

CERTIFICATION REPORT

Alliance for Water Stewardship (AWS)



Audit Number: AO-001627

SITE DETAILS

Site: **TSMC Advanced Backend Fab 3 - Taoyuan**
Address: 101, Longyuan 6th Rd., Longtan Dist., Taoyuan City 325-42, Taiwan R.O.C., 325-42, Taoyuan, Taiwan, P.R. CHINA
Contact Person: Minglien Lo
AWS Reference Number: AWS-000412
Site Structure: Single Site

CERTIFICATION DETAILS

Certification status: Certified Platinum
Date of certification decision: 2025-Oct-21
Validity of certificate: 2028-Oct-20

AUDIT DETAILS

Audited Service(s): AWS Standard v2.0 (2019)
Audit Type(s): Re-Certification Audit
Audit Start Date: 2025-May-20
Audit End Date: 2025-May-22
Lead Auditor: Alex C. Wu
Audit team participants:
Yun-Ching Wang
Site Participants:
Chang-Chin Chou, Factory Engineer
C.H. Lee, Factory Engineer

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ADDITIONAL INFO

Summary of Audit Findings: 5 findings were raised during the certification audit, zero major non-conformity, zero minor non-conformity, five observations.
No action is required for the site.
The audit team recommends re-certification of TSMC Longtan AP03 at Platinum level.

Scope of Assessment: The scope of services covers the recertification audit for assessing conformity of TSMC Longtan Fab AP03 against the AWS International Water Stewardship Standard Version 2.

Established in 1987 and headquartered in Hsinchu Science Park, Taiwan, TSMC pioneered the pure-play foundry business model with an exclusive focus on manufacturing customers' products. TSMC's foundry business model has enabled the rise of the global fabless industry, and since its inception TSMC has been the world's leading semiconductor foundry.

In 2024, TSMC served 522 customers and manufactured 11,878 products for various applications covering a variety of end markets including high performance computing, smartphones, the Internet of Things (IoT), automotive, and digital consumer electronics.

Annual capacity of the manufacturing facilities managed by TSMC and its subsidiaries exceeded 16 million 12-inch equivalent wafers in 2024. TSMC operates four 12-inch wafer fabs, four 8-inch wafer fabs, and one 6-inch wafer fab, all in Taiwan. Among these, AP03 focuses on back-end processes (advanced packaging).

The audit was conducted onsite from May 20th to 22nd, 2025.

The onsite visit included the assessment of all facilities in the site, covering the wastewater treatment plant (WWTP), water purification system, In-site Water Related Areas (IWRAs), chemical warehouse, hazardous waste storage area, and canteen.

The following external stakeholders were interviewed during the audit: employees, suppliers, community representative, industrial zone management committee, and the wastewater treatment plant.

SCORE

4.00

FINDINGS

NUMBER OF FINDINGS PER LEVEL	
Observation	5

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FINDING DETAILS

Finding No:	TNR-018431
Checklist Item No:	1.2.1
Status:	Open
Finding level:	Observation
Checklist item:	Stakeholders and their water-related challenges shall be identified. The process used for stakeholder identification shall be identified. This process shall: - Inclusively cover all relevant stakeholder groups including vulnerable, women, minority, and Indigenous people; - Consider the physical scope identified, including stakeholders, representative of the site's ultimate water source and ultimate receiving water body or bodies; - Provide evidence of stakeholder consultation on water-related interests and challenges; - Note that the ability and/or willingness of stakeholders to participate may vary across the relevant stakeholder groups; - Identify the degree of stakeholder engagement based on their level of interest and influence.
Findings:	In response to standard 1.2.1, the questionnaire indicates that stakeholders are most concerned about water quality. However, the content addressing standard 1.6.1 does not include water quality in the list of water challenges. It is recommended to enhance stakeholder communication to bridge the cognitive gap between the site and its stakeholders.
Finding No:	TNR-018671
Checklist Item No:	1.3.6
Status:	Open
Finding level:	Observation
Checklist item:	On-site Important Water-Related Areas shall be identified and mapped, including a description of their status including Indigenous cultural values.
Findings:	We recommend labeling important water areas on the watershed map that hold human, environmental, or cultural significance.
Finding No:	TNR-018446
Checklist Item No:	1.7.2
Status:	Open
Finding level:	Observation
Checklist item:	Water-related opportunities shall be identified, including how the site may participate, assessment and prioritization of potential savings, and business opportunities.
Findings:	The current assessment of water-related opportunities primarily focuses on short-term prospects. It is recommended to extend the evaluation period to one to three years to gain early insights into mid-to-long-term water governance opportunities and make necessary preparations in advance.

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Finding No:	TNR-018672
Checklist Item No:	3.5.1
Status:	Open
Finding level:	Observation
Checklist item:	Practices set in the water stewardship plan to maintain and/or enhance the site's Important Water-Related Areas shall be implemented.
Findings:	We recommend ensuring consistency with clauses 1.3.6, 1.5.5, and 3.5.1. This includes aligning the background and purpose of important water-related areas, the actual restoration and improvement actions, and the final best practice status. For instance, a tree-planting program should describe the original causes of deterioration in that area to justify the planting efforts there.
Finding No:	TNR-018673
Checklist Item No:	3.9.13
Status:	Open
Finding level:	Observation
Checklist item:	Voluntary Advanced Indicator Evidence of the quantified improvement that has resulted from the collective action relative to a site-selected baseline date shall be identified and evidence from an appropriate range of stakeholders linked to the collective action (including both those implementing the action and those affected by the action) that the site is materially and positively contributing to the achievement of the collective action shall be identified.
Findings:	It is recommended that a table be added to document the best practice initiatives. This table should clearly outline the responsible stakeholders, joint water management efforts, and evidence of the practical outcomes achieved.

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Report Details

Report	Value
Report prepared by	Alex C. Wu
Report approved by	S. M. Leong
Report approved on (Date)	21 Oct. 2025

Surveillance

Proposed date for next audit
2026-May-29

Stakeholder Announcements

Date of publication	Location
12/04/2025	https://www.tuv.com/content-media-files/greater-china/about-us/downloads/management-systems/aws-000412_tsmc-taoyuan_stakeholderannouncement_v3.0-bilingual.pdf
12/04/2025	onsite document see attachment
12/04/2025	https://a4ws.org/wp-content/uploads/2025/01/AWS-000409411_TSMC-Hsinchu_StakeholderAnnouncement_V3.0-bilingual.pdf
Comment	The content of the stakeholder notification for the certification site assessment was disclosed on relevant websites eight weeks prior to the audit.

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Catchment Information

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The AP03 fab's primary tap water source flows from the upper to lower reaches of the Tamsui River (Dahan Creek) to Shimen Reservoir, then to Longtan Water Purification Plant, and finally to industrial water supply.

Discharge from TSMC's on-site wastewater treatment plant flows through a dedicated wastewater pipeline to the Laojie River.

The uppermost reach is the Tamsui River watershed, which has a main channel length of 135 kilometers, a watershed area of 1,163 square kilometers, an average riverbed slope of 1/37, and an annual runoff of 5,674 million cubic meters. The downstream Laojie River watershed has a main channel length of 36.7 kilometers, a watershed area of 81.59 square kilometers, and an average riverbed slope ranging from 1/200 upstream to 1/300 downstream.



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Client Description and Site Details

Client/Site Background

Established in 1987 and headquartered in Hsinchu Science Park, Taiwan, TSMC pioneered the pure-play foundry business model with an exclusive focus on manufacturing customers' products. TSMC's foundry business model has enabled the rise of the global fabless industry, and since its inception TSMC has been the world's leading semiconductor foundry. In 2024, TSMC served 522 customers and manufactured 11,878 products for various applications covering a variety of end markets including high performance computing, smartphones, the Internet of Things (IoT), automotive, and digital consumer electronics. Annual capacity of the manufacturing facilities managed by TSMC and its subsidiaries exceeded 16 million 12-inch equivalent wafers in 2024.

TSMC operates four 12-inch wafer fabs, four 8-inch wafer fabs, and one 6-inch wafer fab, all in Taiwan.

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In 2024, TSMC served 522 customers and manufactured 11,878 products for various applications covering a variety of end markets including high performance computing, smartphones, the Internet of Things (IoT), automotive, and digital consumer electronics.

