lead: EPD (compliance monitoring framework). Support: WRC (permit conditioning, statutory advisory on gender, inclusion and social equality), MoH/EHD (public exposure controls), BWA</p>	<p>Short (0-2 yrs)</p>	<p>Water Reuse Act, 2023 (permit issued subject to terms/conditions; monitoring/oversight functions) + WRC-issued permitting guidelines (to standardise permit annexes), National Gender Policy.</p>	<p>Yes, higher-frequency and tighter triggers for Zones A-B and for high-contact end-uses.</p>

Action description	Lead / supporting	Timeframe	Legal / policy linkage	Zone relevance
guidelines for monitoring positive and negative social and gender impacts and identify triggers.	(operational monitoring alignment).			
Build minimum laboratory and quality-assurance capacity to make enforcement credible: designate the reference laboratory arrangements, implement proficiency testing, and publish a list of approved labs/analytical methods for permit compliance.	Lead: EPD (regulatory lab QA). Support: MoH/EHD; national lab services; procurement/Finance where investment is needed.	Short-Medium (0-5 yrs)	Water Reuse Regulations / permitting guidelines (approved methods/labs as a compliance requirement) + administrative designation by EPD under the Act's monitoring/compliance functions.	Indirect; prioritise capacity for parameters critical to Zones A-C and MAR-related monitoring.
Operationalise statutory traceability and record-keeping: require every reclaimed-water supplier/operator to keep a mandatory disaggregated end-user supply register recording (i) the identity and location of each recipient, (ii) dates and volumes supplied, (iii) the authorised end-use category for that recipient, and (iv) the relevant permit/authorisation reference. Require periodic electronic reporting of these records into a central compliance database, and ensure inspectors have	Lead: EPD (database and inspection use). Support: WRC (oversight), MoH/EHD (end-user compliance interface), BWA (service/provider records where applicable).	Short (0-2 yrs)	Water Reuse Act, 2023 (purchaser register obligations; inspection access; Wastewater Register and publication of permit holders).	Indirect; enables targeted oversight in higher protection zones.

Action description	Lead / supporting	Timeframe	Legal / policy linkage	Zone relevance
access to the register and reports during inspections. (eReporting?)				
Establish a transparency protocol that supports public acceptance and trust without disclosing sensitive information: publish disaggregated data on (i) list of permitted operators, (ii) summary compliance status by scheme, (iii) incidents and resolutions (sanitised), and (iv) annual performance summary against national targets.	Lead: OPM delivery function (programme reporting) + EPD (compliance summaries). Support: MoH/EHD; WRC; BWA.	Medium (0-5 yrs)	Water Reuse Act, 2023 (register/publication mechanisms) + administrative decision on publication scope and cadence.	Indirect; heightened sensitivity in Zones A-B warrants more visible compliance signalling.
Create an independent audit and verification layer: periodic compliance audits for treatment plants and major reuse schemes (including cross-connection controls where dual plumbing exists), with an escalation pathway (corrective action → enforcement → stop-use).	Lead: EPD (permit compliance audits) + MoH/EHD (premises/public exposure audits). Support: WRC (enforcement escalation), BWA (network interface controls).	Medium (2-5 yrs)	Water Reuse Regulations (inspection/audit powers and procedures) + Water Reuse Act, 2023 (inspection/compliance framework; WRC monitoring role).	Yes; audit frequency/risk tiering should reflect Zones A-C and high-contact end-uses.
Standardise operator competence requirements that directly affect monitoring reliability: minimum training/certification for sampling,	Lead: EPD (competence requirements) + MoH/EHD (health-critical practices). Support: BWA (operator	Medium (2-5 yrs)	Water Reuse Regulations + WRC permitting guidelines (competence as permit condition/renewal criterion).	Indirect; stricter competence expectations in higher

Action description	Lead / supporting	Timeframe	Legal / policy linkage	Zone relevance
logbooks, instrument calibration, and reporting responsibilities; incorporate into permitting conditions and renewal criteria.	SOP alignment), training providers.			protection zones and where MAR is pursued.

#### 4.6 Dimension 6 — Financing, tariffs and economic incentives

Reclaimed-water scale-up is constrained by the absence of a defined reclaimed-water service/tariff model, limited clarity on who may sell/supply reclaimed water and on cost-recovery/O&M financing, and under-use of incentives to drive end-user uptake. There is concern that high tariffs and the absence of subsidies or social incentives will lead to the exclusion of low-income and marginalized groups, especially women, micro and small operators. Investments might deliver; this creates a risk that capital investments deliver infrastructure but contribute to inequalities and without a financially unsustainable reuse service.

Action description	Lead / supporting	Timeframe	Legal / policy linkage	Zone relevance
Adopt a Government inclusive, gender sensitive tariff and financing policy for reclaimed water (principles, not numbers): social tariffs and targeted subsidies, cost-recovery approach for O&M, treatment of capex subsidies, rules for cross-subsidy (if any), and how reclaimed-water pricing will relate to potable tariffs.	Lead: Ministry of Finance. Support: BWA; WRC; Bureau of Gender Affairs; FTC (where applicable).	Short (0-2 yrs)	Tariff policy decision; fiscal framework notes	Indirect; tariff design should consider zone-driven cost differentials (where zoning drives stricter safeguards).

Action description	Lead / supporting	Timeframe	Legal / policy linkage	Zone relevance
Issue the implementing tariff instrument for reclaimed-water service (tariff order / regulation / approved schedule) and set a review cycle	Lead: Ministry of Finance. Support: BWA; FTC (where applicable); WRC; Bureau of Gender Affairs.	Short-Medium (0-5 yrs)	Tariff instrument under applicable pricing framework	Indirect.
Define the reclaimed-water “service model” in law or regulation: who may supply/sell reclaimed water (BWA only vs licensed operators), conditions for private operators (e.g., hotels/private WWTPs), and the regulatory boundary between operator/service provider and regulator (no self-regulation).	Lead: MoH + AG/Chief Parliamentary Counsel. Support: EPD; BWA; Finance.	Short-Medium (0-5 yrs)	Water Reuse Act, 2023 (permit regime and oversight) + new Water Reuse Regulations (SI) specifying supplier obligations and sale/use conditions.	Not zone-specific (applies island-wide), but conditions tighten where zoning raises consequences of failure.
Establish a reclaimed-water programme budget line and multi-year O&M financing plan tied to the Investment Plan projects (Bridgetown STP, South Coast STP, distribution networks, sewer expansion), including monitoring/enforcement resourcing for regulators (EPD/EHD).	Lead: Ministry of Finance + OPM delivery function. Support: BWA; MoH; EPD.	Short (0-2 yrs)	Barbados 2035 Investment Plan (investment commitments) + annual budget process; D2.1 identifies regulator capacity constraints affecting enforceability.	Indirect.
Require a gender and equity impact check as a mandatory condition before approving tariff changes or incentives	Lead: Bureau of Gender Affairs.	Medium (2-5 yrs)	Mandatory review requirement embedded in tariff approval procedure	Indirect.

Action description	Lead / supporting	Timeframe	Legal / policy linkage	Zone relevance
	Support: Ministry of Finance; BWA; WRC			
Create an end-user uptake package (incentives + obligations): (i) standard connection/use agreements, (ii) incentives for dual plumbing and backflow prevention in large buildings, (iii) sector-specific uptake measures (agriculture, tourism, industry), and (iv) enforcement backstop for misuse/cross-connection risk.	Lead: Finance (incentives) + MoH/EHD (public health obligations). Support: BWA; EPD; Planning.	Medium (2-5 yrs)	Water Reuse Regulations (SI) for obligations/controls + fiscal measures under Finance (non-statutory or tax instruments as applicable).	Yes: incentives/controls may need to reflect zoning-based safeguards and siting constraints.
Introduce a “polluter-pays / water-efficiency” alignment measure: ensure reclaimed-water financing does not undermine incentives to reduce wastewater loads and improve compliance (e.g., differentiated fees/charges for high-load dischargers, aligned with reuse production objectives).	Lead: EPD + Finance. Support: BWA.	Medium (2-5 yrs)	Marine Pollution Control Act, Cap. 392A interface + Water Reuse Act, 2023 regime (harmonised through Regulations/SIs); D2.1 notes partial integration and legacy gaps in enforceable effluent standards.	Indirect; higher sensitivity in Zones A-C strengthens the case for aligned load-control measures.
Establish a financing decision gate for any reclaimed-water investment: a standard “readiness and sustainability	Lead: OPM delivery function + Finance. Support: BWA; MoH; EPD.	Short (0-2 yrs)	Administrative instrument: Policy directive template; alignment to Investment	Indirect.

