CERTIFICATION REPORT

Alliance for Water Stewardship (AWS)

Audit Number: AO-000788

WSAS WATER STEWARDSHIP ASSURANCE SERVICES

SITE DETAILS

Site: **Taiwan Cement Corporation Hoping Branch, Hoping Plant**

Address: No. 263, Hoping Village, Soulin Township, R.O.C., 972005, Hualien County, Taiwan, TAIWAN

Contact Person: Chien Yu Chen

AWS Reference Number: AWS-000587

Site Structure: Single Site

CERTIFICATION DETAILS

Certification status: Certified Platinum

Date of certification decision: 2024-Feb-28

Validity of certificate: 2027-Feb-27

AUDIT DETAILS

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

Audit Type(s): Initial Audit

Audit Start Date: 2023-Sep-18

Lead Auditor: Milo Y.M. Huang

Audit team participants:

Vito C.C. Lin

Site Participants:

JIAN-YU, CHEN, Factory EHS Manager

Mr. Tsai, Factory Engineer

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ADDITIONAL INFO

Summary of Audit Findings: A total of 9 findings were raised during the certification audit, nil major non-conformities, 1 minor non-conformities, 8 observations.

The Client is requested to perform a root cause analysis and define corrective actions for each of the non-conformities and to submit these to WSAS within 30 days of receipt of the audit report by 21/10/2023.Minor non-conformities must be closed out by the time of the next annual audit.

The audit team recommends certification of Taiwan Cement Corporation- Hoping Branch Hoping Plant at Platinum level pending approval of the corrective actions plan.

The site has prepared a corrective action plan for all non-conformities raised. The Implementation of the corrective action plan will be assessed at the next surveillance audit. All non-conformities were addressed.

Scope of Assessment: The scope of services covers the Initial certification audit for assessing conformity of Taiwan Cement Corporation - Hoping Branch Hoping Plant against the AWS International Water Stewardship Standard Version 2.

Established in 1980.TCC Suao is mainly engaged in the cement manufacturing. These finished products and components are widely applied to building materials. It located at No. 263, Heping, Xiulin Township, Hualien County 972005, Taiwan.

The facility is located in the Mount Nanhu basin, and there is no reservoir.

The audit was conducted onsite on 18/09/2023 - 21/09/2023.
The onsite site visit included the assessment of potential sources, on-site lab, IWRA in the site and catchment etc., that were visited onsite as part of the audit.

SCORE

135.00

FINDINGS

NUMBER OF FINDINGS PER LEVEL

Observation	5
Minor	2

FINDING DETAILS

Finding No:	TNR-008246
Checklist Item No:	1.5.5
Status:	Open
Finding level:	Minor
Due date:	2023-Oct-20
Checklist item:	Important Water-Related Areas shall be identified, and where appropriate, mapped,and their status assessed including any threats to people or the natural environment, using scientific information and through stakeholder engagement.
Findings:	After on-site conformation, IWRAs have been found out including water source area, Receiving Water and ecological pool.
Corrective action:	The IWRAs in the catchment level has been marked on the map

Finding No:	TNR-008218
Checklist Item No:	3.1.3
Status:	Open
Finding level:	Observation
Checklist item:	Advanced Indicator Evidence of improvements in water governance capacity from a site-selected baseline date shall be identified.
Findings:	Suggest creating a water management plan checklist to understand the water-related measures taken each year.

Finding No:	TNR-008219
Checklist Item No:	3.3.1
Status:	Open
Finding level:	Observation
Checklist item:	Status of progress towards meeting water balance targets set in the water stewardship plan shall be identified.
Findings:	Suggest adding regular maintenance of the plant's internal water pipes.

Finding No:	TNR-008220
Checklist Item No:	3.5.1
Status:	Open
Finding level:	Minor
Due date:	2023-Oct-20
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:	The IWRAs in the catchment have not been considered
Corrective action:	The IWRAs in the catchment have marked on the map

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Finding No:	TNR-008221
Checklist Item No:	4.1.1
Status:	Open
Finding level:	Observation
Checklist item:	Performance against targets in the site’s water stewardship plan and the contribution to achieving water stewardship outcomes shall be evaluated.
Findings:	Suggest adding regular maintenance of the plant's internal water pipes.

Finding No:	TNR-008222
Checklist Item No:	5.1.1
Status:	Open
Finding level:	Observation
Checklist item:	The site’s water-related internal governance, including positions of those accountable for compliance with water-related laws and regulations shall be disclosed.
Findings:	The AWS report has not been officially released. Please add it to the official website after establishing a dedicated section.

Finding No:	TNR-008223
Checklist Item No:	5.2.1
Status:	Open
Finding level:	Observation
Checklist item:	The water stewardship plan, including how the water stewardship plan contributes to AWS Standard outcomes, shall be communicated to relevant stakeholders.
Findings:	It is suggested to showcase AWS implementation results during supplier meetings.

