



2025

ALLIANCE FOR WATER STEWARDSHIP SUMMARY

**PT Karyadibya
Mahardhika
JTI**



INTRODUCTION

PT Karyadibya Mahardhika recognises the essential role of water in sustaining life. Every person depends on it for survival, while communities require reliable access to water to grow and prosper.

Our operations also rely heavily on water. It is indispensable for running production facilities and manufacturing our products. At Karyadibya Mahardhika, we uphold the principle that clean water is a fundamental human right, and we believe everyone should have fair access to it.

In recent years, however, water scarcity and increasing pressures on water resources have become more evident across many regions. These challenges highlight the need for responsible and collective action in managing this precious resource.

We are committed to ensuring that water use is socially fair, environmentally responsible, and economically beneficial. Through our partnership with the Alliance for Water Stewardship, we strive to manage water sustainably within the watersheds where we live and operate.

ALLIANCE FOR WATER STEWARDSHIP

What is AWS Outcomes?

What are AWS Outcomes

According to the AWS Standard, we have applied and fulfilled the structure of the AWS International Water Stewardship Standard which built around five steps:

1. Gather and understand: Gather data to understand shared water challenges and water risks, impacts and opportunities.
2. Commit and plan: Commit to be a responsible water steward and develop a water stewardship plan.
3. Implement: Implement the site's stewardship plan and improve impacts.
4. Evaluate: Evaluate the site's performance.
5. Communicate and disclose: Communicate about water stewardship and disclose the site's stewardship efforts.

Each step consists of number of criteria to be addressed, each criteria having one or more indicators for compliance. There are 'core' indicators, representing the minimum requirement, and 'advanced' indicators, to achieve higher levels of water stewardship status and to promote continual improvement.

The implementation of the standard is intended to achieve five main outcomes for the site, and it's defined physical scope, such as:

1. Good water governance
2. Sustainable water balance
3. Good water quality status
4. Important water related areas
5. Safe water, sanitation, and hygiene for all (WASH)



ALLIANCE FOR WATER STEWARDSHIP

Steps

Step 1 GATHER & UNDERSTAND

01

GATHER DATA TO UNDERSTAND SHARED WATER CHALLENGES AND WATER RISKS, IMPACTS AND OPPORTUNITIES

To ensure that the site gathers data on its water use and its catchment context and that the site uses these data to understand its shared water challenges as well as its contributions to these challenges, water risks, impacts, and opportunities. This information also informs the development of the site's water stewardship strategy and plan (Step 2) and guides the actions (Step 3) necessary to fulfil the site's commitments

Step 2 COMMIT AND PLAN

02

COMMIT AND PLAN

To ensure there is sufficient leadership support, site authority, and allocated resources for the site to implement the AWS Standard. It focuses on how a site will act on shared water challenges and improve its performance and the status of its catchment in terms of the AWS water stewardship outcomes. Step 2 links the information gathered in Step 1 to the actions implemented in Step 3, by describing who will do what and when.

Step 3 IMPLEMENT

03

IMPLEMENT THE SITE'S STEWARDSHIP PLAN AND IMPROVE IMPACTS

To ensure that the site is implementing the plan outlined in Step 2, mitigating risks and driving actual improvements in performance.

Step 4 EVALUATE

04

EVALUATE THE SITE'S PERFORMANCE

To review a site's performance against the actions taken in Step 3, learn from the results – both intended and unintended – and inform the next iteration of the site's water stewardship plan. This evaluation shall occur at least annually, but sites should consider more frequent evaluations.

Step 5 COMMUNICATE & DISCLOSE

05

COMMUNICATE ABOUT WATER STEWARDSHIP AND DISCLOSE THE SITE'S STEWARDSHIP EFFORTS

To encourage transparency and accountability through communication of performance relative to commitments, policies, and plans. The disclosure of relevant information allows others to make informed opinions on a site's operations and tailor their involvement to suit.

WATER STEWARDSHIP COMMITMENT AND STRATEGY



Rev.00

Japan Tobacco International PT Karyadibya Mahardhika Water Stewardship Policy

As a result of its public commitment to good water management, PT. Karyadibya Mahardhika has undertaken the following actions:

1. Supports, upholds, and promotes the five water stewardship outcomes of the Alliance for Water Stewardship (AWS) are good water governance, sustainable water balance, good water quality, protection of important water-related areas, and access to safe Water, Sanitation, and Hygiene (WASH) for all.
2. Engages stakeholders openly and transparently
3. Complies with legal and regulatory requirements related to water management, including Respecting water-related rights, ensuring appropriate access to clean water, sanitation, and hygiene for all workers at all operational sites.
4. Implements the AWS Standard in alignment with and in support of sustainability for planning of water catchment.
5. Collaborates with internal and external stakeholders in implementing water-related plans and policies, including working together to fulfill the human right to clean water utilization and sanitation.
6. Initiates, improves, and continually adjusts water stewardship actions and plans within operational areas to reduce shared water-related risks.
7. Allocates all necessary resources to implement and maintain full compliance with the AWS Standard requirements.
8. Supports national and international water-related agreements.
9. Communicates relevant water-related information to stakeholders and other relevant parties to support improved water stewardship outcomes.

Bakalan, 25 September 2025

Reza Safarzadeh

Factory Lead

WATER STEWARDSHIP COMMITMENT AND STRATEGY



Rev.01

Japan Tobacco International PT Karyadibya Mahardhika Water Stewardship Strategy, Vision, Mission and Goals

Following our commitment presented below, to ensure better water management in our site and communities, we define our Vision, Mission and Goal on Water Stewardship

VISION

We believe in protecting the planet. Conserving nature, responsible water stewardship, and tackling climate change are key to a thriving world, for today and tomorrow.

MISSION

At PT Karyadibya Mahardhika, we are committed to minimizing the social and environmental impact of our value chain, products and services. We are focused on protecting the environment; optimizing water and resource use; and respecting people, communities and biodiversity. We identify and assess nature and climate related risks and opportunities and will act to protect water, minimize waste and wastewater, enhance biodiversity and promote sustainable agriculture.

GOALS

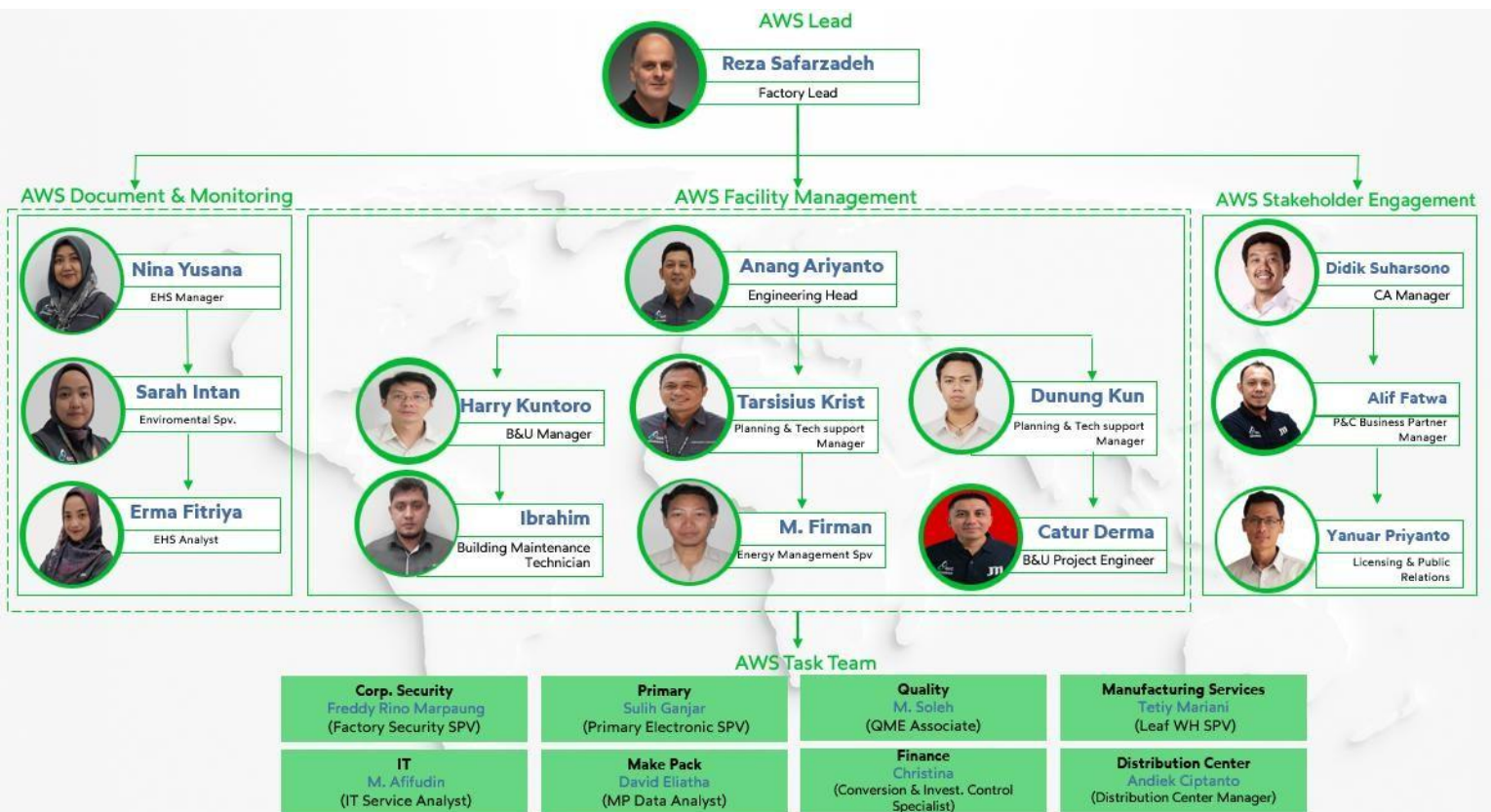
1. Ensure governance of water-related matters at strategic and operational levels
2. Adhere to our own policies and comply with regulatory requirements, whichever are the more stringent
3. Reduce water withdrawal, particular in areas of current and predicted future water stress, through process and use optimization, improved wastewater management, increased rate of on-site water recycling, and improved awareness and behaviors.
4. Implement the alliance for water stewardship standard at PT Karyadibya Mahardhika, to promote the following:
 - ✓ Maintain water balances, to improve understanding of water use and identification of priorities for use optimization
 - ✓ Identify, assess, and mitigate water related risks and realize water related opportunities, through our existing water risk assessments and, going forward, as a key element of our biodiversity impact, dependency and risk assessments
 - ✓ Prevent pollution, of land, water and air, including the development of policy and standards
 - ✓ Engagement on good water stewardship with internal and external stakeholders

Bakalan, 18 November 2025

Reza Safarzadeh

Factory Lead

MANAGEMENT STRUCTURE



WATER RELATED ROLE & RESPONSIBILITY

In order to support Water Stewardship and the implementation of Alliance Water Stewardship in the work environment of PT. Karyadibya Mahardhika, in accordance with the principle of continuous improvement, it is necessary to establish a cross-functional Task Team from respective departments with the following roles & responsibilities:

In general :

- Evaluate and review water stewardship
- Communicate the implementation of Alliance Water Stewardship, policies, and water management programs in the department

Specifically for respective departments :

- **AWS Documentation & Monitoring :**
 - Responsible for documentation management of AWS completion requirements and monitoring of consistencies of implementation records
- **AWS Facility Management :**
 - Overseeing the quality and quantity of water used by the organization and the water source in cooperation with stakeholder
 - Developing and executing plans to address water-related challenges, such as water scarcity, and monitoring progress towards implementation
 - Identifying and implementing water stewardship best practices within the organization's operations and activities
- **AWS Stakeholders Engagement :**
 - Develop effective communication and engagement with local institutions, community members, and other water users to build common understanding and establish shared water stewardship goals within a catchment and implementation of programs related with community
 - Implementation of water stewardship program related with community and external stakeholders
- **AWS Task Team :**
 - Support of provision and involving of development water stewardship goals and program in their department wise level

ALLIANCE FOR WATER STEWARDSHIP

Water Stewardship Plan Summary

		Updated Plan as per		30-Jan-26				
No	Classification to AWS Outcomes	Risks & Challenges (Shared water challenges)	Risk to Business	Action Plan & Best Practice	Target	How it will be measured	Schedule	Real Implementation
1	CATCHMENT IWRA	Risk of insufficient water supply to ground water and flooding at the downstream	Lack of water supply	Treeplanting 3000 trees at mountain slope of Arjuno mountain	3000 trees are planted and improve the water absorption	1. 3000 trees are planted 2. At least 70% of survival rate	Q4-2021	1-Feb-22
2	CATCHMENT IWRA	Risk of insufficient water supply to ground water and flooding at the downstream	Lack of water supply	Treeplanting at Puthuk Lesung and Puthuk Elang	5000 trees are planted and improve the water absorption 9 water storage installed 2 toilets are constructed	1. 5000 trees are planted 2. At least 70% of survival rate 3. 9 water storage are installed 4. 2 toilets are constructed	Q4-2024	Dec-24
3	SITE WATER QUALITY	Risk of effluent water quality due to mixed with domestic waste water	Effluent water quality is out of regulatory norms	Installing the UV Unit after Trickling filter to improve the microbiological parameter	Improve the microbiological parameters (coliform)	Coliform < 200	Q2-2021	Jun-21
4	SITE WATER QUANTITY	Risk of water quantity/scarcity due to excessive water withdrawn	Lack of water supply	Reusing the water effluent for gardening/watering in the site	100% of effluent water is used for gardening/watering (JTI park and fruit garden) About 4000 m3/year saving	100% effluent water is used for gardening	Q2-2025	Jun-25
5	CATCHMENT WATER GOVERNANCE	Risk of unidentified shared water challenges and the WSP will not align with shared water challenges	Social and Environmental Issues	Conducting FGD/Stakeholder forum to define the shared water challenges	The stakeholder forum is done Shared water challenges is defined and aligned with all stakeholders	1 Attendance of FGD 2. The agreed shared water challenges 3. Questionnaire done 4. Presentation by important stakeholder on Welang catchment	Q4-2025	Dec-25
6	CATCHMENT WATER BALANCE	Insufficient information on catchment water balance	Ineffective program due to lack of information	Collaboration with infrastructure owner on information of water balance	Getting access to PUSDA platform on Welang catchment	1. Getting the access to PUSDA platform 2. Getting sufficient information on Welang water balance	Q4-2025	Oct-25
7	CATCHMENT IWRA	Risk of water scarcity	Lack of water supply	Treeplanting 2025 at Puthuk Elang	Treeplanting conducted and meet the target	1. 2000 trees planted 2. at least 70% survival rate 3. Quantified biodiversity improvement	Q1-2026	Jan-26
8	SITE WATER QUANTITY	Fresh water reduce	Environmental sustainability	Re-use AHU water condensate for domestic activity in Main Office and SPM Building	Re-use AHU water condensate 60 m3/month	Fresh water for Main Office & SPM building will be reduce 60 m3/month	Q1-2026	Planned
9	SITE WATER QUANTITY	Fresh water reduce	Environmental sustainability	Rain Harvesting		Fresh water for SKM, Main Office & Primary building will be reduce est. 10 m3/month for rainy season (6 months)	2027	Planned
10	SITE WATER BALANCE	Ensuring boiler efficiency through monitoring of returned water condensate	Boiler Efficiency	Installation of Water Flow Meter for steam condensate return in Boiler system	Monitoring of steam condensate return	- Water withdrawn reduction because of the recycling process (condensate return)	Q4 - 2025	Planned
11	SITE WATER QUANTITY	Fresh water consumption reduction	Environmental sustainability	Recycling water for cooling roller and grinding in RTB Process	Annual saving 2772 m3/year	- Water withdrawn reduction because of the recycling process	Q3 - 2025	Sep-25
12	SITE WATER BALANCE	Connecting biotech effluent to WWTP	Environmental sustainability	Installation waste water pipe (Direction keet) to WWTP	90-100% wastewater inlet	- Quantity of effluent enter to WWTP - All effluent parameters meet the regulation norms	Q1-2026	Planned
13	SITE WATER BALANCE	Risks from leakage/damage to production waste lines that do not enter the wastewater treatment plant	Environmental sustainability	Construction of a new wastewater line from the primary production process due to existing line leakage	90-100% wastewater inlet	- Additional waste water input from primary (m3) - All effluent parameters are within the regulation norms	Q1-2026	Planned