Annual capacity of the manufacturing facilities managed by TSMC and its subsidiaries exceeded 16 million 12-inch equivalent wafers in 2024. TSMC operates four 12-inch wafer fabs, four 8-inch wafer fabs, and one 6-inch wafer fab, all in Taiwan.

AP03 is primarily an Advanced Backend Packaging Fab, located in Longtan Science Park.

The main water source for TSMC AP03 is tap water, which is supplied by the Longtan Water Purification Plant. The source of the tap water is the Shihmen Reservoir, with the more upstream water body being the Tamsui River (Dahan Creek) system.

Wastewater is first treated by TSMC's internal Wastewater Treatment Plant (WWTP). After confirming that it meets the Longtan Science Park's water intake standards, the wastewater is discharged into the Longtan Science Park's sewage treatment plant. Following confirmation that it meets the required standards, the wastewater is discharged. The final receiving water body is the Taiwan Strait.

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Summary of Shared Water Challenges

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TSMC consistently demonstrates industry-leading excellence in water resource management, underpinned by a long-term strategic planning approach. The company maintains exceptionally high process water recycling rates, with the AP03 fab achieving 86.21% recycling rate. Furthermore, its wafer-specific water consumption of 2.37 L/cm³ is significantly below the global standard of 12.13 L/cm³. Through proactive water conservation initiatives and long-term collaborations with stakeholders, TSMC achieves substantial annual water savings, often exceeding its targets.

Despite these achievements, a significant underlying concern is the potential for future water scarcity in Taiwan. Stakeholders consistently identify this as a key potential impact on TSMC's operations, given the critical role of water in semiconductor manufacturing. In response to this vulnerability and to enhance its water resilience, TSMC is currently intensifying its efforts to construct advanced reclaimed water plants. This strategic investment aims to diversify its water sources and ensure sustainable operational continuity, mitigating risks associated with future water supply fluctuations.

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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.



Yes

Comment The map now delineates the site boundary, wastewater collection pipelines, potable water and reclaimed water distribution networks, effluent PID piping diagrams, water sources (potable water intakes), and discharge points (outfalls, internal wastewater treatment plant facilities, and external science park wastewater treatment plants).

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

1.2.1 *Stakeholders and their water-related challenges shall be identified. The process used for stakeholder identification shall be identified. This process shall:*

- Inclusively cover all relevant stakeholder groups including vulnerable, women, minority, and Indigenous people;
- Consider the physical scope identified, including stakeholders, representative of the site's ultimate water source and ultimate receiving water body or bodies;
- Provide evidence of stakeholder consultation on water-related interests and challenges;
- Note that the ability and/or willingness of stakeholders to participate may vary across the relevant stakeholder groups;
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Obs.

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Comment	Stakeholders primarily focus on good water stewardship and water quality, as recognized through the annual survey. Their key water-related challenge is water quality. -Stakeholders are identified based on supply chain and watershed relationships, including government, NGOs, nonprofit organizations, community members, academic institutions, suppliers, customers, employees, and investors. The stakeholder group also includes representation of women and individuals with disabilities. However, indigenous people are not included, as none are located within the relevant catchment area. -Physical Scope: Stakeholders are identified based on their upstream and downstream relationships within and beyond the watershed, with their connections to the site's ultimate water source and receiving water body recorded. -Stakeholder Consultation Process: Proof of consultation is documented through surveys distributed via email questionnaires. -Stakeholder participation willingness, reflected in the survey return rate for each group, is as follows: academic institutions: 75%; community & employees: 68%; government: 55%; suppliers: 42%. -Stakeholder interest and influence, as reflected in the percentage composition of survey responses, are as follows: community & employees: 35%; suppliers: 25%; academic institutions: 21%; government: 16%.	
1.2.2	<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>	 Yes
Comment	This site is located in the Public Industrial Park. The water right allocation and water quality of the source, as well as its discharge into the park's treatment facility and the ultimate receiving water body (Dakengque Creek and Laojie Creek), are managed by the park. The site accounts for 17% of the park's total allocated water usage, and its regulated discharge affects 29% of the park's water quality management. Over the past three years, there have been no recorded water shortage issues in the park, so the site is not at risk. There have been no recorded relevant impacts on residents from the park's treatment facility. Since no suppliers or customers are located within the catchment, the site has minimal direct stakeholder influence.	
1.3	<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>	
1.3.1	<i>Existing water-related incident response plans shall be identified.</i>	 Yes
Comment	The site has established response plans and integrated management procedures to ensure timely and effective responses to water-related incidents, including: - Natural Disasters: Typhoons and earthquakes that may disrupt treatment systems. - Water Supply Issues: Operational impacts due to shortages, with mitigation measures applied as necessary. - Water Quality Abnormalities: Pollution events, chemical spills, WWT failures, drainage issues, and discharge anomalies.	
1.3.2	<i>Site water balance, including inflows, losses, storage, and outflows shall be identified and mapped</i>	 Yes
Comment	According to the site water balance map, inflows include tap water and condensate water, losses consist of evaporation, consumption, and dissipation, while storage includes tanks designated for industrial water, domestic water, fire water, reuse water, and rainwater. Outflows include discharges of domestic sewage and industrial wastewater after treatment.	
1.3.3	<i>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.</i>	 Yes

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Comment	Had combined the report contents from previous report and added this new comments to the report: "The quantified site water balance over the past three years reflects annual variations, illustrated through line and bar charts. Both inflow and outflow values have increased due to production capacity expansion. Despite the increase, total water consumption remains within the permitted allocation. There have been no recorded water shortage issues within the catchment over the past three years. Therefore, there are no water-related challenges posing a threat to the water balance for people or the environment. The annual variance in water usage for 2024 is 5%, while the water balance fluctuation rate is 15%. This is considered reasonable given the increase in production. The 25% rise in condensate recovery and a wastewater recycling and reuse rate of 75% further support the observed reduction in water loss and improved water efficiency."	
1.3.4	<i>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.</i>	 Yes
Comment	Water source: (1)The water quality of Shimen Reservoir, which represents the upstream section of the catchment, is tested monthly by the government and published on the Government Water Quality Monitoring Website. Eutrophication trends were observed in March, April, June, July, and September of 2023. (2)The water quality of Longtan Purified Water Plant, which represents the tap water supply, is tested monthly by the government and made publicly available. In 2024, results showed non-detectable levels for most contaminants. However, total trihalomethanes (THMs) were elevated, posing potential health risks to humans but having minimal impact on site operations. (3) The site does not use groundwater but conducts biannual water quality testing through an appointed external professional agency. The results, including sulfate, chloride, heavy metals, and cyanides, are stored. Among these, elevated manganese and iron levels have been observed. Provided water: The water quality of the incoming tap water is continuously monitored by the site at 5-second, 10-second, 5-minute, and 10-minute intervals, with data displayed on the internal multi-source water integration platform. Any anomalies trigger alerts for additional manual testing, including parameters such as pH, turbidity, and POC. Outflows: (1)The water quality of discharged effluent is tested biannually by a third party. Annual variations in TMAH, ammonia nitrogen, copper, and COD show no specific trend from 2017 to 2024 due to production fluctuations. (2)The site conducts water quality testing at least twice a year to monitor rainwater and stormwater runoff, measuring turbidity, ammonia nitrogen, organics, hydrocarbons, pH, and conductivity. Receiving water bodies: After treatment at the site, the water flows to the Park Wastewater Treatment Plant, then into Dakengque Creek, and ultimately into Laojie Creek. The government conducts monthly water quality testing for both Dakengque Creek and Laojie Creek, with results showing compliance with regulatory limits, even though pollution levels tend to be higher during seasonal water shortages.	
1.3.5	<i>Potential sources of pollution shall be identified and if applicable, mapped, including chemicals used or stored on site.</i>	 Yes
Comment	Potential sources of pollution, including chemical usage and storage areas, waste disposal sites, and effluent discharge points, have been identified and marked on the site layout plan.	
1.3.6	<i>On-site Important Water-Related Areas shall be identified and mapped, including a description of their status including Indigenous cultural values.</i>	 Obs.
Comment	It is suggested that important water-related areas, including those pertaining to cultural, environmental, and social aspects, be mapped within the overall watershed map.	