Action description	Lead / supporting	Timeframe	Legal / policy linkage	Zone relevance
check” before capex is committed (permit pathway defined, monitoring funded, tariff principles set, end-user uptake plan in place).			Plan programme management.	
Publish annual programme financial and performance summaries (capex executed, O&M coverage, compliance status, uptake by sector) to support accountability and reduce integrity risk around large infrastructure programmes.	Lead: Ministry of Finance Support: BWA; EPD; MoH/EHD.	Medium (2-5 yrs)	Administrative transparency measure; complements Water Reuse Act, 2023 register/publication tools.	Indirect.
Establish a connection incentive package for priority non-potable end-users (agriculture, tourism, industrial) tied to compliance obligations	Lead: Ministry of Finance Support: BWA; Ministry of Agriculture; Tourism stakeholders; WRC.	Medium-Long (0-2035)	Incentive programme instrument (budget measure)	Indirect.

#### 4.7 Dimension 7 Stakeholder engagement, communication, and social acceptance

The binding constraint in Barbados is not “whether engagement happened”, but whether it becomes an operating requirement of the reuse system: who is reached (beyond institutions and large users), how feedback is closed, and how trust is maintained once permits, tariffs, offences, and enforcement become real. D2.1 records that public acceptance and the “yuck factor” remain a material barrier despite the technical case, while also confirming that the Water Reuse Committee exists in law but is structurally narrow, and that unsewered/rural and other vulnerable groups are not yet clearly integrated into reuse pathways.

The D2.2 stakeholder assessment flags three practical deficits to correct in D3: Stakeholder discussions revealed inequalities in knowledge, access to information, awareness of plans under the Water Reuse initiative, and exclusion of key groups and agencies in stakeholder engagements during planning and formulation of the Act. Limited documented engagement beyond institutions/large economic actors highlighting the lack of effective inclusive consultation during formulation and decision making of the Act.

- Lack of institutionalised feedback loops
- Communication approaches that are still nascent and not audience-tailored
- Public awareness, public education and stakeholder engagement limited and not inclusive (Discriminatory access to information and engagement) Underrepresentation of women in technical, leadership, and decision-making roles in the sector

Action description	Lead / supporting	Timeframe	Legal / policy linkage	Zone relevance
Develop and implement a comprehensive, multi-layered public engagement framework that is explicitly designed to advance gender equality and social inclusion at every stage of reclaimed water governance.	Lead: WRC Secretariat (once activated). Supporting: BWA, EPD, MoH/EHD, Planning/Development, Finance. Ministry of Finance, Bureau of Gender Affairs and other Gender and social inclusion experts sectoral representatives (e.g., Small Business Association, women's	Short (0-2 yrs)	Water Reuse Act 2023 (public engagement, transparency, permit-holder/purchaser registers, Gazette publication duties) National Gender Policy (mandatory gender and equity impact assessment, statutory advisory role for Bureau of Gender Affairs) Barbados 2035 Investment Plan (alignment with	National (all zones), with engagement activities tailored to the needs of each zone.

Action description	Lead / supporting	Timeframe	Legal / policy linkage	Zone relevance
	organisations, community groups)		national investment and inclusion objectives)  GIS	

#### 4.8 Dimension 8 — Risk management, health protection, and emergency response

Project-level safeguards exist (e.g., ESIA practice), but system-wide reclaimed-water risk governance is weak because enforceable reuse standards are not yet fully operational, routine compliance monitoring is not configured for reclaimed-water schemes, and there is no clear, reuse-specific incident notification and response protocol that assigns triggers, public advisories, and stop-use powers across institutions. This is a direct driver of acceptance risk and a regulatory credibility gap. Further, gender equality, social inclusion and non-discriminatory practices are recognised as important but are not yet fully integrated into risk management, health protection, and emergency response. The legislation is lacking in guidelines provisions, and implementation frameworks are still evolving. The roadmap includes provisions aligned with global policy guidance to address gaps in representation, monitoring, and targeted support for vulnerable and underserved groups.

Action description	Lead / supporting	Timeframe	Legal / policy linkage	Zone relevance
<p>Develop and implement a unified, enforceable Standard Operating Procedure (SOP) for reclaimed water incident response and notification, applicable island-wide, that:</p> <ul style="list-style-type: none"> <li>• Ensure that all incident response and notification procedures are accessible to, and considerate of, women, men, persons with disabilities, low-income and unsewered communities, micro and small business operators, and other vulnerable or marginalised groups</li> <li>• Defines clear triggers and responsibilities assigning clear roles</li> </ul>	<p>Lead: MoH/EHD (public health) + EPD (regulatory incident management). Support: BWA (operational isolation and customer notices), WRC inclusive of the Bureau of Gender Affairs (oversight), Planning and Development authority (for zoning implications)</p>	<p>Short (0–2 yrs)</p>	<p>Water Reuse Act 2023 (inspection/oversight framework; registers; offences; permit conditioning powers) + Water Reuse Regulations to require contingency planning and mandatory incident reporting (SI to be developed under Dimension 2). National Gender Equality Policy (mandatory gender and equity impact assessment, statutory</p>	<p>Direct: heightened consequences in Zones A–B require stricter triggers and faster notification; MAR incidents are zone-sensitive (recharge areas).</p>

Action description	Lead / supporting	Timeframe	Legal / policy linkage	Zone relevance
<p>to all relevant agencies, including gender and social advisers.</p> <ul style="list-style-type: none"> <li>• Mandate 2-hour notification and public health advisories rules of any incident, using multiple accessible communication channels (SMS, phone, email, community radio, etc.).</li> <li>• Adopt disaggregate incident reporting</li> </ul>			advisory role for Bureau of Gender Affairs)	
<p>Make cross-connection and backflow prevention a non-negotiable control: require certified backflow prevention at all reclaimed-water connection points; require dual-plumbing inspection and commissioning certification before service begins; require periodic re-inspection for high-risk premises (schools, health facilities, high-occupancy buildings).</p>	<p>Lead: MoH/EHD (premises health protection). Support: BWA (connection standards); EPD (permit conditions); Planning (building approvals).</p>	<p>Short-Medium (0-5 yrs)</p>	<p>Water Reuse Regulations (SI) to set plumbing/connection controls and inspection requirements + Water Reuse Act, 2023 permit conditions.</p>	<p>Indirect; stricter controls where zoning elevates sensitivity or where potable supply risk is higher.</p>
<p>Develop, formalise, and implement a robust “commissioning gate” protocol for all reclaimed water schemes, ensuring that no distribution to end users occurs until all legal, technical,</p>	<p>Lead: WRC including Bureau of Gendre Affairs (decision gate) + EPD (compliance verification). Support: MoH/EHD; BWA.</p>	<p>Short (0-2 yrs)</p>	<p>Water Reuse Act 2023 (WRC suitability role; permit conditioning) + WRC permitting guidelines (required verification</p>	<p>Yes: commissioning verification must document the zone and</p>

Action description	Lead / supporting	Timeframe	Legal / policy linkage	Zone relevance
<p>and gender/social safeguards are in place.</p> <p>Commissioning documentation and readiness reports must be disaggregated by gender, vulnerability status, and zone, to monitor and address inequities in scheme readiness and access , storage, misuse prohibitions) are in place.</p>	<p>Planning and Development authority, sectoral representatives (e.g., Small Business Association, women’s organisations, community groups)</p>		<p>package before commissioning). National Gender Policy (mandatory gender and equity impact assessment, statutory advisory role for Bureau of Gender Affairs)</p>	<p>any enhanced conditions triggered by the zone.</p> <p>Applies island wide but reporting and validation must be disaggregated and tailored by zone to monitor and address inequities.</p>
<p>Formalise the integration of health risk assessment (HRA) into every stage of the reclaimed water standards pathway, ensuring that technical, legal, and social safeguards are systematically considered and applied. The integrated pathway must:</p> <ul style="list-style-type: none"> <li>• Require that all HRAs consider differential health risks and exposures for women, men,, PWDs</li> <li>• Institutionalize multidisciplinary reviews</li> <li>• Collect and publish health risk data disaggregated by gender, age, disability, socio-economic status, and</li> </ul>	<p>Lead: MoH/EHD (health risk basis). Support: EPD (standards drafting); WRC (approval) ), Barbados Water Authority (BWA), Bureau of Gender Affairs (advisory), Planning and Development authority, sectoral representatives (e.g., Small Business Association, women’s organisations, community groups)</p>	<p>Medium (2-5 yrs)</p>	<p>Water Reuse Regulations (SI schedules) + Water Reuse Act 2023 permit conditions framework. National Gender Policy (mandatory gender and equity impact assessment, statutory advisory role for Bureau of Gender Affairs)</p>	<p>Direct where end-use is more sensitive in certain zones (e.g., restrictions/tighter conditions in Zones A-B).</p>