ALLIANCE FOR WATER STEWARDSHIP

Water Stewardship Plan Summary

❖ Main Focus Areas

1. Catchment (Water Source Area)

Risks:

- Groundwater shortage and downstream flooding

Actions:

- Tree planting (3,000-7,000 trees at Arjuno, Puthuk Lesung, Puthuk Elang).
- Infrastructure development (9 water storages, 2 toilets).
- Stakeholder forums (FGD) to define shared water challenges.
- Collaboration with infrastructure owners for access to water balance data (PUSDA platform).
- Results: Tree survival rate $\geq 70\%$, local economic activities (camping, vehicle rental), and strong support from authorities.

2. Site (JTI Operational Area)

Risks: Effluent water quality, excessive water withdrawal, and boiler efficiency.

Actions:

- Installation of UV Unit to improve microbiological parameters (Coliform < 200).
- Reuse of effluent water for gardening (saving $\sim 4,000 \text{ m}^3/\text{year}$).
- Reuse of AHU condensate water (saving $60 \text{ m}^3/\text{month}$).
- Rain harvesting (target $10 \text{ m}^3/\text{month}$ during rainy season).
- Recycling water for cooling rollers & grinding (saving $\sim 2,772 \text{ m}^3/\text{year}$).
- Monitoring boiler efficiency with flow meters.
- Construction of new wastewater lines to WWTP to prevent leakage.
- Results: Effluent parameters meet regulatory norms, significant freshwater savings, and positive stakeholder feedback.

ALLIANCE FOR WATER STEWARDSHIP

Water Stewardship Plan Summary

❖ Main Focus Areas

3. Water Governance

Risks: Unidentified shared water challenges.

Actions: Stakeholder forums to align on shared water challenges.

Results: Shared challenges defined, active stakeholder participation, and strong collaborative support.

❖ Budget & Implementation

Budget ranges between 100-300 million IDR per program.

Most programs have been implemented successfully with positive stakeholder feedback.

Some initiatives are still under planning (rain harvesting, AHU condensate reuse, new WWTP line).

❖ Conclusion

- Catchment programs emphasize conservation (tree planting + infrastructure) → tangible ecological and economic benefits.
- Site programs focus on water efficiency and effluent quality → proven savings of thousands of cubic meters annually.
- Governance programs strengthen stakeholder collaboration → ensuring WSP aligns with shared water challenges.
- Overall, the WSP demonstrates a strong commitment to water sustainability, operational efficiency, and community empowerment.

ALLIANCE FOR WATER STEWARDSHIP

Good Water Governance

We are very compliant with regulations and policies by the government. Our efforts in implementing alliance for water stewardship are based on existing regulations, such as:

1. Minister of Environmental and Forestry Regulation No. 68/2016 - Regarding Domestic Wastewater Quality Standards.
2. Law of Environment No. 17/2019; partially amended by Law No. 11/2020 - Concerning Water Resources.
3. Minister of Health Regulation No. 03/2014 - Community Based Total Sanitation
4. Pasuruan Regent Regulation No. 239 of 2023 concerning guidelines for determining advertising rental values and groundwater acquisition values
5. Minister of Environment and Forestry Regulation No. 4/2021 - List of Business and/or Activities Required to Have AMDAL, UKL/UPL or Statement of Ability to Manage and Monitor the Environment.
6. Government Regulation No. 22/2021 - implement of Environmental Protection and Management
7. Minister of Health Regulation No. 32/ 2017
8. Minister of Health Regulation No. 2/ 2023

JTI Indonesia places regulatory compliance at the core of its operations, ensuring all initiatives align with national and local environmental and health standards. This commitment goes beyond legal obligations, serving as a foundation for sustainable development and environmental protection.

In Bakalan Village, compliance translated into real change. The Sukun River, once misused as an open toilet, was revitalised through the construction of 53 permanent toilets and the reduction of “river toilets” from around 80 to 40. Youth engagement in fish farming using the karamba system restored the ecosystem, improved hygiene, and created new livelihoods.

This dedication was further reinforced in December 2025 through a multi-stakeholder forum on the Welang Watershed. By uniting government, academia, civil society, and local communities, JTI Indonesia demonstrated that regulatory compliance and collaboration can deliver lasting solutions for water resilience and sustainable ecosystems.

ALLIANCE FOR WATER STEWARDSHIP

Good Water Governance

PEMBENTUKAN TIM KOORDINASI PENGELOLAAN SUMBER DAYA AIR WILAYAH SUNGAI WELANG REJOSO

PERIODE TAHUN 2024 - 2029



DASAR DASAR PEMBENTUKAN TIM KOORDINASI PENGELOLAAN SUMBER DAYA AIR WILAYAH SUNGAI

1. Peraturan Menteri Pekerjaan Umum dan Perumahan Rakyat Nomor 17/PRT/M/2017 Tentang Pedoman Pembentukan Wadah Koordinasi Pengelolaan Sumber Daya Air pada Tingkat Wilayah Sungai.
2. Keputusan Gubernur Jawa Timur Nomor 100.3.3.1/199/KPTS/013/2024 tanggal 23 April 2024 tentang "Tim Koordinasi Pengelolaan Sumber Daya Air Wilayah Welang Rejoso Periode Tahun 2024 - 2029".

TUGAS DAN FUNGSI TIM KOORDINASI PENGELOLAAN SUMBER DAYA AIR WILAYAH SUNGAI

1. Membahas rancangan pola, rancangan rencana, rancangan program dan rencana kegiatan pengelolaan sumber daya air pada wilayah sungai Welang Rejoso guna perumusan bahan pertimbangan untuk penetapan pola dan rencana pengelolaan sumber daya air;
2. Membahas usulan rencana alokasi air dari setiap sumber air pada wilayah sungai Welang Rejoso guna perumusan bahan pertimbangan untuk penetapan rencana alokasi air;
3. Melakukan konsultasi dengan pihak terkait guna keterpaduan pengelolaan sumber daya air pada wilayah sungai Welang Rejoso;
4. Mengintegrasikan dan menyelaraskan kepentingan antarsektor, antarwilayah serta antarpemilik kepentingan dalam pengelolaan sumber daya air pada wilayah sungai Welang Rejoso;
5. Melakukan pemantauan dan evaluasi pelaksanaan program dan rencana kegiatan pengelolaan sumber daya air pada wilayah sungai Welang Rejoso;
6. Memberikan pertimbangan kepada Gubernur mengenai pelaksanaan pengelolaan sumber daya air pada wilayah sungai Welang Rejoso;
7. Membentuk Komisi Sekretariat sesuai kebutuhan; dan
8. Melaporkan hasil pelaksanaan tugasnya kepada Gubernur Jawa Timur.

The establishment of the Water Resources Management Coordination Team (TKPSDA) for the Welang Rejoso River Basin for the 2024-2029 period represents a strategic effort to realize good water governance. The team was formed under national regulations and the Governor's decree of East Java, ensuring strong legal legitimacy.

TKPSDA Welang Rejoso serves not only as a coordination body but also as an instrument to guarantee that water resource management is conducted in a fair, transparent, participatory, and sustainable manner—the essence of good water governance.

ALLIANCE FOR WATER STEWARDSHIP

Sustainable Water Balance

In implementing AWS, we certainly need data of water availability in the catchment area as a part of the area that affected by our operational activities and also as a physical scope area that is part of our AWS program. Water availability data is needed to determine whether the area is still sufficient to meet the water needs of the population/residents in the physical scope (catchment area).

Catchment Water Balance

JTI Indonesia is included in the Welang-Rejoso River Basin. The catchment water balance we get through engagement with PUSDA Pasuruan Regency. In this calculation, the reliable discharge will be calculated at each control point. The list of control points can be seen in the table below.

CATCHMENT WATER BALANCE : DAS WELANG

INPUT (Inflows)	USAGE (Outflows)	LOSSES
	Domestic 19.51 Non Domestic 1.26 Industry 11.68 Agriculture 198.05 Fishery 32.37 Farming 24.65 River Maintenance 29.58	
591.69	317.1	274.59 (gain)
million m3/year	million m3/year	million m3/year

Tahun	DAS	Kota/Kab	Ketersediaan Air		Kebutuhan Air								Indeks Klasifikasi Neraca Air			Indeks Klasifikasi Pemakaian Air	
			Q	Total	Domestik	Non Domestik	Industri	Pertanian	Perikanan	Peterakan	Pemeliharaan sungai	Total	Saldo	Status	Klasifikasi	IPA	Klasifikasi
			Jeta m ³ /Tahun	Jeta m ³ /Tahun	Jeta m ³ /Tahun	Jeta m ³ /Tahun	Jeta m ³ /Tahun	Jeta m ³ /Tahun	Jeta m ³ /Tahun	Jeta m ³ /Tahun	Jeta m ³ /Tahun	Jeta m ³ /Tahun	Jeta m ³ /Tahun	Jeta m ³ /Tahun	Jeta m ³ /Tahun		
2023	DAS Sampitan	Kabupaten Bondowoso dan Kabupaten Situbondo	1001.65	1001.65	27.67	4.15	10.21	1196.52	0	3.16	50.08	1231.73	-230.14	Defisit	V	1.23	I
2023	DAS Banyuwatih	Kabupaten Situbondo	86.63	86.63	1.85	0.28	0	193.50	2.42	0.22	4.33	202.60	-115.97	Defisit	V	2.34	I
2023	DAS Semajid	Kabupaten Pamekasan	197.14	197.14	23.66	3.55	5.02	74.54	0	2.32	6.86	115.95	21.19	Surplus	IV	0.85	I
2023	DAS Bondoyudo	Kabupaten Lumajang dan Kabupaten Jember	1131.20	1131.20	30.08	4.51	33.11	851.58	17.28	5.44	56.56	1004.56	126.64	Surplus	IV	0.89	I
2023	DAS Tunjung	Kabupaten Bangkalan	35.51	35.51	8.10	1.22	6.62	58.46	0	0.39	4.78	60.17	15.34	Surplus	IV	0.84	I
2023	DAS Tanggul	Kabupaten Jember	2774.00	2774.00	16.21	2.43	0	370.10	18.37	7.69	138.70	554.09	2219.90	Surplus	I	0.20	III
2023	DAS Bedadung	Kabupaten Lumajang dan Kabupaten Jember	8776.56	8776.56	112.68	16.30	4.10	3061.80	33.07	40.85	438.83	3708.23	5068.33	Surplus	I	0.42	I
2023	DAS Welang	Kabupaten Pasuruan	531.63	531.63	19.51	1.26	11.68	198.05	32.37	24.65	29.58	317.11	214.57	Surplus	IV	0.54	I
2023	DAS Welang	Kabupaten Pasuruan	531.63	531.63	19.51	1.26	11.68	198.05	32.37	24.65	29.58	317.11	214.57	Surplus	IV	0.54	I
2023	DAS Rejoso	Kabupaten Pasuruan	215.27	215.27	3.40	1.41	23.65	1.42	24.39	13.09	10.76	64.12	151.15	Surplus	IV	0.39	II

ALLIANCE FOR WATER STEWARDSHIP

Sustainable Water Balance

In implementing AWS, we certainly need data of water availability in the catchment area as a part of the area that affected by our operational activities and also as a physical scope area that is part of our AWS program. Water availability data is needed to determine whether the area is still sufficient to meet the water needs of the population/residents in the physical scope (catchment area).

Catchment Water Balance

JTI Indonesia is included in the Welang-Rejoso River Basin. The catchment water balance we get through engagement with PUSDA Pasuruan Regency. Water availability is calculated using the F.J. Mock model (surface-subsurface water balance), then the reliable discharge Q20/Q50/Q80 is derived (Weibull method). Water requirements include: domestic (SNI 6728.1:2015), non-domestic ($\approx 30\%$ of domestic for urban areas), industrial (based on SIPA/SIPPA & spatial planning 30-50% RK), irrigation (KP-01 & KP Supporting, including IR/WLR/efficiency), fisheries (≈ 1 L/s/ha), livestock (SNI), and river maintenance (Q95). All are calculated monthly and then aggregated annually.

