

CERTIFICATION REPORT

Alliance for Water Stewardship (AWS)

Audit Number: AO-001754

SITE DETAILS

Site: **T.C. Pharmaceutical Industries Company Limited (Prachinburi Factory)**

Address: 39 Moo 13 Bang Kanag-Ban Sang Rd, Bang Taen, Ban Sang District, 25150, Prachinburi, THAILAND

Contact Person: Aphichat Boonruangthaworn

AWS Reference Number: AWS-000691

Site Structure: Single Site

CERTIFICATION DETAILS

Certification status: Certified Core

Date of certification decision: 2026-Feb-13

Validity of certificate: 2029-Feb-12

AUDIT DETAILS

Audited Service(s): AWS Standard v2.0 (2019)

Audit Type(s): Initial Audit

Audit Start Date: 2025-Oct-28

Audit End Date: 2025-Oct-30

Lead Auditor: Elizabeth Villezar

Audit team participants:

Prapas Nores

Site Participants:

Aphichat Boonruangthaworn, Engineering, Safety and Sustainability Director

Arjaree Suwangool, Corporate Affairs & Communications Director

Aranya Luepradid, Corporate Affairs & Communications Associate Director - Sustainability

Kanpong Poolsawat, Engineering, Safety and Sustainability Associate Director

Maesa Sriamporn, Sustainability Manager

Pornchanok Phongrod, Sustainability Manager

Thanatat Aniwat, Sustainability Manager

Nichakant Mungkala, Assistant Manager

Thanawut Kitraksa, Assistant Manager

Wilaiwan Samranruen, Sustainability and Environment Senior Engineer

Tawan Wongchantra, Sustainability and Environment Senior Officer

Supawat Suknun, Utility Senior Manager

Vasinee Niyomdate, CSR Senior Officer

CERTIFICATION REPORT

Alliance for Water Stewardship (AWS)



Audit Number: AO-001754

ADDITIONAL INFO

Summary of Audit Findings: During the certification audit, 7 non-conformities and 4 observations were raised.

The Client is requested to submit a root cause analysis and corrective actions for each of the non-conformities to WSAS by 05 January 2026.

The non-conformities must be closed within 90 days of the end of the audit. Due to the delay in issuing the report and added non-conformities at the technical review stage, this due date is extended to 20 February 2026. To meet this timeline, evidence is to be submitted to WSAS by 05 February 2026.

The audit team recommends certification of T. C. Pharmaceuticals Industries Co., Ltd. (Prachinburi) at the Core level pending closure of the non-conformities.

CERTIFICATION REPORT

Alliance for Water Stewardship (AWS)

Audit Number: AO-001754

Scope of Assessment: The scope of services encompasses the Initial certification audit for assessing the conformity of T.C. Pharmaceutical Industries Company Limited (Prachinburi Factory) to the AWS International Water Stewardship Standard, Version 2.

T.C. Pharmaceutical Industries Company Limited (TCP Group) is a premier beverage and food enterprise headquartered in Thailand, renowned globally as the original creator and flavor manufacturer of the iconic energy drink brand Red Bull, in partnership with the Yoovidhya family. As the exclusive producer and exporter of the Red Bull flavor used in the original formula sold worldwide, TCP plays a pivotal role in the brand's global success. Widely recognized as the "House of Great Brands," TCP boasts a diverse product portfolio and operates across 14 Asian markets, employing over 5,000 professionals globally. In Thailand, the company has also achieved notable success through its robust distribution network and vending machine business, reinforcing its leadership in the fast-moving consumer goods sector.

The audit site is located at 39 Moo 13, Bang Kanag-Ban Sang Rd., Bang Taen, Ban Sang District, 25150 Prachin Buri Province, Thailand. Nearby areas include Bang Khanak, Ban Sang town center, and other industrial and agricultural zones along the Bang Khanak–Ban Sang Road. The neighboring areas include:

- Bang Khanak Sub-district: Located just west of Bang Taen, this area is primarily agricultural with some light industrial activity.
- Ban Sang District Center: A short drive southeast, this is the administrative and commercial hub of the district.
- Bang Pakong River Basin: The factory is near the upper reaches of this river system, which supports local agriculture and water supply.
- Nearby Industrial Zones: While not part of a formal industrial estate, the region hosts several food and beverage manufacturers, logistics hubs, and agricultural processing facilities.
- Transportation Links: The Bang Khanak–Ban Sang Road connects to Highway 319 and other regional routes, facilitating access to Chachoengsao, Nakhon Nayok, and central Prachinburi.

The facility is located in Ban Sang District, in the western area of Phrachin Buri province. The factory is in a rural or semi-rural industrial setting, located along the Bang Khanak-Ban Sang Road. The surrounding area is a combination of farmland and various industrial or community buildings. The company is well-established locally and participates in community initiatives, such as flood relief in Ban Sang District, suggesting that the area may be a floodplain or close to a river basin prone to flooding. The TCP Legacy Museum is also located on the premises of the facility.

The site (TCP) operates two pumping stations near the Bang Pakong River, which extract water during the rainy season to maintain water quality. The water is conveyed through two pipelines, each approximately 3 km in length, to a receiving pond within the facility (Pond #10). From there, the site manages a series of ponds (Pond #9 through Pond #1), through which the water flows and is subsequently pumped for treatment.

The audit was conducted on-site from October 28 to 30, 2025.

The onsite visit included the assessment of pumping stations, receiving ponds, the water treatment plant, the WASH area at the production entrance, and potential sources of water pollution, as well as the wastewater treatment plant and the rainwater pond.

FINDINGS

NUMBER OF FINDINGS PER LEVEL

Observation	4
Non-Conformity	7

CERTIFICATION REPORT

Alliance for Water Stewardship (AWS)

Audit Number: AO-001754



CERTIFICATION REPORT

Alliance for Water Stewardship (AWS)

Audit Number: AO-001754

FINDING DETAILS

Finding No:	TNR-021726
Checklist Item No:	1.1.1
Status:	Open
Finding level:	Observation
Checklist item:	The physical scope of the site shall be mapped, considering the regulatory landscape and zone of stakeholder interests, including: <ul style="list-style-type: none">- Site boundaries;- Water-related infrastructure, including piping network, owned or managed by the site or its parent organization;- Any water sources providing water to the site that are owned or managed by the site or its parent organization;- Water service provider (if applicable) and its ultimate water source;- Discharge points and waste water service provider (if applicable) and ultimate receiving water body or bodies;- Catchment(s) that the site affect(s) and is reliant upon for water.
Findings:	Stormwater from the site is discharged into the Bang Pakong River through a single canal, while treated wastewater is internally reused for irrigation purposes, specifically for gardening and cleaning activities. The pathway of the stormwater can be clearly illustrated on the site map to ensure an accurate representation of water flow.
Finding No:	TNR-022108
Checklist Item No:	1.3.5
Status:	Closed
Finding level:	Non-Conformity
Due date:	2026-Feb-02
Checklist item:	Potential sources of pollution shall be identified and if applicable, mapped, including chemicals used or stored on site.
Findings:	Although the site assessment successfully identified and mapped potential sources of water pollution, it did not account for the truck yard as a contributing factor.
Corrective action:	The truck yard has been added to SD-UT-043, which identifies areas with potential contamination risks. Currently, environmental contamination prevention measures are in place, including regular site inspections by the area owner. In the event of an oil spill, corrective action is taken immediately using absorbent materials.
Evidence of implementation:	<ol style="list-style-type: none">1. The truck yard has been added to SD-UT-043, which identifies areas with potential contamination risks. (See the file “SD-UT-043 Areas at Risk of Contamination.”)2. Environmental contamination prevention measures are in place, including regular site inspections conducted by the area owner and safety officer. (See the file “Support doc.-SHE Checklist_Truck yard_Nov 2025 - Jan 2026”)3. In the event of an oil spill, corrective actions are taken immediately using absorbent materials. (See the files “Support Doc.-SP-UT-001 Drainage System in the Factory” and “Support Doc.-Truck Yard and Absorbent Materials”; refer to the yellow highlights for related evidence.)

CERTIFICATION REPORT

Alliance for Water Stewardship (AWS)

Audit Number: AO-001754

Finding No:	TNR-022530
Checklist Item No:	1.5.4
Status:	Open
Finding level:	Observation
Checklist item:	Water quality, including physical, chemical, and biological status, of the catchment shall be identified, and where possible, quantified. Where there is a water-related challenge that would be a threat to good water quality status for people or environment, an indication of annual, and where appropriate, seasonal, high and low variances shall be identified.
Findings:	There is a high likelihood of salinity occurring within the Bang Pakong River. As a result, the site monitors this parameter closely, focusing on its seasonal fluctuations and the variations between high and low levels, which were highlighted during the audit. For further improvement, the site may consider incorporating additional parameters into future collective initiatives.

CERTIFICATION REPORT

Alliance for Water Stewardship (AWS)



Audit Number: AO-001754

Finding No: TNR-022106
Checklist Item No: 1.5.5
Status: Closed
Finding level: Non-Conformity
Due date: 2026-Feb-02
Checklist item: Important Water-Related Areas shall be identified, and where appropriate, mapped, and their status assessed including any threats to people or the natural environment, using scientific information and through stakeholder engagement.
Findings: There are at least 39 IWRAs within the catchment that were identified; however, threats to people or the natural environment were not identified using scientific information and through stakeholder engagement.

CERTIFICATION REPORT

Alliance for Water Stewardship (AWS)

Audit Number: AO-001754

Corrective action:

1: Strengthen IWRA Identification, Status Assessment, and Impact Analysis

- Review and validate all identified IWRAs using a standardized methodology.
- Identify the current status and potential threats for each IWRA to understand existing challenges.
- Support assessment using scientific evidence (hydrological data, ecological studies, WWF, Office of the National Water Resources, royal irrigation department, etc.) or stakeholder engagement where data is limited to ensure a comprehensive understanding of status and threats before moving to prioritization.