CERTIFICATION REPORT

Alliance for Water Stewardship (AWS)

Audit Number: AO-000788

WSAS WATER STEWARDSHIP ASSURANCE SERVICES

Report Details

Report	Value
Report prepared by	Milo Y.M. Huang
Report approved by	Lisa Seufert
Report approved on (Date)	21/12/2023

Surveillance

Proposed date for next audit
2024-Sep-18

Stakeholder Announcements

Date of publication	Location
11/07/2023	https://www.tuv.com/content-media-files/taiwan/pdfs/202301-system/aws-announcement/aws-stakeholder-announcement-tuvtw-taiwan-cement-corporation-hoping-branch.pdf
30/07/2023	

Catchment Information

Catchment Information

Overview of the Heping River Basin. Heping Creek is located in Yilan County and Hualien County in northeastern Taiwan. Heping Creek originates from Nanhu Mountain in the Central Mountains (elevation 3,536 meters). It starts below the Dazhuoshui Bridge. The left bank belongs to Nan'ao Township. Most of them are close to high mountain cliffs. In the hinterland Narrow; the right bank belongs to Xiulin Township, with a wider hinterland. The main tributaries in the upper reaches are Heping South Creek and Heping North Creek. After converging, they become Heping Creek, which flows into the Pacific Ocean at Heping Village, Xiulin Township, Hualien County. The basin area is about 562 square kilometers, the main stream is about 48.2 kilometers long, and the average slope of the river bed is about 1/37 , Figure 2-9. The watershed covers two townships (towns and cities) administrative districts, including Nan'ao in Yilan County and Xiulin in Hualien County. This basin has many mountains and little flat land, a small hinterland and poor soil with few agricultural products, as well as frequent natural disasters such as typhoons and earthquakes. Although it has developed railway and highway transportation, (except for the early days when it was a timber distribution center) economic activities are limited. The basin is rich in natural resources, especially mining resources. If effectively developed, it will promote local economic prosperity, improve people's living standards and increase employment opportunities. The Hualien area has developed transportation. Heping Village in this basin is an important station on the Su-Hua Highway. Since the opening of the North Railway and the Beiyi Expressway, the transportation in this area has become more convenient. With the development of the cement professional zone and the construction of a dedicated port, Transportation is more frequent. Meteorology and Hydrology The Pingxi Basin has a subtropical climate, with the rainy season mostly concentrated between June and November each year, and the dry season from December to May. The average annual rainfall is about 2,500 mm, and the average monthly temperature is about 23°C.

Map of the catchment .bmp

Client Description and Site Details

Client/Site Background

TCC created the cement business model when it was founded in 1954. The main service is cement manufacturing and sales.In addtion, TCC dedicate to green energy such as solar, wind and energy storage development recently .

There is a single site covered in the audit scope are 100% owned by TCC Hoping Branch and located in Meilun Industrial Parks in Hualien City of Taiwan. The main prouduct in Hoping Branch Hoping Plant is Portland Cenment and operated in 1996. For this site one unique code was allocated by audit team.

Site address: No.263, Hoping Village, Sioulin Township, Hualien County, 972, Taiwan

	Summary of Shared Water Challenges

Summary of Shared Water Challenges
The shared water challenges have been identified 11 items by the questionnaire of water issues, and sort & filter 3 significant items including:
1.Level of compliance with water-related regulations (wastewater discharge):
The plant will be punished from the government if it doesn't follow the wastewater discharge regulations.
2.Level of compliance with water-related regulations (water intaking)
The plant will be punished from the government if it doesn't follow the water intaking regulations.
3.Reclaimed and reuse of water:
Due to Taiwan face water shortage issues (especially in dry season from November to April every year), Water Resources Agency recently concern about enterprises use reclaimed water to decline the water usage from raw water.

0.1	General Requirements for Single Sites, Multi-Sites and Groups	
0.1.1	*Eligibility Criteria*	
0.1.1.1	*The site(s) occupy one catchment OR an exception has been granted.*	Yes
Comment	The site occupies one catchment.	
0.1.1.2	*The scope of the proposed certification shall be under the control of a single management system.*	Yes
Comment	The scope of the proposed certification is under the control of a single management system.	
0.1.1.3	*The scope of the proposed certification shall be homogeneous with respect to primary production system, water management, product or service range, and the main market structures.*	Yes
Comment	The scope of the proposed certification is homogeneous with respect to primary production system, water management, product or service range, and the main market structures.	

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	1. Site boundaries have been marked. 1. Cooling Water: The intake points for the Heping Underground Water at the Industrial Zone Cooling Water Plant, as well as the intake points for the Taiwan Cement Heping Plant, have been identified. 2. Tap Water: The groundwater intake point at the Taiwan Water Purification Plant has been identified. 3. Within the site boundaries, D01, RD01 to RD06 have been marked. 4. RD01 to RD03 within the industrial zone have been marked. 5. Six groundwater monitoring wells have been marked. 6. Two groundwater extraction wells have been marked. 7. MBR facilities/sewage treatment facilities within the plant and the Industrial Zone Management Authority Sewage Plant have been marked.	
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;* *- Identify the degree of stakeholder engagement based on their level of interest and influence.*	✓ Yes
Comment	Stakeholders have been identified, and their concerns have been investigated.	
1.2.2	*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.*	✓ Yes
Comment	Stakeholders have been identified, and their concerns have been investigated.	