Water Balance and Water Use Index of the Welang Watershed

Watershed Name	Q Water Availability (Million m ³ /year)	Q Water Demand (Million m ³ /year)	Surplus (Million m ³ /year)	Water Balance Classification	IPA Classification		Remarks
Welang Watershed Q80	637.01	300.17	336.84	IV	0.47	I	Mildly Critical
Welang Watershed Q50	759.56	300.17	459.4	IV	0.4	II	Mildly Critical
Welang Watershed Q20	967.84	300.17	667.67	III	0.31	II	Mildly Critical

Source: Publication of the Pasuruan Technical Implementation Unit Water Balance for 2025

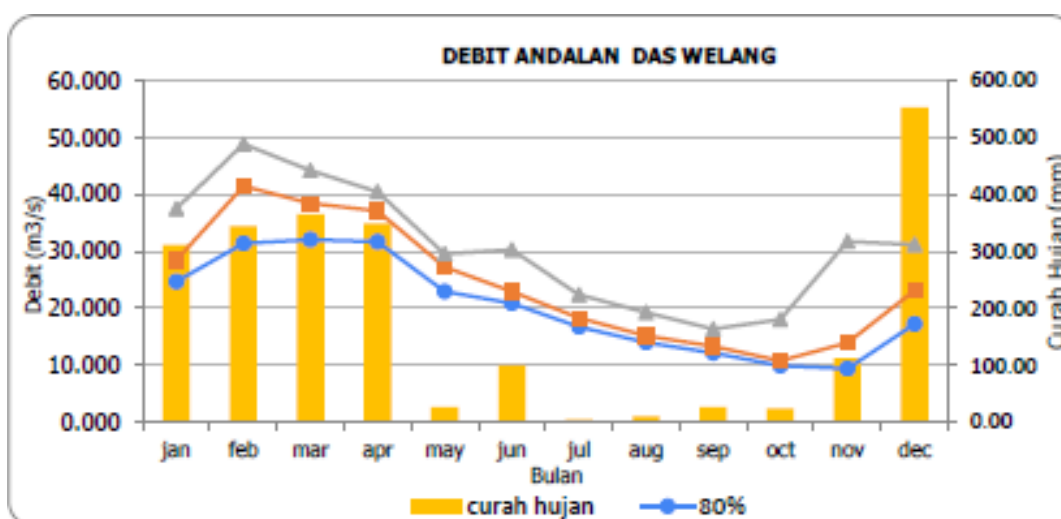
ALLIANCE FOR WATER STEWARDSHIP

Sustainable Water Balance

Qandalan Basic Month DAS Welang

Tahun	Q jan	Q Peb	Q Mar	Q Apr	Q mei	Q jun	Q jul	Q Ags	Q sept	Q Okt	Q Nop	Q Des
2015	29.93	46.20	40.98	38.15	28.56	23.42	18.93	15.84	13.67	11.06	10.03	19.81
2016	24.77	47.53	33.33	34.96	29.57	35.18	22.73	19.64	16.72	19.37	20.68	28.26
2017	45.30	51.63	44.91	42.43	29.26	25.56	21.16	17.87	15.03	12.78	32.27	31.90
2018	37.95	49.18	41.31	30.64	24.09	20.86	16.70	13.95	12.13	9.88	13.67	17.21
2019	31.77	29.02	28.36	36.37	22.12	18.77	15.14	12.66	10.94	8.85	7.64	6.32
2020	24.65	33.99	31.74	31.18	29.52	21.15	17.32	14.94	12.49	10.14	14.22	17.54
2021	26.55	39.05	37.70	33.63	22.88	25.87	18.56	15.31	13.85	11.20	32.24	26.62
2022	35.76	43.61	46.13	40.57	35.68	31.40	23.87	20.62	17.21	21.48	29.78	26.42

	Debit Andalan Basic Month (m^3/dtk) DAS Welang											
Persen Andalan	jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec
10%	44.567	51.388	46.011	42.241	35.067	34.807	23.758	20.523	17.157	21.272	32.271	34.841
20%	37.509	48.847	44.192	40.456	29.058	30.297	22.412	19.289	16.383	18.054	31.745	31.169
30%	34.566	47.127	41.215	39.447	29.445	25.779	20.492	17.258	14.675	12.304	27.050	27.767
40%	31.037	45.161	40.279	38.036	28.983	24.707	18.783	15.624	13.777	11.147	18.093	26.538
50%	28.426	41.446	38.461	37.116	27.241	22.974	18.328	15.198	13.365	10.805	13.943	23.115
60%	26.697	39.145	35.203	35.524	24.819	22.453	17.630	14.998	12.787	10.371	12.573	18.449
70%	25.303	35.507	33.392	34.028	23.496	21.526	17.113	14.502	12.525	10.174	10.573	17.429
80%	24.672	31.414	32.058	31.672	22.949	20.936	16.765	14.027	12.200	9.936	9.416	17.240
90%	23.324	29.199	28.702	30.693	22.198	18.980	15.300	12.790	11.056	8.951	7.805	7.406



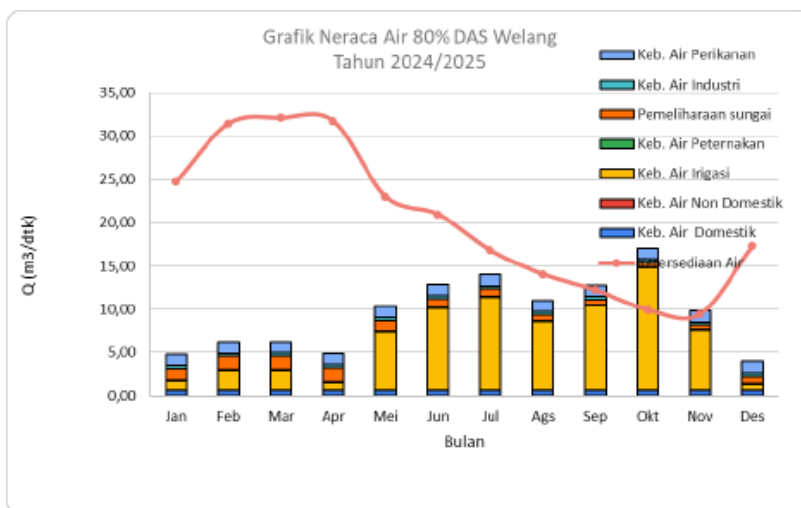
ALLIANCE FOR WATER STEWARDSHIP

Sustainable Water Balance

Monthly Water Balance 80% of the Welang Watershed

Periode: 2024/2025

No.	Nama DAS	Administrasi Kab/Kota	Item	Bulan (m ³ /bulan)												Volume (m ³ /year)
				Jan	Feb	Mar	Apr	Mei	Jun	Jul	Agst	Sep	Okt	Nov	Des	
1	DAS Welang	Kab. Pasuruan	a. Ketersediaan Air													
			Total Q Ketersediaan (m ³ /Bul)	24,67	24,41	22,86	21,67	22,96	20,82	16,76	14,03	12,20	9,94	9,42	17,24	20,27
			1. Q 80 (pajak air)	24,67	24,41	22,86	21,67	22,96	20,82	16,76	14,03	12,20	9,94	9,42	17,24	20,27
			2. Q Sumber													-
			b. Kebutuhan Air													
			Total Kebutuhan air (m ³ /Bul)	4,78	6,23	6,26	6,81	10,30	12,84	14,00	11,00	12,75	17,62	9,81	3,87	9,90
			1. Keb. Air Domestik	0,63	0,63	0,63	0,63	0,63	0,63	0,63	0,63	0,63	0,63	0,63	0,63	0,63
			2. Keb. Air Non Domestik	0,04	0,04	0,04	0,04	0,04	0,04	0,04	0,04	0,04	0,04	0,04	0,04	0,04
			3. Keb. Air Industri	0,27	0,27	0,27	0,27	0,27	0,27	0,27	0,27	0,27	0,27	0,27	0,27	0,27
			4. Keb. Air Irigasi	1,14	2,24	2,24	0,81	6,77	9,45	10,75	7,88	9,73	14,11	6,93	0,69	6,07
			5. Keb. Air Perikanan	1,29	1,29	1,29	1,29	1,29	1,29	1,29	1,29	1,29	1,29	1,29	1,29	1,29
			6. Keb. Air Peternakan	0,08	0,08	0,08	0,08	0,08	0,08	0,08	0,08	0,08	0,08	0,08	0,08	0,08
			7. Pemeliharaan sungai	1,23	1,57	1,60	1,58	1,15	0,96	0,70	0,61	0,50	0,47	0,86	1,03	
			c. Neraca Air	19,89	18,18	16,60	14,86	12,66	8,01	2,76	3,33	-0,55	-7,68	-0,40	13,37	10,37
			Status Neraca Air	S	S	S	S	S	S	S	S	D	D	D	S	S
			1. Klasifikasi NSA	IV	IV	IV	IV	IV	IV	IV	IV	V	V	V	IV	IV
			2. Simbol Warna	Kuning	Kuning	Kuning	Kuning	Kuning	Kuning	Kuning	Kuning	Merah	Merah	Merah	Kuning	
			3. Indeks Pemakaian Air	0,19	0,26	0,28	0,35	0,45	0,63	0,84	0,78	1,05	1,71	1,04	0,23	
			4. Klasifikasi IPA	II	II	II	II	I	I	I	I	I	I	I	II	
			5. Simbol Warna	Hijau	Hijau	Hijau	Hijau	Merah	Merah	Merah	Merah	Merah	Merah	Merah	Kuning	



Annual Water Balance Volume 80% of the Welang Watershed

No	DAS	Kab Kota	Ketersediaan Air		Kebutuhan Air							Indeks Klasifikasi Neraca Air				Indeks Klasifikasi Pemakaian Air			
			Q Juta m ³ /Tahun	Total Juta m ³ /Tahun	Domestik Juta m ³ /Tahun	Non Domestik Juta m ³ /Tahun	Industri Juta m ³ /Tahun	Irigasi Juta m ³ /Tahun	Perikanan Juta m ³ /Tahun	Peternakan Juta m ³ /Tahun	Pemeliharaan Juta m ³ /Tahun	Total Juta m ³ /Tahun	Selish Juta m ³ /Tahun	Status NA	Klasifikasi NSA	Simbol Warna	IPA	Klasifikasi IPA	Simbol Warna
1	DAS Welang	Kab. Pasuruan	637,01	637,01	19,92	1,29	11,68	192,18	40,72	2,51	31,85	300,17	336,84	S	IV	Kuning	0,47	I	Merah

Based on water availability and water demand for 1 year, there is a **SURPLUS**, with a **DEFICIT** in September - November.

Total Water Availability = 637.01 million m³/year.

Total Water Demand = 300.17 million m³/year.

Water Balance (Surplus) = 336.84 million m³/year.

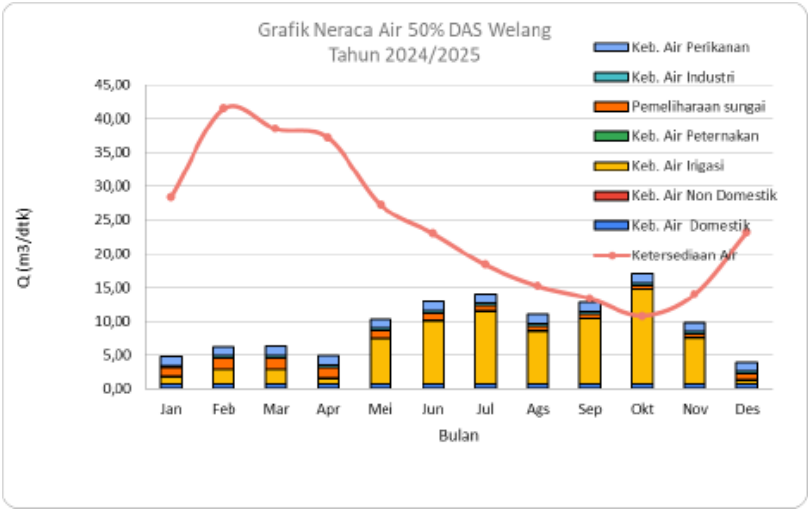
Water Use Index = 0.47

ALLIANCE FOR WATER STEWARDSHIP

Sustainable Water Balance

Monthly Water Balance 50% of the Welang Watershed

Periode: 2024/2025															
No.	Nama DAS	Administrasi Kab/Kota	Item	Bulan (m ³ /sekit)											
				Jan	Feb	Mar	Apr	Mei	Jun	Jul	Agst	Sep	Okt	Nov	Des
1	DAS Welang	Kab. Pasuruan	a. Ketersediaan Air												
			Total Q Ketersediaan (m ³ /dtk)	28,43	41,45	38,46	37,13	37,24	22,87	18,33	15,20	13,36	10,80	13,94	23,11
			1. Q SD (Jalan air)	28,43	41,45	38,46	37,13	37,24	22,87	18,33	15,20	13,36	10,80	13,94	23,11
			2. Q Sumber												
			b. Kebutuhan Air												
			Total Kebutuhan air (m ³ /dtk)	4,78	6,23	6,26	4,91	10,33	12,91	14,00	11,00	12,75	17,02	9,81	3,87
			1. Keb. Air Domestik	0,63	0,63	0,63	0,63	0,63	0,63	0,63	0,63	0,63	0,63	0,63	0,63
			2. Keb. Air Non Domestik	0,04	0,04	0,04	0,04	0,04	0,04	0,04	0,04	0,04	0,04	0,04	0,04
			3. Keb. Air Industri	0,37	0,37	0,37	0,37	0,37	0,37	0,37	0,37	0,37	0,37	0,37	0,37
			4. Keb. Air Irigasi	1,34	2,24	2,24	0,91	6,77	9,45	10,75	7,88	9,73	14,13	6,83	0,89
			5. Keb. Air Perikanan	1,29	1,29	1,29	1,29	1,29	1,29	1,29	1,29	1,29	1,29	1,29	1,29
			6. Keb. Air Peternakan	0,08	0,08	0,08	0,08	0,08	0,08	0,08	0,08	0,08	0,08	0,08	0,08
			7. Pemeliharaan sungai	1,33	1,57	1,60	1,58	1,15	1,05	0,84	0,70	0,61	0,50	0,47	0,86
			c. Neraca Air	23,64	35,22	32,20	32,21	26,91	10,07	4,33	4,20	0,61	-6,22	4,13	19,25
			Status Neraca Air	S	S	S	S	S	S	S	S	S	D	S	S
			1. Klasifikasi NSA	IV	IV	IV	IV	IV	IV	IV	IV	IV	V	IV	IV
			2. Simbol Warna	Kuning	Kuning	Kuning	Kuning	Kuning	Kuning	Kuning	Kuning	Kuning	Merah	Kuning	Kuning
			3. Indeks Pemakaian Air	0,37	0,15	0,16	0,13	0,38	0,56	0,76	0,72	0,95	1,58	0,70	0,17
			4. Klasifikasi IPA	II	II	II	II	II	I	I	I	I	I	I	II
			5. Simbol Warna	Hijau	Hijau	Hijau	Hijau	Kuning	Merah	Merah	Merah	Merah	Merah	Merah	Hijau



Annual Water Balance Volume 50% of the Welang Watershed

NERACA AIR TAHUNAN

No	DAS	Kab Kota	Ketersediaan Air		Kebutuhan Air							Indeks Klasifikasi Neraca Air				Indeks Klasifikasi Pemakaian Air			
			Q Juta m³/tahun	Total Juta m³/tahun	Domestik Juta m³/tahun	Non Domestik Juta m³/tahun	Industri Juta m³/tahun	Irigasi Juta m³/tahun	Perikanan Juta m³/tahun	Peternakan Juta m³/tahun	Pemeliharaan Juta m³/tahun	Total Juta m³/tahun	Selish Juta m³/tahun	Status NA	Klasifikasi NSA	Simbol Warna	IPA	Klasifikasi IPA	Simbol Warna
1	DAS Welang	Kab. Pasuruan	759,56	759,56	19,92	1,29	11,68	192,18	40,72	2,51	31,85	300,17	459,40	S	IV	Kuning	0,40	II	Kuning

Based on water availability and water demand for 1 year, there is a **SURPLUS**, with a **DEFICIT** in October.