2: IWRA Status Ranking and Prioritization Framework

- Rate IWRA Status based on the information gathered in Step 1 using AWS Guideline on Assessing the status of an IWRA (Scale 0-5).
- Assign priority levels (High/Medium/Low) by considering the identified status, threats, and relative importance to the catchment.
- Ensure the ranking reflects the urgency of intervention required to tackle identified problems.

3: Integrate IWRAs into Water Risk and Stewardship Planning

Explicitly link priority IWRAs, their status, and identified threats to:

- Catchment-level water risk assessment.
- Site-level water stewardship planning and mitigation initiatives (Step 2 & 3 of the AWS process).

4: Strengthen stakeholder engagement and validation:

Engage relevant stakeholders (river basin organizations, local authorities, communities, NGOs, environmental experts, Office of the National Water Resources, royal irrigation department) to:

- Validate the current status and perceived threats of IWRAs.
- Confirm shared concerns and opportunities for collective action
- Clearly document engagement processes, outcomes, and decisions

The revised IWRA table is attached. Sample data have been entered in the orange-highlighted cells for illustrative purposes. Please review and let me know if you have any comments or suggestions.

Note: We have considered your comments and have made the necessary additions and revisions to the CAP. In particular, we have restructured it into a clear step-by-step implementation process, starting from IWRA assessment and threat analysis before ranking, and showing stronger alignment with the AWS methodology.

CERTIFICATION REPORT

Alliance for Water Stewardship (AWS)

Audit Number: AO-001754

Evidence of implementation: Following the approved corrective action plan, we are submitting the following evidence of implementation for your review and closure of the CAR:

1. Updated IWRA Assessment and Evaluation Instructions
We have completed the assessment of Important Water-Related Areas (IWRAs). We have integrated a comprehensive "How to Evaluate" (Evaluation Instructions) section directly into the assessment file. This provides clear guidance on the methodology and criteria used for the assessment process.

2. IWRA Assessment Evidence for High-Priority Areas
We are providing the supporting evidence for the IWRA assessment results, specifically focusing on the areas identified as "High Prioritization" (Risk to Site Catchment). This document demonstrates our analysis of the significant water-related risks associated with our site's catchment area and the prioritization matrix used.

Finding No: TNR-022451
Checklist Item No: 1.5.7
Status: Open
Finding level: Observation
Checklist item: The adequacy of available WASH services within the catchment shall be identified.
Findings: At the national level in 2020, approximately 85% of the population in Thailand had access to WASH services, while access in rural areas was estimated at 83%. However, these data are limited to national and rural-level statistics. The site may consider undertaking a more systematic catchment-level assessment of WASH adequacy to better inform and support future collective action initiatives.

CERTIFICATION REPORT

Alliance for Water Stewardship (AWS)

Audit Number: AO-001754

Finding No:	TNR-022114
Checklist Item No:	1.7.2
Status:	Closed
Finding level:	Non-Conformity
Due date:	2026-Feb-02
Checklist item:	Water-related opportunities shall be identified, including how the site may participate, assessment and prioritization of potential savings, and business opportunities.
Findings:	<p>The table identifies a range of water-related opportunities and outlines corresponding actions for participation. However, there is currently no prioritization framework in place to assess potential cost savings or business opportunities, leaving the relative value of each initiative undetermined.</p> <p>Reference: Table 20.</p>
Corrective action:	<ol style="list-style-type: none">1. Develop a water opportunity prioritization framework to ensure value-based decision-making.2. Define standardized evaluation criteria (e.g., cost savings, water risk reduction, ROI).3. Re-score existing water-related opportunities using the defined criteria.4. Rank opportunities and select priority actions for implementation.5. Update relevant documents to reflect the revised prioritization approach. <p>Water-related opportunities in the 2025 plan will be re-evaluated, re-scored, and re-prioritized using the newly established water opportunity prioritization framework as part of the NC closure actions. The same framework will be formally applied as the standard approach for evaluating and prioritizing water-related initiatives from 2026 onward.</p>

CERTIFICATION REPORT

Alliance for Water Stewardship (AWS)

Audit Number: AO-001754

Evidence of implementation: As two different approaches are used to identify water-related opportunities and prioritize actions at the factory and catchment levels, separate standards have been established for each approach, as outlined below.

A. Factory level

1. Developed a water opportunity prioritization framework to ensure value-based decision-making.
2. Defined standardized evaluation criteria (Potential Cost Savings, Water Risk Reduction, Investment Efficiency (ROI), Implementation Feasibility).
3. Re-scored existing water-related opportunities using the defined criteria.
4. Ranked opportunities and select priority actions for implementation.
5. Updated relevant documents to reflect the revised prioritization approach.

Evidence: Reference file "1.7.2 Water-related opportunities (Factory)

B. Catchment level

1. Developed a water opportunity prioritization framework to ensure value-based decision-making.
2. Defined standardized evaluation criteria (Budget, Catchment Priority by distance from site, Stakeholder Engagement, Sustainable).
3. Re-scored existing water-related opportunities using the defined criteria.
4. Ranked opportunities and select priority actions for implementation.
5. Updated relevant documents to reflect the revised prioritization approach.

Evidence: Reference file "1.7.2 Water-related opportunities (Catchment levels)

CERTIFICATION REPORT

Alliance for Water Stewardship (AWS)

Audit Number: AO-001754

Finding No: TNR-022452
Checklist Item No: 2.3.2
Status: Closed
Finding level: Non-Conformity
Due date: 2026-Feb-02
Checklist item: A water stewardship plan shall be identified, including for each target:

- How it will be measured and monitored
- Actions to achieve and maintain (or exceed) it
- Planned timeframes to achieve it
- Financial budgets allocated for actions
- Positions of persons responsible for actions and achieving targets
- Where available, note the link between each target and the achievement of best practice to help address shared water challenges and the AWS outcomes.

Findings: The Water Stewardship Plan does not fully meet the requirements of AWS 2.3.2, as not all objectives have clearly defined and measurable targets (e.g., % progress, volume of water replenished using the VWBA method, and number of engagements). The plan is action-based, and it is not clear from the plan what outcome-based targets the site wants to achieve with the set of planned actions. Regulatory compliance is a baseline and not regarded as a water stewardship target. In addition, the linkage of objectives and actions to AWS Outcomes and recognized best practices is incomplete and not applied consistently, and the plan includes an “Other” AWS Outcome category that is not defined in AWS Standard Version 2.0.

Corrective action:

1. Redesign the Water Stewardship Plan to shift from action-based planning to outcome-based planning.
2. Define SMART water stewardship targets (specific, measurable, and outcome-oriented).
3. Align targets with AWS Outcomes (Good water governance, Sustainable water balance, Good water quality status, Important water-related areas, Safe water, sanitation and hygiene for all (WASH)).
4. Clearly link planned actions to intended water stewardship outcomes.
5. Assign clear ownership, budget allocation, and timelines to each target.
6. Update the monitoring and review framework to track progress against defined outcomes.

CERTIFICATION REPORT

Alliance for Water Stewardship (AWS)

Audit Number: AO-001754

Evidence of implementation:

1. Redesigned the Water Stewardship Plan to shift from action-based planning to outcome-based planning.
2. Defined SMART water stewardship targets (specific, measurable, and outcome-oriented).
3. Aligned targets with AWS Outcomes (Good water governance, Sustainable water balance, good water quality status, Important water-related areas, Safe water, sanitation and hygiene for all (WASH)).
4. Clearly linked planned actions to intended water stewardship outcomes.
5. Assigned clear ownership, budget allocation, and timelines to each target.
6. Updated the monitoring and review framework to track progress against defined outcomes.

Details are provided in the file “2.3.2 Water Stewardship Plan,” columns J–P.

Finding No: TNR-022463
Checklist Item No: 4.1.1
Status: For information
Finding level: Non-Conformity
Due date: 2026-Feb-02
Checklist item: Performance against targets in the site’s water stewardship plan and the contribution to achieving water stewardship outcomes shall be evaluated.

Findings: Although a progress update for the Water Stewardship Plan (WSP) was available as of September 2025, the plan was action-based with the lack of measurable targets. The site does not consistently measure and evaluate progress against clearly defined and established targets, limiting effective tracking of WSP implementation. There was no evidence provided that the site evaluated its contribution to achieving water stewardship outcomes.

Corrective action:

1. Establish measurable and SMART water stewardship targets.
2. Define clear KPIs and baselines for each target.
3. Evaluate performance results against the defined targets and KPIs.
4. Link evaluation results to relevant AWS Outcomes

Evidence of implementation:

1. Established measurable and SMART water stewardship targets.
2. Defined clear KPIs and baselines for each target.
3. Evaluated performance results against the defined targets and KPIs.
4. Linked evaluation results to relevant AWS Outcomes

Details are provided in the file “2.3.2 Water Stewardship Plan,” columns J–R, and supporting documents provide evidence for each KPI.

CERTIFICATION REPORT

Alliance for Water Stewardship (AWS)

Audit Number: AO-001754

Finding No:	TNR-022111
Checklist Item No:	4.1.2
Status:	Closed
Finding level:	Non-Conformity
Due date:	2026-Feb-02
Checklist item:	Value creation resulting from the water stewardship plan shall be evaluated.
Findings:	The value creation to the site resulting from the Water Stewardship Plan (WSP) was not evaluated.
Corrective action:	<ol style="list-style-type: none">1. Define value dimensions for water stewardship (such as financial, risk, compliance).2. Map each WSP initiative to clear value drivers and organizational objectives.3. Quantify value where feasible, including financial and non-financial impacts.4. Prepare a Water Stewardship Value Creation Report summarizing the value created by the WSP.
Evidence of implementation:	<p>The framework will be applied starting with the 2025 result.</p> <ol style="list-style-type: none">1. Defined value dimensions for water stewardship (Finance, Water Risk Management, Compliance and Governance).2. Mapped each WSP initiative to clear value drivers and organizational objectives.3. Quantified value where feasible, including financial and non-financial impacts.4. Prepared a Water Stewardship Value Creation Report summarizing the value created by the WSP. (Used the same attached file) <p>Details are provided in the file “2.3.2 Water Stewardship Plan,” columns S–U.</p>

CERTIFICATION REPORT

Alliance for Water Stewardship (AWS)

Audit Number: AO-001754

Finding No: TNR-022112
Checklist Item No: 4.1.3
Status: Closed
Finding level: Non-Conformity
Due date: 2026-Feb-02
Checklist item: The shared value benefits in the catchment shall be identified and where applicable, quantified.
Findings: The shared value benefits attributed to the Water Stewardship Plan (WSP) remain unsubstantiated. While there are ongoing activities within the catchment that aim to generate value, their alignment and direct linkage to the WSP are not clearly demonstrated.
Corrective action:

1. Define a shared value framework covering people, environment, and economic benefits.
2. Map each WSP action to clearly defined catchment-level benefits.
3. Quantify shared value where applicable (e.g., additional water volume in m³, number of beneficiaries).
4. Collect verifiable evidence (e.g., data records, MoUs, photos, and testimonials) to support shared value claims.
5. Prepare a Water Stewardship Value Creation Report summarizing the value created by the WSP.