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1.3.7	<i>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.</i>	 Yes
Comment	The site has listed water-related projects and quantified the costs associated with ultrapure water production, water conservation, and water quality maintenance, as well as their economic and environmental impacts. For example, NF membrane filtration integrated into the biological treatment system reduced effluent TMAH concentration by 1.3 ppm, while lowering biocide usage resulted in a wastewater fee reduction of 470,000 TWD.	
1.3.8	<i>Levels of access and adequacy of WASH at the site shall be identified.</i>	 Yes
Comment	Drinking fountains are inspected every two months, which is more frequent than Taiwan's regulatory requirement of once every three months. Additionally, the minimum required number of urinals and seated toilets has been established based on the total number of personnel, in accordance with Taiwan's Occupational Safety and Health Facilities Regulations.	
1.4	<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>	
1.4.1	<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>	 Yes
Comment	The overall water risk for this watershed, as queried on the Aqueduct Water Risk Atlas, is consistently low (1-2) across all locations. Additionally, AP03 has implemented ISO 14046, with the latest water footprint certification for 12-inch wafer assembly and test raw material water consumption data completed in 2025. There are 24 suppliers, not limited to the same watershed, and all have provided corresponding water consumption and water quality test results.	
1.4.2	<i>The embedded water use of outsourced services shall be identified, and where those services originate within the site's catchment, quantified.</i>	 Yes
Comment	The indirect water consumption for outsourced services currently includes: wafer reclaim, shuttle transportation, parts cleaning, and tray cleaning.	
1.4.3	<i>Advanced Indicator The embedded water use of primary inputs in catchment(s) of origin shall be quantified.</i>	 Yes
Comment	AP03 has implemented ISO 14046, and the latest water footprint certification for 12-inch wafer assembly and test raw material water consumption data was completed in 2025. The number of suppliers remained unchanged compared to the previous year, 2023.	
1.5	<i>Gather water-related data for the catchment, including water governance, water balance, water quality, Important Water-Related Areas, infrastructure, and WASH</i>	
1.5.1	<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>	 Yes

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Comment	The site utilizes the government's Water Resources Stewardship Fundamental Plan to identify catchment plans, water-related public policies, major publicly-led initiatives, and relevant goals over the past two years. These indicate that a connecting pipeline will be constructed from Shimen Reservoir to Baoshan Reservoir to ensure a stable water supply, meaning the catchment where the site is located has abundant water resources and faces no water shortage risks. Additionally, the government offers discounts on water usage fees for entities that voluntarily undergo third-party verification, which the site may consider applying for to achieve economic benefits related to water stewardship.	
1.5.2	<i>Applicable water-related legal and regulatory requirements shall be identified, including legally-defined and/or stakeholder-verified customary water rights.</i>	Yes
Comment	The site has established an internal management system platform to track water-related regulations and requirements, with dedicated ESH/ISEP teams responsible for identifying applicable legal requirements and ensuring compliance at the facility level. There are no stakeholder-verified customary water rights, as water rights are designated and managed directly by the Park authority.	
1.5.3	<i>The catchment water-balance, and where applicable, scarcity, shall be quantified, including indication of annual, and where appropriate, seasonal, variance.</i>	Yes
Comment	The water balance data for the catchment, including Dahan Creek and Shimen Reservoir, is publicly available on the government website, with records documented at hourly, daily, monthly, annual, and five-year intervals. The tap water supply-demand chart for Taoyuan shows that the annual water supply from Dahan Creek has steadily increased, surpassing local demand. However, months with lower reservoir storage levels coincide with periods of increased rainfall due to the region's steep topography, which accelerates water flow and leads to direct discharge into the ocean.	
1.5.4	<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>	Yes
Comment	The water quality of Shimen Reservoir is monitored and publicly reported on the government's water quality website. Eutrophication was observed in March, April, June, July, and September 2023. The Longtan Purified Water Plant conducts monthly water quality testing, with results made publicly available. In 2024, most contaminants were non-detectable. However, total trihalomethanes (THMs), which pose potential health risks to humans, remain elevated across water treatment plants in the Taoyuan–Hsinchu region. Groundwater quality is tested biannually, with results stored and uploaded to the internal monitoring platform. The analysis includes sulfates, chlorides, heavy metals, and cyanides. While manganese and iron levels have been observed to be elevated, they remain within regulatory compliance.	
1.5.5	<i>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.</i>	Yes
Comment	The site utilized Google Maps, government research papers, and stakeholder engagement to identify, map, and assess the status of important water-related areas. These include Shimen Reservoir as the primary water source, Baoshan Reservoir as a future pipeline-connected catchment supporting water supply, a stormwater retention pond within the Industrial Park for flood mitigation, and a wetland downstream of Laojie Creek as a potential biodiversity area.	
1.5.6	<i>Existing and planned water-related infrastructure shall be identified, including condition and potential exposure to extreme events.</i>	Yes

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Comment	The site has identified key existing and planned water-related infrastructure, including Shimen Reservoir, water treatment plants, wastewater treatment facilities, and stormwater retention ponds within the Industrial Park, as well as on-site rainwater drainage outlets and water storage pools. These infrastructure elements are continuously monitored, with assessments focusing on water quantity, quality, and resilience to extreme weather conditions. Additionally, the site has implemented measures to mitigate risks associated with water shortages, droughts, extreme rainfall events, water quality, and climate change impacts.	
1.5.7	<i>The adequacy of available WASH services within the catchment shall be identified.</i>	 Yes
Comment	According to the Ministry of Interior's Construction and Planning Agency, the tap water penetration rate in Taoyuan District is 98.16%, and the wastewater treatment rate is 72.99%, which is higher than the national average of 70.97%.	
1.5.8	<i>Advanced Indicator Efforts by the site to support and undertake catchment level water-related data collection shall be identified.</i>	 Yes
Comment	The site supports catchment-level water-related data collection efforts by conducting independent groundwater quality monitoring, comparing results against official government-tested data, which is publicly disclosed on government websites, and sharing the data and results with government agencies.	
1.5.9	<i>Advanced Indicator The adequacy of WASH provision within the catchments of origin of primary inputs shall be identified.</i>	 Yes
Comment	It need to incorporate the raw material suppliers' regional location as the background survey value (this has been updated on-site). Given that all suppliers are located in Taiwan, and referencing the Environmental Performance Index, Taiwan scored 69 points, which is higher than the global average of 54.4 points. According to both assessments, this is due to scores for unsafe sanitation and unsafe drinking water.	
1.6	<i>Understand current and future shared water challenges in the catchment, by linking the water challenges identified by stakeholders with the site's water challenges.</i>	
1.6.1	<i>Shared water challenges shall be identified and prioritized from the information gathered.</i>	 Yes
Comment	The site has identified and prioritized shared water challenges, including abnormal water resource availability due to climate change, the annual increase in regional water demand as indicated by the domestic water usage prediction chart, and tap water pipeline leakage.	
1.6.2	<i>Initiatives to address shared water challenges shall be identified.</i>	 Yes
Comment	The government's Water Resources Stewardship Fundamental Plan has addressed shared water challenges. As part of the plan, the government has scheduled the construction of a pipeline between Shimen Reservoir and Baoshan Reservoir to adapt to climate change. Additionally, a reclaimed water plant will be built downstream of the creek to support the increasing water demand from the community. The government has also initiated inspections and repairs of tap water pipeline leakage.	
1.6.3	<i>Advanced Indicator Future water issues shall be identified, including anticipated impacts and trends</i>	 Yes
Comment	Future water issues have been identified based on anticipated impacts and trends. According to the Water Resources Agency, the period from March to May experiences low rainfall, making it a season with a higher risk of water shortages. Additionally, the sedimentation rate of Shimen Reservoir has reached 34%, classified as moderate.	