Total Water Availability = 759.56 million m³/year.

Total Water Demand = 300.17 million m³/year.

Water Balance (Surplus) = 459.40 million m³/year.

Water Use Index = 0.40

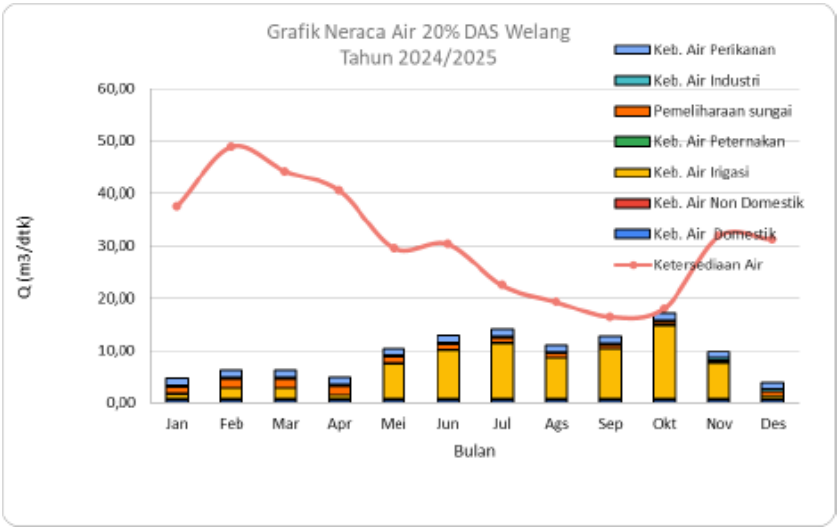
ALLIANCE FOR WATER STEWARDSHIP

Sustainable Water Balance

Monthly Water Balance 20% of the Welang Watershed

Periode: 2024/2025

No.	Nama DAS	Administrasi Kab/Kota	Item	Bulan (m ³ /detik)												Volume (m ³ /detik)
				Jan	Feb	Mar	Apr	Mei	Jun	Jul	Ag	Sep	Okt	Nov	Des	
1	DAS Welang	Kab. Pasuruan	a. Ketersediaan Air													
			Total Q Ketersediaan (m ³ /detik) :	37,51	48,85	44,19	40,46	29,56	30,30	22,41	19,29	16,38	18,05	31,74	31,17	30,83
			1. Q 20 (hujan aliran) :	37,51	48,85	44,19	40,46	29,56	30,30	22,41	19,29	16,38	18,05	31,74	31,17	30,83
			2. Q Sumber													-
			b. Kebutuhan Air													
			Total Kebutuhan air (m ³ /detik) :	4,78	6,23	6,26	4,91	10,33	12,91	14,00	11,00	12,75	17,02	9,81	3,97	9,50
			1. Keb. Air Domestik :	0,63	0,63	0,63	0,63	0,63	0,63	0,63	0,63	0,63	0,63	0,63	0,63	0,63
			2. Keb. Air Non Domestik :	0,04	0,04	0,04	0,04	0,04	0,04	0,04	0,04	0,04	0,04	0,04	0,04	0,04
			3. Keb. Air Industri :	0,37	0,37	0,37	0,37	0,37	0,37	0,37	0,37	0,37	0,37	0,37	0,37	0,37
			4. Keb. Air Irigasi :	1,14	2,24	2,24	0,91	6,77	9,45	10,75	7,88	9,73	14,11	6,93	0,69	6,07
			5. Keb. Air Perikanan :	1,29	1,29	1,29	1,29	1,29	1,29	1,29	1,29	1,29	1,29	1,29	1,29	1,29
			6. Keb. Air Peternakan :	0,08	0,08	0,08	0,08	0,08	0,08	0,08	0,08	0,08	0,08	0,08	0,08	0,08
			7. Pemeliharaan sungai :	1,23	1,57	1,60	1,58	1,15	1,05	0,84	0,70	0,61	0,50	0,47	0,86	1,01
			c. Neraca Air :	32,72	42,62	37,93	35,55	19,23	17,39	8,41	8,29	3,63	1,03	21,93	27,20	21,33
			Status Neraca Air :	S	S	S	S	S	S	S	S	S	S	S	S	S
			1. Klasifikasi NSA :	IV	IV	IV	IV	IV	IV	IV	IV	IV	IV	IV	IV	
			2. Simbol Warna :	Kuning	Kuning	Kuning	Kuning	Kuning	Kuning	Kuning	Kuning	Kuning	Kuning	Kuning	Kuning	
			3. Indeks Pemakaian Air :	0,13	0,13	0,14	0,12	0,35	0,43	0,62	0,57	0,78	0,94	0,31	0,13	
			4. Klasifikasi IPA :	III	III	III	III	II	I	I	I	I	I	II	III	
			5. Simbol Warna :	Hijau	Hijau	Hijau	Hijau	Kuning	Merah	Merah	Merah	Merah	Merah	Kuning	Hijau	



Annual Water Balance Volume 20% of the Welang Watershed

NERACA AIR TAHUNAN

No	DAS	Kab Kota	Ketersediaan Air		Kebutuhan Air								Indeks Klasifikasi Neraca Air				Indeks Klasifikasi Pemakaian Air		
			Q Juta m ³ /Tahun	Total Juta m ³ /Tahun	Domestik Juta m ³ /Tahun	Non Domestik Juta m ³ /Tahun	Industri Juta m ³ /Tahun	Irigasi Juta m ³ /Tahun	Perikanan Juta m ³ /Tahun	Peternakan Juta m ³ /Tahun	Pemeliharaan Juta m ³ /Tahun	Total Juta m ³ /Tahun	Selisih Juta m ³ /Tahun	Status NA	Klasifikasi NSA	Simbol Warna	IPA	Klasifikasi IPA	Simbol Warna
1	DAS Welang	Kab. Pasuruan	967,84	967,84	19,92	1,29	11,68	192,18	40,72	2,51	31,85	300,17	667,67	S	III	Hijau	0,31	II	Kuning

Based on water availability and water demand for 1 year, there is a **SURPLUS**, with a **DEFICIT** in October.

Total Water Availability = 967.84 million m³/year.

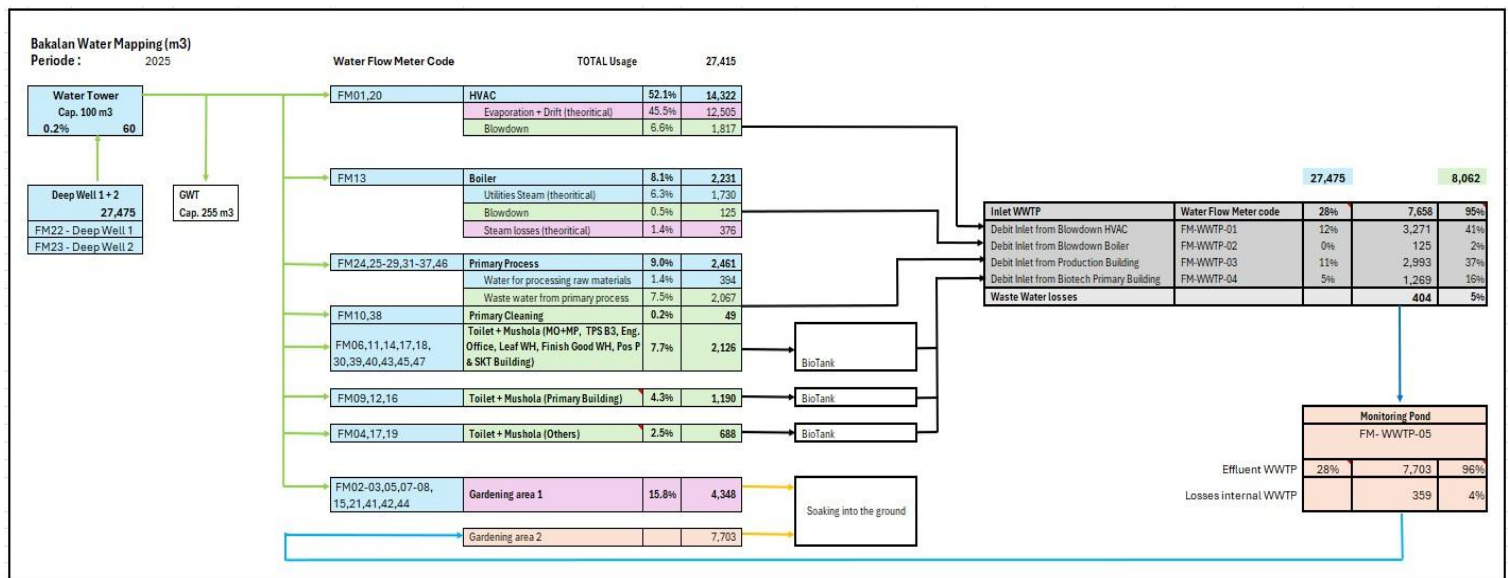
Total Water Demand = 300.17 million m³/year.

Water Balance (Surplus) = 667.67 million m³/year.

Water Use Index = 0.31

ALLIANCE FOR WATER STEWARDSHIP

Sustainable Water Balance Site Water Balance



Legend:

- Fresh Water for Utilities, Domestic & Primary Process
- Fresh Water (Evaporation, Steam losses & Gardening) - not goes to WWTP
- Fresh Water for Domestic activity & Cleaning - wastewater goes to WWTP
- Inlet WWTP from Blowdown HVAC, Boiler, Production & Biotech
- Effluent WWTP for Gardening area 2

ALLIANCE FOR WATER STEWARDSHIP

Good Water Quality Status Water Quality of Catchment Area

Welang Rivers Water Quality Monitoring

Periodically, government conduct river water quality monitoring within the surface water catchment



Based on data river water quality monitoring above, Welang river quality as follow

No	Tempat	Kode	Tanggal Sampling	Buku Mutu	Parameter Kualitas Air														Nilai	Hasil	
					Warna	Bau	Isolasi	TDS	TSS	Amoniak Total NH ₄ -N	Fosfat Total PO ₄ -P	BOD	COD	Nitrat NO ₃ -N	DO	pH	Koli Tega	Koli Total			
1	Rano Gati	Ra.Gr	2025-09-19	KELAS III	Cerah	Tidak Berbau	Tidak Berbau	-	282	15	-	0.161	3.84	34.8	0.022	6.78	8.13	970	12100	1.045	Cerah
2	K. Gembong Hilir	KGB.2	2025-09-19	KELAS III	Cerah	Tidak Berbau	Tidak Berbau	-	382	83	-	0.0105	2.57	13.7	0.845	6.7	7.37	34500	21000	5.66	Cerah Sedang
3	K. Gembong Hulu	KGB.1	2025-09-19	KELAS III	Cerah	Tidak Berbau	Tidak Berbau	-	326	15	-	0.284	2.28	5.31	2.16	6.80	7.46	73300	248100	9.319	Cerah Sedang
4	K. Kebungatng Hulu	KDO.1	2025-09-19	KELAS III	Cerah	Tidak Berbau	Tidak Berbau	-	382	14	-	0.348	2.14	3.99	1.97	7.13	7.05	3190	21300	1.917	Cerah Sedang
5	K. Rejoso Hilir	KRe.2	2025-09-19	KELAS III	Cerah	Tidak Berbau	Tidak Berbau	-	270	41	-	0.167	2.81	22.4	0.604	6.28	7.04	95900	524700	6.953	Cerah Sedang
6	Wincan Lor + K. Rejoso	KRe.1	2025-09-19	KELAS III	Cerah	Tidak Berbau	Tidak Berbau	-	202	36	-	0.201	2.42	12.6	0.813	6.61	7.34	218700	415200	8.067	Cerah Sedang
7	K. Welang Hilir	KW1.4	2025-09-19	KELAS III	Cerah	Tidak Berbau	Tidak Berbau	-	490	71	-	0.301	2.1	<0.03	1.95	7.03	7.31	5200	108300	4.452	Cerah Sedang
8	K. Welang Hulu	KW1.1	2025-09-19	KELAS III	Cerah	Tidak Berbau	Tidak Berbau	-	408	12.7	-	0.291	2.79	21.9	1.4	6.11	7.26	18500	613100	7.14	Cerah Sedang