Action description	Lead / supporting	Timeframe	Legal / policy linkage	Zone relevance
zone, to monitor and address inequities in exposure and outcomes.				
<p>Develop, formalise, and implement a robust competence and certification pathway for all operators and inspectors involved in reclaimed water schemes, that ensure that</p> <ul style="list-style-type: none"> <li>All training programmes and certification requirements are accessible to all including persons with disabilities, low-income and unsewered communities, micro and small business operators, and other vulnerable or marginalised groups.</li> <li>Implement joint training and standard operating procedures for Environmental Protection Department (EPD) and Environmental Health Department (EHD) inspectors, including checklists, evidence standards, sampling verification, escalation procedures, and inclusive engagement practices</li> </ul>	<p>Lead: MoH/EHD + EPD. Support: BWA (operator SOP alignment); training providers/TVET, Water Reuse Committee (WRC including Bureau of Gender Affairs) (oversight), sectoral representatives (e.g., Small Business Association, women’s organisations, community groups)</p>	<p>Medium (2-5 yrs)</p>	<p>Water Reuse Regulations (SI) to require competence and drill obligations + permit conditions.</p>	<p>All zones.</p>

Action description	Lead / supporting	Timeframe	Legal / policy linkage	Zone relevance
<ul style="list-style-type: none"> <li>• Integrate safeguards to promote gender equality and social inclusion in both process and outcomes.</li> <li>• Disaggregate training and certification reporting.</li> </ul> <p>Requirements tied to health protection: minimum training for sampling, hygiene controls, PPE, site safety, and incident escalation; require documented drills (table-top exercises) for major schemes at least annually.</p>				
<p>Create non-potable aquifer recharge safeguards where pursued: require hydrogeologic suitability confirmation, an MoH/EHD wellhead and sanitary protection compliance check (including any existing wellhead inspection protocols), a monitoring-wells plan, trigger thresholds and shutdown rules, and public reporting of monitoring summaries as enforceable permit conditions (All MAR proposals must</p>	<p>Lead: EPD (environmental protection) + BWA (hydrogeologic/operational inputs). Support: MoH/EHD (health risk review); WRC (permit approval).</p>	<p>Medium-Long (0-2035)</p>	<p>Water Reuse Act 2023 permit conditions + zoning policy basis for recharge protection; SI schedules to include MAR-specific requirements where adopted.<sup>4</sup> National Gender Policy (mandatory gender and equity impact assessment, statutory</p>	<p>Direct: applies in recharge-related zones and where groundwater protection is highest.</p>

<sup>4</sup> MoH/EHD wellhead inspection protocols (where applicable) are treated as mandatory public-health inputs to the permit conditions for any recharge scheme

Action description	Lead / supporting	Timeframe	Legal / policy linkage	Zone relevance
include a gender-responsive and socially inclusive risk assessment, with targeted outreach and consultation for affected communities—especially women, persons with disabilities, small farmers, low-income groups, and micro/small operators).			advisory role for Bureau of Gender Affairs)	
<p>Develop, formalise, and implement a practical compliance escalation ladder for reclaimed water offences and enforcement where</p> <ul style="list-style-type: none"> <li>• All enforcements protocols and materials are accessible to all</li> <li>• Enforcement actions are reviewed for accessibility, inclusivity, and non-discrimination, and must promote gender equality and social inclusion in both process and outcome</li> <li>• There is disaggregated enforcement reporting</li> </ul> <p>Aligned to inspection responsibilities under the SOP to avoid delays during incidents.</p>	<p>Lead: EPD (regulatory ladder) + MoH/EHD (premises enforcement). Support: WRC with Bureau of Gender Affairs (advisory); BWA (service stop). sectoral representatives (e.g., Small Business Association, women’s organisations, community groups)</p>	Short-Medium (0-5 yrs)	Water Reuse Act 2023 offences/enforcement framework + Water Reuse Regulations (SI) to specify stop-use and reporting duties. National Gender Policy (mandatory gender and equity impact assessment, statutory advisory role for Bureau of Gender Affairs)	All zones.

#### 4.9 Dimension 9 — Institutional capacity, human resources, and inclusion

Delivery capacity is identified at different levels: insufficient staff time and technical capability for routine monitoring, inspection and enforcement; laboratory/testing and QA/QC constraints. Without explicit resourcing and competence controls, the regulatory system will remain largely nominal and acceptance risks will persist.

As the sector expands some groups of groups in society can continue to face challenges that limit participation in the economic opportunities created by the sector. Some of these challenges are linked to socio-economic and cultural factors that limit access to training and certification in the technical fields needed to fully participate in income-gaining activity in the sector.

Action description	Lead / supporting	Timeframe	Legal / policy linkage	Zone relevance
<p>Develop, formalise and operationalise a comprehensive training and capacity-building support system with clear guidelines that actively promote diversity in participation across all employment and economic activities created by the reclaimed water sector.</p> <p>Key features:</p> <ul style="list-style-type: none"> <li>Inclusive training programmes accessible to all, with targeted outreach for underrepresented groups.</li> <li>Certification pathways and capacity-building activities tailored to diverse needs.</li> </ul>	<p>Lead: Training designers and providers\TVET, Universities, Ministry of Education, Technological and Vocational Training, Bureau of Gender Affairs</p> <p>Support: EPD, BWA, WRC, Ministry of Finance, Sectoral representatives (e.g., Small Business Association, women’s organisations, community groups)</p>	<p>Short to Medium Term (0–5 years), with ongoing review and adaptation</p>	<p>Water Reuse Act 2023 (permit conditioning powers, training and certification requirements)</p> <p>National Gender Policy (mandatory gender and equity impact assessment, statutory advisory role for Bureau of Gender Affairs)</p> <p>Barbados 2035 Investment Plan (alignment with national investment and inclusion objectives)</p> <p>Human resource Development strategy</p>	<p>Indirect: The training and capacity-building system applies island-wide, but enhanced outreach and support will be prioritised in zones where vulnerable or marginalised groups are concentrated, and where zoning decisions may have disproportionate impacts on access and participation.</p>

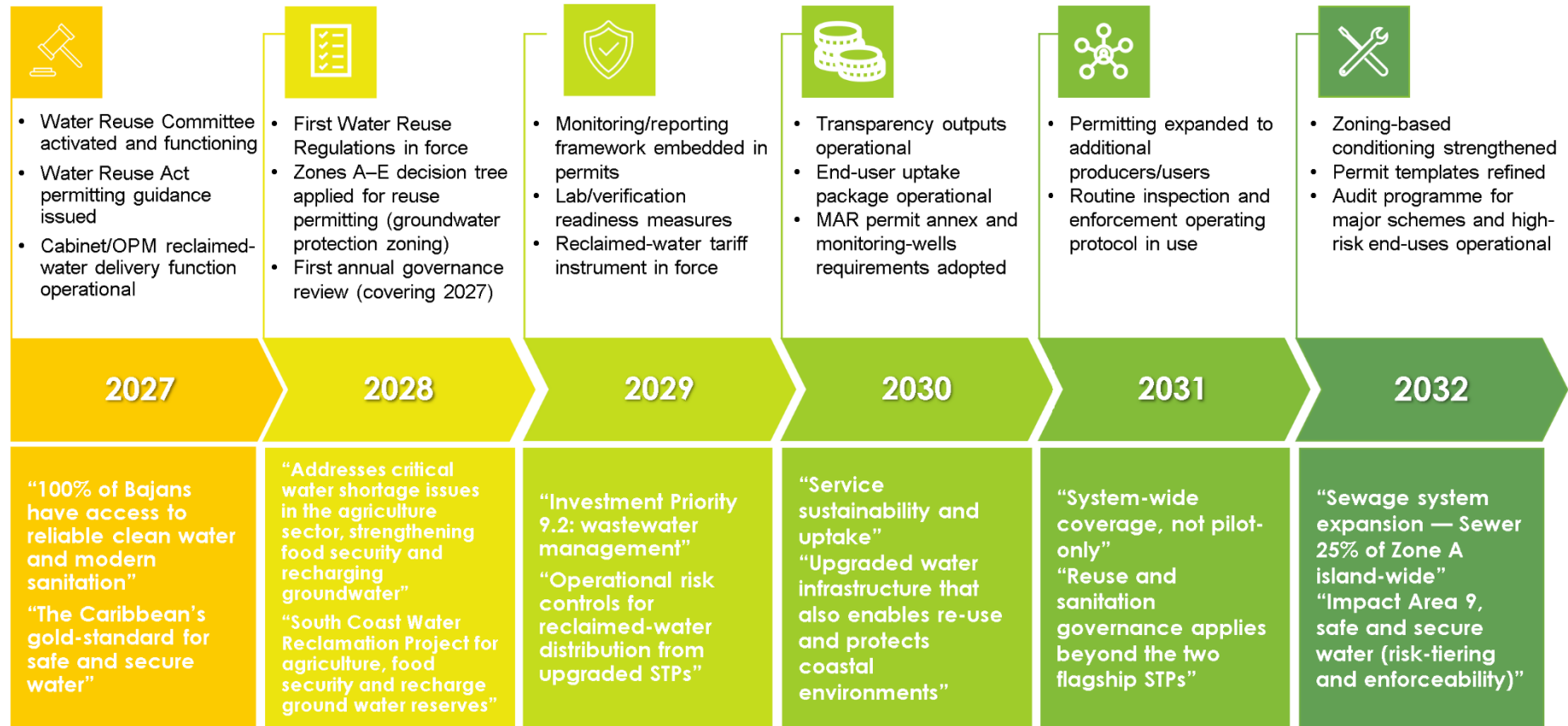
Action description	Lead / supporting	Timeframe	Legal / policy linkage	Zone relevance
<ul style="list-style-type: none"> <li>Guidelines for monitoring participation and impact, including disaggregated reporting by gender, vulnerability status, and zone.</li> <li>Integration of gender and social expertise in programme design and delivery.</li> <li>Regular review and adaptation to ensure effectiveness and responsiveness to sector needs.</li> </ul>			(promoting life-long education)	
Adopt a minimum regulatory resourcing plan for reclaimed-water governance (inspectors, permitting case management, data administration, legal drafting support) with named positions, workload assumptions, and a 3–5 year funding pathway.	Lead: Ministry of Finance + OPM delivery function. Support: MoH/EHD; EPD; BWA.	Short (0–2 yrs)	Administrative instrument: Policy directive and budget appropriation; Policy anchor: Barbados 2035 Investment Plan (reuse-dependent capital programme requires matching regulatory O&M capacity).	Indirect.
Create a dedicated “Reuse Permitting & Compliance Desk” within the administering authority (EPD case-management function supporting	Lead: EPD (Director). Support: WRC Secretariat; MoH/EHD; Planning; BWA (technical consultation).	Short (0–2 yrs)	Water Reuse Act, 2023 (Director administers Act; monitoring permit holders;	Indirect (desk must apply zoning screen where relevant).