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1.6.4	<i>Advanced Indicator</i> <i>Potential water-related social impacts from the site shall be identified, resulting in a social impact assessment with a particular focus on water.</i>	 Yes
Comment	The site's activities have enabled it to outperform other industries by: - Upgrading wastewater treatment technologies to extract copper sulfate from the effluent, thereby improving discharge water quality while reducing both environmental impact and economic losses associated with wastewater. - By increasing the number of installed units and water recycling facilities, the volume of reclaimed water has significantly risen, leading to a notable reduction in tap water consumption. This achievement reflects a 25% water-saving rate—well above the park-wide consensus target of 15%—and effectively releases water rights for use by other park sites, downstream residential communities, or inter-basin water transfers. As a result, the company maintains a water recycling rate above 70%, in alignment with its goal of reusing each drop of water up to 3.5 times. - Incorporating nanofiltration (NF) membranes into the biological treatment system, resulting in a 1.3 ppm reduction of TMAH concentration in the discharge water and decreased disinfectant usage. These improvements contribute to enhanced water quality within the catchment. All relevant documents are available on the official website: https://esg.tsmc.com/zh-Hant/resources/ESG-data-hub?tab=reports-documents.	
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	The site has identified and categorized water-related risks across operations, reputation, and infrastructure, providing detailed descriptions for each category. A quantitative risk assessment has been conducted using a rating system to prioritize risks, considering multiple factors, including the probability of occurrence and the severity of potential impacts, such as cost losses, employee injuries, reputational damage, environmental harm, and business disruptions.	
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>	 Obs.
Comment	The site has identified key water-related opportunities, considering regulations, production demand, and customer requirements. The top priorities are water scarcity and water quality. Additionally, implementing the AWS program is the most effective way to capitalize on these opportunities, as AWS is both a customer requirement and a valuable initiative for enhancing water stewardship. In line with this approach, the site focuses on water-saving and quality improvement measures, including planned upgrades and expansions of process water reuse systems and wastewater treatment.	
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	1.Regularly review and enhance the comprehensive sustainable water management plan. 2.Annually propose water-related improvement plans for all TSMC fabs (fabrication plants). 3.Conduct regular training on water management principles for all employees. 4.Collaborate with peer organizations to promote sustainable water management. 5.Demonstrate strong support for water governance with regulatory authorities.	

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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	In 2023, AP03's wafer specific water consumption was 2.19 L/cm². This increased to 2.37 L/cm² in 2024, a rise attributed to changes in the proportion of AI process manufacturing. (This explanation has been added to the relevant section.) However, the overall consumption remains significantly better than the global semiconductor wafer specific water consumption benchmark of 12.13 L/cm², and a comparison of product water consumption with industry peers is also presented.	
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	AP03 has presented the water quality data for key industries within the watershed, such as Wafer Works Corporation and AU Optronics. The supporting evidence is based on the content of their respective ESG Reports. Both TSMC and other industries within the watershed comply with the Science Park Administration's wastewater discharge standards.	
1.8.4	<i>Relevant catchment best practice for site maintenance of Important Water-Related Areas shall be identified.</i>	 Yes
Comment	The overall best practices include continuous monitoring of groundwater wells, tree planting initiatives, ecological restoration within the plant area, and chemical storage management.	
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
Comment	According to the WBCSD's WASH Self-Assessment Tool, all six criteria were met, indicating that optimal WASH standards have been achieved.	

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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> - 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	The site has publicly disclosed its environmental protection policy on the TSMC official website, including an AWS certification section signed by the CEO.	
2.1.2	<i>Advanced Indicator</i> <i>A statement that explicitly covers all requirements set out in Indicator 2.1.1 and is signed by the organization's senior-most executive or governance body and publicly disclosed shall be identified.</i>	 Yes
Comment	The evidence includes a document signed by the director, a document signed by the CEO, and requirements and outcomes signed by the CEO. All relevant documents are available on the official website: https://esg.tsmc.com/zh-Hant/resources/ESG-data-hub?tab=reports-documents .	
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> - Identification of responsible persons/positions within facility organizational structure - Process for submissions to regulatory agencies.	 Yes
Comment	The site has implemented an internal system to ensure compliance with water and wastewater management obligations. The system's organizational chart outlines the positions and responsibilities of three key departments: Facility Management, ISEP, and ESH. Internal training materials define various water-related tasks, specifying which unit is responsible for each step, such as scheduled water pollution inspections and reporting. The internal system maintains site-specific compliance records, displaying the site's monthly audit execution dates and key findings for continuous monitoring. Additionally, the site conducts quarterly internal audits to ensure compliance and identify areas for improvement, while the central unit performs annual internal audits across all sites, following established management procedures.	
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

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Comment The site has established a comprehensive water stewardship strategy that defines its mission, vision, and goals in alignment with the AWS Standard. This strategy is structured around five key focus areas: water management, water environment (including greenbelt and groundwater quality), drinking water and sanitation, water balance, and water quality. For each of these areas, the site has outlined specific targets and implementation plans for 2024, ensuring measurable progress in sustainable water use, environmental protection, and stakeholder engagement.

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.



Yes

Comment The site's water stewardship plan addresses the following areas:
Targets: Long-term goals, as outlined in the ESG report, focus on water quality improvement, reducing the integrated water pollution index, optimizing unit product water consumption, and increasing the recycled water substitution rate. Meanwhile, short-term targets aim to reduce the integrated water pollution index and unit product water consumption, achieve a process water recovery rate above 85% and a total site recovery rate above 77%, while maintaining COD levels below 200 ppm and TMAH levels below 6 ppm.
Monitoring Measures: The site has implemented continuous monitoring for influent and effluent water quality, with monthly and semi-annual inspections. Inspected substances include ammonia nitrogen, copper (Cu), TMAH, and COD.
Actions to Achieve Targets: The site has implemented several initiatives to support its water stewardship goals:
 - Emergency response protocols address water pollution, water shortages, and typhoon-induced heavy rainfall, conducted annually in June–July.
 - Training programs, including orientation for new employees and Facility Management Academy courses, ensure staff preparedness.
 - Hazardous waste management is strengthened by maintaining four specialists who exceed regulatory requirements.
 - Annual greenbelt and groundwater quality monitoring helps uphold environmental standards.
 - Drinking water management incorporates enhanced monitoring standards, exceeding regulations by 1/8, with bi-monthly testing of 1/6 of total dispensers.
 - Touchless handwashing facilities have been implemented to improve hygiene and water efficiency.
Timeframes & Financial Budgets: The site has allocated budgets for execution, including the expansion and construction of biological treatment systems, the implementation of a mobile resin tower system for TMAH treatment, and the development of advanced recovery systems for copper-containing wastewater and etching solutions.
Responsible Personnel & Organizational Structure: Defined accountability ensures effective coordination and implementation of water stewardship initiatives within the organization.

2.3.3 *Advanced Indicator*
The site's partnership/water stewardship activities with other sites within the same catchment (which may or may not be under the same organisational ownership) shall be identified and described.



Yes

Comment The site actively engages in water stewardship collaborations with other entities within the catchment, including the Industrial Park and Jingshan Transportation Company, which manages mountain spring water resources. As part of these efforts, the site participates in an annual water tanker drill with Jingshan Transportation Company to enhance emergency water distribution capabilities. Additionally, the site collaborates with the Industrial Park Management Authority to coordinate water supply and wastewater quality management, where the park oversees water allocation and regulatory compliance, while the site adjusts its water usage plan and implements measures to reduce wastewater pollution.