K. Welang hilir (Welang river downstream) overall water quality is light contaminated (blue)

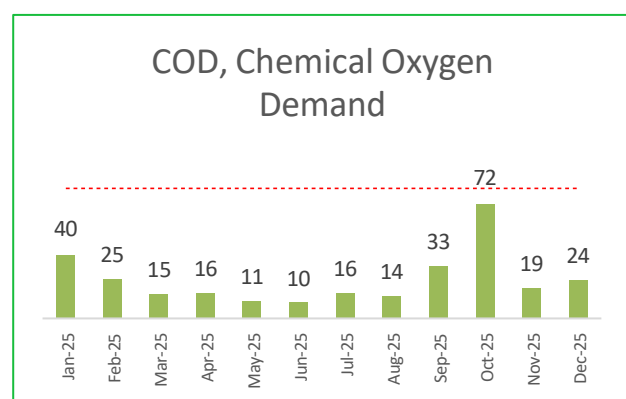
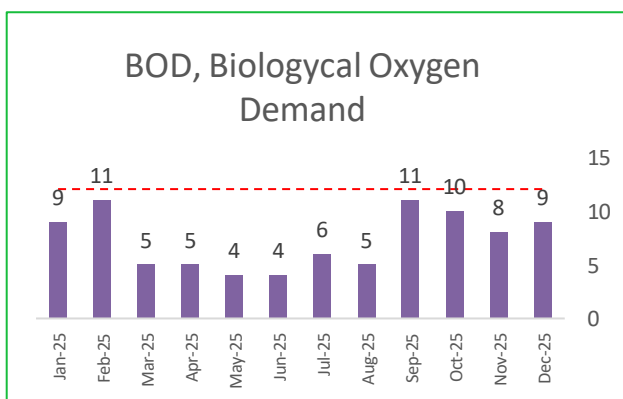
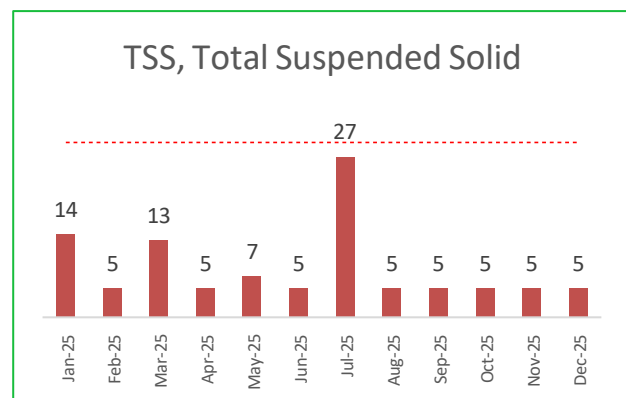
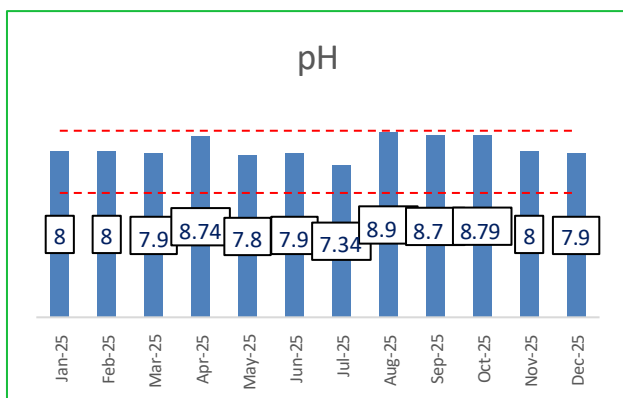
K. Welang hulu (Welang river upstream) overall water quality is medium contaminated (yellow)

Water Quality Parameters in the Catchment

ALLIANCE FOR WATER STEWARDSHIP

Good Water Quality Status Water Quality of Site Area

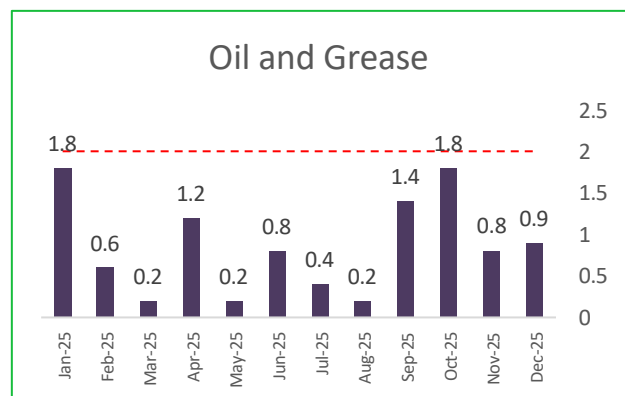
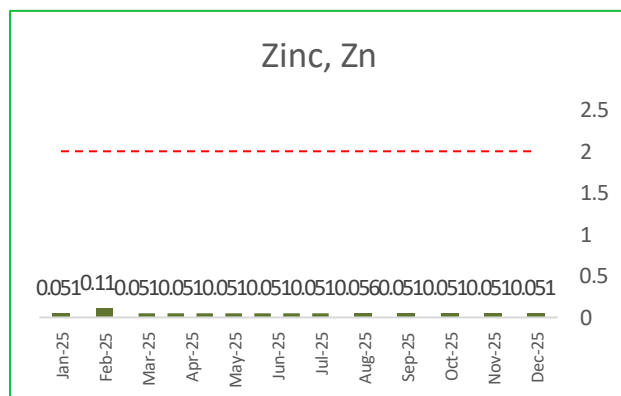
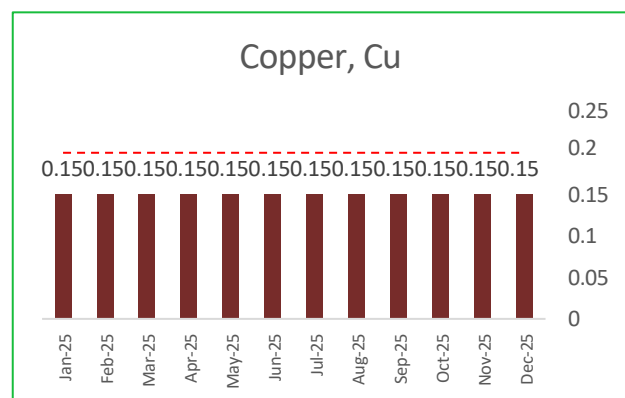
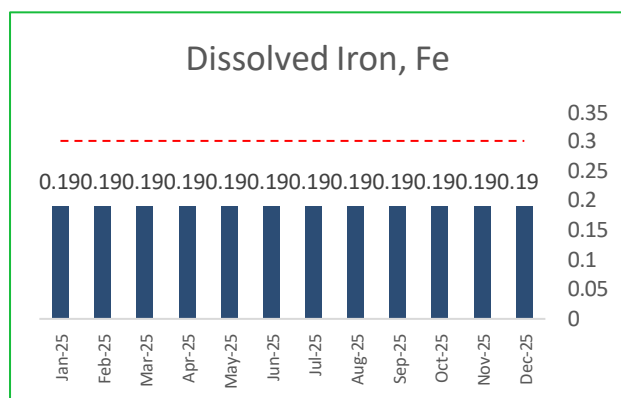
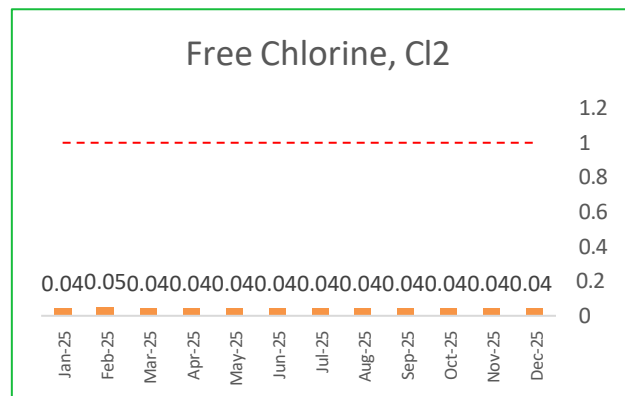
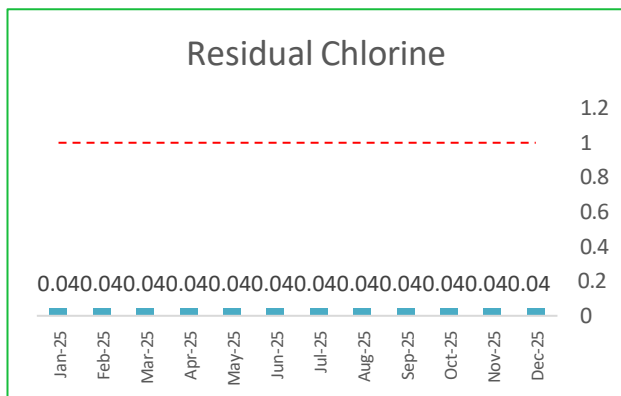
We understand that our factory activities certainly produce waste that can pollute water bodies. We always make efforts to maintain water quality. One of our efforts is we have WWTP (Waste Water Treatment Plant) to treat waste water so it will be not pollute the water bodies. The waste treatment process is function properly so the quality of the water output is safe for water bodies. According to Peraturan Gubernur Jawa Timur No. 72/2013, measured parameters in WWTP includes: COD, BOD, Oil and Fat, Total Suspended Solid, Ammonia, pH and Phenol. PT Karyadibya Mahardhika is comply with all parameters showed in table below:



Waste Water Trend 2025 PT Karyadibya Mahardhika

ALLIANCE FOR WATER STEWARDSHIP

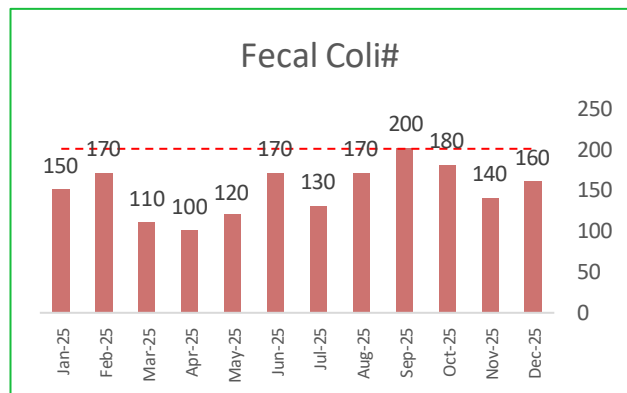
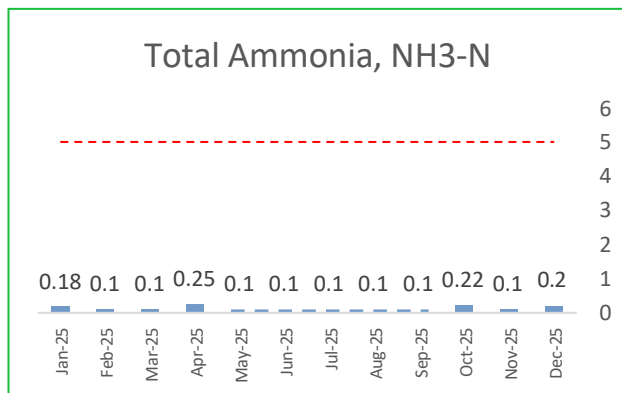
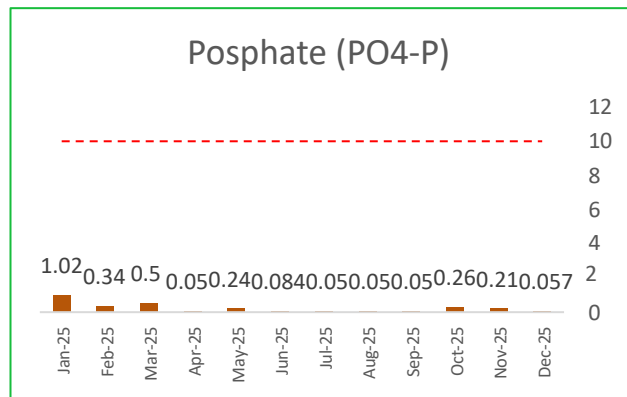
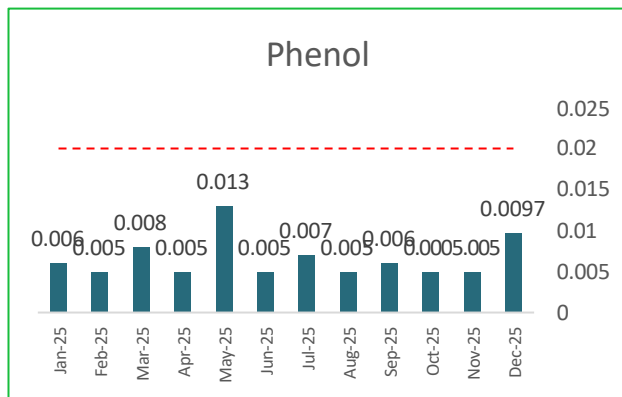
Good Water Quality Status Water Quality of Site Area



Waste Water Trend 2025 PT Karyadibya Mahardhika

ALLIANCE FOR WATER STEWARDSHIP

Good Water Quality Status Water Quality of Site Area

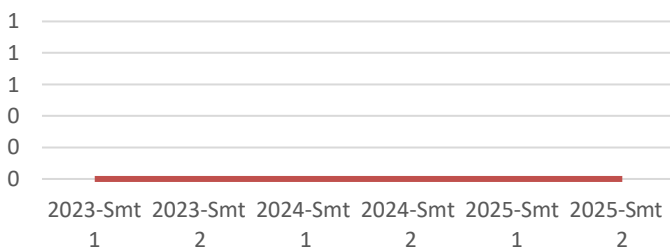


Waste Water Trend 2025 PT Karyadibya Mahardhika

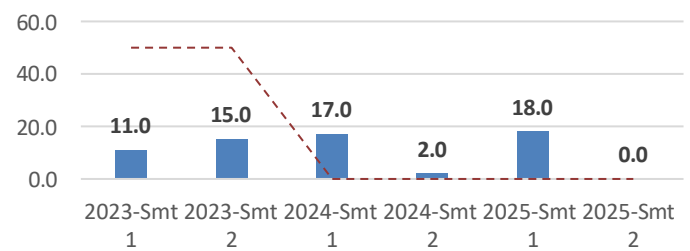
ALLIANCE FOR WATER STEWARDSHIP

We also have two wells as a source of our water needs for factory and domestic activities. In an effort to maintain good quality, we continue to monitor every year. Below is the water quality results of each parameter in Wells JTI Indonesia which comply with regulation Minister of Health Regulation of The Republic Indonesia No.32/2017 concerning Environmental Health Quality Standards and Water Health Requirements