Evidence of implementation:

1. Defined a shared value framework covering people, environment, and economic benefits.
2. Mapped each WSP action to clearly defined catchment-level benefits.
3. Quantified shared value where applicable.
4. Collected verifiable evidence to support shared value claims where applicable.
5. Prepared a Water Stewardship Value Creation Report summarizing the value created by the WSP. (Used the same attached file)

Details are provided in the file "2.3.2 Water Stewardship Plan," columns V–X.

Finding No: TNR-022453
Checklist Item No: 4.4.1
Status: Open
Finding level: Observation
Checklist item: The site's water stewardship plan shall be modified and adapted to incorporate any relevant information and lessons learned from the evaluations in this step and these changes shall be identified.
Findings: A Review Date tab was provided, indicating the review frequency, the most recent review, and the next scheduled review date. However, while the "Note" field is intended to capture revision history and corresponding lessons learned, the recording of lessons learned can be further strengthened to ensure they are clearly documented.

CERTIFICATION REPORT

Alliance for Water Stewardship (AWS)

Audit Number: AO-001754

Report Details

Report	Value
Report prepared by	Elizabeth Villezar
Report approved by	Neringa Pumputyte
Report approved on (Date)	19 December 2025

Surveillance

Proposed date for next audit
2026-Oct-28

Comment The site is eligible for Surveillance 1 Audit next year.

Stakeholder Announcements

Date of publication	Location
02/09/2025	https://www.tcp.com/en/sustainability/water-sustainability
05/09/2025	Bulletin Board of the Royal Irrigation Department – Prachin Buri
02/09/2025	https://a4ws.org/aws-standard/aws-standard-certification/stakeholder-announcements/
Comment	After receiving the official announcement, the information was published on the TCP website, which was validated during the audit. Based on the interview, the announcement was made in the community area (13 villages) in September 2025. A copy was also shared with Prachin Buri Glass and the local government.
Comment	Three stakeholder representatives were interviewed during this audit, which were conducted by the Local Auditor. The representatives were selected from the list provided by the site to the Audit Team during the audit preparation phase, comprising one representative each from the local village, regulatory body, and non-governmental organization (NGO).

CERTIFICATION REPORT

Alliance for Water Stewardship (AWS)



Audit Number: AO-001754

Catchment Information

Catchment Information

CERTIFICATION REPORT

Alliance for Water Stewardship (AWS)

Audit Number: AO-001754

The Bang Pakong River Basin covers a total area of approximately 10,707 km² (1.07 million ha) and drains into the Gulf of Thailand. The basin's headwaters originate from the Sankamphaeng Mountains and the Dong Phrayayen–Khao Yai Mountain ranges in the north, as well as the Chanthaburi Mountains in the east. Its two main tributaries—the Prachinburi River and the Nakhon Nayok River—both arise within Khao Yai National Park and converge at Yothaka Subdistrict in Chachoengsao Province, forming the Bang Pakong River. There are at least 12 sub-basins, of which the site is located at the Bang Pakong River Plain (Part 1).

The Bang Pakong River Basin contains four nationally important wetlands, as follows:

1. Bang Pakong River Wetland – Formed along the main Bang Pakong River, this wetland extends through the provinces of Chachoengsao, Chonburi, Prachinburi, and Nakhon Nayok. It has a total length of approximately 122 km, with an elevation ranging from 0 to 20 meters above sea level.

2. Nakhon Nayok River Wetland – Originating from Khao Yai National Park, this wetland flows through Mueang, Ban Na, and Ongkharak Districts in Nakhon Nayok Province before joining the Bang Pakong River. The river's maximum depth reaches approximately 4.7 meters.

3. Central Plains of Thailand Wetland – Portions of this extensive lowland wetland are located within Nakhon Nayok and Chachoengsao Provinces. The area comprises scattered small lakes and swamps, tree stands, small rivers, rice paddies, lotus and papyrus ponds, fish ponds, irrigation canals, and fruit plantations. Influenced by the tropical monsoon, this wetland receives both water and sediment inflow from the Bang Pakong River.

4. Upper Gulf of Thailand Wetland – Situated at the Bang Pakong Estuary along the Gulf of Thailand, this wetland area has an average depth of around 45 meters. It includes mudflats, silt and sand beaches, mangrove forests, and small islands surrounding the estuary.

The Bang Pakong River Basin is ecologically diverse, encompassing freshwater, brackish, and saltwater habitats. More than 100 species of aquatic plants and over 400 fish species have been recorded, ranging from large stingrays weighing up to 150 kilograms to small saltwater fish, including more than 100 species of economic importance. The basin's wetlands also support a rich diversity of resident bird species and serve as vital feeding and resting grounds for migratory birds. The Bang Pakong Estuary is recognized as a biodiversity hotspot, home to a variety of aquatic mammals, including the Irrawaddy dolphin.

A notable ecological feature of the basin is the intrusion of seawater deep into the Bang Pakong River during high tides and the dry season. While this phenomenon is a natural part of the basin's hydrodynamics, it poses challenges to agricultural activities in the surrounding areas. To mitigate saltwater intrusion and provide freshwater storage for dry-season use, a dam was constructed near Ban Phai Saweang in Bang Kaew Subdistrict, Chachoengsao Province. The dam became operational on 6 January 2000; however, its operation has also resulted in several ecological and hydrological issues.

Reference: Chaiyarak, B., Tattiyakul, G., and Karnsunthad, N. (2019). Climate Change Vulnerability Assessment Bang Pakong River Wetland, Thailand. Bangkok, Thailand: IUCN. X + 73pp.

The name of the Catchment for the site is the Bang Pakong River Plain 1 (part 1) Sub-basin, which is within the Bang Pakong River Basin.

The climate in Prachin Buri is classified as tropical (Aw) according to the Köppen–Geiger climate classification. Precipitation levels are significantly higher during the summer months compared to the winter season. The mean annual temperature is approximately 26.7 °C (80.1 °F), with an average yearly rainfall of about 1,622 mm (63.9 in). Due to its proximity to the equator, seasonal variation is limited, and summers are not distinctly defined.

CERTIFICATION REPORT

Alliance for Water Stewardship (AWS)

Audit Number: AO-001754



Bang Pakong River Basin.jpg

Comment The site is situated within the Bang Pakong River Basin, which serves as its primary water source and the ultimate recipient of its stormwater discharges.

CERTIFICATION REPORT

Alliance for Water Stewardship (AWS)



Audit Number: AO-001754

Client Description and Site Details

Client/Site Background

CERTIFICATION REPORT

Alliance for Water Stewardship (AWS)

Audit Number: AO-001754

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- North: The site is directly adjacent to agricultural land. To the northeast lies Prachinburi Glass Industry Co., Ltd., a glass manufacturer supplying glass containers to TCP.
- East: The eastern boundary is bordered by agricultural land.
- South: The southern boundary is adjacent to the Bang Krachet public canal, followed by agricultural land.
- West: The western boundary adjoins a residential community, including TCP worker accommodation.

Water-Related Infrastructure Owned or Managed by the Site or Its Parent Organization

A. Water Treatment Facilities

- Water pumping station and transmission pipelines
- Raw water storage ponds
- Tap water production building (CMF system)
- RO water production building

B. Wastewater Treatment Facilities

- Primary treatment pond
- Equalization pond
- UASB system
- Anaerobic pond
- Aerobic ponds
- Polishing pond

C. Rainwater Harvesting Infrastructure

- Rainwater storage pond
- Pumping station

D. Other Water-Related Facilities

- Fire water pump
- Cooling tower
- Boiler
- Water Sources Owned or Managed by the Site or Its Parent Organization

The site abstracts raw water from the Bang Pakong River during the rainy season. Water is drawn via a pumping station located on the riverbank and conveyed through a transmission pipeline running parallel to the site's entrance road. The distance between the Bang Pakong River and the company's raw water storage pond is approximately 3 kilometers.

Water Service Provider and Ultimate Water Source

- Not applicable. The site does not receive water from an external service provider.

Discharge Points, Wastewater Service Provider, and Ultimate Receiving Water Body

A. Wastewater Management

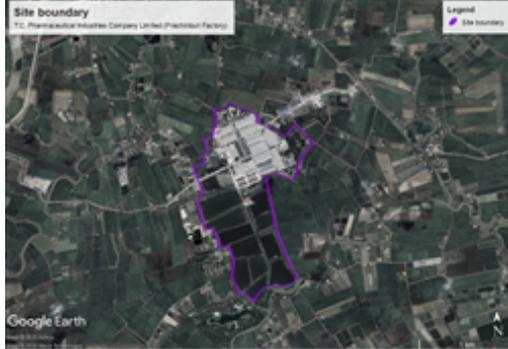
The site operates an in-house wastewater treatment facility. Wastewater generated from production and domestic activities is collected through an internal pipeline network and treated using a multi-stage system comprising:

- Primary treatment pond
- Equalization pond
- UASB units
- Anaerobic pond
- Aerobic ponds
- Polishing pond
- Treated effluent is collected on-site and reused for irrigation within the facility's landscaped areas.