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2.3.4	<i>Advanced Indicator</i> <i>The site's partnership/water stewardship activities with other sites in another catchment(s) (either under same corporate structure or with another corporate site) shall be identified.</i>	 Yes
Comment	A list indicates that the site actively engages in water stewardship initiatives with entities across different catchments, fostering collaboration on water conservation, wastewater treatment, and resource reuse in 2023 and 2024. As part of these efforts, the site has participated in exchanges with international media, industry associations, government officials, and academic experts, focusing on advancements in water-saving technologies, wastewater treatment methodologies, and effluent quality improvement. In particular, the site has shared its key experiences in sulfate copper recovery from wastewater treatment.	
2.3.5	<i>Advanced Indicator</i> <i>Stakeholder consensus shall be sought on the site's water stewardship plan. Consensus should be achieved on at least one target. A list of targets that have consensus and in which stakeholders are involved shall be identified.</i>	 Yes
Comment	The site has actively engaged with key stakeholders, including the Ministry of Environment and the Industrial Development Bureau, to establish consensus on water stewardship goals. Shared priorities include waste reduction, resource recovery, green factory initiatives, and professional water management. In 2024, the site was recognized as an Outstanding Resource Recycling Enterprise.	
2.4	<i>Demonstrate the site's responsiveness and resilience to respond to water risks</i>	
2.4.1	<i>A plan to mitigate or adapt to identified water risks developed in co-ordination with relevant public-sector and infrastructure agencies shall be identified.</i>	 Yes
Comment	The site has developed a comprehensive plan to mitigate and adapt to identified water risks in coordination with public-sector and infrastructure agencies, detailed as follows: To ensure water quality and stability, the site collaborates with the public water supply company for monitoring treated water quality and with the Industrial Park Management Authority for wastewater management oversight. TSMC commissions monthly water quality testing through an external contractor and submits monthly water balance reports to ensure compliance and monitoring effectiveness. In response to water supply disruptions, such as unstable municipal water provision or deteriorating water quality detected through on-site testing, the site promptly contacts the public water supply company to identify the cause. During such incidents, process water intake is temporarily halted, while domestic water remains accessible. As an interim measure, the site relies on city water tanks to maintain an uninterrupted supply. Seasonal fluctuations, particularly those caused by typhoons, may affect water quality. However, the site's storage tank reserves effectively balance supply and demand, ensuring sufficient water availability. While recent years have not seen droughts or wastewater treatment facility failures, the site maintains management protocols for water shortages, pollution incidents, and infrastructure disruptions caused by natural disasters or earthquakes, ensuring swift response and operational resilience.	
2.4.2	<i>Advanced Indicator</i> <i>A plan to mitigate or adapt to water risks associated with climate change projections developed in co-ordination with relevant public-sector and infrastructure agencies shall be identified.</i>	 Yes

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Comment The site has developed a comprehensive water risk mitigation and adaptation plan in coordination with public-sector agencies and infrastructure partners to address challenges associated with climate change projections, detailed as follows:

To ensure long-term water security, the site collaborates with the public Water Resources Agency on reservoir dredging projects, maintaining optimal storage capacity. In partnership with Jingshan Transportation Company, the site facilitates emergency water tanker operations, ensuring supply continuity during shortages. Additionally, the site works with the Water Resources Agency on pipeline leak detection and replacement, covering both incoming water pipelines and wastewater sewer systems to prevent losses and maintain infrastructure resilience.

Flood prevention measures include internal pit systems, as well as stormwater retention ponds and pumping facilities within the industrial park, which effectively mitigate risks during extreme weather events. The site also participates in the Water Resources Agency's emergency response network, receiving real-time updates on flood conditions and disaster response coordination.

Further strengthening regional water resilience, the Water Resources Agency has constructed a municipal wastewater recycling plant downstream, enhancing water reuse efficiency. Additionally, Shimen Reservoir, the site's water source, provides support to Baoshan Reservoir, located in another catchment, ensuring balanced distribution and sustained supply across the region.

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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>	
Comment	According to the WBCSD's WASH Self-Assessment Tool, all six criteria were met, indicating that optimal WASH standards have been achieved.	Yes
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>	
Comment	The site does not operate within Indigenous territories; however, it has implemented measures beyond regulatory requirements to uphold responsible water stewardship and respect the water rights of surrounding communities. From 2023 to 2024, the site has enhanced water treatment and recycling technologies to improve water efficiency in production. As a result, unit water consumption per product has decreased by 30%, ensuring that despite increasing production capacity, overall water usage remains stable. This approach helps support the rising municipal water supply available to residents, as reflected in the government's reported water supply coverage rate, further demonstrating the site's commitment to respecting shared water resources.	Yes
3.1.3	<i>Advanced Indicator</i> <i>Evidence of improvements in water governance capacity from a site-selected baseline date shall be identified.</i>	
Comment	Water quality standards are met, with advanced self-management targets including effluent pollutant reduction targets, a comprehensive water pollution index, process recycling rate, total plant recycling rate, total plant discharge rate, and water consumption per wafer. Site have achieved the annual targets and are progressing towards the long-term goals. Corresponding implementation plans for these targets, along with the financial and environmental benefits, have also been outlined. Note: The latest statistical results are for 2024. Water Management Initiatives: Established a diversified water supply integration platform. Founded a facilities management academy, incorporating real-world incidents as learning case studies. Developed courses based on the experience of various fabs, such as foundational training for new hires. Dedicated Water Pollution Control Personnel: There are 4 dedicated personnel assigned which exceeds the regulatory requirements. Resource Recovery Achievements: Improved wastewater treatment capabilities have led to increased water reuse, consequently reducing waste disposal costs by TWD13,000.	Yes
3.1.4	<i>Advanced Indicator</i> <i>Evidence from a representative range of stakeholders showing consensus that the site is seen as positively contributing to the good water governance of the catchment shall be identified.</i>	

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Comment	A comprehensive assessment from stakeholders confirms that the site has positively contributed to effective water governance within the catchment. Managed under the unified oversight of the Public Industrial Park, the site operates in alignment with shared objectives on water usage and wastewater discharge levels. Recent data indicates that the site's water consumption is 25% lower than the agreed target, while wastewater discharge levels are 15% below the consensus threshold, reflecting its commitment to sustainable resource management. Further supporting this contribution, the site has successfully achieved key targets from 2016 to 2024, demonstrating its long-term dedication to water stewardship. In 2024, the site was recognized as an Outstanding Resource Recycling Enterprise, highlighting its efforts in liquid waste reduction, resource solidification, and system-based purification and recovery. This recognition, endorsed by the Ministry of Environment, serves as direct evidence of the site's commitment to strengthening water governance within the catchment.		
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	The site has implemented an internal audit system and processes, including supplier audits, quarterly self-audits for environmental compliance, quarterly audits conducted by the headquarters, and inter-site environmental audits, ensuring full compliance with legal and regulatory obligations. Audit findings are documented as evidence of implementation, and compliance checklists cover legal requirements, customer expectations, and internal regulations. Hard-copy records are maintained for reference. Additionally, the site has undergone external audits conducted by government authorities, with records documented on the Ministry of Environment's system platform.		
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
Comment	The site is located within an industrial park, a public sector area where its water rights are allocated and monitored by the park authority in accordance with the government-approved water usage plan. The site operates under an approved water usage plan and has no recorded violations. Regarding Indigenous water rights, Indigenous communities are located upstream of the Shimen Reservoir, meaning the site's water source and discharge do not impact Indigenous populations within the catchment. Therefore, the site's operations do not involve or affect Indigenous water rights. Supporting evidence includes documented location data on Indigenous communities in Taoyuan.		
3.3	<i>Implement plan to achieve site water balance targets.</i>		
3.3.1	<i>Status of progress towards meeting water balance targets set in the water stewardship plan shall be identified.</i>		Yes
Comment	1.BG, UF, ADWR, MAUR, and SWR systems have enabled AP03 to achieve a process water recycling rate of >85%, meeting targets annually from 2017 to 2024. 2.AP03's wafer specific water consumption of 2.37 L/cm² is lower than the global standard of 12.13 L/cm². 3.Relevant water-saving measures, such as extending ultrapure water recovery and improving RO water production rates, have achieved an annual water saving of 351.7 metric tons. p.s:AP03 is currently aligning with the water balance targets of other Hsinchu sites. The standard is required to be greater than 75%, and all sites have met this goal.(Please also refer to 1.7.2.) It is recommended that the site further improve its WSP (Water Safety Plan) to be a more comprehensive plan by integrating all elements into a single document. This will allow for easier allocation and reference of information in the future.		