1.3	*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.*	
1.3.1	*Existing water-related incident response plans shall be identified.*	Yes
Comment	Eight major water management-related risk topics have been identified, including toxic chemical leaks, for which regular drills are conducted annually as required by the supervisory authority (Hualien County Environmental Protection Bureau).The emergency response plan content for the wastewater plant's failure was tested on September 19.	
1.3.2	*Site water balance, including inflows, losses, storage, and outflows shall be identified and mapped*	Yes
Comment	The 2022 water balance chart has been completed.	
1.3.3	*Site water balance, inflows, losses, storage, and outflows, including indication of annual variance in water usage rates, shall be quantified. Where there is a water-related challenge that would be a threat to good water balance for people or environment, an indication of annual high and low variances shall be quantified.*	Yes
Comment	The 2022 water balance chart has been completed.	
1.3.4	*Water quality of the site's water source(s), provided waters, effluent and receiving water bodies shall be quantified. Where there is a water-related challenge that would be a threat to good water quality status for people or environment, an indication of annual, and where appropriate, seasonal, high and low variances shall be quantified.*	Yes
Comment	The discharge water poses no threat to the water quality required for humans and the environment. 1. Sampling and testing of cooling water provided by the cooling water plant is conducted every two weeks. 2. D01 discharge pond is sampled once a month.(compliance with sewage plant management standards). 3. MBR recycled water pond (S01) is tested semi-annually. 4. Taiwan Cement has three groundwater monitoring wells, which are tested annually. The test results from September 19 comply with the relevant water quality standards.	
1.3.5	*Potential sources of pollution shall be identified and if applicable, mapped, including chemicals used or stored on site.*	Yes
Comment	Marked locations: Oxygen acetylene storage, waste heat power generation area (including cooling water towers), 1k kiln area, 2K kiln area, diesel tanks for stone grinding, 2k diesel tanks, 1K diesel tanks, the plant's cooling water tower, cement grinding room, and the chemical analysis laboratory.	
1.3.6	*On-site Important Water-Related Areas shall be identified and mapped, including a description of their status including Indigenous cultural values.*	Yes
Comment	IWRA has been identified and marked on the map, including 2 groundwater wells and cooling water plant.	
1.3.7	*Annual water-related costs, revenues, and a description or quantification of the social, cultural, environmental, or economic water-related value generated by the site shall be identified and used to inform the evaluation of the plan in 4.1.2.*	Yes

Comment	1. Water expenses 2. Wastewater treatment expenses 3. Environmental monitoring expenses 4. Indirect material expenses - pure water station 5. Management system verification expenses, such as ISO 46001, AWS 6. Pipeline maintenance expenses for water-related facilities within the plant, such as water storage tanks and wastewater treatment plants Quantified: Annual savings in water expenses based on the sprinkler truck provided to Heping Village.	
1.3.8	*Levels of access and adequacy of WASH at the site shall be identified.*	Yes
Comment	The WASH in the site has identified, including: 1.Good drinking water quality 2.Cleaning staff training 3.Kitchen staff training 4.Adequate public toilets	
1.4	*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.*	
1.4.1	*The embedded water use of primary inputs, including quantity, quality and level of water risk within the site's catchment, shall be identified.*	Yes
Comment	1. Major raw materials (limestone), secondary raw materials, and the supplier's watershed have been identified. 2. The water usage of limestone suppliers (mining areas) is marked on the water balance chart.(supplied by Taiwan Cement Heping Plant) 3. The 2020 product water footprint has been calculated using SimaPro's database for raw material water consumption.	
1.4.2	*The embedded water use of outsourced services shall be identified, and where those services originate within the site's catchment, quantified.*	Yes
Comment	There is an outsourced cleaning service provider in the DAKA Industrial Park that uses the park's self-sourced water.	
1.4.3	*Advanced Indicator* *The embedded water use of primary inputs in catchment(s) of origin shall be quantified.*	Yes
Comment	1. Major raw materials (limestone), secondary raw materials, and the supplier's watershed have been identified. 2. The water usage of limestone suppliers (mining areas) is marked on the water balance chart.(supplied by Taiwan Cement Heping Plant)	
Score	7	
1.5	*Gather water-related data for the catchment, including water governance, water balance, water quality, Important Water-Related Areas, infrastructure, and WASH*	
1.5.1	*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.*	Yes