Audit Number: AO-001754

B. Stormwater Management

Rainwater is collected through a network of collection ponds located across the site. Water from these ponds is directed to the main rainwater collection pond situated near the site's front gate. From there, stormwater is discharged into the public canal (Chuat Nong Or), primarily to prevent flooding within the premises.



Site Map.jpg

Comment A map of the site was provided, delineating the site's boundaries.

Summary of Shared Water Challenges

Summary of Shared Water Challenges

The following are the water challenges identified by the stakeholders, which are shared with the site:

- flooding
- increasingly severe storms (still related to flooding)
- drought
- saltwater intrusion
- aquatic weeds (water hyacinth that obstruct waterways)
- shallow canals with low water levels
- damaged water gates
- uncertainty in sufficient water supply
- river water quality
- pollution by chemical use
- saltwater issues

Comment The water challenges identified in indicators 1.2.1 & 1.6.1 have been summarized.

0.0.1 Water Source & Discharge Locations

0.01 *Have any water source or discharge locations been visited during the audit, if so, which and where? If none were visited, please provide justification.* ✔
Yes

Comment The Bang Pakong River has been visited, where the pumping house of the site is located.

Audit Number: AO-001754

1 STEP 1: GATHER AND UNDERSTAND

1.1 *Gather information to define the site's physical scope for water stewardship purposes, including: its operational boundaries; the water sources from which the site draws; the locations to which the site returns its discharges; and the catchment(s) that the site affect(s) and upon which it is reliant.*

1.1.1 *The physical scope of the site shall be mapped, considering the regulatory landscape and zone of stakeholder interests, including:*

- Site boundaries;
- Water-related infrastructure, including piping network, owned or managed by the site or its parent organization;
- Any water sources providing water to the site that are owned or managed by the site or its parent organization;
- Water service provider (if applicable) and its ultimate water source;
- Discharge points and waste water service provider (if applicable) and ultimate receiving water body or bodies;
- Catchment(s) that the site affect(s) and is reliant upon for water.

Q
Obs.

Comment

- Site boundaries are identified in the 1.1.1 Physical scope 20251010, where a Google map is contained, delineating the site's boundaries
- Water-related infrastructure, including piping network, owned or managed by the site or its parent organization. Water infrastructure includes a raw water pumping building at the Bang Pakong River and a 3-km pipe to Pond #10, which connects sequentially to Ponds #9 to #1. There were small strips of backwash water from the tap water production process. The stormwater discharge point was also identified and mapped near pond# 10. The drainage system layout was identified and mapped, which is connected to the site's wastewater treatment facilities. It is noted and confirmed that pond# 6 in the wastewater treatment facilities has no discharge to the nearby water body (validated during the tour of the site). Stormwater facilities were identified and mapped within the site, including those areas that may pose potential water pollution.

- The Bang Pakong River is the source of raw water and the recipient of stormwater; mapping needs improvement to show this clearly. The process of obtaining a permit to draw surface water from the river is currently in progress, based on both the interview and the Thai-language document submitted. The permit will be formally issued once the approved water meter—imported from overseas and authorized by the Authority—has been installed. At present, the site operates in accordance with the meeting minutes of the River Basin Committee meeting dated 29 July 2015; however, the government agency is charging for water usage according to the readings from the meter installed at the water treatment plant connected to Pond No. 1. The designated catchment area for the site is the Bang Pakong River Plain 1 Sub-basin.

- The water service provider is not applicable as the site directly draws surface water from the Bang Pakong River

- The discharge point of the site is the Bang Pakong River for the stormwater, but the treated wastewater is reused within the site through irrigation intended for gardening and cleaning (need to reflect it clearly on the map).

Stormwater from the site is discharged into the Bang Pakong River through a single canal, while treated wastewater is internally reused for irrigation purposes, specifically for gardening and cleaning activities. The pathway of the stormwater can be clearly illustrated on the site map to ensure an accurate representation of water flow.

1.2 *Understand relevant stakeholders, their water related challenges, and the site's ability to influence beyond its boundaries.*

CERTIFICATION REPORT

Alliance for Water Stewardship (AWS)

Audit Number: AO-001754

1.2.1	<p><i>Stakeholders and their water-related challenges shall be identified. The process used for stakeholder identification shall be identified. This process shall:</i></p> <ul style="list-style-type: none"> - <i>Inclusively cover all relevant stakeholder groups including vulnerable, women, minority, and Indigenous people;</i> - <i>Consider the physical scope identified, including stakeholders, representative of the site's ultimate water source and ultimate receiving water body or bodies;</i> - <i>Provide evidence of stakeholder consultation on water-related interests and challenges;</i> - <i>Note that the ability and/or willingness of stakeholders to participate may vary across the relevant stakeholder groups;</i> - <i>Identify the degree of stakeholder engagement based on their level of interest and influence.</i> 	 Yes
Comment	<p>The stakeholders and their water-related challenges were identified by the site, considering the location (water ultimate source/discharge), as well as the influence on the site that may pose physical, reputational, and compliance risks; and/or opportunities or solutions.</p> <p>The site employed physical (face-to-face) engagement through meetings by inviting the relevant stakeholders. A physical letter in the Thai Language was accordingly sent to the stakeholders, and their attendance serves as testament of their commitment/willingness to participate.</p> <p>The site measured the degree of stakeholders' engagement based on their level of interest in the water-related risks discussed during the meeting.</p> <p>The list of Stakeholders is in a Word file (with a total of 19). The process for identifying stakeholders involves considering physical, regulatory, governance, and reputational risks, as well as opportunities and solutions that can be harnessed.</p> <p>Shared water challenges are summarized, which were obtained through an interview with stakeholders (Excel file) on 22 March 2024/22 March 2025, and 29 October 2024 (with updates), working closely with the school as well.</p> <p>The degree of stakeholder engagement based on their level of interest and influence was documented. It was discussed that the villagers and other stakeholders who attended the event are interested.</p>	
1.2.2	<p><i>Current and potential degree of influence between site and stakeholder shall be identified, within the catchment and considering the site's ultimate water source and ultimate receiving water body for wastewater.</i></p>	 Yes
Comment	<p>The current and potential degree of influence between the site and the stakeholders was identified:</p> <ul style="list-style-type: none"> - Royal Irrigation - keep satisfied & meet needs (high influence) - At least nine (9) identified stakeholders as Key Players to be managed closely (high influence) - Monitor those who are least important (low influence) - Royal Projects - Keep informed & show consideration (low influence) with at least 10 identified stakeholders <p>Potential degree of influence (four groups)</p> <ul style="list-style-type: none"> - High degree (raise awareness and key players for driving change) - Low degree (monitor and can be considered for potential collective engagement) 	
1.3	<p><i>Gather water-related data for the site, including: water balance; water quality, Important Water-Related Areas, water governance, WASH; water-related costs, revenues, and shared value creation.</i></p>	
1.3.1	<p><i>Existing water-related incident response plans shall be identified.</i></p>	 Yes

CERTIFICATION REPORT

Alliance for Water Stewardship (AWS)

Audit Number: AO-001754

- Comment Existing water-related incident response plans were identified in several work instructions, summarized in the document '1.3.1 Incident response plans-20251028':
- WI-SF-005 Fire Fighting and Protection Plan
 - WI-SF-009 Chemicals and Oil and Gas Spill Protection Plan
 - WI-SF-010 Flood Emergency Procedure
 - WI-UT-047 Drought Emergency Procedure
 - WI-UT-046 Wastewater Treatment Pond Leakage/ Overflow Procedure
 - SP-WW-001 Surface Water and Process Water Quality Control
 - SP-UT-001 Drainage Plan
- 1.3.2** *Site water balance, including inflows, losses, storage, and outflows shall be identified and mapped* ✔
Yes
- Comment Water comes in from the Bang Pakong River and Rainwater. Raw water ponds 1-10 => Water Treatment Plant (Clarifier) => Tap Water => RO Water pass 1 (metered) passed to Factory 1-8 & RO Brine Water (metered) & returned to RO pass 1 => RO water pass 2 (metered) passed to Boiler RO Pass 2 => Production => Finished Goods. This water flow has been mapped by the site, as shown in the document uploaded and presented, including losses to evaporation (cooling) and from storage ponds.
- 1.3.3** *Site water balance, inflows, losses, storage, and outflows, including indication of annual variance in water usage rates, shall be quantified. Where there is a water-related challenge that would be a threat to good water balance for people or environment, an indication of annual high and low variances shall be quantified.* ✔
Yes
- Comment The site has been monitoring its water balance quarterly with the provided data since 2024. Water withdrawn from the river is measured based on the volume of pond# 10 that it can hold (estimation only). Based on the water balance provided, there is a water balance of approximately -20.54% of the total volume of water coming in from the river and the rainwater collected from January to September 2025. With this, there are several initiatives to reduce water loss, such as the increase of water recovery from RO water pass 1; RO water pass 2 recovery; RO brine; and the reduction of RO pass 1 backwash frequency by extending the backwash time. Based on the data provided, the water coming into the products is fluctuating; in Q4 of 2024, the volume is high compared to Q1 of 2025 (difference of almost -6%). However, in Q2 of 2025, the volume increased by more than 8% based on the previous quarter, and by Q3 of 2025, the volume had decreased by 11%.
- Meter has been considered in the monitoring of water coming from pond# 1, and that of the rainwater, to account for possible loss along the process of water management (with ongoing application to account for the volume of water drawn from the river going to pond# 10).
- The water reduction target is 3% vs. last year (water savings: 89,877m3 1,595,874Baht, 100% legal compliance; water use ratio < 3.44 L/L-FG with actual of 3.47 L/L-FG covering the period of Jan - Sep 2025).
- 1.3.4** *Water quality of the site's water source(s), provided waters, effluent and receiving water bodies shall be quantified. Where there is a water-related challenge that would be a threat to good water quality status for people or environment, an indication of annual, and where appropriate, seasonal, high and low variances shall be quantified.* ✔
Yes

CERTIFICATION REPORT

Alliance for Water Stewardship (AWS)

Audit Number: AO-001754

Comment Bang Pakong River - Thai Government (salinity with some abnormal results in January & September 2025, DO with some results below the requirement in Jan., Feb, May & Sept 2025, pH has below and above the requirements but mostly within the required level, turbidity, TDS, conductivity, chlorophyll, temperature (annual variances need to be qualified as well => extra effort can be considered).