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3.3.2	<i>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.</i>	 Yes
Comment	In 2024, the site's self-imposed water reduction exceeded 5%, achieving its water efficiency targets. This included both the process recycling rate and total plant discharge rate, which met its self-management goals. The site's water consumption per unit of product also outperformed global standards. Note: Changes in total water consumption are primarily influenced by production capacity and the requirements of corresponding environmental regulations.	
3.3.3	<i>Legally-binding documentation, if applicable, for the re-allocation of water to social, cultural or environmental needs shall be identified.</i>	 Yes
Comment	Legally binding documents for the reallocation of water include the site's water usage plan, which was approved by the Park. The most recent water rights reallocation occurred in 2015, when the site reduced its permitted water allocation, releasing a portion of its water rights for use by others within the Park and downstream communities.	
3.3.4	<i>Voluntary Advanced Indicator The total volume of water voluntarily re-allocated (from site water savings) for social, cultural and environmental needs shall be quantified.</i>	 Yes
Comment	The most recent voluntary water reallocation occurred in 2015, when the site reduced its permitted water allocation by 30%	
3.4	<i>Implement plan to achieve site water quality targets</i>	
3.4.1	<i>Status of progress towards meeting water quality targets set in the water stewardship plan shall be identified.</i>	 Yes
Comment	It focusing on a more stringent review of water pollution, specifically targeting the short-term standards for ammonia nitrogen (NH₃-N), copper ions (Cu²⁺), TMAH (tetramethylammonium hydroxide), and COD (chemical oxygen demand), beyond the Science Park Administration's general effluent water quality standards. In 2024, measurements were: Ammonia Nitrogen (NH₃-N): 12.16 mg/L (limit < 20 mg/L) Copper Ions (Cu²⁺): 0.06 mg/L (limit < 0.1 mg/L) TMAH: 0.48 mg/L (limit < 6 mg/L) COD: 116.84 mg/L (limit < 200 mg/L) All these values are well below the regulatory limits.	
3.4.2	<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>	 Yes
Comment	It confirmed that the plant site tests for pollutants according to the Science Park Administration's wastewater discharge standards. All results meet these standards and have achieved best practice outcomes.	
3.5	<i>Implement plan to maintain or improve the site's and/or catchment's Important Water-Related Areas.</i>	
3.5.1	<i>Practices set in the water stewardship plan to maintain and/or enhance the site's Important Water-Related Areas shall be implemented.</i>	 Obs.
Comment	The overall direction should align with Clauses 1.3.6 and 1.5.5 IWRA status, necessitating the delineation of environmental threats to important water-related values within the watershed and the subsequent implementation of corresponding control actions. All updates have been completed on-site.	

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3.5.2	<i>Advanced Indicator</i> <i>Evidence of completed restoration of non-functioning or severely degraded Important Water-Related Areas including where appropriate cultural values from a site-selected baseline date shall be identified. Restored areas may be outside of the site, but within the catchment.</i>	 Yes
Comment	The original site is situated in a functionally impaired area. During operations, sustainable water management practices are actively maintained within the plant, including chemical management, rainwater diversion, and continuous groundwater well monitoring. Additionally, for other impaired areas within the watershed, ongoing tree planting has restored or maintained the current landscape.	
3.5.3	<i>Advanced Indicator</i> <i>Evidence from a representative range of stakeholders showing consensus that the site is seen as positively contributing to the healthy status of Important Water-Related Areas in the catchment shall be identified.</i>	 Yes
Comment	Through TSMC's ESG Sustainability Survey on Water Management, we surveyed 10 stakeholder groups to assess key water management issues, which included making active contributions to the region's health. The results of the 2024 AWS sustainable water management implementation at Hsinchu plants F12 and F5, and Longtan plant AP03, are being shared. The process included using a stakeholder questionnaire to facilitate corrections and subsequent improvements, resulting in achievements such as the collective attainment of standard water discharge quality and the establishment of safety and drinking water facilities that exceed the number required by regulations.	
3.6	<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>	
3.6.1	<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>	 Yes
Comment	The number of toilet facilities has been quantified and exceeds national standards. During site inspections, diverse restroom types were observed, equipped with hand soap and paper towels, which is better than regulatory requirements. Furthermore, the plant site is located within the Taoyuan City watershed, and according to the Ministry of Interior's Construction and Planning Agency, the tap water penetration rate in Taoyuan City is 98.16%.	
3.6.2	<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>	 Yes
Comment	There is evidence that the plant's operations have not impacted the community's right to safe water and sanitation. This is supported by the following three points: 1. There are no original residents within the Longtan Science Park; it is designated solely for factory establishments. 2. All factories exclusively use tap water supplied by the park, and their water usage is recorded and approved in their water usage plans. 3. Taoyuan City has a tap water penetration rate of 98.16%, ensuring no concerns regarding access to safe water.	

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3.6.3	<i>Advanced Indicator</i> <i>A list of actions taken to support the provision to stakeholders in the catchment of access to safe drinking water, adequate sanitation and hygiene awareness shall be identified.</i>	 Yes
Comment	Based on the Environmental Impact Statement for the Longtan facility, there's a total allocated water volume (total quantity control) within the park. A reduction in water consumption was implemented in 2021, which indirectly led to an increase in water availability for other stakeholders, thereby supporting their WASH (Water, Sanitation, and Hygiene) needs.	
3.6.4	<i>Voluntary Advanced Indicator:</i> <i>In catchments where WASH has been identified as a shared water challenge, evidence of efforts taken with relevant public-sector agencies to share information and to advocate for change to address access to safe drinking water and sanitation shall be identified.</i>	 Yes
Comment	1.For safe drinking water: Conduct joint disaster drills with the local environmental protection bureau and fire department to respond to wastewater leakage. 2.For environmental safety and hygiene: Engage in factory visits with the Ministry of Health and Welfare's Centers for Disease Control and local community offices to demonstrate evidence of water conservation and environmental and ecological sustainability. 3.Implement a dengue fever awareness campaign throughout the entire factory.	
Score	4	
3.7	<i>Implement plan to maintain or improve indirect water use within the catchment:</i>	
3.7.1	<i>Evidence that indirect water use targets set in the water stewardship plan, as applicable, have been met shall be quantified.</i>	 Yes
Comment	TSMC has established indirect water use targets for suppliers as part of the water stewardship plan for all sites, including this one. According to the latest ESG report, the water-saving target achievement rate has reached 142%, demonstrating significant progress in water efficiency across the supply chain.	
3.7.2	<i>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.</i>	 Yes
Comment	TSMC's central ESH division oversees supplier engagement on water conservation, conducting annual onsite guidance sessions to support suppliers in improving water efficiency, with initiatives extending through 2030. As evidence of this engagement, the recent Supply Chain Environmental, Health, and Safety Forum served as a key platform for sharing water-saving practices and providing advisory resources to suppliers. Forum documentation, including photographs and a signed attendance list, confirms participation and knowledge exchange. Additionally, a supplier survey was conducted, through which participants reported their respective water savings, further demonstrating the tangible impact of these collaborative efforts on indirect water use.	
3.7.3	<i>Advanced Indicator</i> <i>Actions taken to address water related risks and challenges related to indirect water use outside the catchment shall be documented and evaluated.</i>	 Yes

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Comment	To address this requirement, TSMC annually organizes regular collective action initiatives and related forum seminars. The objective of these events is to collaborate with both domestic and overseas suppliers to conduct water conservation surveys and jointly enhance supply chain sustainability and environmental performance. Most recently, the TSMC Sustainable Supply Chain Environmental Forum was held at the end of 2023, with 77 suppliers actively participating. Furthermore, water conservation sharing materials and relevant online courses are regularly announced on the TSMC website. Therefore, TSMC's commitment to regularly reviewing supplier water risk and actively implementing water conservation measures satisfies the spirit of the clause as stated.	
3.8	<i>Implement plan to engage with and notify the owners of any shared water-related infrastructure of any concerns the site may have.</i>	
3.8.1	<i>Evidence of engagement, and the key messages relayed with confirmation of receipt, shall be identified.</i>	 Yes
Comment	The site has actively engaged with regulatory authorities, suppliers, and infrastructure partners to communicate key water management messages and confirm receipt of relevant information. Regulatory approvals, including permits issued by the Environmental Protection Bureau and the Public Industrial Park Authority's water pollution control plan, serve as documented evidence of compliance and coordination. Supplier engagement includes emails, photographs from industry conferences, onsite guidance sessions, audit forms, and documented improvement responses, demonstrating continuous collaboration and alignment on water stewardship practices. Additionally, in response to municipal water quality issues, the site has taken immediate action, including direct communication with the water supply company, valve shutdown procedures, and documentation in duty logs to ensure timely mitigation. In 2019, the site responded to a report of elevated phosphorus levels in the industrial park's wastewater plant, implementing temporary discharge reductions in coordination with wastewater facility management. Wastewater treatment plants also conduct unscheduled sampling to monitor and adjust treatment measures as needed.	
3.9	<i>Implement actions to achieve best practice towards AWS outcomes: continually improve towards achieving sectoral best practice having a local/catchment, regional, or national relevance.</i>	
3.9.1	<i>Actions towards achieving best practice, related to water governance, as applicable, shall be implemented.</i>	 Yes
Comment	1.Regularly review and update the comprehensive sustainable water management plan. 2.Annually, all TSMC fabs across Taiwan propose water-related improvement plans. 3.Conduct regular training on water management principles for all employees. 4.Optimize water-related emergency response procedures. 5.Establish water system operation specifications. 6.Implement a continuous effluent improvement plan. 7.Maintain product unit water consumption below world standards. 8.Collaborate with relevant government agencies on water management initiatives.	
3.9.2	<i>Actions towards achieving best practice, related to targets in terms of water balance shall be implemented.</i>	 Yes
Comment	1.BG, UF, ADWR, MAUR, and SWR systems have enabled AP03 to achieve a process water recycling rate of 86.21% (>85%), meeting targets annually from 2017 to 2024. 2.AP03's wafer specific water consumption of 2.37 L/cm² is lower than the global standard of 12.13 L/cm². 3.Relevant water-saving measures, such as extending ultrapure water recovery and improving RO water production rates, have achieved an annual water saving of 351.7 metric tons. 4.In response to tap water pipeline repairs, it successfully implemented water company tank level control.	

