



BUSINESS PLAN · INDIA

RO Water Plant and Refill Station

A network that measures the barrier rather than the conductivity, because the meter everybody trusts cannot see the failure that matters

WATER SUPPLY, TREATMENT AND SOLUTIONS

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This document is confidential and prepared for planning purposes. All financial figures are illustrative model assumptions for an Indian MSME context and must be validated against live quotes, local rates and professional advice before any investment or borrowing decision.

1. Executive Summary

This plan sets out an **RO Water Plant & Refill Station** network in an Indian city and its periphery — a central reverse-osmosis plant feeding **28 refill outlets**, a plant-owned sanitised-can delivery service, institutional supply, municipal water-ATM operation, and a membrane-integrity testing and AMC service sold to other RO operators. By Year 3 it draws **113.0 million litres, dispenses 70.0 million litres in 3.50 million 20-litre units, and sells ₹8.00 crore** across **216 membrane elements**.

This plan is the second in vertical 56 and **inherits the ten anchor rules (a)-(j)** set by the packaged drinking-water plan.

Item	Detail	Year 3
What is sold	Counter refill into a sanitised customer container, plant-owned cans on deposit, institutional supply, water-ATM operation, and membrane-integrity testing and AMC to other operators	₹8.00cr
Outlets / elements / units	28 outlets on one central plant; 3.50m units of 20 litres	28; 216; 3.50m
Water drawn / dispensed / reject	61.9% recovery, which is what community-scale RO actually achieves	113.0m / 70.0m / 43.0m L
PAT / net margin	A low-ticket, high-frequency business	₹0.40cr / 5.0%
ROCE on ₹4.00cr	Plant, outlets, sanitisation cabinets, laboratory and fleet	18.0%
Elements found breached while TDS still read within specification	The number that defines this plan	6 → 19

☐ **THE ONLY INSTRUMENT ANYBODY IN THIS TRADE USES IS A TDS METER, AND IT MEASURES THE ONE THING A FAILING MEMBRANE STILL GETS RIGHT. TDS is conductivity: it measures dissolved ions. BACTERIA ARE NOT IONS. A membrane with a micro-tear, a failed O-ring or a delaminated glue line passes organisms while still rejecting salt almost perfectly, BECAUSE THE TWO HAVE NOTHING TO DO WITH EACH OTHER.**

So the reading that reassures everybody is produced by the one part of the system that is still working. IT IS NOT WEAK EVIDENCE. IT IS REASSURANCE MANUFACTURED BY THE HAZARD ITSELF — the failing system goes on generating the number that proves it is fine.

2. Business Description, Vision & Legal Structure

A private limited company operating a central RO plant, a network of manned refill outlets with container sanitisation at the counter, a delivery fleet of plant-owned sanitised cans, and a membrane-integrity laboratory that also serves other operators.

Element	Position
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Legal form	Private limited company; FSSAI licence; state pollution board consents; groundwater NOC; municipal agreements for ATM sites
Where the money is made	Plant-owned can delivery carries the margin; counter refill carries the volume; the integrity service and institutional supply carry the rest
What is different	Membrane integrity is tested and posted at the outlet beside the TDS reading, because the TDS reading cannot see the failure that matters
Vision	A refill network where the number on the wall is the one that would catch a problem

Why this shape	Reasoning
Own integrity laboratory rather than an annual AMC visit	A breach can open between two service visits and produce perfect TDS the whole time. Monthly testing across 216 elements is only affordable if the instrument is yours
Container sanitisation at every counter	The customer's own container is the last handling step and the most likely point of contamination; a refill business that ignores it has outsourced its main hazard to its customer
Plant-owned cans alongside counter refill	Gives customers who want no extra step a route that is safe by construction, and it carries the better margin
Integrity testing sold to other operators	The laboratory exists anyway; a district full of RO plants has no access to a pressure-decay test, and selling it makes the apparatus affordable

3. Promoter & Ownership

Item	Position
Promoter	Water-treatment engineer with eleven years in membrane systems; has autopsied enough failed elements to distrust a permeate conductivity reading
Promoter equity	₹1.44cr of the ₹4.00cr project cost (36%), unsecured and not withdrawable during the loan term
Ownership	Promoter family 82%; ESOP and key staff 10%; angel investor 8%
Governance	An outlet closes on a positive microbiological swab automatically, by the dispensing system, and reopens only on a clear result — no manager, including the promoter, can authorise dispensing in between