Some challenges were noted for the test results of the Bang Pakong River in terms of salinity, dissolved oxygen, and pH.

Receiving Ponds (raw water - once a year by other party, but daily for the salinity, conductivity, turbidity, free chlorine, color, total alkalinity, total hardness, total calcium hardness, iron, manganese, silica for pond# 1 only, which is within the required parameters). Water Quality Analysis Report - Pond# 1 covering the period of four years from 2022 to 2025. Pond# 1 is the only one undergoing water parameter testing, as this is directly connected to the Water Treatment plant.

RO Water I testing has been performed on 30 Jan 2025 by an independent, accredited third-party laboratory. The analytical results confirm that all measured parameters are within the required standards and compliance thresholds, thereby validating the effectiveness of the treatment system and ensuring conformity with applicable quality requirements (once a year for compliance). RO Water II is being tested as well, once a year, with the latest on 30 Jan 2025. All parameters tested resulted in being within the requirements.

Rainwater pond (once a week) - pH, conductivity, TDS, Salinity, Alkalinity, DO
Wastewater (every three months) - Analysis Test Report (Final Pond) => arsenic, barium, cadmium, copper, hexavalent chromium, lead, mercury, zinc, and a lot....analysis is only for those parameters applicable to the site

Drinking water (daily internally & once a year for the RO pass 2 for compliance only)

Stormwater is also tested.

1.3.5 *Potential sources of pollution shall be identified and if applicable, mapped, including chemicals used or stored on site.* ✔ closed

Comment The Site Map is presented
 - Hazardous waste storage building
 - Fuel Oil Tank
 - Diesel Fuel Tank (Generator Set)
 - Caustic Soda Tank
 - Hydrochloric Tank
 - Chemical Storage Area
 - PAC Tank
 - Chlorine Tank

While the site identified and mapped the potential sources of water pollution within the site, the inclusion of the truck yard was not considered.

Finding No: TNR-022108

1.3.6 *On-site Important Water-Related Areas shall be identified and mapped, including a description of their status including Indigenous cultural values.* ✔ Yes

Comment Presented the IWRAs within the catchment and within 5 km of the site. The nearby IWRAs are the Khlong Bang Krachet Canal, Kong Bang Kradan Canal, Klong Bang Taen Noi (passing through the site), Bang Pakong River, and Nakhon Nayok River. These are mapped in Figure 13 of the document presented.

1.3.7 *Annual water-related costs, revenues, and a description or quantification of the social, cultural, environmental, or economic water-related value generated by the site shall be identified and used to inform the evaluation of the plan in 4.1.2.* ✔ Yes

CERTIFICATION REPORT

Alliance for Water Stewardship (AWS)

Audit Number: AO-001754

Comment	<p>The site has identified its water-related annual costs, and a description (column L) including quantification (column K) can be found in the provided document 1.3.7 Annex 1 budget_final_06Dec2024.</p> <p>The total water cost—covering chemical expenses, electricity, preventive maintenance, labor, and process-related charges—amounts are described for tap water for January 2025. In comparison, the wastewater treatment cost was described.</p>	
1.3.8	<p><i>Levels of access and adequacy of WASH at the site shall be identified.</i></p>	 Yes
Comment	<p>Table 8 TCH WASH Service Status of the site:</p> <ul style="list-style-type: none"> - safe drinking water - toilets & hand wash facilities - feminine hygiene products & disposal facilities - maintenance of toilets & handwashing <p>Restroom Requirements and Capacity Required facilities: 27 women’s restrooms and 17 men’s restrooms TCP facilities available:</p> <ul style="list-style-type: none"> - 387 women’s restrooms - 248 men’s restrooms - Disabled-access facilities included 	
1.4	<p><i>Gather data on the site’s indirect water use, including: its primary inputs; the water use embedded in the production of those primary inputs the status of the waters at the origin of the inputs (where they can be identified); and water used in out-sourced water-related services.</i></p>	
1.4.1	<p><i>The embedded water use of primary inputs, including quantity, quality and level of water risk within the site’s catchment, shall be identified.</i></p>	 Yes
Comment	<p>Table 9: Top 20 Raw Materials by Spend and Estimated Water Usage This table highlights the top 20 raw materials ranked by expenditure, along with estimated water usage associated with material inputs, where data is readily available.</p> <ul style="list-style-type: none"> - Quantity data is not available for all materials; only two suppliers (LLG) have provided figures. - No water-related issues were identified at the time of engagement with LLG and PTI, aside from salinity concerns noted for PTI. - Within the catchment area, only two suppliers are currently represented. <p>The site has engagement records with the two primary input sources, and the embedded water use was quantified in column E of the document.</p>	
1.4.2	<p><i>The embedded water use of outsourced services shall be identified, and where those services originate within the site’s catchment, quantified.</i></p>	 Yes
Comment	<p>At least six outsourced services have been identified as involving embedded water use. However, since these services operate outside the catchment area, their embedded water consumption has not yet been quantified.</p>	
1.5	<p><i>Gather water-related data for the catchment, including water governance, water balance, water quality, Important Water-Related Areas, infrastructure, and WASH</i></p>	
1.5.1	<p><i>Water governance initiatives shall be identified, including catchment plan(s), water-related public policies, major publicly-led initiatives under way, and relevant goals to help inform site of possible opportunities for water stewardship collective action.</i></p>	 Yes

CERTIFICATION REPORT

Alliance for Water Stewardship (AWS)

Audit Number: AO-001754

Comment	<p>The list of applicable laws presented for this indicator includes the 20-Year Master Plan on Water Resources Management (Phase 1 Revision: 2023–2027) and the 20-Year National Strategy (2018–2037).</p> <p>The 20-Year Master Plan on Water Resources Management (Phase 1 Revision: 2023–2037) sets forth the vision: “Thailand shall achieve sustainable water resources management through the participation of all sectors, under balanced and dynamic development, to ensure water security in all dimensions.” This vision is pursued within the framework of five key development areas, as follows: - Framework 1: Management of Water for Domestic Consumption - Framework 2: Enhancing Water Security for the Productive Sectors - Framework 3: Flood and Inundation Management - Framework 4: Conservation and Rehabilitation of Water-related Ecosystems - Framework 5: Management of Water Resources for Environmental Sustainability</p> <p>The 20-Year National Strategy (2018–2037) provides Thailand’s long-term development framework across six strategic areas, including environmentally friendly growth. It serves as an overarching policy that aligns national plans—such as those on water and environmental management—toward the goal of sustainable development.</p> <p>Key strategies related to water resources include: - Promoting integrated river basin management to ensure national water security. This includes guaranteeing safe and affordable water for households, strengthening community water systems, conserving watersheds, improving efficiency, managing flood and drought risks, and enhancing international cooperation. - Increasing water productivity through efficient and sustainable use. The strategy seeks to ensure an adequate water supply for urban development, agriculture, industry, and tourism. It also emphasizes the development of urban water systems encompassing distribution, wastewater, drainage, and reuse in critical areas, while promoting fair and efficient water allocation.</p>	
1.5.2	<p><i>Applicable water-related legal and regulatory requirements shall be identified, including legally-defined and/or stakeholder-verified customary water rights.</i></p>	 Yes
Comment	<p>There are at least seven (7) applicable laws identified. Customary water rights are covered by water permitting. Water Resources Act B.E.2661 (2018).</p>	
1.5.3	<p><i>The catchment water-balance, and where applicable, scarcity, shall be quantified, including indication of annual, and where appropriate, seasonal, variance.</i></p>	 Yes
Comment	<p>The catchment water balance was quantified, including rainfall data for the period from April 1994 to December 2023, water availability, and water demand in Mm3 per month, which reveals high scarcity from May 2022 to April 2023 at the water source level. Quantification was also made for the groundwater level fluctuation from 2013 to 2023 in the Bang Pakong River Plain 1, with five wells monitored.</p>	
1.5.4	<p><i>Water quality, including physical, chemical, and biological status, of the catchment shall be identified, and where possible, quantified. Where there is a water-related challenge that would be a threat to good water quality status for people or environment, an indication of annual, and where appropriate, seasonal, high and low variances shall be identified.</i></p>	 Obs.
Comment	<p>The salinity of water is possible (with high probability) within the Bakong Pakong River, hence, the site focuses on this parameter’s seasonal, high & low variances, which were presented during the audit. For improvement, the site may consider including other parameters for future collective action.</p>	

CERTIFICATION REPORT

Alliance for Water Stewardship (AWS)

Audit Number: AO-001754

1.5.5 *Important Water-Related Areas shall be identified, and where appropriate, mapped, and their status assessed including any threats to people or the natural environment, using scientific information and through stakeholder engagement.* ✔ closed

Comment: There are at least 39 IWRA's within the catchment that were identified as presented during the time of the audit; however, threats to people or the natural environment were not identified using scientific information and through stakeholder engagement. **Finding No: TNR-022106**

1.5.6 *Existing and planned water-related infrastructure shall be identified, including condition and potential exposure to extreme events.* ✔ Yes

Comment: There are at least six Water-Related Infrastructures (Khao Mai Plong, Nong Khaen Nang Pond, Thap Lan National Park and Reservoir, Naruebodindrachinta Reservoir, Kawat Kong Yai Reservoir, Phra Prong Dam) identified that may be exposed to water stress and water depletion by 2030, based on Aqueduct data. Only flooding (brought about by the severe storms) & drought are the extreme events that may affect the water-related infrastructures. Reference: 1.5.1 Threat

1.5.7 *The adequacy of available WASH services within the catchment shall be identified.* 🔍 Obs.

Comment: National Level: 85% of the population in Thailand had access to WASH in 2020; 83% in rural areas had access to WASH facilities in 2020. These data are limited to national and rural statistics; the site could make an effort to have a systematic catchment-level assessment of WASH adequacy for future collective action.