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3.9.3	<i>Actions towards achieving best practice, related to targets in terms of water quality shall be implemented.</i>	 Yes
Comment	Regarding the Science Park Administration's effluent water quality standards, water pollution control focuses on compliance with limit standards for ammonia nitrogen, copper ions, TMAH, and COD. In 2024, measured levels for ammonia nitrogen were 12.16 mg/L (below the 30 mg/L limit), copper ions 0.06 mg/L (below the 1 mg/L limit), TMAH 0.48 mg/L (below the 30 mg/L limit), and COD 116.84 mg/L (below the 500 mg/L limit). All measured values are well below their respective regulatory limits.	
3.9.4	<i>Actions towards achieving best practice, related to targets in terms of the site's maintenance of Important Water-Related Areas shall be implemented.</i>	 Yes
Comment	Overall best practice achievements include continuous groundwater well monitoring, a tree planting program, ecological restoration within the plant area, and chemical storage management.	
3.9.5	<i>Actions towards achieving best practice related to targets in terms of WASH shall be implemented.</i>	 Yes
Comment	Regarding the WBCSD WASH Self-Assessment Tool, the results for all six assessment criteria indicate satisfaction with subsequent best practice actions. Contributions include providing free drinking water sources, sufficient and convenient toilets, hygienic handwashing facilities, and compliance with regulatory requirements.	
3.9.6	<i>Voluntary Advanced Indicator Achievement of identified best practice related to targets in terms of good water governance shall be quantified.</i>	 Yes
Comment	1.The BG, UF, ADWR, MAUR, and SWR systems achieved an AP03 process water recycling rate exceeding 85%. This target has been consistently met from 2017 to 2024. 2.The AP03 wafer-specific water consumption is 2.37 L/cm³, which is below the world standard of 12.13 L/cm³. 3.Relevant water-saving measures, such as extending ultrapure water recovery and improving RO water production rates, resulted in an annual water saving of 351.7 metric tons, exceeding the annual water production rate target.	
3.9.7	<i>Voluntary Advanced Indicator Achievement of identified best practice related to targets in terms of sustainable water balance shall be quantified.</i>	 Yes
Comment	The BG, UF, ADWR, MAUR, and SWR systems achieved an AP03 process 1.water recycling rate of 86.21%, exceeding the 85% target. This target has been met annually from 2017 to 2024. 2.The AP03 wafer-specific water consumption is 2.37 L/cm³, which is below the world standard of 12.13 L/cm³. 3.Relevant water-saving measures, such as extending ultrapure water recovery and improving RO water production rates, have achieved an annual water saving of 351.7 metric tons, meeting the annual water production rate target. 4.In response to tap water pipeline repairs, effective water tank level control by the water company has been achieved.	
3.9.8	<i>Voluntary Advanced Indicator Achievement of identified best practices related to targets in terms of water quality shall be quantified</i>	 Yes
Comment	Regarding the Science Park Administration's effluent water quality standards, water pollution control focuses on compliance with limit standards for ammonia nitrogen, copper ions, TMAH, and COD. In 2024, measured levels for ammonia nitrogen were 12.16 mg/L (below the 30 mg/L limit), copper ions 0.06 mg/L (below the 1 mg/L limit), TMAH 0.48 mg/L (below the 30 mg/L limit), and COD 116.84 mg/L (below the 500 mg/L limit). All measured values are well below their respective regulatory limits.	

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3.9.9	<i>Voluntary Advanced Indicator</i> <i>Achievement of identified best practices related to targets in terms of the site's maintenance of Important Water-Related Areas have been implemented.</i>	 Yes
Comment	Overall best practice achievements include continuous groundwater well monitoring. At sampling points, certain parameters (manganese, iron, total hardness, total solids, chlorides, and ammonia nitrogen) exceeded monitoring standard values. Comparison with the Science Park Administration's monitoring data (MW04) also indicated values exceeding monitoring standards, initially attributed to elevated groundwater background levels. Other achievements include a tree planting program to strengthen ecological restoration within the watershed, with 305 trees planted at Nanyuan Ecological Park. Chemical storage management is also implemented, with Chemical Dikes equipped with leak sensors and undergoing regular maintenance according to chemical type.	
3.9.10	<i>Voluntary Advanced Indicator</i> <i>Achievement of identified best practice related to targets in terms of WASH shall be quantified.</i>	 Yes
Comment	Regarding the WBCSD WASH Self-Assessment Tool, the results for all six assessment criteria indicate satisfaction with subsequent best practice actions. Contributions are observed in providing free drinking water sources, sufficient and convenient toilets, hygienic handwashing facilities, and compliance with regulatory requirements. Relevant quantitative data is provided in supporting documentation.	
3.9.11	<i>Voluntary Advanced Indicator</i> <i>A list of efforts to spread best practices shall be identified.</i>	 Yes
Comment	Promotion is conducted from a group perspective, leveraging experience from industry, government, and academia. This includes organizing ESG visits and meetings for TSMC's water areas with industry, media, U.S. government officials, and academia. A total of 9 promotional activities were conducted from November 28, 2023, to December 6, 2024.	
3.9.12	<i>Voluntary Advanced Indicator</i> <i>A list of collective action efforts, including the organizations involved, positions of responsible persons of other entities involved, and a description of the role played by the site shall be identified.</i>	 Yes
Comment	Enhanced internal and external best practice actions are observed. These actions correspond, in a tabular/list format, to individual contractors' joint efforts in water management. The responsible person from each contractor, along with their subsequent water management improvement results and their specific role/impact, are also detailed.	
3.9.13	<i>Voluntary Advanced Indicator</i> <i>Evidence of the quantified improvement that has resulted from the collective action relative to a site-selected baseline date shall be identified and evidence from an appropriate range of stakeholders linked to the collective action (including both those implementing the action and those affected by the action) that the site is materially and positively contributing to the achievement of the collective action shall be identified.</i>	 Obs.
Comment	TSMC should enhanced their internal and external best practice actions, presented in a tabular/list format, to reflect the joint water management efforts of each respective contractor. This also details the responsible person from each contractor, their subsequent water management improvement results, and the impact they have made, while also presenting quantifiable improvement outcomes.	