Comment	TCC Hoping Plant has collected the water-related plan including water supply, effluent discharge and pipeline installation from Economic bureau and Water Resources Agency authority. Water Resources Agency legislated to water user who uses over 9,000 m3 has to pay more cost, it will push TCC Hoping Plant to aware of their cost.	
1.5.2	*Applicable water-related legal and regulatory requirements shall be identified, including legally-defined and/or stakeholder-verified customary water rights.*	Yes
Comment	The Water-related legal and regulatory requirements have been confirmed through the procedure in the plant. It would be checked and kept the record, updating every season.	
1.5.3	*The catchment water-balance, and where applicable, scarcity, shall be quantified, including indication of annual, and where appropriate, seasonal, variance.*	Yes
Comment	The site has collected the catchment water-balance on official website from Water Resources Agency, the information includes precipitation, storage and demand. The overall conclusion is that the water recourse is sufficient, but there is a great difference between dry season and wet season.	
1.5.4	*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.*	Yes
Comment	The water quality information of Hoping River catchment is available on the public webpage.River Pollution Index (RPI) in Hoping River are now in medium-pollution status. For influent water, TCC Hoping plant also collected water quality of Heping water purification plant from official website.	
1.5.5	*Important Water-Related Areas shall be identified, and where appropriate, mapped,and their status assessed including any threats to people or the natural environment, using scientific information and through stakeholder engagement.*	No
Comment	The Important Water-Related Areas in the catchment has not been identified. ***Finding No: TNR-008246***	
1.5.6	*Existing and planned water-related infrastructure shall be identified, including condition and potential exposure to extreme events.*	Yes
Comment	After communication with Meilin Industrial Parks Service Center, TCC Hoping Plant obtained the existing and planned water-related infrastructure.	
1.5.7	*The adequacy of available WASH services within the catchment shall be identified.*	Yes
Comment	Statistic on Tap water supply penetration rate and WWP Plant distribution rate published by Water Resources Agency.	
1.5.8	*Advanced Indicator* *Efforts by the site to support and undertake catchment level water-related data collection shall be identified.*	Yes
Comment	1 Government-provided data on the water quality monitoring of the Da-Zhuoshui Bridge station has been collected. 2. Regular water quality testing of the Heping River Undergroundwater is conducted. 3. Water quality of the groundwater monitoring wells is regularly sampled and outsourced for testing.	
Score	7	

1.5.9	*Advanced Indicator* *The adequacy of WASH provision within the catchments of origin of primary inputs shall be identified.*	N/A
1.6	*Understand current and future shared water challenges in the catchment, by linking the water challenges identified by stakeholders with the site's water challenges.*	
1.6.1	*Shared water challenges shall be identified and prioritized from the information gathered.*	Yes
Comment	Shared water challenges have been identified, including flood and drought risks, and the main root is product production capacity will be affected, resulting in financial losses and revenue decline.	
1.6.2	*Initiatives to address shared water challenges shall be identified.*	Yes
Comment	Shared water challenges have been identified, including flood and drought risks, and the main root is product production capacity will be affected, resulting in financial losses and revenue decline.	
1.6.3	*Advanced Indicator* *Future water issues shall be identified, including anticipated impacts and trends*	Yes
Comment	Water management focus areas for the future have been identified through internal and external analyses of priority and urgency, including the severity and urgency of the company's impact. Water source scarcity is currently not an issue, as determined through observations from the water service provider (cooling water plant).	
Score	3	
1.6.4	*Advanced Indicator* *Potential water-related social impacts from the site shall be identified, resulting in a social impact assessment with a particular focus on water.*	Yes
Comment	Potential water-related social impacts from the site have been identified	
Score	4	
1.7	*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.*	
1.7.1	*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.*	Yes
Comment	ISO 46001 methodology has been followed for data completeness.	
1.7.2	*Water-related opportunities shall be identified, including how the site may participate, assessment and prioritization of potential savings, and business opportunities.*	Yes
Comment	ISO 46001 methodology has been followed for completeness of data.	
1.8	*Understand best practice towards achieving AWS outcomes: Determining sectoral best practices having a local/catchment, regional, or national relevance.*	
1.8.1	*Relevant catchment best practice for water governance shall be identified.*	Yes

Comment	TCC Hoping plant has collected regulations from the related government and the ESG report by the same trade. Water usage, water reuse rate and unit consumption per unit product are the main best practices from these information.	
1.8.2	*Relevant sector and/or catchment best practice for water balance (either through water efficiency or less total water use) shall be identified.*	Yes
Comment	Water usage, water reuse rate and unit consumption per unit product are the main best practices from the ESG report from the same trade.	
1.8.3	*Relevant sector and/or catchment best practice for water quality shall be identified, including rationale for data source.*	Yes
Comment	The main water quality practices are based on regulations from Water Resources Agency and Meilun Industrial Parks, including Effluent Standards and permitted sewer-connected water specification.	
1.8.4	*Relevant catchment best practice for site maintenance of Important Water-Related Areas shall be identified.*	Yes
Comment	TTC Hoping Plant identified IWRA best pracitices through the same trade(ACC) and regulations from the related government, Environmental Impact Assessment (EIA) has some requirement which should be confirmed by TCC Hoping Plant, and the site has met all of the demands.	
1.8.5	*Relevant sector and/or catchment best practice for site provision of equitable and adequate WASH services shall be identified.*	Yes
Comment	TTC Hoping Plant identified IWRA best pracitices through the same trade(ACC) and regulations from the related government, the quantity of toilets has to be required by Ministry of the Interior and the site has met all of demands.	