1.6 *Understand current and future shared water challenges in the catchment, by linking the water challenges identified by stakeholders with the site's water challenges.*

1.6.1 *Shared water challenges shall be identified and prioritized from the information gathered.* ✔ Yes

Comment: Identified nine water challenges where prioritization is measured by the risk level, as assessed (risk level 6 is the highest).
 1-3 (green) - low
 4,6 (orange) - moderate
 9 (red) - high

Based on the assessment, there are at least nine (9) shared water challenges that have moderate risks, and two have a low risk level, where 21 actions are in place.

- impacts from climate change, such as flooding, increasingly severe storms, drought, and saltwater intrusion
- aquatic weeds (water hyacinth) obstructing waterways
- shallow canals with low water levels
- Some water gates are damaged
- Requirements for sufficient water supply are increasing (uncertainty of supply availability)
- poor river water quality
- chemical use
- increasing aquatic biodiversity
- saltwater issues

1.6.2 *Initiatives to address shared water challenges shall be identified.* ✔ Yes

Comment: Column F of the same document as 1.6.1 is the initiatives to address the water challenges, such as but not limited to:

- dredging of channels affected by invasive plants (water hyacinth)
- regular maintenance of the sluice gates
- Install water pumps at 10 key points to reduce flood damage to Bang Tan rice fields.

CERTIFICATION REPORT

Alliance for Water Stewardship (AWS)

Audit Number: AO-001754

1.7	<i>Understand the site's water risks and opportunities: Assess and prioritize the water risks and opportunities affecting the site based upon the status of the site, existing risk management plans and/or the issues and future risk trends identified in 1.6.</i>	
1.7.1	<i>Water risks faced by the site shall be identified, and prioritized, including likelihood and severity of impact within a given timeframe, potential costs and business impact.</i>	 Yes
Comment	Water availability, water quality, and water governance, among others, were identified as key risks. Their prioritization (Column I) was determined based on the matrix provided, taking into account the timeframe (Column M), budget or cost implications (Column L), and potential negative impact (Column E).	
1.7.2	<i>Water-related opportunities shall be identified, including how the site may participate, assessment and prioritization of potential savings, and business opportunities.</i>	 closed
Comment	Table 20: Water-related opportunities are identified, and actions on how to participate are included. However, there is no prioritization of potential savings and business opportunities. Finding No: TNR-022114	
1.8	<i>Understand best practice towards achieving AWS outcomes: Determining sectoral best practices having a local/catchment, regional, or national relevance.</i>	
1.8.1	<i>Relevant catchment best practice for water governance shall be identified.</i>	 Yes
Comment	Stakeholder Engagement Project. The meetings provided government-sector stakeholders with a platform to actively contribute to water stewardship practices. These sessions also served as an opportunity to explore, adapt, and implement best practices, thereby advancing dialogue and collaboration in this critical area.	
1.8.2	<i>Relevant sector and/or catchment best practice for water balance (either through water efficiency or less total water use) shall be identified.</i>	 Yes
Comment	Funding NGO/partnered with NGO Project. TCP collaborated with NGOs to support targeted projects. Water Replenishment Project - Implemented to increase water volume within the catchment area, strengthening long-term water availability.	
1.8.3	<i>Relevant sector and/or catchment best practice for water quality shall be identified, including rationale for data source.</i>	 Yes
Comment	Conservation Project. Create key conservation areas or key biodiversity areas/zones in the river/ canal or the areas that bring multi-fold benefits to water quality. With good governance to maintain these areas, the water quality remains in good shape & provides habitats for aquatic organisms. The Biodiversity Project focuses on the preservation and enhancement of ecosystems that directly support water quality and sustainability.	
1.8.4	<i>Relevant catchment best practice for site maintenance of Important Water-Related Areas shall be identified.</i>	 Yes
Comment	The conservation project is part of the site's identified best practice for IWRA within the catchment, including the engagement and increasing public awareness project, and the nature-based solution project.	
1.8.5	<i>Relevant sector and/or catchment best practice for site provision of equitable and adequate WASH services shall be identified.</i>	 Yes

CERTIFICATION REPORT

Alliance for Water Stewardship (AWS)



Audit Number: AO-001754

- Comment
- Sanitation Project: Focused on improving hygiene and sanitation facilities to safeguard public health and enhance water quality.
 - Livelihood Development Project: Designed to strengthen community resilience by creating sustainable income opportunities and supporting local economic growth.
 - Women Empowerment Project: Aimed at promoting gender equity through capacity-building, leadership opportunities, and access to resources for women.
 - Mobile Medical Unit: Provides accessible healthcare services to communities, ensuring timely medical support and improving overall well-being.

Audit Number: AO-001754

2	STEP 2: COMMIT & PLAN - Commit to be a responsible water steward and develop a Water Stewardship Plan	
2.1	<i>Commit to water stewardship by having the senior-most manager in charge of water at the site, or if necessary, a suitable individual within the organization head office, sign and publicly disclose a commitment to water stewardship, the implementation of the AWS Standard and achieving its five outcomes, and the allocation of required resources.</i>	
2.1.1	<i>A signed and publicly disclosed site statement OR organizational document shall be identified. The statement or document shall include the following commitments:</i> <ul style="list-style-type: none"> - That the site will implement and disclose progress on water stewardship program(s) to achieve improvements in AWS water stewardship outcomes - That the site implementation will be aligned to and in support of existing catchment sustainability plans - That the site's stakeholders will be engaged in an open and transparent way - That the site will allocate resources to implement the Standard. 	 Yes
Comment	Sustainable Water Management Policy dated 06 February 2025, with six policy guidelines (commitment) signed by the COO, Mr. Wacharin Buadee. - TCP Website (https://www.tcp.com/en/sustainability/water-sustainability) - SD Report 2024 (May 2025)	
2.2	<i>Develop and document a process to achieve and maintain legal and regulatory compliance.</i>	
2.2.1	<i>The system to maintain compliance obligations for water and wastewater management shall be identified, including:</i> <ul style="list-style-type: none"> - Identification of responsible persons/positions within facility organizational structure - Process for submissions to regulatory agencies. 	 Yes
Comment	SP-SF-003 dated 10 Feb 2025 (Document Management System accessed via intranet) stated in the Thai language that Environmental Officers (two personnel) are in charge of the compliance obligations for environment-related including water and wastewater management. An appointment and accreditation were provided in Thai, so that in any case the site has violations, these personnel can be held accountable and punishable by law & imprisonment.	
2.3	<i>Create a water stewardship strategy and plan including addressing risks (to and from the site), shared catchment water challenges, and opportunities.</i>	
2.3.1	<i>A water stewardship strategy shall be identified that defines the overarching mission, vision, and goals of the organization towards good water stewardship in line with this AWS Standard.</i>	 Yes
Comment	Water Sustainability Management (part of Sustainability Report) - TCP website. Vision: Energizing a Better World for All Mission: Net Water Positive by 2030 Goals/ Strategy: Use water resources efficiently & to the maximum benefit by reducing water impacts in the production processes.	

CERTIFICATION REPORT

Alliance for Water Stewardship (AWS)

Audit Number: AO-001754

2.3.2 *A water stewardship plan shall be identified, including for each target:*

- How it will be measured and monitored
- Actions to achieve and maintain (or exceed) it
- Planned timeframes to achieve it
- Financial budgets allocated for actions
- Positions of persons responsible for actions and achieving targets
- Where available, note the link between each target and the achievement of best practice to help address shared water challenges and the AWS outcomes.

 closed

Comment A Water Stewardship Plan was provided, which includes measurable targets (Column O), corresponding actions to achieve and maintain these targets (Column J), allocated financial budgets (Column M), designated Lead Associates (Column L), and linkage to AWS Outcomes (Column K). However, some objectives in the AWS Plan do not have clearly defined measurable targets. Specifically, % progress is not indicated in Column 6; the volume of water replenished (using the VWBA method) is not specified in Row 12; and the number of engagements is not defined in Row 15. In addition, the AWS Outcomes section does include an “Other” category, despite these outcomes being clearly and explicitly defined in the AWS Standard.

Finding No: TNR-022452

2.4 *Demonstrate the site’s responsiveness and resilience to respond to water risks*

2.4.1 *A plan to mitigate or adapt to identified water risks developed in co-ordination with relevant public-sector and infrastructure agencies shall be identified.*

 Yes

Comment SP-SF-006 Monitoring and Measuring includes a plan to mitigate or adapt to identified water risks (wastewater quality risk). This is internally developed, but the parameters measured and monitored are those imposed by the Government in terms of wastewater quality. In case of an emergency, there is a process that will be followed if the situation can’t be managed internally, and external help/ support is needed.