Action description	Lead / supporting	Timeframe	Legal / policy linkage	Zone relevance
WRC): file intake, completeness checks, permit drafting, monitoring returns review, and register maintenance.			issuance of guidelines with WRC approval; registers).	
Implement a joint inspectorate protocol and training plan (EPD + EHD) for reclaimed-water systems: standard checklists, evidence standards, sampling verification, chain-of-custody, and escalation procedures.	Lead: MoH/EHD + EPD. Support: WRC (oversight); BWA (network interface training).	Short-Medium (0-5 yrs)	Water Reuse Regulations (SI) and WRC guidelines to codify inspection powers, checklists and escalation ladder; Water Reuse Act, 2023 inspection and compliance tools.	Yes (risk-tiered inspection intensity in Zones A-C).
Establish laboratory readiness as a compliance prerequisite: (i) designate approved labs/methods for permit compliance, (ii) implement proficiency testing/QA/QC, and (iii) publish a lab capability statement aligned to the new reuse standards schedules.	Lead: EPD (QA/QC oversight). Support: MoH (public health parameters), Finance (funding), labs (implementation).	Short-Medium (0-5 yrs)	Water Reuse Regulations (SI) / WRC permit guidelines to require approved methods/labs; administrative designation by regulator.	Indirect; prioritise parameters with highest consequence in Zones A-C and any MAR scheme areas.
Create an operator competence and certification pathway (minimum training) for sampling, plant operation controls relevant to reuse, recordkeeping, and incident escalation;	Lead: EPD + MoH/EHD. Support: BWA (operator SOP alignment); training providers/TVET.	Medium (2-5 yrs)	Water Reuse Regulations (SI) to require competence obligations; Water Reuse Act, 2023 permit conditioning powers via WRC.	Indirect; stricter competence for higher-risk end-uses and protected zones.

Action description	Lead / supporting	Timeframe	Legal / policy linkage	Zone relevance
embed as permit conditions and renewal criteria.				
Make inclusion operational: require disaggregated participation and impact reporting (at minimum by sex, age and vulnerable group category) for stakeholder engagement, tariff/incentive consultations, and end-user uptake where Government support is provided; publish annually with programme reporting.	Lead: Ministry of Finance (for incentive-linked reporting) + MoH (policy). Support: Bureau of Gender Affairs (technical guidance); WRC Secretariat (collection).	Medium (2-5 yrs)	Administrative reporting requirement attached to Cabinet/Finance decisions (non-statutory) + D2.2 stakeholder engagement framework commitments.	Indirect; ensures zone-based delivery choices do not produce untracked inequities.
Institutionalise gender and equity expertise in governance without delaying activation: formalise Bureau of Gender Affairs participation as standing adviser to WRC (attendance, agenda rights, written advisory notes), and require its review of engagement plans and tariff/incentive proposals.	Lead: MoH/WRC. Support: Bureau of Gender Affairs; Finance.	Short (0-2 yrs)	Administrative instrument: WRC operating procedure / participation protocol (non-statutory); if needed later, targeted Schedule amendment.	Not zone-specific.
Implement integrity safeguards as capacity, not rhetoric: mandatory conflict-of-interest declarations, recusal procedures, and a "decisions register"	Lead: WRC Secretariat (administrative governance tool creation)	Short (0-2 yrs)	Water Reuse Act, 2023 (disclosure of interest; secrecy/confidentiality requirements) +	Indirect.

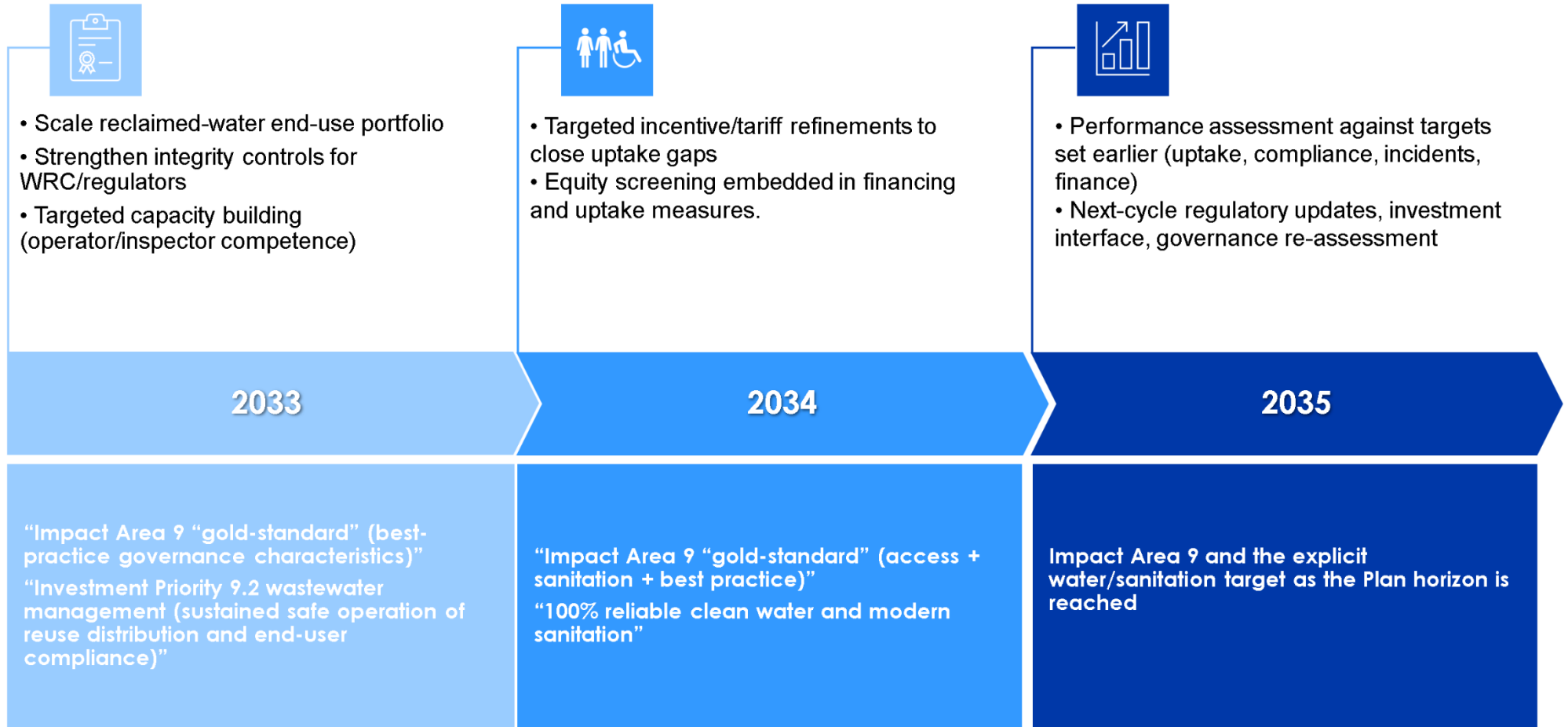
Action description	Lead / supporting	Timeframe	Legal / policy linkage	Zone relevance
discipline for WRC and regulators; train members/inspectors on integrity rules and documentation standards.	Support: EPD legal/admin; AG/Chief Parliamentary Counsel templates		administrative transparency decision for what is publishable.	
Create a reuse compliance KPIs package and an annual review cycle to prevent capacity decay: number of permits processed, inspections completed, non-compliance event	Lead: OPM delivery function + EPD (data). Support: MoH/EHD; WRC; BWA.	Medium-Long (0-2035)	Administrative performance management aligned to OECD WGIF re-assessment intent;	Yes (KPIs should be viewable with a zone lens where zoning changes risk and compliance burden).