2	STEP 2: COMMIT & PLAN - Commit to be a responsible water steward and develop a Water Stewardship Plan	
2.1	*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.*	
2.1.1	*A signed and publicly disclosed site statement OR organizational document shall be identified. The statement or document shall include the following commitments:* *- 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	A water management policy has been developed, including information disclosure and stakeholder communication.	
2.1.2	*Advanced Indicator* *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.*	Yes
Comment	The policy is posted on the company's intranet bulletin board(internal employees) the first-floor information board of the administrative building(village leaders/government agencies) on the company's official website and ESG report.	
Score	1	
2.2	*Develop and document a process to achieve and maintain legal and regulatory compliance.*	
2.2.1	*The system to maintain compliance obligations for water and wastewater management shall be identified, including:* *- Identification of responsible persons/positions within facility organizational structure* *- Process for submissions to regulatory agencies.*	Yes
Comment	The system to maintain compliance obligations for water and wastewater management has been identified.	
2.3	*Create a water stewardship strategy and plan including addressing risks (to and from the site), shared catchment water challenges, and opportunities.*	
2.3.1	*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.*	Yes
Comment	A water stewardship strategy has been identified: 1.Cement Plants in Taiwan which water usage intensity target is deceased 50% by 2030 2. TCC conducts internal self-monitoring quarterly for wastewater, which is in conformity with the relevant standards.	

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	A water stewardship plan has been identified, the plans including: 1.3A shaft tunnel recycling water resources for reuse 2.The construction project of the sewage recycling and reuse system of Hoping Plant was completed in 2022, with the annual recycling volume reaching 29,200 tons. 3.Ecological pond construction to attract aquatic animals and plants in the mining area. 4.1B Shaft Tunnel recycling water resources for reuse.	
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	Collaborating with the mine to implement the vertical well water recycling plan, reducing water usage for dust suppression within the plant.	
Score	4	
2.3.4	*Advanced Indicator* *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.*	Yes
Comment	1. In 2021, participated in the Ministry of Economic Affairs' Industrial Bureau's 2021 Industrial Water Efficiency Improvement Program, initiating a product water footprint investigation at five shipping sites (all belonging to the Taiwan Cement Group). 2. Participated in the Ministry of Economic Affairs' Water Resources Agency's 2021 Major Water User Efficiency Water Management Guidance Program, providing water conservation guidance in collaboration with sister plants, Taiwan Cement Hualien Plant and the Heping Power Plant.	
Score	4	
2.3.5	*Advanced Indicator* *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.*	Yes
Comment	Stakeholder consensus have benn sought on the site's water stewardship plan.	
Score	7	
2.4	*Demonstrate the site's responsiveness and resilience to respond to water risks*	
2.4.1	*A plan to mitigate or adapt to identified water risks developed in co-ordination with relevant public-sector and infrastructure agencies shall be identified.*	Yes
Comment	A emergency response guidance for drought and water shortage has established by TCC Hoping Plant, which can collaborate with relevant public-secotor.	

2.4.2	*Advanced Indicator* *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.*	Yes
Comment	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 have been identified.	
Score	6	

3	**STEP 3: IMPLEMENT - Implement the site's stewardship plan and improve impacts**	
3.1	*Implement plan to participate positively in catchment governance.*	
3.1.1	*Evidence that the site has supported good catchment governance shall be identified.*	Yes
Comment	1. ISO 46001 certification achieved (from December 22, 2021, to December 22, 2024). 2. Quarterly supervisory management and work coordination meetings conducted. 3. No violations of water-related regulations in the past five years.(Registration Number: U0100187) 4. Promotion activities at Heping Elementary School. 5. Implementation of mine shaft seepage water recovery measures (completed by April 30, 2021, and April 30, 2023). 6. Installation of MBR for recovering domestic wastewater (completed in May 2022).	
3.1.2	*Measures identified to respect the water rights of others including Indigenous peoples, that are not part of 3.2 shall be implemented.*	Yes
Comment	1. Groundwater usage rights obtained (Registration Numbers: U0880046, U0880047). 2. Company water source is Heping Creek Cooling Water Plant (Heping Creek subsurface water), and water for Heping Village residents comes from the tap water company (pumping groundwater); there is no conflict in water sources between the two.	
3.1.3	*Advanced Indicator* *Evidence of improvements in water governance capacity from a site-selected baseline date shall be identified.*	Yes
Comment	1. ISO 14046 certification achieved in 2019, ISO 46001 certification in 2021. 2. Water-related responsibilities established in the management manual (Version H). 3. Water Safety Plan (WSP) established.	
Score	2	
3.1.4	*Advanced Indicator* *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.*	Yes
Comment	1. No comments or feedback received regarding rainwater management in 2022. 2. Questionnaires provided to stakeholders. 3. No external complaints recorded in 2022.	
Score	2	
3.2	*Implement system to comply with water-related legal and regulatory requirements and respect water rights.*	
3.2.1	*A process to verify full legal and regulatory compliance shall be implemented.*	Yes
Comment	1. Quarterly monitoring of water quality parameters based on environmental impact commitments. 2. Possession of water-related permits. 3. No violations of water-related regulations in the past five years.	
3.2.2	*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.*	N/A