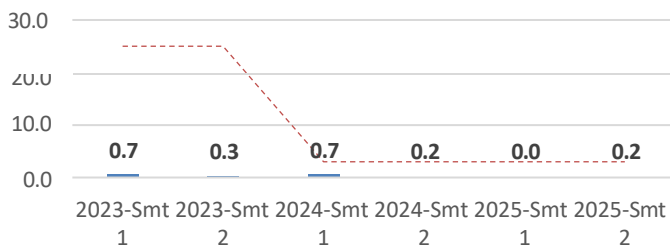
Tandon 1 - E Coli



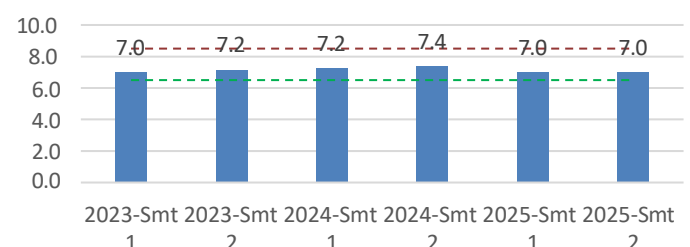
Tandon 1 - Coliform



Sumur 1 - Turbidity



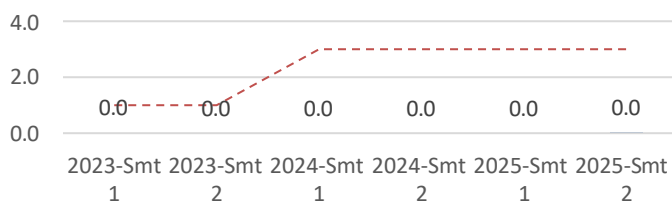
Sumur 1 - pH



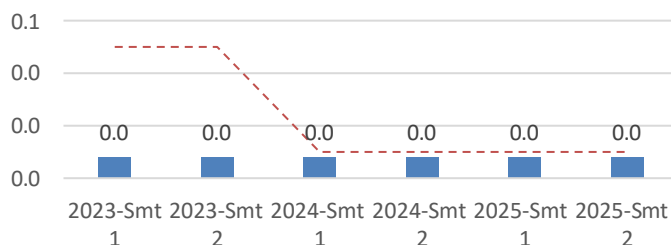
Water Quality in Deep Well 1 PT Karyadibya Mahardhika

ALLIANCE FOR WATER STEWARDSHIP

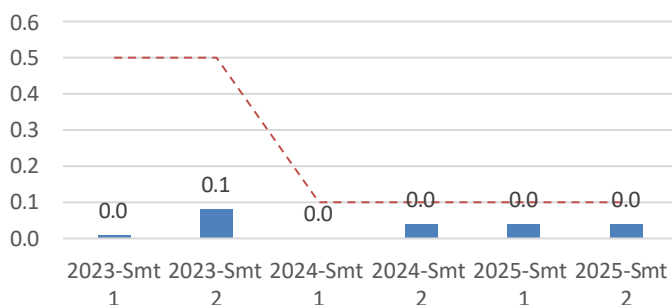
Sumur 1 - Nitrogen, Nitrate as N (NO₃-N)



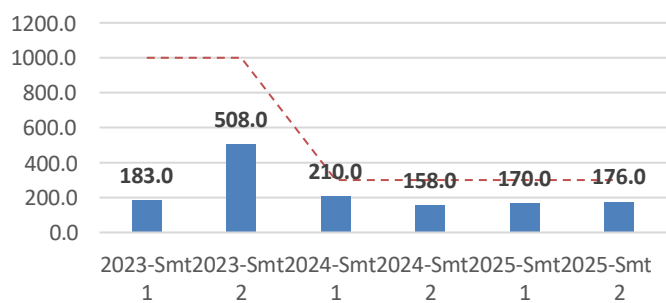
Sumur 1 - Hexavalent Chromium



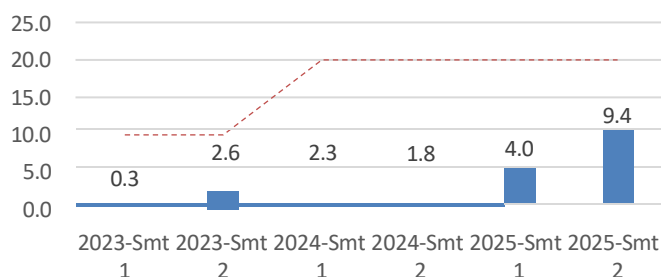
Sumur 1 - Manganese, Mn



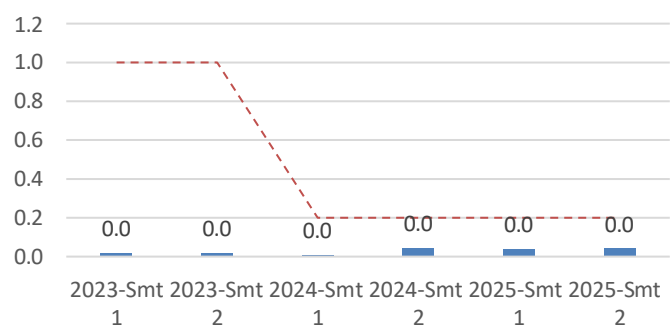
Tandon 1 - TDS



Sumur 1 - Nitrogen, Nitrate as N (NO₃-N)



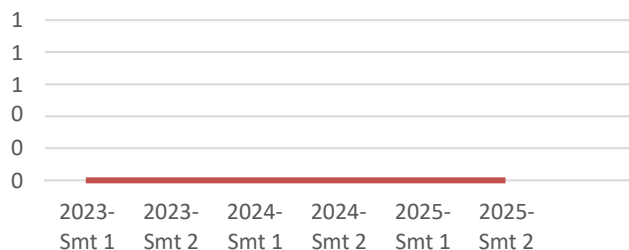
Sumur 1 - Iron, Fe



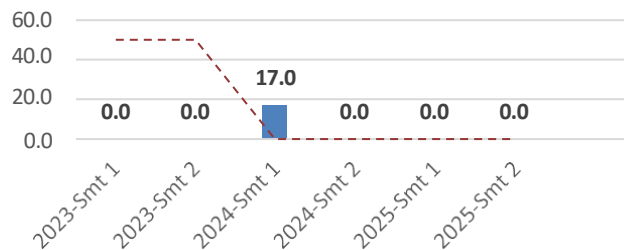
Water Quality in Deep Well 1 PT Karyadibya Mahardhika

ALLIANCE FOR WATER STEWARDSHIP

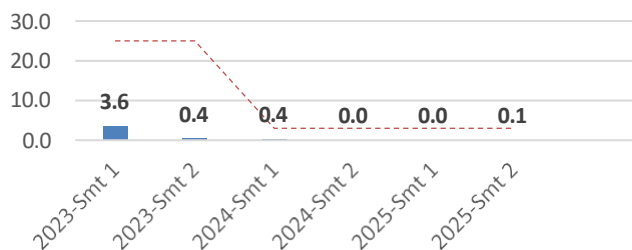
Sumur 2 - E Coli



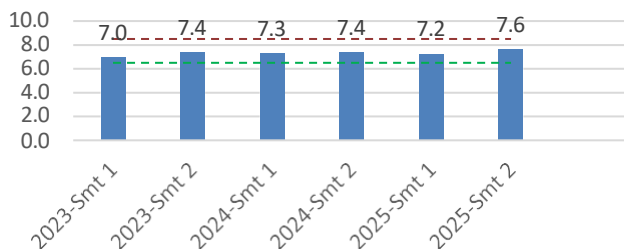
Sumur 2 - Coliform



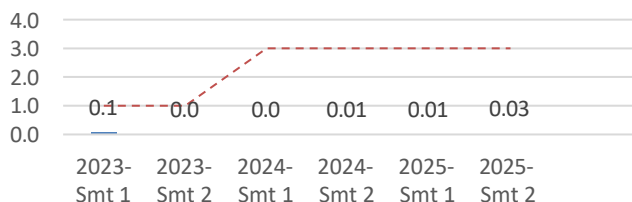
Sumur 2 - Turbidity



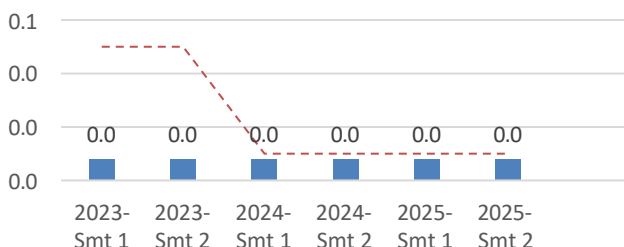
Sumur 2 - pH



Sumur 2 - Nitrogen, Nitrate as N (NO₃-N)



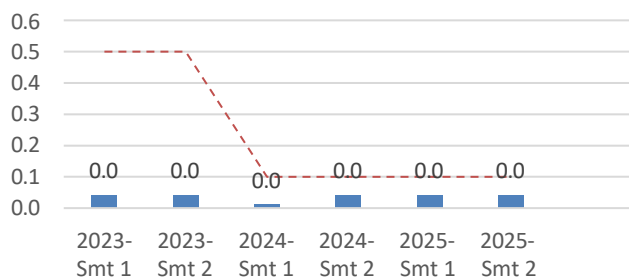
Sumur 2 - Hexavalent Chromium



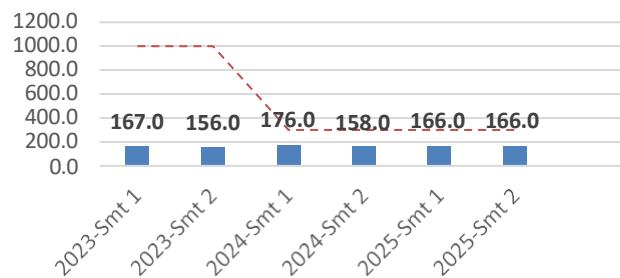
Water Quality in Deep Well 2 PT Karyadibya Mahardhika

ALLIANCE FOR WATER STEWARDSHIP

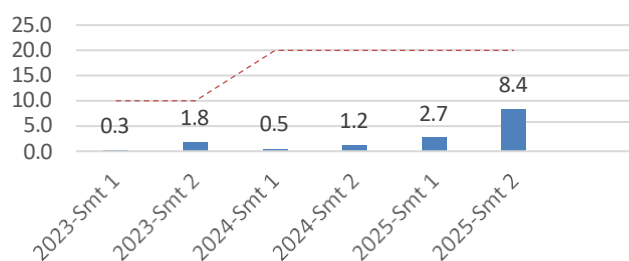
Sumur 2 - Manganese, Mn



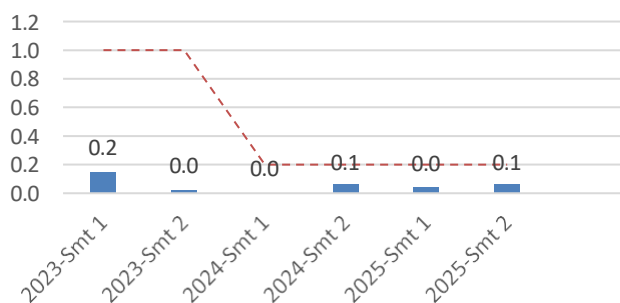
Sumur 2 - TDS



Sumur 2 - Nitrogen, Nitrate as N (NO₃-N)



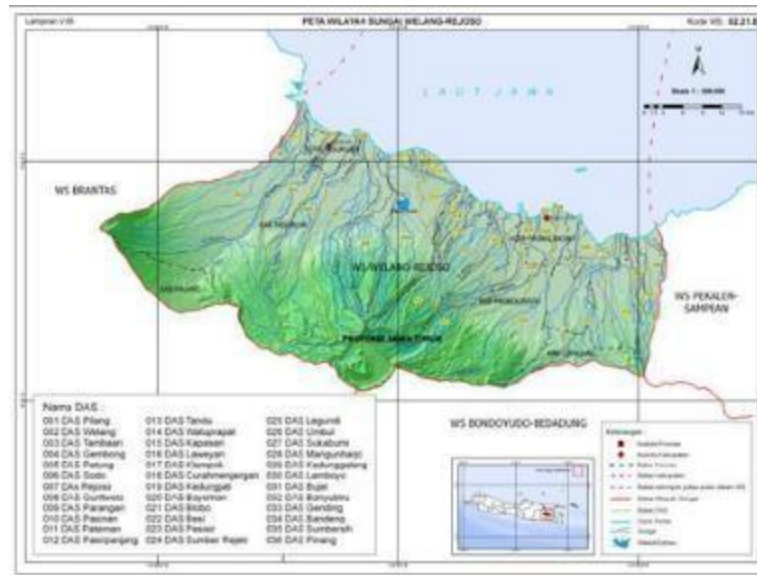
Sumur 2 - Iron, Fe



Water Quality in Deep Well 2 PT Karyadibya Mahardhika

Important Water Related Area

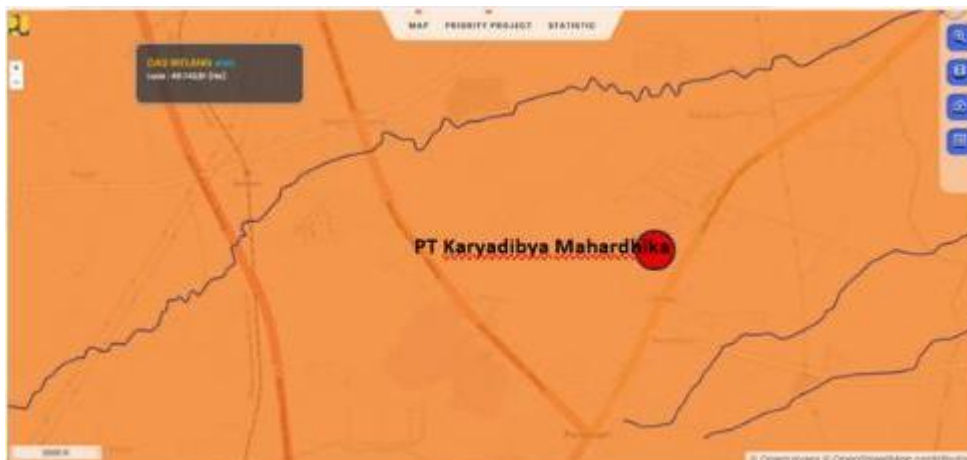
Catchment Area



Welang-Rejoso River Basin



Base on surface catchment map provided by government, area of Bakalan village - Purwosari district- Pasuruan regency belongs to Welang catchment area (brown colored area), a sub of bigger Welang Rejoso catchment (green and brown colored)



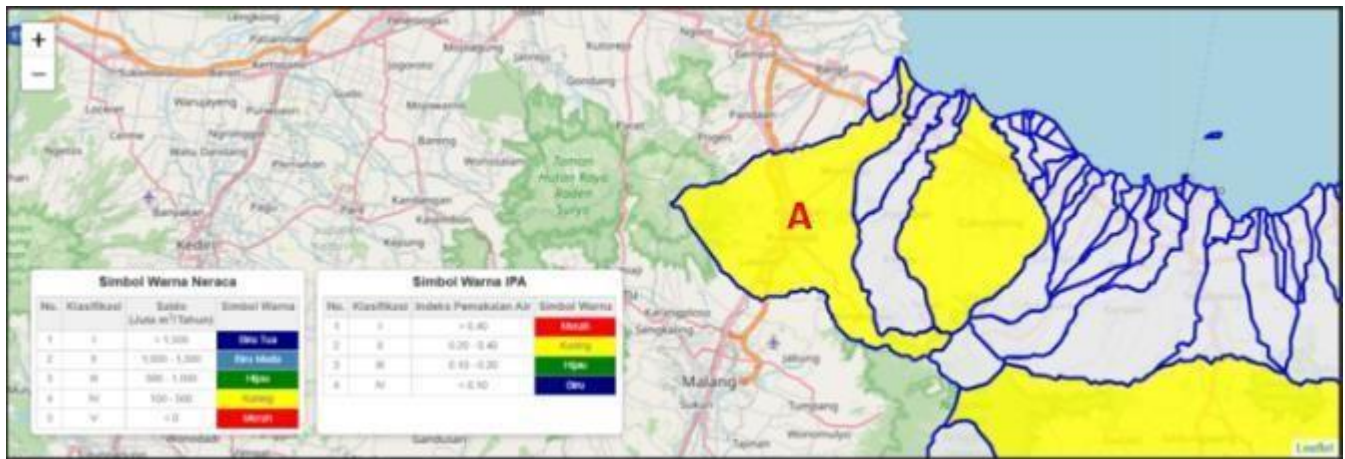
PT Karyadibya Mahardika member of JTI, located in surface water catchment called Welang catchment, a sub of Welang Rejoso catchment area.