Taken together, the nine dimension action tables translate the Deliverable 2 governance diagnosis into a sequenced set of enforceable decisions—assigning leads, instruments and timelines—so reclaimed-water reuse can be implemented at scale without role overlap or self-regulation and with zoning applied consistently as a permitting lens. The combined roadmap visual summarises the critical governance actions from 2027 to 2035 and shows where each one aligns with the Barbados 2035 Investment Plan for Prosperity & Resilience objectives for safe water and modern sanitation and the wastewater investment priorities.



ALIGNMENT WITH BARBADOS 2035 INVESTMENT PLAN





## ALIGNMENT WITH BARBADOS 2035 INVESTMENT PLAN



## 5. Quick wins and critical path

This Roadmap is intentionally sequenced “governance first, communications second.” Barbados will not secure durable public acceptance for reclaimed-water reuse through messaging in the absence of enforceable standards, clear institutional accountability, and a credible incident-response chain. The first priority is therefore to activate the governance controls that make reuse lawful, auditable, and safe; only once these controls are operational does the Roadmap scale communications and uptake measures as a second-order workstream.

This section therefore identifies the quick wins as governance activations that unlock implementation across all nine governance dimensions:

- The Water Reuse Committee is not operational
- Supporting subsidiary legislation (regulations and enforceable standards pathway) is not yet in force
- The permitting–monitoring–inspection–incident response chain is not yet defined in a way that avoids self-regulation and overlap.

### Quick Win 1 - OPM delivery function becomes operational

**Objective:** Establish a time-bound coordination function attached to the Office of the Prime Minister to manage delivery sequencing for reclaimed-water reuse, remove cross-ministry blockers, and align implementation with the Barbados 2035 Investment Plan for Prosperity & Resilience wastewater programme. This function does not create a new regulator, does not issue permits, and does not supervise statutory enforcement.

**Deliverable:** Approved Terms of Reference and 12-month workplan for the coordination function, including (i) a standing meeting frequency, (ii) a single progress dashboard linked to the Roadmap action tables, and (iii) a defined escalation route to Cabinet for unresolved inter-agency constraints.

**Outcome:** A single delivery “clearing house” for schedule, dependencies, and budget interfaces, without transferring statutory powers or creating self-regulation.

Note: This role should not sit with EPD because EPD is a statutory regulator in the competent-authority split; assigning it programme-wide delivery coordination would blur regulatory independence and create perceived self-regulation over a system it must oversee

## Quick Win 2 — Water Reuse Committee becomes operational

**Objective:** Activate the Water Reuse Committee as the decision body for reclaimed-water permitting, with clear procedures that separate delivery from regulation and make compliance enforceable.

**Deliverables:** Formal constitution of the WRC plus an adopted operating procedure (application workflow, decision templates, minutes, setting the standards and issuing permits), with an advisory participation protocol for Finance and Gender expertise.

**Outcome:** A functioning permit and oversight mechanism that can issue predictable permit conditions, enable the first SI package to be implemented in practice, and anchor inspection, monitoring, and incident-response responsibilities.

With the above Quick Wins, Barbados should have: an operational WRC, a published permit regime, enforceable regulations/standards pathway, a functioning monitoring/reporting and incident response system, and an economic decision framework that supports sustainable operation of reclaimed-water services aligned to the national investment pipeline.

## 6. Proposed Phases for Legislative changes

The roadmap must show how Barbados moves from the Water Reuse Act, 2023 to an operating reclaimed-water reuse regime. It does that by setting out the required legal steps, naming who leads each step, and specifying the instruments needed to make permitting and compliance work in practice.

### 6.1 Legislative pathway and responsible entities

**Phase 1** — Lock the legal scope and definitions used in all instruments and guidance.

All proposed legislation and policy directives should use the Water Reuse Act, 2023 definitions and remain strictly within “non-potable” reclaimed-water reuse. The Act defines “non-potable”, “potable water”, and “reclaimed water”, and ties the wastewater treatment permit expressly to producing non-potable water for sale under the Act. The intent of the planned tertiary upgrades and reclaimed-water distribution at the Bridgetown and South Coast sewage treatment plants is to enable non-potable reclaimed-water use primarily for agricultural irrigation and managed aquifer recharge, alongside continued non-potable uses already practiced (e.g., landscaping where authorised). Other non-potable end-uses (including toilet flushing via dual plumbing) may be technically feasible, but any expansion beyond irrigation and non-potable recharge depends on (i) the adoption of enforceable reclaimed-water standards and (ii) confirmation that plumbing and cross-connection controls are adequate and legally extendable from existing non-potable plumbing practices (including those used for harvested rainwater).

**Responsible:** Environmental Protection Department (EPD) Director (as administrator of the Act) to issue the drafting instruction package; Water Reuse Committee (WRC) to endorse the permitting scope applied in practice.

**Phase 2** — Activate the statutory permitting decision-maker before drafting secondary law.

The WRC is the statutory body mandated to consider and decide wastewater treatment permit applications and can require the Director to issue permits; it also monitors permit-holders and inquires into complaints. The First Schedule provides that the Committee may regulate its own procedure and proceedings and requires conflict-of-interest disclosure to be recorded in minutes with recusal from decisions.

**Responsible:** Minister to assign the Committee Secretary as required by the First Schedule and reconstitute/expand the WRC membership to include the Ministry of Finance as a mandatory seat, using the legally available mechanism under the Act. The WRC Chair/Director to convene and adopt operating procedures. BWA and MoH/EHD participate through the statutory membership structure and through their operational roles in implementation; Ministry of Finance participates to lock tariff and financing decisions into the permitting-to-service delivery sequence

**Phase 3** — Prepare and bring into force a first “Regulations package” under the Water Reuse Act, 2023 (Statutory Instruments).

The Act expressly anticipates that operational standards and procedures will be prescribed by regulations. The regulation-making provision is broad and implementation-facing: treatment standards, construction standards for tanks/structures, plumbing standards (including colour coding and labelling), discharge mechanisms/standards, internal tests and reporting format/procedure to the WRC or Director, safe operating procedures, training/certification requirements, fees/forms, and administrative penalties (and offences/penalties where created).

**Responsible:** Minister with responsibility for the environment (regulation-maker); EPD Director to lead technical drafting instructions and compliance design (administration/monitoring/enforcement mandate); WRC to validate permit-operability (what can be implemented through permit conditions from day one).

**Phase 4** — Issue implementation instruments that are “law-adjacent” but operationally binding through permits and procedures.

Even with Regulations in place, the system will fail without standard permit architecture, standard application requirements, and a compliance/incident workflow that the WRC and Director can apply consistently. The Act places administration, monitoring and compliance with the EPD Director and staff; WRC decisions then drive permitting and permit-holder oversight.

**Responsible:** EPD Director (templates, monitoring instructions, compliance tools); WRC (permit decision templates and conditions library); MoH/EHD to align health protection expectations operationally (inspection triggers, incident escalation), consistent with the “safe use” offences and prohibitions in the Act (including prohibitions on misuse of non-potable water and on use of certain domestic wastewater streams on edible crops).

**Phase 5** — Embed groundwater protection zoning as a mandatory siting and conditioning lens for reclaimed-water reuse (without re-writing zoning law).

Zones A–E exist as a groundwater-protection system based on time-of-travel and recharge logic, and wastewater disposal controls are explicitly treated as applicable across the island, including the recharge contributing area (Zone D) and non-recharge contributing area (Zone E). D3 uses zoning to structure permit conditions, monitoring intensity, and restrictions on higher-risk end-uses near sensitive groundwater supply areas.

**Responsible:** EPD Director and WRC (integrate zoning screens into permit conditions and monitoring plans); Planning and Development authority to apply zoning-relevant conditions at the development approval stage for major schemes (as already recognised in project institutional mapping).

**Phase 6** — Establish enforcement operability and deterrence in parallel with the first permits.

The Act already provides significant offence provisions and penalties; the Regulations package should add the administrative penalties and procedure needed to make compliance responsive and predictable (inspection triggers, corrective action deadlines, stop-supply conditions, and reporting duties).

**Responsible:** EPD Director and staff (monitoring and compliance); WRC (permit-holder oversight and complaint handling).

**Phase 7** — Provide the required “empowerment” provisions on gender in the legal-operational chain (not generic statements).

The project requires that policies empower persons in authority to take actions to promote gender equality in the wastewater sector. In D3, this is operationalised by mandating (through WRC procedure and/or Regulation-supported permit conditions) inclusion of gender-responsive workforce/training measures in scheme approvals and requiring reporting on community impacts and end-user accessibility where reclaimed-water services are rolled out.