Audit Number: AO-001754

3	STEP 3: IMPLEMENT - Implement the site’s stewardship plan and improve impacts	
3.1	<i>Implement plan to participate positively in catchment governance.</i>	
3.1.1	<i>Evidence that the site has supported good catchment governance shall be identified.</i>	 Yes
Comment	<p>The site’s representative presented evidence of the site’s support for good catchment governance through participation in the Water Users Organization within the Bang Pakong River Catchment, of which the site is a member. This initiative forms part of WSP Item #3, with the latest participation recorded on 23 December 2022.</p> <p>The site also presented a project to the National Water Resources Organization on 28 April 2025, as documented in the Minutes of Meeting (in Thai language).</p> <p>Furthermore, an Endorsement/Appointment Letter dated 05 October 2023 from the Prachinburi Governor confirms the site’s membership in the Working Committee of the Bang Pakong River. The committee’s mandate includes gathering information for water management planning, coordinating with stakeholders on river conservation initiatives, and supporting livelihood development within the project area.</p> <p>The site also participated in a stakeholder engagement meeting held on 26 August 2025, attended by 84 participants, where discussions focused on drought and flood management, early warning systems, and updates on the year’s ongoing projects.</p>	
3.1.2	<i>Measures identified to respect the water rights of others including Indigenous peoples, that are not part of 3.2 shall be implemented.</i>	 Yes
Comment	<p>According to the site's representative, they gather data from the local Government, and there were no indigenous people in Prachinburi. Information can also be found on the website https://ethnicity.sac.or.th/, which does not list any IPs within Prachinburi province, where the site is located.</p>	
3.2	<i>Implement system to comply with water-related legal and regulatory requirements and respect water rights.</i>	
3.2.1	<i>A process to verify full legal and regulatory compliance shall be implemented.</i>	 Yes
Comment	<p>A monthly monitoring of compliance with applicable laws and regulations was presented for September 2025. The Factory License for Beverage Manufacturing, issued on 02 September 1997, covers activities such as water extraction, waste management, and other related operations. The evidence is the same as the one presented for indicator 3.1.1.</p> <p>The site does not discharge any wastewater externally, as all wastewater is treated and reused within the premises. However, wastewater quality testing is conducted quarterly, with results reported every six months.</p> <p>The License of Environmental Responsible Person (Wastewater) was renewed on 04 September 2025 and remains valid until 03 October 2028. Additionally, the application for the water pump installation at the source was received by the authority on 25 March 2024, and the site is awaiting the arrival of the unit.</p>	
3.2.2	<i>Where water rights are part of legal and regulatory requirements, measures identified to respect the water rights of others including Indigenous peoples, shall be implemented.</i>	 Yes

CERTIFICATION REPORT

Alliance for Water Stewardship (AWS)

Audit Number: AO-001754

Comment The water meter for the pumping station has yet to arrive to ensure that the site continues to respect the water rights of others. Pumping activities are conducted only during the rainy season (July to December each year), with a maximum volume of 29,500 m³. These details were included in the application submitted to the Water Resource Department. The most recent inspection of the authority was last 03 September 2025. The presented project timeline covers the period from 24 January 2024 to April 2026.

3.3 *Implement plan to achieve site water balance targets.*

3.3.1 *Status of progress towards meeting water balance targets set in the water stewardship plan shall be identified.* ✔
Yes

Comment Under WSP #1, the site has implemented at least eight (8) initiatives (Action Plans), with the latest record dated 02 July 2025. Monitoring of these activities is conducted using the Aqueduct Water Risk Atlas.

On 27 August 2025, the site participated in an engagement activity with the local government unit (LGU) and the community during the groundbreaking of the Chuat Tuk Ta Canal, which measures 1.2 km in length and 15 m in width. The initiative aimed to eliminate water hyacinth and improve water availability for agricultural land use.

In line with the company's Net Water Positive 2030 commitment, the site targets to replenish at least 360,000 m³ of water annually starting from 2016, while continuing to reduce water use by 3% in 2025. Key activities contributing to this goal include:

- Canal excavation and rehabilitation
- Repair of water gates
- Dredging of ponds and canals
- Tree planting initiatives

Volumetric Benefit Accounting is applied to quantify water replenishment. The forecasted volumetric benefit for 2025 is 1,427,556 m³, compared to 2,115,063 m³ achieved in 2024, under the Embraing Thailand River Basin Project.

The online monitoring dashboard, as of the audit period, indicated 93% water stock for Ponds 10 and 1, with 481 days of storage remaining. The system monitors parameters such as pH, conductivity, and salinity in real time.

Additionally, rainwater is utilized for road cleaning approximately 20 times per month, totaling 1,200 m³ per year, across an operational area of 240 hectares. Wastewater quality is monitored annually to ensure compliance with environmental standards.

3.3.2 *Where water scarcity is a shared water challenge, annual targets to improve the site's water use efficiency, or if practical and applicable, reduce volumetric total use shall be implemented.* ✔
Yes

Comment WSP item# 5: As of January to September 2025, the site achieved a 2.39% reduction in water use compared to last year, against the annual reduction target of 3%. The Water Use Ratio (WUR) stands at 3.47 L/L-FG, slightly above the target of < 3.44 L/L-FG. The total water savings amount to 89,877 m³, equivalent to 1,595,974 Baht in cost savings.

3.3.3 *Legally-binding documentation, if applicable, for the re-allocation of water to social, cultural or environmental needs shall be identified.* ✔
Yes

Comment An Appointment Letter from the Governor was presented. Presented an MOU with Hydro-Informatic Institute and Utokapat Foundation (Replenishment Program), signed on 28 Nov 2024, valid for three years.

3.4 *Implement plan to achieve site water quality targets*

3.4.1 *Status of progress towards meeting water quality targets set in the water stewardship plan shall be identified.* ✔
Yes

CERTIFICATION REPORT

Alliance for Water Stewardship (AWS)

Audit Number: AO-001754

Comment	<p>Wastewater (third party every three months) for the following parameters (item# 4 of the WSP initiative# 2):</p> <ul style="list-style-type: none"> - COD 120mg/L (within the limit from 2021 to 2025) - BOD 20mg/L (within the limit from 2021 to 2025) - pH 5.5-9.0 (within the limit) - TSS 50mg/L (within the limit) <p>SMART Manufacturing is the online monitoring that monitors some of the water parameters used within the factory.</p>	
3.4.2	<p><i>Where water quality is a shared water challenge, continual improvement to achieve best practice for the site's effluent shall be identified and where applicable, quantified.</i></p>	 Yes
Comment	<p>Although the site is not discharging wastewater, third-party testing is conducted every three months for the following parameters (item# 4 of the WSP initiative# 2):</p> <ul style="list-style-type: none"> - COD 120mg/L (within the limit from 2021 to 2025) - BOD 20mg/L (within the limit from 2021 to 2025) - pH 5.5-9.0 (within the limit) - TSS 50mg/L (within the limit) 	
3.5	<p><i>Implement plan to maintain or improve the site's and/or catchment's Important Water-Related Areas.</i></p>	
3.5.1	<p><i>Practices set in the water stewardship plan to maintain and/or enhance the site's Important Water-Related Areas shall be implemented.</i></p>	 Yes
Comment	<p>09 June 2025 Tree planting (<i>Dipterocarpus alatus</i>) of about 153 seedlings with monitoring on 23 July 2025. 17 September 2025, supplied with fertilizer (70-90cm in height) in Prachinburi.</p> <p>In collaboration with Utokapat Foundation (breaking the canal, building a water gate for the community, repairing a water gate from June to October 2025 in the Nakhon Nayok River.</p>	
3.6	<p><i>Implement plan to provide access to safe drinking water, effective sanitation, and protective hygiene (WASH) for all workers at all premises under the site's control.</i></p>	
3.6.1	<p><i>Evidence of the site's provision of adequate access to safe drinking water, effective sanitation, and protective hygiene (WASH) for all workers onsite shall be identified and where applicable, quantified.</i></p>	 Yes
Comment	<p>Restroom Provision Summary</p> <ul style="list-style-type: none"> - Required: 27 women's restrooms and 17 men's restrooms - Actual (TCP): 387 restrooms available <p>Disabled-access restrooms: Included in total count.</p>	
3.6.2	<p><i>Evidence that the site is not impinging on the human right to safe water and sanitation of communities through their operations, and that traditional access rights for indigenous and local communities are being respected, and that remedial actions are in place where this is not the case, and that these are effective.</i></p>	 Yes
Comment	<p>There are no identified indigenous peoples within the province. There is no discharge of treated wastewater outside the site. Extraction of water from the river is seasonal from July to December of each year; hence, traditional access rights to water are not impinged.</p>	
3.7	<p><i>Implement plan to maintain or improve indirect water use within the catchment:</i></p>	
3.7.1	<p><i>Evidence that indirect water use targets set in the water stewardship plan, as applicable, have been met shall be quantified.</i></p>	 Yes

CERTIFICATION REPORT

Alliance for Water Stewardship (AWS)

Audit Number: AO-001754

- Comment Item #12 of the WSP includes three (3) initiatives related to stakeholder engagement and collaboration. A meeting with Prachinburi Glass was conducted via MS Teams on 17 February 2025 to discuss water stewardship initiatives and shared catchment actions.
- Prachinburi Glass also participated in World Water Day activities held on 22 March 2025, as well as the canal rehabilitation project (canal breaking activity), demonstrating its continued support for collective water management.
- In addition, the initial engagement with LLG, a supplier of glass bottles, took place on 19 February 2025 through a virtual meeting (MS Teams) to discuss water-related initiatives and potential areas for collaboration.
- 3.7.2** *Evidence of engagement with suppliers and service providers, as well as, when applicable, actions they have taken in the catchment as a result of the site's engagement related to indirect water use, shall be identified.* ✔
Yes
- Comment 18 Aug 2025 suppliers' meeting with AWS introduction with around 300+ attendees.
- The engagement on 23 Aug 2024 resulted in one of the major suppliers (sugar) inquiring more about the AWS.
- TCP is one of the companies to share water management practices in 2024, as published on the website on 31 May 2024 (UN Global Compact - Water Resilience). This is evidence that the site is being looked up to by the organizations in Thailand and is a great influencer when it comes to water management.
- A plan in Q1 of 2026 to engage the suppliers, the initial engagement was on 18 Aug 2025, which is too short a period to assess the actions taken by the suppliers.
- 3.8** *Implement plan to engage with and notify the owners of any shared water-related infrastructure of any concerns the site may have.*
- 3.8.1** *Evidence of engagement, and the key messages relayed with confirmation of receipt, shall be identified.* ✔
Yes
- Comment A home visit was conducted around 10 March 2025 to invite the Local stakeholders, and a Letter (TCP River Project) dated 18 March 2025 was sent to the Local Government for information and encouragement. Confirmation is usually through the actual attendance dated 21 March 2025, which was presented during the audit, including the photos.
- 3.9** *Implement actions to achieve best practice towards AWS outcomes: continually improve towards achieving sectoral best practice having a local/catchment, regional, or national relevance.*
- 3.9.1** *Actions towards achieving best practice, related to water governance, as applicable, shall be implemented.* ✔
Yes
- Comment Set up a meeting with the Local Stakeholders (Villagers) on 26 August 2025, with 84 attendees, to monitor the progress of the water replenishment project and check if there are any issues related to water (Water Replenishment Project), with photos presented.
- Training session with students on 25 June 2025 (Srirakrajbumrung School), 50 (water quality, basic scientific equipment, and teaching how to take care of the river) with photos presented.
- 3.9.2** *Actions towards achieving best practice, related to targets in terms of water balance shall be implemented.* ✔
Yes

CERTIFICATION REPORT

Alliance for Water Stewardship (AWS)

Audit Number: AO-001754

Comment Support the construction of a water gate for Village# 5 on 06 April 2025 and 26 April 2025 renovated & repaired the water gate for Village# 2. On 14 March 2025, supported the dredging of a canal to remove the weeds in Village# 8 (500m long). These actions support the best practice for the water balance within the catchment (availability of water for the community).