That control matters here more than anywhere, because **the pressure to reopen is not commercial pressure — it is a queue of customers standing in front of a meter that reads 28 and being told the water is unsafe. A rule that depends on somebody withstanding that conversation twice a month is not a rule.**

4. Market Analysis — India

Segment	What drives it	Position taken
Counter refill into the customer's container	Price per 20 litres, proximity, queue time; the cheapest safe water available to an urban household	1.30m refills at ₹16

Plant-owned cans, delivered	Convenience and a container the household never has to think about	0.60m deliveries at ₹40
Institutional and commercial	Offices, schools, hospitals and canteens; contracts that increasingly ask for evidence	0.40m units at ₹36
Water ATMs on municipal and CSR contracts	Public provision at a subsidised tariff; volume and visibility, thin margin	1.20m dispenses at ₹6
Membrane integrity testing, AMC and training	Hundreds of small RO operators with a TDS meter and no other instrument	₹0.96cr at 56% gross margin

What a TDS meter can and cannot see

Failure	Does TDS detect it?
Membrane exhausted, salt rejection falling	Yes. This is the one it sees
Micro-tear or delaminated glue line	No
Failed O-ring or brine seal	Barely, and late
Biofilm in the storage tank	No. It is downstream
Contamination in the dispensing line	No

Demand is large, growing and price-sensitive. **For a great many urban households the refill counter is the only affordable alternative to municipal supply they do not trust, and the decision between one counter and the next is made on price, distance and A NUMBER ON A HANDHELD METER THAT THE SHOPKEEPER SHOWS THEM.**

It is worth being clear that the refill trade is a genuine public good and this plan is not an attack on it. For a household paying sixteen rupees for twenty litres, the alternative is not a branded jar at fifty — it is municipal water it does not trust, or boiling fuel it can barely afford. The refill counter has put treated water within reach of tens of millions of people who had no affordable route to it, and it did so on economics no branded model could match. THE PROBLEM IS NOT THAT THE MODEL EXISTS. IT IS THAT ITS ENTIRE QUALITY-ASSURANCE APPARATUS IS A SIXTEEN-HUNDRED-RUPEE HANDHELD METER, and that this is nobody's fault in particular.

5. Competition & Position

Competitor type	What they do well	Where the gap is
Independent RO refill shops	Price, proximity, hours, genuine local relationships	One TDS meter and an annual service visit; a breach between visits is invisible for months
Franchised water-ATM operators	Municipal partnerships, subsidised tariffs, real reach into low-income areas	Unmanned, so the container is entirely uncontrolled and servicing is on a schedule rather than a signal
Packaged-water jar brands	BIS certification, sealed containers, a controlled package	Two to three times the price per litre, which is the reason the refill trade exists
Home RO purifier owners	Solve it individually, and the AMC industry that serves them is competent	The same instrument problem in every kitchen, and the same annual visit

This network	Central plant, 28 outlets, sanitisation cabinets and an integrity laboratory in one entity	Positioned on the instrument nobody uses, in a trade defined by the instrument everybody does
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The commercial difficulty is exact and unusual: this plan must persuade a customer that the number he has been taught to trust is the wrong number. He has been shown the TDS meter at every counter he has ever used, it has always read low, and he has never been ill in a way he attributed to water. **SELLING AGAINST A REASSURING INSTRUMENT IS HARDER THAN SELLING AGAINST A COMPETITOR**, because the instrument is not lying and the competitor is not necessarily careless.

6. The Instrument Everyone Trusts Is Blind to the Hazard

This is the finding, and it is a fact about physics rather than about anybody's conduct.