**Responsible:** WRC (procedural requirements in decisions and permit conditions); Minister/EPD Director.

## 6.2 Recommended legal and instruments for implementation on the ground

### **Instrument 1** — Water Reuse Act Regulations

Legal basis and contents: Regulations under the Act to prescribe at minimum:

- treatment standards for producing non-potable water from wastewater/reclaimed water
- standards for treatment plants
- standards for storage tanks/structures; (iv) plumbing standards including colour coding/labelling
- discharge mechanisms/standards
- internal testing and the form/procedure for submission of results to WRC or Director

- safe operating procedures
- training/certification requirements
- fees/forms
- administrative penalties and any offences/penalties created by the regulations.

**Responsible:** Minister (making the Regulations); EPD Director (technical drafting lead and compliance design); WRC (operational validation for permit implementation).

**Instrument 2** — WRC activation package (administrative) (immediately implementable).

Contents: formal (re)appointments per statutory composition; reconstitution to include the Ministry of Finance as a mandatory seat (and any other agreed additions such as Bureau of Gender Affairs where legally provided); secretary assignment; adopted rules of procedure; decision templates; minutes protocol; and conflict-of-interest disclosure, recording and recusal protocol (to preserve regulatory integrity). The Act allows the Committee to regulate its own procedure and requires disclosure of interest to be recorded in minutes with non-participation in the decision concerned.

**Responsible:** Minister to (i) assign the secretary (as required by the First Schedule) and (ii) effect any required (re)appointments and membership reconstitution; WRC Chair/Director to convene and adopt the operating package.

**Instrument 3** — Standard permitting toolkit (Director/WRC technical documents).

Contents: standard application requirements; standard permit conditions library by end-use class; monitoring and reporting templates; cross-connection control requirements for any dual-plumbed applications; incident notification and stop-supply procedure (aligned to Act offences and the Director's monitoring/compliance mandate). The Act places administration, monitoring, and ensuring compliance with the EPD Director and staff; WRC decides permits and monitors permit-holders for compliance with permit conditions.

**Responsible:** EPD Director (issuance and maintenance); WRC (adoption for use in decisions); operational coordination with BWA for distribution-interface practicality.

**Instrument 4** — Zoning integration note for reclaimed-water reuse permits

Contents: how Zones A-E alter minimum permit conditions, monitoring intensity, and permissible end-uses; how "sensitive areas" are treated; and how island-wide wastewater disposal controls interact with recharge/recharge-excluded areas. The zoning policy defines the logic for Zone A exclusion, Zone B pathogen management, Zone C chemical management, Zone D recharge contributing area, and Zone E non-recharge contributing area, and states that wastewater disposal regulations apply in the recharge area and across the island.

**Responsible:** EPD Director and WRC to issue and apply; BWA to provide technical concurrence on the zoning interpretation narrative (project sign-off requirement), without shifting statutory decision authority.

### 6.3 Recommendations for the legal instruments needed

The instrument package below is derived directly from the Water Reuse Act, 2023 regulation-making powers and governance architecture, and is presented as the minimum set of subsidiary legislation and operational instruments required to make reclaimed-water reuse implementable in permitting, monitoring, and enforcement.

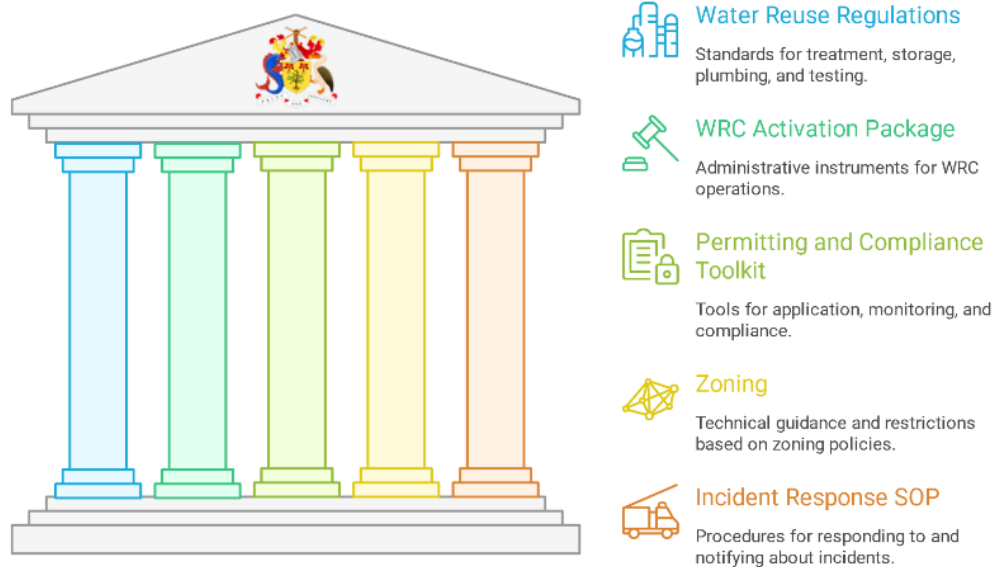


Figure 6 - Recommended Instruments

- 1) **Water Reuse Regulations:** the detailed technical requirements must be prescribed in the substantive provisions of the Regulations made by Statutory Instrument under the Water Reuse Act, 2023. At minimum, the Regulations should include separate regulations for (i) direct discharge compliance, (ii) irrigation reuse, and (iii) non-potable aquifer recharge, with additional end-use regulations added later by amendment as new non-potable applications are authorised.
- 2) **WRC activation package — administrative instruments:** constitution/appointments; secretary assignment; procedure rules; decision templates; minutes and conflict-of-interest recording/recusal; decisions register discipline.
- 3) **Permitting and compliance toolkit:** application forms/checklists; standard permit templates and conditions by end-use class; monitoring/reporting templates; cross-connection controls; compliance escalation ladder; incident notification workflow. Anchored in the Director’s administration/monitoring mandate and the WRC’s permit oversight functions.
- 4) **Zoning:** technical guidance used in every permit file, mandatory zoning screen, zone-based restrictions/conditions, and monitoring intensity rules based on the zoning policy definitions and logic.
- 5) **Incident response and notification SOP:** triggers and stop-supply actions; regulator notification; public health advisory roles; cross-connection response; corrective-action and enforcement escalation. Anchored to the Act’s offence framework and the Director/WRC compliance roles.

## 6.4 WATER REUSE ACT, 2023 – Draft amendments

1. Convert “guidance” into binding law (mandatory standards + mandatory regulations)
  - Amend section 23 (Regulations) by replacing “may make regulations” with “shall make regulations”, to prescribe (i) reclaimed-water quality standards, (ii) monitoring and verification, (iii) incident classification and response, (iv) user notification, (v) cross-connection control and backflow prevention, (vi) operational fail-safe requirements, and (vii) enforcement tools (stop notices, administrative penalties, emergency directions).
  - Amend section 23 further to require that the Minister shall prescribe reclaimed-water quality standards and verification requirements in the substantive provisions of the Regulations, so that thresholds are legally binding and enforceable.
2. Incorporate AECOM 2020 quality thresholds as legally binding Safety Grades
  - Insert a new definition in section 2 for “Safety Grade” meaning the reclaimed-water quality classification prescribed in the Regulations and tied to end-use categories (e.g., direct discharge compliance, irrigation, including edible food crops where authorised, and non-potable aquifer recharge).
  - Insert a new subsection in section 23 (or a new section after section 23) stating: “The Regulations shall prescribe reclaimed-water quality standards and verification requirements, including the quality thresholds recommended in the AECOM 2020 Reuse Standards deliverable, as adopted by the Minister, set out in the operative provisions of the Regulations.”
    - Do NOT invent the numeric values in the Act. The drafting instruction is to incorporate the exact AECOM thresholds verbatim into the operative provisions of the Regulations.
3. Assign final legal liability (end the institutional deadlock)
  - Insert a new definition in section 2: “Responsible Person” means the permit holder and operator named in the wastewater treatment permit, having day-to-day operational control of treatment, storage, and supply of reclaimed water (including any private distribution downstream of the BWA interface point). (This locks liability to a named legal person.)
  - Insert a new section immediately after section 11 (Wastewater treatment permit) stating:
    - “The Responsible Person bears primary and final legal responsibility for any reclaimed-water incident, including any injury, disease, or contamination arising from non-compliance with Safety Grade standards or permit conditions.”