Important Water Related Area

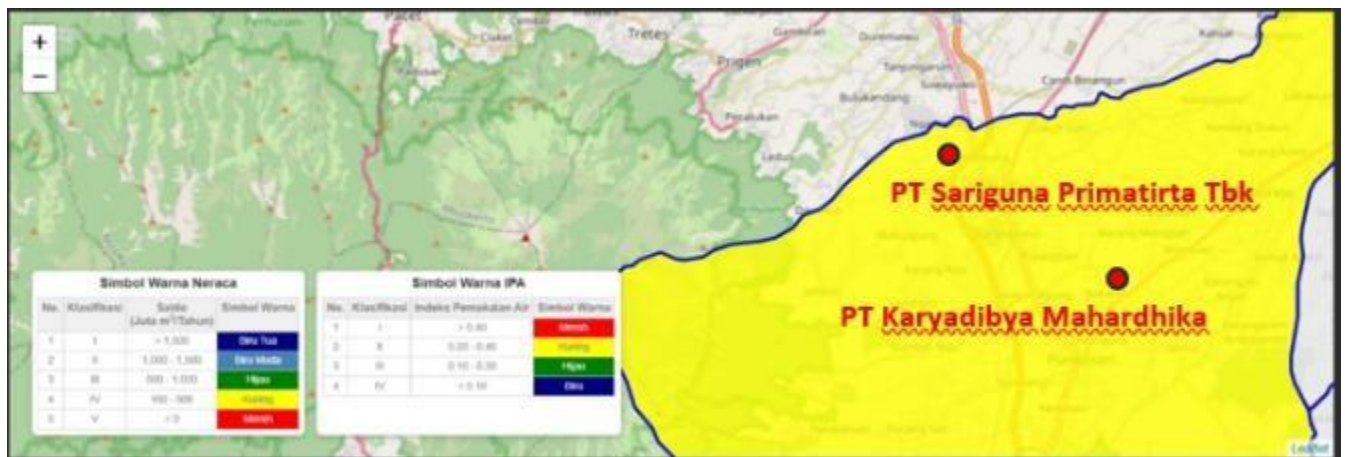
Catchment Area

Underground Water Hydrogeological Map

Base on underground aquifer map provided by government, area of Bakalan village -Purwosari district- Pasuruan regency belongs to section A (see in the map below) named Welang aquifer.



Detailed location of PT Karyadibya Mahardika, Bakalan and PT Sariguna Primatirta Tbk. (PT KDM's employee drinking water supplier) on the underground aquifer map.



K. Welang hilir (Welang river downstream) overall water quality is light contaminated (blue)

K. Welang hulu (Welang river upstream) overall water quality is medium contaminated (yellow)

Important Water Related Area

Catchment Area

Tahun	DAS	Kota/Kab	Ketersediaan Air		Kebutuhan Air							Indeks Klasifikasi Neraca Air			Indeks Klasifikasi Pemakaian Air		
			Q Juta m³/Tahun	Total Juta m³/Tahun	Domestik Juta m³/Tahun	Non Domestik Juta m³/Tahun	Industri Juta m³/Tahun	Pertanian Juta m³/Tahun	Perikanan Juta m³/Tahun	Peternakan Juta m³/Tahun	Pemeliharaan sungai Juta m³/Tahun	Total Juta m³/Tahun	Saldo Juta m³/Tahun	Status NA	Klasifikasi NSA	IPA	Klasifikasi IPA
2023	DAS Sampitan	Kabupaten Bondowoso dan Kabupaten Situbondo	100.65	100.65	27.67	4.15	10.21	196.52	0	3.16	50.08	129.79	-290.14	Defisit	V	1.29	I
2023	DAS Banyuwangi	Kabupaten Situbondo	86.63	86.63	1.85	0.28	0	193.50	2.42	0.22	4.33	202.60	-16.97	Defisit	V	2.34	I
2023	DAS Semanggi	Kabupaten Pamekasan	137.14	137.14	23.66	3.55	5.02	74.54	0	2.32	6.86	116.95	21.19	Surplus	IV	0.85	I
2023	DAS Tumpang	Kabupaten Bangkalan	95.51	95.51	8.10	1.22	6.62	58.46	0	0.99	4.78	80.77	15.34	Surplus	IV	0.84	I
2023	DAS Welang	Kabupaten Pasuruan	59.69	59.69	19.51	1.26	1.68	198.05	32.37	2.465	29.58	317.31	234.57	Surplus	IV	0.54	I
2023	DAS Rejos	Kabupaten Pasuruan	215.27	215.27	9.40	1.41	23.65	1.42	24.39	13.09	10.76	84.12	131.35	Surplus	IV	0.39	II
2023	DAS Welang	Kabupaten Pasuruan	59.69	59.69	19.51	1.26	1.68	198.05	32.37	2.465	29.58	317.31	234.57	Surplus	IV	0.54	I

Water Quality Parameters in the Catchment

Welang underground water aquifer based on data above, categorized as SURPLUS, class IV meaning the water usage is less than water recharge.

Underground Water Quality

Periodically PT Karyadibya Mahardika take water samples from its two deep well and send to 3rd party laboratorium to check water quality according standard from government.

Based on historical data of deep well water quality in PT Karyadibya Mahardhika, show in overall deep well water quality still within norm. Detail data regarding water quality provided in separate study.

Summary

PT Karyadibya Mahardika business activities impact on:

1. Surface water catchment area through wastewater effluent discharge to environment, not direct to river but used as water for gardening.
2. Underground water aquifer through direct water usage and drinking water consumption.

Important Water Related Area Catchment Area (Purwosari)

PETA WILAYAH KECAMATAN PURWOSARI
MAP OF PURWOSARI DISTRICT



The Purwosari Districts on Pasuruan Regency beside on bottom of Pasuruan Regency and located between 7,30' - 8,30' Lintang South Latitude and 112o30' - 113o30' East Longitude. Its area average 0 - 100 m on the sea with land rather.

Region Boundaris in the North is bounded with the Sea of Java. In the east side is bounded by Lekok and Grati District, then in the west is bounded by Pasuruan City. In the South side is bounded by Winongan and Gondangwetan District.

Generally, Purwosari Districts area in Pasuruan Regency can be divided into 16 Villages, has been 57 hamlet, 74 citizen pillar, 275 neighbor pillar and Area 35,51 Km².

Because Purwosari Regency located inside Pasuruan Regency location in the surrounding of Equator, the climate is similar the other region climate.

There are just two seasons, rains seasons and dry seasons. From October until April is the rainy seasons, while the dry season is between May till September.

Important Water Related Area Catchment Area (Sanitary Purwosari)



Sumber/Source: Badan Pusat Statistik, Hasil Proyeksi Penduduk Interim 2020-2025 (Pertengahan Tahun/Juni)/
BPS-Statistics Indonesia, The Result of Interim Population Projections, 2020-2025 (Mid-Year/June)

Gambar 3.1 Kepadatan Penduduk Menurut Desa/Kelurahan di
Figures Kecamatan Purwosari, 2023
Population Density by Villages/Kelurahan in Purwosari District, 2023

Purwosari District showed significant variation in population density across its villages, with Sengon Agung and Karang Rejo recording the highest figures at over 2,000 people per square kilometer, while Purwosari itself was also highly populated at 1,979.80 people/km², highlighting the urgent need for clean water, sanitation, and adequate healthcare services in these dense areas; meanwhile, villages such as Cendono, Sukodermo, Kayoman, and Pucangsari had densities below 1,000 people/km², making them more spacious and suitable for land development, agriculture, or conservation but facing challenges in accessibility to public services, and with the district's average density reaching 1,411.75 people/km², most villages remain above this threshold, positioning Purwosari as a generally dense district that requires careful planning in infrastructure, healthcare distribution, and community-based education programs.

Source : BPS (Badan Pusat Statistik Purwosari Dalam Angka 2024)

Important Water Related Area

Catchment Area (Sanitary Purwosari)

4.2 KESEHATAN HEALTH

Tabel 4.2.1
Banyaknya Desa¹/Kelurahan yang Memiliki Sarana Kesehatan Menurut Jenis Sarana Kesehatan di Kecamatan Purwosari, 2021–2023
Number of Villages¹/Kelurahan Health Facilities by Type of Health Facilities in Purwosari District, 2021–2023

Jenis Sarana Kesehatan Type of Health Facilities	2021 ²	2022 ²	2023 ³
(1)	(2)	(3)	(4)
Rumah Sakit Hospital	-	-	-
Rumah Sakit Bersalin Maternity Hospital	-	-	-
Poliklinik/Balai Pengobatan Polyclinic	4	6	6
Puskesmas Rawat Inap Public Health Center with Inpatient Care	1	1	1
Puskesmas Tanpa Rawat Inap Public Health Center without Inpatient Care	1	1	1
Apotek Pharmacy	2	3	3

Tabel 4.2.3
Banyaknya Sarana Kesehatan Menurut Desa/Kelurahan dan Jenis Sarana Kesehatan di Kecamatan Purwosari, 2023
Number of Health Facilities by Villages/Kelurahan and Type of Health Facilities in Purwosari District, 2023

Desa/Kelurahan Village/Kelurahan	Rumah Sakit Hospital	Rumah Sakit Bersalin Maternity Hospital	Poliklinik Polyclinic
(1)	(2)	(3)	(4)
010. Sekar Mojo	-	-	-
020. Tejowangi	-	-	1
030. Kertosari	-	-	1
040. Martopuro	-	-	-
050. Purwosari	-	-	1
060. Sumber Rejo	-	-	-
070. Pager	-	-	-
080. Cendono	-	-	-
090. Karang Rejo	-	-	-
100. Sumber Suko	-	-	-
110. Sengon Agung	-	-	2
120. Bakalan	-	-	1
130. Sukodermo	-	-	-
140. Pucangsari	-	-	-
150. Kayoman	-	-	-
Kecamatan Purwosari	-	-	-

Catatan/Note: ---
Sumber/Source: Dinas Kesehatan Kabupaten Pasuruan/Health Agency of Pasuruan Agency

There are health facilities in the catchment area that can assist in serving public health. Health facilities also support sanitation programs in each hospital. The local health organization also has a program on sanitation and hygiene so community are not susceptible to disease.

Source : BPS (Badan Pusat Statistik Purwosari Dalam Angka 2024)

Important Water Related Area

Catchment Area (Sanitary Purwosari)

Tabel 4.2.4
Table

Banyak Tenaga Kesehatan dan Posyandu di Kecamatan Purwosari, 2023
Number of Health Human Resources and Posyandu in Purwosari District, 2023

Desa/Kelurahan Village/Kelurahan	2022	2023
(1)	(2)	(3)
Medis Physician	8	22
Paramedis Paramedic	35	44
Posyandu (Balita dan Usia) Integrated Health Service Center	82	82

Tabel 4.2.5
Table

Kemudahan Mencapai Sarana Kesehatan Terdekat Bagi Desa/Kelurahan yang Tidak Ada Sarana Kesehatan Menurut Desa/Kelurahan dan Jenis Sarana Kesehatan di Kecamatan Purwosari, 2023
Ease of Reaching the Closest Health Facilities for Villages/Kelurahan Without Health Facilities by Villages/Kelurahan and Type of Health Facilities in Purwosari District, 2023

Desa/Kelurahan Village/Kelurahan	Rumah Sakit Hospital	Rumah Sakit Bersalin Maternity Hospital	Poliklinik Polyclinic
(1)	(2)	(3)	(4)
010. Sekar Mojo	Mudah	Mudah	Mudah
020. Tejowangi	Mudah	Mudah	-
030. Kertosari	Sangat Mudah	Sangat Mudah	-
040. Martopuro	Sangat Mudah	Mudah	Sangat Mudah
050. Purwosari	Sangat Mudah	Sangat Mudah	-
060. Sumber Rejo	Mudah	Mudah	Sangat Mudah
070. Pager	Sangat Mudah	Mudah	Sangat Mudah
080. Cendono	Mudah	Mudah	Mudah
090. Karang Rejo	Mudah	Mudah	Mudah
100. Sumber Suko	Mudah	Mudah	Mudah
110. Sengon Agung	Sangat Mudah	Mudah	-
120. Bakalan	Mudah	Mudah	-
130. Sukodermo	Mudah	Mudah	Sangat Mudah
140. Pucangsari	Mudah	Mudah	Mudah
150. Kayoman	Mudah	Mudah	Sangat Mudah
Kecamatan Purwosari			

Catatan/Note: Tanda (-) menandakan di Desa/Kelurahan tersebut sudah memiliki sarana kesehatan yang dimaksud/ The (-) sign indicates that the village/sub-district already has the health facilities in question.