Comment	1. Effective communication with stakeholders. 2. Since the plant's water source is subsurface water from the cooling water plant, there is no infringement of the water rights of the local community. 3. No records of groundwater extraction in 2022.

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

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

Comment	1. Goal: Reduce water intensity (L/ton of binding materials), reference year 2016 (277 L/ton of binding materials). The target is to reduce this by 50% by 2030, and it was already reduced by 28% in 2022. 2. Implementation of management measures (ISO 46001, AWS). 3. Shaft seepage water recovery to reduce supplier water usage (3A shaft system completed by April 30, 2021; 1B shaft system completed by April 30, 2023). 4. Installation of MBR for recovering domestic wastewater (completed in May 2022).

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

Comment	There are no water shortages in the watershed or plant area. Suppliers proactively proposed rainwater recovery from mine shafts to reduce water usage, and this was included as a water balance target, with completion expected in 2023.

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

Comment	The plant provides community road sprinkling using water from the MBR water recovery system within the plant. Water quality is tested semi-annually, and there are currently no violations recorded.

3.3.4 *Advanced Indicator*
The total volume of water voluntarily re-allocated (from site water savings) for social, cultural and environmental needs shall be quantified. Yes

Comment	Collaboration with Shuilin Township government involves providing approximately 14,040 m3 of water for street cleaning each year.
Score	6

3.4 *Implement plan to achieve site water quality targets*

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

Comment	In 2022, the water quality of incoming water and wastewater discharged from the plant met regulatory standards.

3.4.2 *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.* Yes

Comment	1. Wastewater discharged from the plant in 2022 met industrial area management standards, with testing records available. 2. An interview with the sewage plant officer confirmed that Taiwan Cement had no violations.

3.5 *Implement plan to maintain or improve the site's and/or catchment's Important Water-Related Areas.*

3.5.1	*Practices set in the water stewardship plan to maintain and/or enhance the site's Important Water-Related Areas shall be implemented.*	No
Comment	The IWRA should include source areas, receiving bodies of water, and plant area groundwater. Provide evidence of water quality, water level monitoring, research, data and photos, as well as details of maintenance and improvement. ***Finding No: TNR-008220***	
3.5.2	*Advanced Indicator* *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.*	N/A
3.5.3	*Advanced Indicator* *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.*	Yes
Comment	1. Water quality data relating to environmental commitments is monitored. 2. Measures are in place to prevent fishing at the IWRA.	
Score	2	
3.6	*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.*	
3.6.1	*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.*	Yes
Comment	1. Regular drinking water quality testing is conducted. 2. Daily restroom cleaning. 3. Sufficient male and female restroom facilities are provided according to the law.	
3.6.2	*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.*	Yes
Comment	1Company water source is Heping Creek Cooling Water Plant (Heping Creek subsurface water), and water for Heping Village residents comes from the tap water company; there is no conflict regarding water sources between the two.	
3.6.3	*Advanced Indicator* *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.*	Yes
Comment	1. Offer masks, street disinfection, and rapid testing services to community residents. 2. Conduct epidemic awareness campaigns through relevant channels.	
Score	5	
3.6.4	*Advanced Indicator:* *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.*	Yes
Comment	1. Provide home repairs to community residents (including water and electricity); 183 cases were completed in 2022. 2. Provide sufficient WASH facilities at Daka Park and clean them daily.	