- “Where the Barbados Water Authority operates or controls any part of the reclaimed-water distribution network, the Barbados Water Authority bears responsibility only for failures within the portion of the network it operates or controls, and only to the extent of its acts or omissions.”
  - “Regulators (EPD, Ministry of Health, Environmental Health Department) are not Responsible Persons by virtue of regulatory functions alone.” (This structure ends the “who is responsible for monitoring / enforcement” loop while keeping BWA delivery practical and non-self-regulating.)
4. Make monitoring ownership explicit (who tests, who verifies, who audits)
- Amend section 3 (Administration) to add explicit duties for the Environmental Protection Department (as administering authority) to (i) monitor compliance under the Act, and (ii) maintain an incident register and compliance status register, and (iii) require corrective actions from permit holders. (Section 3 already anchors EPD administration and monitoring—tighten it into an operational duty.)
  - Do not amend the Committee’s functions for monitoring compliance (already provided in the Act). Instead, operationalise it by requiring, in the Water Reuse Regulations and permit templates, that every permit application include an approved Monitoring and Verification Plan as a condition precedent, and that permits include an enforceable audit clause.
5. Hard-wire “Fail-Safe” operational obligations into the Act (and then detail in SI)
- Amend section 11 (Wastewater treatment permit) to state that every permit “shall” include conditions requiring:
    - a Safety Management Plan (SMP) covering critical control points, alarms, automatic shutdown/isolation, diversion/containment, and emergency disinfection;
    - continuous monitoring parameters (as prescribed) plus independent verification sampling;
    - a cross-connection control plan and backflow prevention requirements;
    - a user registry with 24/7 contacts and notification procedures;
    - immediate cessation protocols on exceedance or equipment failure. (The permit mechanism is already the control point for the system—this makes fail-safes non-optional.)
6. Mandatory 2-hour user notification window (farmers/hotels/end-users)
- Insert a new section immediately after section 18 (Registers) requiring:
    - the Director to maintain (or cause to be maintained) a “Reclaimed Water Users Register” containing, for each user, the end-use category, location, and 24/7 contact details; and

- the Responsible Person to maintain the same on-site and keep it current.
  - Insert a new section (or amend offences) requiring:
    - “Where any monitoring result, treatment failure, cross-connection event, or other operational event indicates (or gives reasonable grounds to suspect) non-compliance with any enforceable permit condition or any prescribed quality requirement applicable to the authorised end-use, the Responsible Person shall notify all affected end-users and shall simultaneously notify the Director and the Chief Medical Officer”
    - “Notification” must include: affected zones/end-users, parameter(s) exceeded, immediate restrictions (e.g., cease irrigation / cease hotel landscape use / restrict access), and safe alternative actions.
  - Tie non-compliance to offences and/or administrative penalties.
7. Step-in rights for BWA in a public health emergency (without court order)
- Insert a new section after section 16 (Revocation/Suspension) creating “Emergency Control and Step-In Powers”, drafted as follows:
    - Trigger: “Where the Chief Medical Officer or the Director determines, on reasonable grounds, that reclaimed water supplied or intended to be supplied presents an imminent risk to public health or to a groundwater protection zone, an Emergency Direction may be issued.”
    - Direction power: the Director/CMO may order immediate cessation of supply, isolation of affected storage/distribution, and protective actions.
    - Step-in: “If the system is privately operated and the Responsible Person fails to comply immediately, the Barbados Water Authority is authorised to enter any premises (including treatment, storage, and distribution facilities), operate valves and controls, isolate the supply, and take temporary control of the reclaimed-water system to abate the risk, without prior court order.”
    - Safeguards: require written confirmation of the direction; limit step-in to the minimum necessary; require a post-action report; preserve right of appeal after the fact (appeal does not stay the emergency measures).
  - Distinguish emergency controls from “takeover.” Require permits and the Incident Response Protocol to include immediate stop-supply/stop-use triggers and network isolation within BWA-controlled infrastructure. If physical intervention on private premises is required, proceed via an expedited court order; do not imply BWA can assume operational control without a court order.
8. Make suspension automatic on defined failures (no “wait and see” discretion)

- Amend section 16 (Revocation and Suspension of licence) to add “immediate suspension” that may only be imposed after the permit holder has been given written notice of the grounds and a reasonable opportunity to be heard within a specified period:
    - repeated exceedance of Safety Grade thresholds;
    - loss of disinfection capability;
    - confirmed cross-connection/backflow event;
    - failure to notify within 2 hours;
    - refusal to provide monitoring results or obstruction.
  - Retain (and strengthen) the linkage requiring notification to the Chief Medical Officer on revocation/suspension (already present as a notification concept—expand it to cover emergency suspension and incident notifications).
9. Close the “incident protocol” gap (explicit life-safety duties)
- Insert a new section titled “Reclaimed Water Incident Response Protocol” requiring the Responsible Person to:
    - immediately stop supply/isolate affected volumes;
    - secure alternative disposal/diversion (e.g., return to sewer, contained holding);
    - undertake confirmatory sampling and root-cause investigation;
    - comply with re-commissioning criteria (two consecutive compliant results, equipment validation, regulator sign-off where required).
  - Require the Water Reuse Committee to issue binding compliance directions and emergency supply restrictions where exposure is possible, on the advice of the Director; require the Chief Medical Officer and/or Environmental Health Department to issue public health advisories and exposure-control instructions where there is actual or suspected public exposure.
10. Strengthen offences and penalties around life-safety failures
- Amend the general offences provisions to add specific offences for:
    - tampering with monitoring devices or falsifying results;
    - failure to notify users/regulators within 2 hours;
    - failure to cease supply immediately on exceedance/failure;
    - obstruction of emergency step-in.
  - Add an offence of “reckless endangerment” specific to reclaimed-water systems (if consistent with Barbados drafting style), with higher penalties than administrative breaches.
11. Equity and gender: empower persons in authority (not a “nice-to-have”)

- Amend section 4 (Functions of the Committee) to add a statutory function: “to promote equitable participation and access in the reclaimed-water sector, including measures that advance gender equality in wastewater and reuse-related employment, decision-making, and stakeholder engagement.”
- Administrative operating procedure: the Committee adopts an annual public reporting practice covering permits, compliance actions, incidents, and equity/gender actions and outcomes (implemented through WRC procedures, not imposed by Regulations unless enabled in the Act).

## 6.5 HEALTH SERVICES ACT, CAP. 44 — DRAFTING INSTRUCTIONS (AMENDMENTS)

### 1. Definitions to support reclaimed-water emergency powers

- Amend section 2 (Definitions) to insert:
  - “reclaimed water” (cross-refer to Water Reuse Act definition by reference, or replicate);
  - “reclaimed water incident” meaning any deviation from prescribed Safety Grade, cross-connection event, or treatment failure that may expose persons to pathogens/chemicals;
  - “affected premises/end-user” including farms, hotels, public facilities, and any premises receiving reclaimed water.
- Keep alignment with existing definitions added in the Health Services (Amendment) Act, 2024 (CMO, Medical Officer of Health, offensive matter, night soil).

### 2. Regulations + administrative penalties that bite (not just offences)

- Amend section 10(1) by inserting an explicit enabling limb for reclaimed-water health protection regulations, including:
  - prohibiting/restricting use of reclaimed water during an incident;
  - mandating emergency notices and public health advisories;
  - prescribing administrative penalties for contravention of reclaimed-water safety regulations, using the new administrative penalty framework. (The 2024 amendments already set up administrative penalties linked to contravention of regulations under section 10(1)(f); extend that logic to reclaimed-water-specific regulations.)

### 3. Express power for urgent public health directions (bridge to the Water Reuse Act, 2023 intervention)

- Insert a new section after section 11B, or wherever the scheme places emergency powers, providing:

- the Chief Medical Officer / Medical Officer of Health may issue an “Urgent Public Health Direction” where reclaimed water presents an imminent risk;
  - the Direction may require immediate cessation of use, closure of reuse-dependent facilities (where necessary), and compliance actions by the Responsible Person;
  - failure to comply is enforceable by administrative penalty and/or offence.
- Include a cross-reference: where an Urgent Public Health Direction is issued, BWA intervention powers under the Water Reuse Act, 2023 emergency section are activated.
4. Cost recovery for emergency interventions
- Amend section 11A (costs incurred in execution of work on property) to expressly include costs incurred due to reclaimed-water incident response (sampling, emergency works, isolation, clean-up), recoverable from the owner/occupier and/or the Responsible Person (as defined in the Water Reuse Act, 2023) where the incident arose from their act/omission. (Section 11A is already being strengthened for cost recovery and administrative penalties.)