Sumber/Source: Dinas Kesehatan Kabupaten Pasuruan/Health Agency of Pasuruan Agency

Almost all villages in Purwosari District have access rated as “Easy” or “Very Easy” to public health centers and pharmacies, even though not all of them have direct facilities within their boundaries.

Densely populated villages such as Martopuro, Kertosari, and Sengon Agung enjoy very easy access, supporting service delivery in high-risk areas.

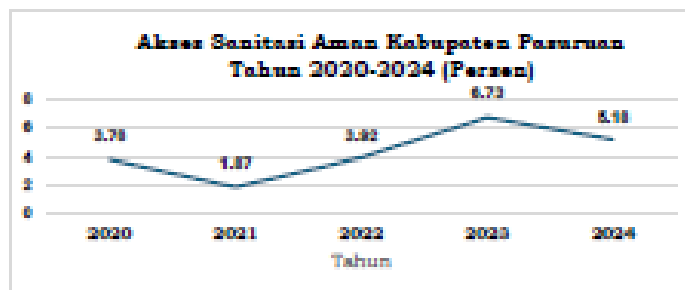
Source : BPS (Badan Pusat Statistik Purwosari Dalam Angka 2024)

Important Water Related Area

Catchment Area (Sanitary Purwosari)

B. Rumah Tangga dengan Akses Sanitasi Aman

Akses Sanitasi Aman adalah apabila rumah tangga memiliki fasilitas sanitasi sendiri, dengan bangunan atas dilengkapi kloset dengan leher angsa, dan bangunan bawahnya menggunakan tangki septik yang disedot setidaknya sekali dalam 5 (lima) tahun terakhir dan diolah dalam instalasi pengolahan lumpur tinja (IPLT), atau tersambung ke sistem pengolahan air limbah domestik terpusat (SPALD-T). Gambar 2.12 menunjukkan capaian akses sanitasi aman di Kabupaten Pasuruan mengalami fluktuasi, dengan penurunan tajam pada tahun 2021. Capaian angka capaian sanitasi aman Kabupaten Pasuruan masih sangat rendah sehingga menjadi prioritas dalam pembangunan sanitasi dan pengelolaan air limbah domestik. Pemerintah daerah perlu mempercepat penyediaan IPLT, pendataan terintegrasi, serta pengujian regulasi sanitasi berkelanjutan.



Gambar 2.12 Akses Sanitasi Aman di Kabupaten Pasuruan Tahun 2020-2024

Sumber: Badan Pusat Statistik Kabupaten Pasuruan, 2025

Safe sanitation in Pasuruan remains far from the target, with stagnant achievements below 5%. Purwosari cannot be assessed due to the absence of available data, which highlights inequality in distribution. This must become a priority in regional programs by strengthening infrastructure, regulations, and community participation.

Important Water Related Area Catchment Area (Sanitary Purwosari)

Conclusion

Purwosari District demonstrates both high population density in several villages and relatively good accessibility to health facilities. The densest areas such as Sengon Agung, Karang Rejo, and Purwosari highlight the urgent need for strengthened WASH services and healthcare infrastructure, while less dense villages face challenges in accessibility despite having more space for development. Overall, the presence of health facilities and sanitation programs, combined with the fact that most villages report “Easy” or “Very Easy” access to services, indicates that the district has a solid foundation for public health. However, careful planning and targeted interventions remain essential to balance service delivery between densely populated and more remote areas, ensuring equitable access to clean water, sanitation, and healthcare across the entire district. Safe sanitation in Pasuruan remains far from the target, with stagnant achievements below 5%. Purwosari cannot be assessed due to the absence of available data, which underscores inequality in distribution. This must become a priority in regional programs by strengthening infrastructure, regulations, and community participation.

PT Karyadibya Mahardhika Area



Location : Bakalan, Purwosari, Pasuruan, East Java, Indonesia 67162

Coordinate : -7.7574717 Latitude to 112.7530761

PT Karyadibya Mahardhika is located in Bakalan Village, Purwosari District, Pasuruan Regency, East Java. Bakalan Village falls under the administration of Purwosari District. According to the most recent official data available, the village covers an area of approximately 150.66 km² and has a population of around 7,070 residents.

Safe Water Sanitation and Hygiene (WASH)



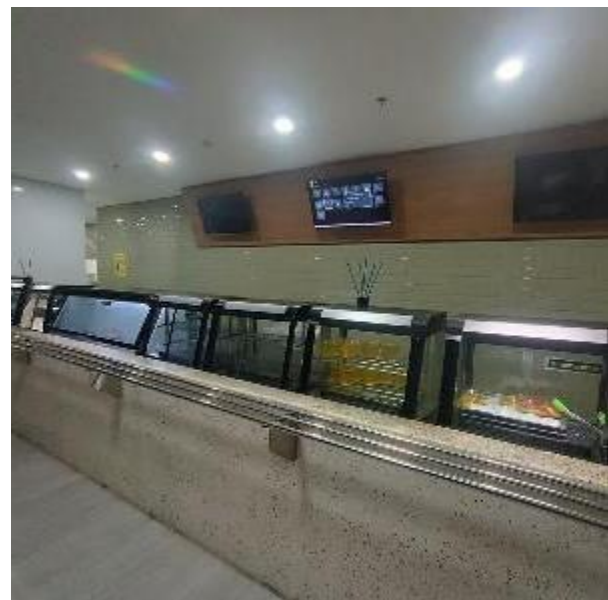
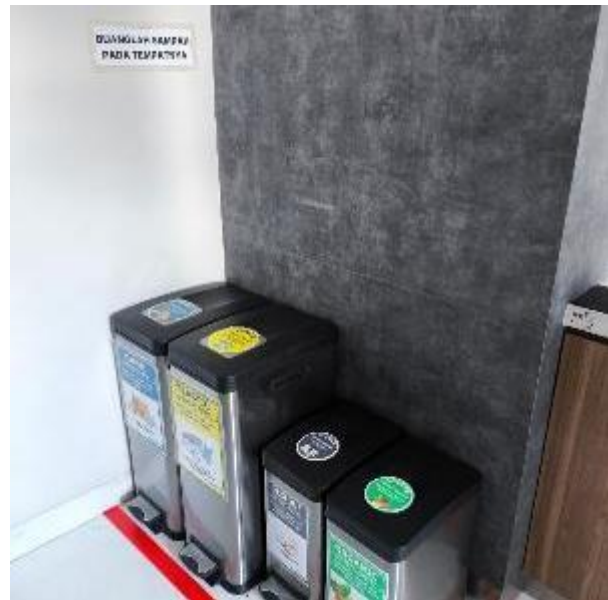
In Bakalan Village, the Sukun River has always been a central part of daily life. For years, however, the river was misused. Many residents relied on it as an open toilet, while household waste was carelessly thrown into its waters. Hygiene standards were poor, indigenous fish populations were declining, and the risk of flooding increased due to pollution and blockages. These practices not only damaged the ecosystem but also created social tensions and the possibility of conflict. Worse still, such habits threatened to be passed down to the younger generation, embedding unhealthy behaviours into the community's future.

Recognising the urgency of change, PT Karyadibya Mahardhika stepped forward to support a collaborative initiative. Working hand in hand with local NGOs and community members, the company helped improve sanitation by building permanent toilets, reducing the dependence on the river for unsafe practices. At the same time, JTI encouraged the involvement of young people, positioning them as agents of change. Their enthusiasm was channelled into innovative projects, such as using the Sukun River for fish culture through the karamba system, which transformed the river from a source of risk into a source of livelihood.

The impact of these efforts soon became visible. Hygiene conditions improved significantly, with fewer health risks for families. The fish culture initiative began to generate income, offering new economic opportunities for villagers. The river itself grew cleaner, allowing ecosystems to recover and indigenous fish species to return. Most importantly, the community developed a stronger sense of self-awareness, with young people leading by example and inspiring others to adopt sustainable practices.

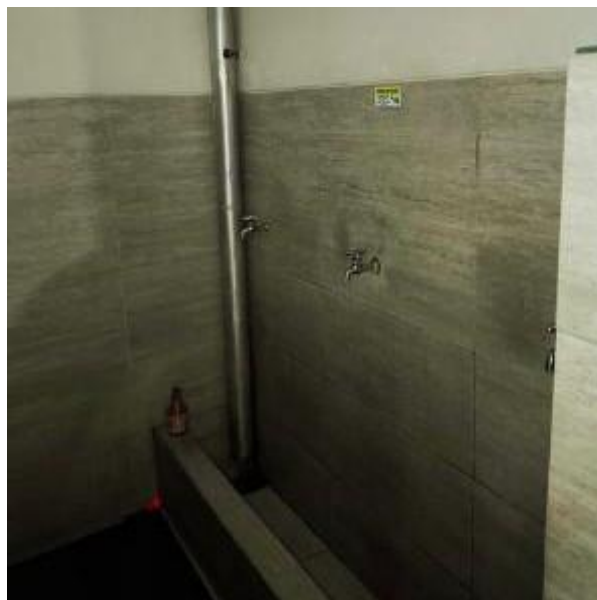
This transformation of Bakalan Village illustrates how environmental conservation can go hand in hand with community empowerment. By addressing hygiene, creating economic value, and restoring ecosystems, the Sukun River project has not only revitalised a natural resource but also strengthened the social fabric of the village. It stands as a model of how joint efforts between corporations, NGOs, and local communities can bring lasting change.

Safe Water Sanitation and Hygiene (WASH)



WASH Facilities in PT Karyadibya Mahardhika

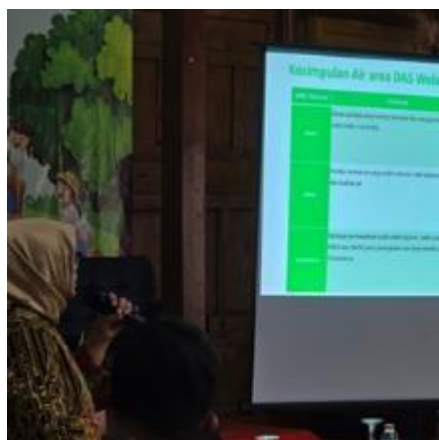
Safe Water Sanitation and Hygiene (WASH)



WASH Facilities in PT Karyadibya Mahardhika

The assessment confirmed that the physical infrastructure of WASH facilities is sufficient and in good condition. This outcome is largely attributed to the fact that the area surveyed lies within an urban setting, where the inhabitants enjoy relatively strong economic stability. Such conditions have enabled residents to maintain proper hygiene practices and invest in adequate facilities.

FOCUS GROUP DISCUSSION FOR AWS



The forum brought together a diverse group of stakeholders to ensure a holistic approach to conservation and management. Participants included the Brantas River Regional Office, as the owner of river infrastructure in East Java; BBWS (River Basin Office); the Pasuruan Environmental Service; the Pasuruan PUSDA Service, responsible for water resources; PDAM Purwosari Regency, managing clean water access; the Pasuruan Regency Environmental Service; PUSDA Pasuruan Regency; local authorities such as the Village Heads and District Heads of Purwosari, Bakalan, and Martapuro; the Environmental Activist Community; and Yudharta University Pasuruan, representing academia. Their presence ensured that perspectives from government, service providers, civil society, and academia were all represented.

Importantly, the participants also reached a consensus in agreeing to the key points outlined in the shared water challenges, reinforcing their collective commitment to collaborative solutions and sustainable management of water resources.

Shared Water Challenges

AWS Outcome	Challenge	Action
Water Balance	The Welang watershed often experiences flooding problems in the downstream part every year, this is certainly inseparable from the hydrological cycle that changes due to human activities changing the landscape and the environmental damage it causes. According to the East Java PUSDA (2020) the travel time of the flood is relatively short, rainwater in the Lawang Malang area takes 3-4 hours to reach the Pasuruan Palace near the coast. This flood is caused by human factors who are not aware of the function of the river so that it always destroys, logs and changes land into settlements in river areas make water infiltration disappear and result in flooding during rain.	1. Increase water infiltration in the upstream area 2. The agari campaign does not throw garbage into the river 3. Efforts to market biopore infiltration holes to increase water infiltration 4. Greening Activities
Water Quality	The quality of the Welang river has decreased from year to year so that it is not in accordance with its designation as rice field irrigation, fisheries and other purposes based on the classification of water quality class III PPNo. 82 of 2003. Based on the values of the pollution index and STORET, it shows that the conditions in the Welang River from upstream to downstream are moderately polluted to lightly polluted.	1. Maintaining the quality of wastewater to meet the required quality standards 2. A campaign is needed so that they do not throw garbage into the river 3. Tree planting is more routine so that branches do not fall into the river and prevent trees from falling
WASH	Inadequate access to sanitation and use of rivers for toilets, bathing etc	1. Correctional Personal Hygiene and Good Sanitation 2. Increase awareness of keeping the river clean and not using the river for toilets, bathing, etc.
IWRA	The condition of water sources is declining both in quantity and quality of water	1. Water source maintenance efforts 2. Maintaining biodiversity in water source areas 3. Cultural ceremony to maintain culture around water sources
Governance	Various problems in water balance, water quality, IWRA and WASH need to be improved and improved in terms of Governance	1. Discuss problems related to the Welang watershed through the Welang Watershed Forum 2. Distributing to related agencies/parties from various challenges in the Welang watershed

Tree Planting 2026



Since 2022, PT Karyadibya Mahardhika has carried out the Tandur Banyu program as part of its long-term conservation efforts in Pasuruan, East Java. In January 2026, the company, together with local environmental communities, expanded the initiative in the upstream area of Mount Arjuna. The program focused on disaster prevention through tree planting, land rehabilitation, and water conservation education. During this phase, more than 7,000 endemic trees were planted alongside infiltration pits (rorak) to restore critical land and improve water absorption.

The initiative was driven by the urgent need to reduce ecological risks such as floods and landslides caused by land conversion and resource exploitation. By combining technical conservation measures with social empowerment, , PT Karyadibya Mahardhika aims to strengthen ecosystem resilience while improving community livelihoods. Starting in 2026, the program has also been aligned with the AWS (Alliance for Water Stewardship) framework, ensuring sustainable water resource management. This collaboration highlights the importance of multi-stakeholder engagement in protecting natural ecosystems and securing long-term environmental and social benefits.