3.9.3 *Actions towards achieving best practice, related to targets in terms of water quality shall be implemented.* 
Yes

Comment On 26 May 2025, the site supported a weed removal and canal cleaning activity in Village #5, covering approximately 300 meters of waterway. On 27 May 2025, the site facilitated the water hyacinth eradication activity for Village #7, also covering a 300-meter section of the canal.

Further, on 26 June 2025, the site supported the community in Village #4 by assisting in trash collection along the river, contributing to improved water management and environmental cleanliness in the area.

3.9.4 *Actions towards achieving best practice, related to targets in terms of the site's maintenance of Important Water-Related Areas shall be implemented.* 
Yes

Comment Established one more water conservation/fishery area in Village# 1 on 09 June 2025 and planted native trees in the IWRA catchment area to absorb rainwater & reduce soil erosion. In May 2025, the site's representative visited the area to survey the salinity measurement points of the Prachin Buri River in collaboration with the 9th Regional Irrigation Office. Relay information to the Villager the amount of water flowing into the Bang Tan Subdistrict through the water gate.

3.9.5 *Actions towards achieving best practice related to targets in terms of WASH shall be implemented.* 
Yes

Comment 01 Nov 2023 support the cleaning of all water filtration equipment for Boo 6 Bak Tamru Village, Bang Tean community. On 23 Jan 2024, organized a cleaning day of Moo 9 Bang Ton Jick Village community water plumbing system, thus allowing villagers to clean water for household consumption.

Create one main drinking water system from March to September 2025 in SA Kaeo Province near Ta Phraya National Park for around 100 households.

24 Feb 2024 organized cleaning day for Moo 7 Koh Loi Village community water plumbing system, thus, allowing villagers access to clean water for household consumption.

In April 2025, the site maintained the WASH facilities onsite, while in the catchment, a sluice gate was constructed to control saline intrusion & ensure usable water flow to villages for domestic use.

Monitoring salinity levels in the water was also undertaken in 2025 to ensure that water quality is usable to the villages.

CERTIFICATION REPORT

Alliance for Water Stewardship (AWS)

Audit Number: AO-001754

4 STEP 4: EVALUATE - Evaluate the site's performance.	
4.1	<i>Evaluate the site's performance in light of its actions and targets from its water stewardship plan and demonstrate its contribution to achieving water stewardship outcomes.</i>
4.1.1	<i>Performance against targets in the site's water stewardship plan and the contribution to achieving water stewardship outcomes shall be evaluated.</i>
Comment	As of the time of the audit, the site has the AWS activities, but not all are expressed in measurable terms where actual results can be evaluated against the targets. Finding No: TNR-022463
4.1.2	<i>Value creation resulting from the water stewardship plan shall be evaluated.</i>
Comment	15 July 2025 Activity for handicrafts using water hyacinth raw materials weaving group welcomes the Minister of Agriculture and Cooperatives. The site's value creation has not been fully measured. Finding No: TNR-022111
4.1.3	<i>The shared value benefits in the catchment shall be identified and where applicable, quantified.</i>
Comment	The value creation, including the shared value benefits attributed to the Water Stewardship Plan (WSP), remains unsubstantiated. While there are ongoing activities within the catchment that aim to generate value, their alignment and direct linkage to the WSP are not clearly demonstrated. Finding No: TNR-022112
4.2	<i>Evaluate the impacts of water-related emergency incidents (including extreme events), if any occurred, and determine the effectiveness of corrective and preventative measures.</i>
4.2.1	<i>A written annual review and (where appropriate) root-cause analysis of the year's emergency incident(s) shall be prepared and the site's response to the incident(s) shall be evaluated and proposed preventative and corrective actions and mitigations against future incidents shall be identified.</i>
Comment	The annual review is scheduled from November to December of each year. The latest was on 19 December 2024, including flood, fire protection plan, energy, and electricity. There have been no emergency incidents related to water that have happened in the past since 2011, but the site was not affected. Work Instruction for Flooding Events that includes preventive, corrective actions, and mitigations against future flooding incidents.
4.3	<i>Evaluate stakeholders' consultation feedback regarding the site's water stewardship performance, including the effectiveness of the site's engagement process.</i>
4.3.1	<i>Consultation efforts with stakeholders on the site's water stewardship performance shall be identified.</i>
Comment	The two documents provided are the presentation for the consultation efforts that the site has identified. Since this is their initial year for the AWS, the site presented their past and current initiatives for Water Management. These water management initiatives were made possible with the consultation of the relevant stakeholders.
4.4	<i>Evaluate and update the site's water stewardship plan, incorporating the information obtained from the evaluation process in the context of continual improvement.</i>

CERTIFICATION REPORT

Alliance for Water Stewardship (AWS)

Audit Number: AO-001754

4.4.1	<i>The site's water stewardship plan shall be modified and adapted to incorporate any relevant information and lessons learned from the evaluations in this step and these changes shall be identified.</i>	 Obs.
Comment	A Review Date tab was provided, indicating the review frequency, the most recent review, and the next scheduled review date. However, while a "Note" field is intended to capture revision history and, accordingly, lessons learned, these details can still be enhanced to ensure that lessons learned are recorded.	

CERTIFICATION REPORT

Alliance for Water Stewardship (AWS)

Audit Number: AO-001754

5 STEP 5: COMMUNICATE & DISCLOSE - Communicate about water stewardship and disclose the site's stewardship efforts	
5.1	<i>Disclose water-related internal governance of the site's management, including the positions of those accountable for legal compliance with water-related local laws and regulations.</i>
5.1.1	<i>The site's water-related internal governance, including positions of those accountable for compliance with water-related laws and regulations shall be disclosed.</i>
Comment	Shared in the TCP website where the AWS sponsor is the COO, Chairman of internal water management (Engineering, Safety and Sustainability Director), Chairman of External Water Management (Corporate Affairs & Communications Associate Director - Sustainability), Working Group - Internal Water Management (Engineering, Safety & Sustainability Division), Working Group - External Water Management (Corporate Affairs & Communication - Sustainability). Sent via email to all employees dated 06 February 2025.
5.2	<i>Communicate the water stewardship plan with relevant stakeholders.</i>
5.2.1	<i>The water stewardship plan, including how the water stewardship plan contributes to AWS Standard outcomes, shall be communicated to relevant stakeholders.</i>
Comment	WSP is shared via the TCP website https://www.tcp.com/storage/ and shared with the community via a PowerPoint presentation on 21 March 2025 (photos presented).
5.3	<i>Disclose annual site water stewardship summary, including: the relevant information about the site's annual water stewardship performance and results against the site's targets.</i>
5.3.1	<i>A summary of the site's water stewardship performance, including quantified performance against targets, shall be disclosed annually at a minimum.</i>
Comment	Shared via the TC website, Water Sustainability Report (Water Resource Data for 2024).
5.4	<i>Disclose efforts to collectively address shared water challenges, including: associated efforts to address the challenges; engagement with stakeholders; and co-ordination with public-sector agencies.</i>
5.4.1	<i>The site's shared water-related challenges and efforts made to address these challenges shall be disclosed.</i>
Comment	Sustainable Water Management Approach, which is shared via the TCP website.
5.4.2	<i>Efforts made by the site to engage stakeholders and coordinate and support public-sector agencies shall be identified.</i>
Comment	TCP Group continues its water management mission in all dimensions, energizing the local economy. Kicks off the "Managed Aquifer Recharge" community model in Nontree Sub-district, Prachin Buri Province, dated 28 April 2023. Bangkok Post dated 20 June 2025 TCP Group Advances Sustainable Water Management Under AWS Standard, aiming for Net Water Positive by 2030 in collaboration with Utokpat Foundation under Royal Patronage of H.M. the King, the Hydro-Informatics Institute, the Groundwater Resources Institute at Khon Kaen University, WWF Thailand, and private sector organizations through the "TCP Embracing Thailand's River Basin project."

CERTIFICATION REPORT

Alliance for Water Stewardship (AWS)

Audit Number: AO-001754

5.5	<i>Communicate transparency in water-related compliance: make any site water-related compliance violations available upon request as well as any corrective actions the site has taken to prevent future occurrences.</i>	
5.5.1	<i>Any site water-related compliance violations and associated corrections shall be disclosed.</i>	 Yes
Comment	Accordingly, the site all throughout its operations, maintains full compliance with regulatory requirements and has no violations of water-related regulations resulting in penalties, enforcement actions, or legal proceedings (available on the TCP website).	
5.5.2	<i>Necessary corrective actions taken by the site to prevent future occurrences shall be disclosed if applicable.</i>	 Yes
Comment	Accordingly, the site all throughout its operations, maintains full compliance with regulatory requirements and has no violations of water-related regulations resulting in penalties, enforcement actions, or legal proceedings (available on the TCP website).	
5.5.3	<i>Any site water-related violation that may pose significant risk and threat to human or ecosystem health shall be immediately communicated to relevant public agencies and disclosed.</i>	 Yes
Comment	Accordingly, the site all throughout its operations, maintains full compliance with regulatory requirements and has no violations of water-related regulations resulting in penalties, enforcement actions, or legal proceedings (available on the TCP website).	

Previous Findings

	<i>All non-conformities raised in the previous audit have been satisfactorily closed.</i>	 N/A
Comment	Not applicable for Initial Certification Audit.	