Score	4	
3.7	*Implement plan to maintain or improve indirect water use within the catchment:*	
3.7.1	*Evidence that indirect water use targets set in the water stewardship plan, as applicable, have been met shall be quantified.*	Yes
Comment	Shaft seepage water recovery to reduce supplier water usage (3A shaft system completed by April 30, 2021, with a total recovered water volume of 8,732 tons in 2022; 1B shaft system completion expected by April 30, 2023).	
3.7.2	*Evidence of engagement with suppliers and service providers, as well as, when applicable, actions they have taken in the catchment as a result of the site's engagement related to indirect water use, shall be identified.*	Yes
Comment	1. Conduct an annual water resources management survey and provide guidance and improvement to non-compliant suppliers. 2. Shaft seepage water recovery to reduce supplier water usage.	
3.7.3	*Advanced Indicator* *Actions taken to address water related risks and challenges related to indirect water use outside the catchment shall be documented and evaluated.*	Yes
Comment	Each year, a water resources management survey is conducted, and guidance and improvements are offered to non-compliant suppliers.	
Score	7	
3.8	*Implement plan to engage with and notify the owners of any shared water-related infrastructure of any concerns the site may have.*	
3.8.1	*Evidence of engagement, and the key messages relayed with confirmation of receipt, shall be identified.*	Yes
Comment	Conduct a supervisory management and work coordination meeting every quarter.	
3.9	*Implement actions to achieve best practice towards AWS outcomes: continually improve towards achieving sectoral best practice having a local/catchment, regional, or national relevance.*	
3.9.1	*Actions towards achieving best practice, related to water governance, as applicable, shall be implemented.*	Yes
Comment	TCC Hoping Plant has completed the certification including ISO 14046, ISO 46001.	
3.9.2	*Actions towards achieving best practice, related to targets in terms of water balance shall be implemented.*	Yes
Comment	According to TCC Target (Water intensity should be decreased 50% by 2030), TCC built a water footprint platform to monitor water consumption every year, and TCC Hoping Plant achieved the annual target from 2016 to 2022.	
3.9.3	*Actions towards achieving best practice, related to targets in terms of water quality shall be implemented.*	Yes
Comment	TCC Hoping Plant Implemented MBR construction to recycle domestic sewage in 2022, and 28,225 m3 recycled water has been reused.	

3.9.4	*Actions towards achieving best practice, related to targets in terms of the site's maintenance of Important Water-Related Areas shall be implemented.*	Yes
Comment	1.TCC Hoping Plant encouraged the public join Hamben beach cleanup which in the catchment. 2.TCC Hoping Plant implemented coral reefs restoration annually.	
3.9.5	*Actions towards achieving best practice related to targets in terms of WASH shall be implemented.*	Yes
Comment	Actions towards achieving best practice, related to targets in terms of WASH has implemented: 1.The record of toilets cleanup. 2.The record of drinking water testing and equipment maintenance. 3.The record of cleaning staff training.	
3.9.6	*Advanced Indicator* *Achievement of identified best practice related to targets in terms of good water governance shall be quantified.*	Yes
Comment	Achieved a 50% reduction in water intensity (L/ton of cementitious materials) by 2030 compared to 2016 levels. Current water intensity is 28%.	
Score	8	
3.9.7	*Advanced Indicator* *Achievement of identified best practice related to targets in terms of sustainable water balance shall be quantified.*	Yes
Comment	Achieved a 50% reduction in water intensity (L/ton of cementitious materials) by 2030 compared to 2016 levels. Current water intensity is 28%.	
Score	8	
3.9.8	*Advanced Indicator* *Achievement of identified best practices related to targets in terms of water quality shall be quantified*	Yes
Comment	Wastewater and runoff wastewater both meet the standards.	
Score	8	
3.9.9	*Advanced Indicator* *Achievement of identified best practices related to targets in terms of the site's maintenance of Important Water-Related Areas have been implemented.*	N/A
3.9.10	*Advanced Indicator* *Achievement of identified best practice related to targets in terms of WASH shall be quantified.*	Yes
Comment	Drinking water quality is tested every six months.	
Score	4	
3.9.11	*Advanced Indicator* *A list of efforts to spread best practices shall be identified.*	Yes
Comment	External public participation in water management guidance is encouraged through the Water Management Navigation promotion.	
Score	3	
3.9.12	*Advanced Indicator* *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.*	Yes

Comment	1. Collaborated with the mine to implement the vertical well water recycling plan 2. Collaborated with suppliers on water conservation projects. 3. MBR recycled water.
Score	14

3.9.13 *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.

Yes

Comment	1. Collaborated with the mine to implement the vertical well water recycling plan 2. Collaborated with suppliers on water conservation projects. 3. MBR recycled water.
Score	8

4	STEP 4: EVALUATE - Evaluate the site's performance.	
4.1	*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.*	
4.1.1	*Performance against targets in the site's water stewardship plan and the contribution to achieving water stewardship outcomes shall be evaluated.*	Obs.
Comment	1. Goal: Water intensity (L/ton of binding materials), reference year 2016 (277 L/ton of binding materials). The target is to reduce it by 50% by 2030, and it was already reduced by 28% in 2022. 2. Shaft seepage water recovery to reduce supplier water usage (3A shaft system completed by April 30, 2021, with a total recovered water volume of 8,732 tons in 2022; 1B shaft system completion expected by April 30, 2023). 4. Installation of MBR for recovering domestic wastewater (completed in 2022, with a total recovery of 28,225 m3 in 2022). 3. The water quality goal is to meet regulatory standards, with continuous environmental monitoring. 4. Quarterly environmental monitoring of the IWRA. 5. Maintain sufficient WASHT facilities, with regular testing of drinking water and daily restroom cleaning.	
4.1.2	*Value creation resulting from the water stewardship plan shall be evaluated.*	Yes
Comment	1. In comparison to the reference year (2016), water usage was reduced by 21.5% in 2022 (223,886 m3), resulting in an estimated cost reduction of 2,597,078 NT dollars (average water price of 11.6 NT dollars/m3 in 2022). 2. MBR domestic wastewater recovery reduced wastewater treatment costs by 1,615,035 NT dollars (water usage of 28,225 m3, average treatment price of 57.22 NT dollars in 2022).	
4.1.3	*The shared value benefits in the catchment shall be identified and where applicable, quantified.*	Yes
Comment	1. Provide MBR-recovered water for community street sprinkling (estimated water usage of 14,040 m3, saving 140,400 NT dollars annually). 2. Provide sufficient public restrooms at Daka Park.	
4.1.4	*Advanced Indicator* *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.*	Yes
Comment	1. Interview information from the plant manager confirmed the manager's annual review of water-related issues.	
Score	3	
4.2	*Evaluate the impacts of water-related emergency incidents (including extreme events), if any occurred, and determine the effectiveness of corrective and preventative measures.*	
4.2.1	*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.*	N/A