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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> ✓ Yes
Comment	1.The organization's focus on water pollution control is evidenced by a stringent review against the Science Park Administration's effluent water quality standards, specifically for short-term targets concerning ammonia nitrogen, copper ions, TMAH, and COD. In 2024, measured levels for ammonia nitrogen were 12.16 mg/L (below the 20 mg/L limit), copper ions 0.06 mg/L (below the 0.1 mg/L limit), TMAH 0.48 mg/L (below the 6 mg/L limit), and COD 116.84 mg/L (below the 200 mg/L limit). All measured values are well below their respective regulatory limits. 2.Waste reduction and environmental improvements are evident. 3.A safe water environment is provided. 4.The recycling system has been enhanced.
4.1.2	<i>Value creation resulting from the water stewardship plan shall be evaluated.</i> ✓ Yes
Comment	1.Enhanced Resource Utilization 2.Provision of a Safe Water Environment 3.Improved Recycling System 4.Drought Resilience and Voluntary Water Conservation
4.1.3	<i>The shared value benefits in the catchment shall be identified and where applicable, quantified.</i> ✓ Yes
Comment	1.Enhanced Resource Utilization: Copper tube production increased to 9,033 tons in 2024. 2.Provision of a Safe Water Environment: E. coli is tested every two months, exceeding the regulatory requirement of once every three months. 3.Improved Recycling System: The process water recycling rate reached 86.21% in 2024, consistently maintained above the internal standard of 85%. 4.Drought Resilience and Voluntary Water Conservation: Average voluntary water savings exceeded 6%
4.1.4	<i>Advanced Indicator</i> <i>A governance or executive-level review, including discussion of shared water challenges, water risks, and opportunities, and any water-related cost savings or benefits realized, and any relevant incidents shall be identified.</i> ✓ Yes
Comment	At the Management Review Committee, an explanation was provided covering topics such as the water management organizational chart, water management strategies and plans, significant watersheds, water resource challenges, water supply contingency, water resource management regulations and communication methods, and AWS achievements and management review committee outputs. The plant's top management expressed affirmation.
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> ✓ Yes

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Comment The site has conducted an annual review of water-related emergency incidents, including water quality issues, leaks, firewater events, and unintended chemical discharge into general water systems. The most recent incident was an aluminum chloride waste leakage at the dock in 2021. The details of the incident, including the root cause, corrective actions, and preventative measures, have been documented in the internal system. According to records, the leakage was immediately contained by the interception drain, preventing discharge into the rainwater drainage system.

4.3 *Evaluate stakeholders' consultation feedback regarding the site's water stewardship performance, including the effectiveness of the site's engagement process.*

4.3.1 *Consultation efforts with stakeholders on the site's water stewardship performance shall be identified.*



Yes

Comment The site has integrated stakeholder consultation into its water stewardship performance assessment, ensuring transparency and alignment with sustainability goals. Through structured surveys, stakeholders are engaged in discussions on key water management metrics, including water savings, recovery rates, water quality, groundwater usage, drinking water standards, WASH initiatives, and professional training programs. In 2024, the site achieved a water recovery rate of 53%, demonstrating its commitment to continuous improvement and collaborative water governance.

4.3.2 *Voluntary Advanced Indicator
The site's efforts to address shared water challenges shall be evaluated by stakeholders. This shall include stakeholder reviewing of the site's efforts across all five outcome areas, and their suggestions for continual improvement.*



Yes

Comment Stakeholder evaluations of the site's efforts to address shared water challenges indicate that water management practices have been the most successfully implemented, demonstrating strong governance and operational efficiency. Conversely, the site's performance in promoting a healthy water environment beyond its boundaries has been the least developed, primarily due to its location within an Industrial Park managed by the public sector, where all effluents are treated by a public wastewater treatment facility before being discharged into the creek. Stakeholders have not provided specific suggestions for further improvement.

4.4 *Evaluate and update the site's water stewardship plan, incorporating the information obtained from the evaluation process in the context of continual improvement.*

4.4.1 *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.*



Yes

Comment The site's water stewardship plan is reviewed and refined based on annual and monthly performance evaluations to ensure continuous improvement. Each year, a management review meeting is held between November and December to assess the achievement of annual performance targets. Meeting records are then uploaded to the management system platform, ensuring transparency and documentation. Additionally, monthly wastewater meetings provide ongoing discussions on performance progress throughout the year. As part of this process, the site plans water management targets for the following year before the February executive briefing, where these targets are formally reviewed and confirmed. This structured approach ensures that lessons learned from past evaluations are incorporated into future objectives, supporting adaptive and effective water stewardship.

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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	A document signed by the director, detailing the responsible units, positions, and scope of duties for AWS management and outlining accountability for compliance with water-related laws and regulations, has also been uploaded. All relevant documents are available on the official website: https://esg.tsmc.com/zh-Hant/resources/ESG-data-hub?tab=reports-documents .	
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	The site communicates its water stewardship plan and its contributions to AWS Standard outcomes through ESG and AWS surveys, ensuring stakeholders are informed of its commitments and progress. Additionally, the plan is presented at supplier conferences, fostering engagement and collaboration on water management initiatives across the supply chain.	
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	TSMC has quantified its water management performance for fiscal year 2024 (or "fiscal year 113" if you prefer the ROC calendar year explicitly) in its ESG Report, which has been published on TSMC's official website. Additionally, TSMC's ESG Sustainability Survey on Water Management was administered to present its strategies and water targets to stakeholders.	
	A new section will be added to the ESG report to present water management-related performance results. The content, such as historical water savings, water recycling volume, and recycling rate, will be presented in the form of screenshots.	
	All relevant documents are available on the official website: https://esg.tsmc.com/zh-Hant/resources/ESG-data-hub?tab=reports-documents .	
5.3.2	<i>Advanced Indicator The site's efforts to implement the AWS Standard shall be disclosed in the organization's annual report.</i>	
Comment	Quantified benefits from the organization's implementation of AWS standards at the site and with stakeholders are presented in the annual ESG report. This includes five key achievements, annual water management targets and performance, and the water declaration.	
	https://esg.tsmc.com/zh-Hant/resources/ESG-data-hub?tab=reports-documents .	

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5.3.3	<i>Voluntary Advanced Indicator</i> <i>Benefits to the site and stakeholders from implementation of the AWS Standard shall be quantified in the organization's annual report.</i>	 Yes
Comment	Quantified benefits from the organization's implementation of AWS standards at the site and with stakeholders are presented in the annual ESG report. This includes five key achievements, annual water management targets and performance, and the water declaration. Examples: 1. Water Safety and Public Health Enhancing the hygiene and safety of the drinking water environment and improving the implementation of handwashing and cleaning campaigns in the office to reduce the spread of infectious diseases such as COVID-19. 2. Wastewater Classification and Resource Utilization To ensure and provide high-quality water, 38 separate diversion systems were established, categorized by the composition and concentration of process wastewater. A complete system for wastewater classification and resource recovery (valorization) was constructed. This enables the wastewater systems to effectively degrade pollutants and concentrate them via recovery systems for reuse, thereby achieving the dual goals of pollutant reduction and circular resource utilization.	
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>	 Yes
Comment	TSMC administered its ESG Sustainability Survey on Water Management, which included themes for establishing mutual future water management challenges with stakeholders, such as ensuring good water quality and a healthy water environment. A feedback mechanism has also been established to address efforts in overcoming these challenges.	
5.4.2	<i>Efforts made by the site to engage stakeholders and coordinate and support public-sector agencies shall be identified.</i>	 Yes
Comment	The site has actively engaged stakeholders and collaborated with public-sector agencies to support water management efforts. Stakeholder evaluations indicate that the site's most significant contribution has been in advancing effective water management, while promoting a healthy water environment remains the least developed aspect. This is primarily due to the site's location within an Industrial Park managed by the public sector, where all effluents are treated by a public wastewater treatment facility before being discharged into the creek. Additionally, in preparation for regulatory updates, the site has provided industry-specific insights to ensure practical implementation. For example, ahead of new regulations, the site has cooperated with the Public Industrial Park Authority to reduce total phosphorus levels, aligning with anticipated environmental standards and demonstrating proactive compliance.	
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	The site has no recorded water-related regulation violations, according to the environmental pollution disclosure platform managed by the government.	
5.5.2	<i>Necessary corrective actions taken by the site to prevent future occurrences shall be disclosed if applicable.</i>	 N/A

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Comment	The site has no recorded water-related regulation violations, according to the environmental pollution disclosure platform managed by the government.	
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	Emergency response procedure document A-RMS-08-03-210 ver.66 is established. It includes emergency response procedures for Wastewater Treatment (WWT) equipment anomalies, abnormal discharge into drainage systems, and abnormal domestic wastewater discharge. Furthermore, no publicly disclosed government violation records for this facility are found within the past five years.	

Previous Findings

<i>All non-conformities raised in the previous audit have been satisfactorily closed.</i>	✔ Yes
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