## 6.6 Statutory Instrument — Water Reuse Regulations (Safety, Monitoring And Incident Response)

### 1. Mandatory Fail-Safe Protocols (treatment facility failure / deviation)

- Draft a Part titled “Fail-Safe Controls and Emergency Operations” requiring every permitted system to have:
  - continuous monitoring at defined critical control points (CCPs) appropriate to the Safety Grade;
  - alarms with predefined setpoints; and
  - automatic isolation/shutdown capability (or demonstrably equivalent engineered controls).
- Draft “Immediate Actions on Deviation” clauses that require, on any deviation from Safety Grade or loss of treatment integrity:
  - Immediate stop-supply/isolate affected storage and distribution;
  - diversion/containment of off-spec water (e.g., return to sewer, contained holding, tanker removal)
  - Emergency disinfection where applicable (with minimum contact times specified in the Regulations where applicable)
  - Prohibition on resuming supply until re-commissioning criteria are met.
- Draft “Re-Commissioning Criteria” clauses requiring:
  - Root-cause correction
  - Equipment validation

- Two consecutive compliant verification samples (or more if the end-use is higher risk) before restart
  - Regulator notification and, for high-risk events, written clearance
2. Incident classification + compulsory response (the missing life-safety protocol)
- Set out the incident classification (Levels 1–3) and minimum response actions as an operational protocol (Annex I) for immediate use through permit conditions and operating procedures:
    - Level 1: minor operational deviation with no exposure (still requires notification to Director/CMO);
    - Level 2: off-spec supplied to users but exposure can be controlled (requires 2-hour user notice + site restrictions);
    - Level 3: confirmed/likely exposure, groundwater risk, or cross-connection (requires emergency public health direction triggers + BWA step-in readiness).
  - Draft minimum response actions per level, including sampling, notifications, public advisories, and restrictions.
4. Binding technical standards (AECOM 2020) as Regulations
- Draft a Part titled “Reclaimed Water Quality Standards (Safety Grades)” that sets out, in the substantive regulations, the AECOM 2020 thresholds verbatim (microbiological, physico-chemical, and any chemical management indicators tied to end-use).
  - “Monitoring Frequencies, Methods, and QA/QC” including:
    - minimum sampling frequencies by Safety Grade and end-use;
    - approved analytical methods;
    - calibration and chain-of-custody requirements;
    - independent lab accreditation requirements (or an approved list maintained by the Director).
5. Cross-connection and backflow control (aquifer protection logic)
- Draft a Part requiring:
    - physical separation requirements, signage, color coding, and backflow prevention;
    - mandatory commissioning tests and annual re-testing;
    - immediate incident classification as Level 3 for any confirmed cross-connection/backflow event.
6. Enforcement tools that work in real time (not after harm occurs)
- Immediate operational stop-supply/stop-use actions are implemented by the Operator/Permit Holder and through network isolation controls at the BWA interface

point where applicable, in accordance with permit conditions and this Protocol. Any regulator-issued emergency direction is issued under existing statutory powers in the Water Reuse Act, 2023 and public health legislation; this Protocol sets out the operational handover steps, access arrangements, and documentation to execute those existing powers. Where physical intervention on private premises is required and is not expressly authorised by statute, the competent authority will proceed via the appropriate expedited legal process.

#### 7. Gender equality empowerment (operational, not symbolic)

- Administrative operating procedure: the Water Reuse Committee publishes an annual summary on permits, compliance actions, incidents, and gender-equality measures as part of its transparency practice.

## ANNEX I - National Reclaimed Water Incident Response Protocol

The Protocol in Annex I is provided as the operational template for use by competent authorities and permit holders; it is intended to be implemented through standard permit conditions and administrative directions rather than as a legislative annex.

### 1. Purpose and scope

This Protocol establishes a national, enforceable response framework for any reclaimed-water incident that may create a risk of illness, injury, aquifer contamination, or loss of life. It applies to all reclaimed-water production, storage, distribution, sale, and end-use under the Water Reuse Act, 2023.

### 2. Definitions

“Incident” includes any event that triggers the notification rule in section 4, including: treatment failure, exceedance of applicable thresholds, cross-connection, system intrusion, uncontrolled discharge, abnormal monitoring results suggesting contamination, or any event requiring stop-supply or stop-use.

“Stop-supply” means immediate isolation and cessation of reclaimed-water distribution from a scheme, zone, subsystem, or outlet pending clearance for restart.

“Stop-use” means immediate cessation of a specific reclaimed-water end-use at a site (e.g., irrigation, toilet flushing, industrial process, recharge) pending clearance.

### 3. Primary duty holders

A. Operator/Permit Holder (BWA or private permit holder) must: detect, contain, notify, record, and implement immediate control actions.

B. MoH/EHD must: lead public health enforcement actions, stop-use orders at end-user sites, and coordinate public health protective measures.

C. EPD must: lead environmental compliance casework, require corrective actions, and coordinate incident investigation and compliance outcomes.

D. CMO must: lead public health emergency escalation and public advisories where thresholds are met.

### 4. Mandatory notification rule (2-hour requirement)

4.1 The Operator/Permit Holder must notify the following recipients within 2 hours of becoming aware of an Incident, whether suspected or confirmed:

- EPD Director (24/7 duty contact)
- Chief Environmental Health Officer / MoH/EHD duty contact

- Chief Medical Officer (CMO) duty contact
- WRC Secretariat duty contact
- BWA incident duty manager (where BWA is not the permit holder, the permit holder's duty manager is notified instead)
- Planning and Development authority duty contact where the incident has siting/land-use implications (e.g., recharge, Zone A/B proximity)

4.2 Notification must be by the fastest available means and must include:

- time detected; location; scheme name; affected subsystem/outlet(s); suspected cause
- immediate control actions taken (isolation, shutdown, diversion, containment)
- preliminary monitoring results, if available
- expected public exposure pathways (end-uses impacted; possibility of cross-connection; proximity to sensitive wells; Zone A-E context)
- next update time (not later than 4 hours after initial notice)

## 5. Stop-supply and stop-use legal triggers (immediate safety controls)

Stop-supply and stop-use are immediate operational safety measures to prevent exposure and contamination and do not, of themselves, constitute administrative suspension or revocation of a licence/permit. Any administrative suspension or revocation remains subject to the right to be heard as per the Administrative Justice Act. The Operator/Permit Holder must implement stop-supply immediately upon any of the triggers below, without awaiting external approval. Competent authorities may also issue stop-use/stop-supply directions under existing statutory powers.

Stop-supply triggers:

1. Loss of disinfection or treatment barrier integrity (including equipment failure) that may result in unsafe reclaimed water leaving the treatment facility.
2. Exceedance of any enforceable reclaimed-water threshold applicable to the scheme at the point of compliance, including:
  - a) thresholds specified in gazetted Regulations/SIs; or
  - b) interim thresholds made enforceable through permit conditions (see CA-3 bridge below).
3. Confirmed or suspected cross-connection between reclaimed-water lines and potable-water plumbing or any connection that may allow backflow into potable infrastructure.

4. Missing critical monitoring data where the permit requires continuous or time-bound monitoring and the absence prevents safety determination.
5. Any uncontrolled discharge or bypass that may contaminate groundwater, surface waters, or sensitive receiving environments, including any release within or hydraulically connected to higher protection zones (notably Zones A and B).
6. Any credible evidence of chemical contamination event (e.g., industrial discharge) that may compromise reclaimed-water safety for intended end-use.
7. Any instruction from MoH/EHD, EPD, or CMO requiring immediate cessation due to public health risk.

Stop-use triggers (at end-user sites), led by MoH/EHD:

1. Any cross-connection at premises or failure of backflow prevention at a dual-plumbed property.
2. Use outside permitted end-use categories or outside permit conditions (including prohibited application on edible crops where applicable).
3. Any end-use that creates aerosolisation risk in proximity to sensitive receptors when monitoring or disinfection integrity is compromised.
4. Any instruction from MoH/EHD or CMO issued to prevent exposure.

## 6. Immediate control actions (first 6 hours)

Within the first 6 hours after detection, the Operator/Permit Holder must:

- isolate affected assets (valves, zones, tanks) and confirm containment
- initiate emergency sampling at defined points (treatment effluent, distribution entry point, key downstream points, and any suspected cross-connection points)
- secure and preserve operational logs (SCADA, maintenance logs, chemical dosing records)
- implement diversion or safe disposal consistent with permit conditions
- provide regulators with a situation report not later than 4 hours after initial notification

MoH/EHD must:

- issue stop-use directions to affected end-users where required
- coordinate immediate exposure risk controls (site closures, restrictions, advisories) as needed

EPD must:

- open a compliance case file

- issue a written corrective action direction within 24 hours where required
- determine whether administrative penalties and enforcement actions are indicated

## **7. Public advisory and emergency escalation thresholds**

The CMO must issue, or cause to be issued, a public advisory where any of the following apply:

- confirmed or likely exposure of the public via cross-connection, aerosolisation, or use in public-access areas
- risk of contamination of groundwater sources, especially where Zone A or Zone B sensitivity is implicated
- any incident where illness is suspected to be linked to reclaimed-water exposure
- regulator determination that public protective action is required

## **8. Investigation, corrective action, and restart criteria**

8.1 Root cause investigation must be completed and documented within 10 working days, led by EPD with MoH/EHD participation for public health aspects and Operator technical participation.

8.2 Restart of supply is prohibited until all conditions below are met:

- cause identified and corrected
- corrective actions verified (engineering fix, operational changes, staff retraining)
- confirmatory sampling demonstrates compliance with all enforceable thresholds for a defined verification period
- cross-connection risk eliminated and verified (where relevant)
- regulators issue written clearance: EPD for environmental compliance; MoH/EHD for public health readiness; WRC is notified of restart and may impose permit variations if needed

## **9. Documentation, reporting, and accountability**

- Operator/Permit Holder must maintain an Incident Register and submit an Incident Report to EPD and MoH/EHD within 5 working days, including sex-disaggregated workforce training records for any retraining mandated (CA-6).
- EPD must produce a regulatory outcome note (enforcement decisions, penalties, permit variations) within 20 working days.
- WRC must record any permit-related determinations and required follow-up actions in its decisions register.