Comment	1. No emergency events in 2022. 2. Emergency response measures have been established for both the plant site and the industrial area.	
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	1. Stakeholder questionnaires carried out annually. 2. AWS execution performance questionnaires carried out annually. 3. No stakeholder feedback received.	
4.3.2	*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	1. Stakeholder questionnaires carried out annually. 2. AWS execution performance questionnaires carried out annually. 3. No stakeholder feedback received.	
Score	6	
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	Reviewed annually through management review and changes to the water management plan.	

5	**STEP 5: COMMUNICATE & DISCLOSE - Communicate about water stewardship and disclose the site's stewardship efforts**	
5.1	*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.*	
5.1.1	*The site's water-related internal governance, including positions of those accountable for compliance with water-related laws and regulations shall be disclosed.*	Obs.
Comment	AWS reports clearly define the list of relevant personnel.	
5.2	*Communicate the water stewardship plan with relevant stakeholders.*	
5.2.1	*The water stewardship plan, including how the water stewardship plan contributes to AWS Standard outcomes, shall be communicated to relevant stakeholders.*	Obs.
Comment	1. The ESG report publicly discloses water management performance annually. 2. The AWS report publicly discloses sustainable water management performance annually.	
5.3	*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.*	
5.3.1	*A summary of the site's water stewardship performance, including quantified performance against targets, shall be disclosed annually at a minimum.*	Yes
Comment	1. The ESG report publicly discloses water management performance annually. 2. The AWS report publicly discloses sustainable water management performance annually.	
5.3.2	*Advanced Indicator* *The site's efforts to implement the AWS Standard shall be disclosed in the organization's annual report.*	Yes
Comment	The AWS report publicly discloses sustainable water management performance annually.	
Score	1	
5.3.3	*Advanced Indicator* *Benefits to the site and stakeholders from implementation of the AWS Standard shall be quantified in the organization's annual report.*	Yes
Comment	The AWS report publicly discloses sustainable water management performance annually.	
Score	1	
5.4	*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.*	
5.4.1	*The site's shared water-related challenges and efforts made to address these challenges shall be disclosed.*	Yes
Comment	1. Water-related challenges and responses are disclosed in the ESG report each year. 2. Water-related challenges and responses are disclosed in the TCFD report each year. 3. Water-related challenges and responses are disclosed in the CDP questionnaire each year.	
5.4.2	*Efforts made by the site to engage stakeholders and coordinate and support public-sector agencies shall be identified.*	Yes

Comment	1. Relevant information is disclosed in the ESG report each year. 2. Relevant information is disclosed in the TCFD report each year. 3. A report on nature and biodiversity is published.	
5.5	*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.*	
5.5.1	*Any site water-related compliance violations and associated corrections shall be disclosed.*	Yes
Comment	1. Relevant information is disclosed in the ESG report each year. 2. Relevant information is disclosed in the AWP report each year. 3. Government-sanctioned penalty information shows no violations in the last five years.	
5.5.2	*Necessary corrective actions taken by the site to prevent future occurrences shall be disclosed if applicable.*	Yes
Comment	1. Government-sanctioned penalty information shows no violations in the last five years. 2. Procedures have been established to prevent recurring violations.	
5.5.3	*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.*	Yes
Comment	1. Government-sanctioned penalty information shows no violations in the last five years. 2. Procedures have been established to prevent recurring violations.	

Photographic Evidence from Audit

Yes

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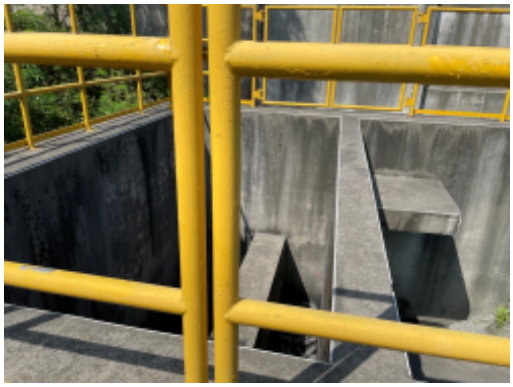

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