At the counter	Raw water	Product water
What the meter shows	620 ppm	28 ppm
What it proves	—	Salts are being rejected
What it does not measure	—	Anything alive
Elements breached last year with the meter reading 28	—	19

Every RO counter in India has a TDS meter, and the demonstration is always the same: the shopkeeper dips it in raw water at six hundred and twenty parts per million, then in the product at twenty-eight, and hands the reading to the customer. The customer is convinced, **AND HE SHOULD BE CONVINCED OF EXACTLY ONE THING — THAT THE MEMBRANE IS REJECTING DISSOLVED SALTS**. TDS is conductivity. It measures ions. **BACTERIA ARE NOT IONS, AND NEITHER IS A BIOFILM**.

A reverse-osmosis element does not usually fail by losing its salt rejection. It fails physically: a micro-tear in the membrane sheet, a delaminated glue line, a failed brine seal, an O-ring that has taken a set. Each of those opens a path that organisms can cross and that dissolved salts barely notice — **SO THE ELEMENT GOES ON PRODUCING TWENTY-EIGHT PARTS PER MILLION WHILE PASSING WHAT IT WAS INSTALLED TO STOP**. And the second failure mode is downstream of the membrane altogether: biofilm in the storage tank, the post-carbon cartridge or the dispensing line, **WHICH CONTRIBUTES NOTHING TO CONDUCTIVITY BECAUSE IT IS NOT DISSOLVED IN ANYTHING**. **THE READING THAT REASSURES EVERYBODY IS PRODUCED BY THE ONE PART OF THE SYSTEM THAT IS STILL WORKING**.

What makes this different from an ordinary imperfect proxy is the direction of the error. A weak signal is one that sometimes misses. **THIS ONE ACTIVELY REPORTS SAFETY WHILE THE HAZARD DEVELOPS**, and it goes on doing so with complete accuracy about the thing it measures. **IT IS NOT WEAK EVIDENCE — IT IS REASSURANCE MANUFACTURED BY THE HAZARD ITSELF**. Nobody in this trade is deceiving anybody: the shopkeeper believes the meter, the customer believes the shopkeeper, the meter is accurate, and the water may be unsafe. There is not a dishonest party anywhere in that sequence.

So measure integrity, not conductivity. **EVERY ONE OF 216 MEMBRANE ELEMENTS IS TESTED MONTHLY — pressure decay, conductivity profiling vessel by vessel, and a permeate-side microbial swab — 2,592 tests a year at ₹1,698 each, AND THE RESULT IS POSTED AT THE OUTLET BESIDE THE TDS READING. 19 ELEMENTS**

WERE FOUND BREACHED IN YEAR 3 WHILE THEIR TDS WAS STILL WITHIN SPECIFICATION — nineteen membranes that every meter in the district would have declared fine. Every outlet is swabbed weekly downstream of the membrane and CLOSES AUTOMATICALLY ON A POSITIVE until it clears: 34 outlet-days lost. GENERAL RULE: WHERE THE ONLY INSTRUMENT ANYONE USES IS BLIND TO THE FAILURE THAT ACTUALLY HARMS PEOPLE, THE READING IS NOT WEAK EVIDENCE BUT REASSURANCE PRODUCED BY THE HAZARD ITSELF — SO MEASURE THE INTEGRITY OF THE BARRIER, NOT THE CONDUCTIVITY OF WHAT GETS THROUGH IT.

There is a second misreading of the same instrument, running in the opposite direction, and it is worth putting beside the first. The whole trade markets low TDS as proof of quality — lower is better, and an operator who can show 12 ppm feels he has beaten one showing 40. But reverse osmosis strips calcium and magnesium along with everything else, and BOTH IS 10500 AND IS 14543 SET A FLOOR UNDER DISSOLVED SOLIDS AS WELL AS A CEILING. SO THE NUMBER THE MARKET TREATS AS A SCORE TO BE MINIMISED HAS A LEVEL BELOW WHICH THE PRODUCT IS OUT OF SPECIFICATION — and an operator competing on how low he can drive it is competing towards a failure. **The same meter, misunderstood at both ends: blind to the hazard that matters and misread on the one thing it does measure.**

7. The Customer Brings the Last Handling Step Himself

The second thread is about the container, and it is the economics of the whole model.

In a refill transaction	Who controls it
Source water	The plant
Treatment	The plant
Storage and dispensing	The plant
The container it goes into	Nobody
Who is blamed if it goes wrong	The plant

The refill model is cheap for one reason: the customer supplies the packaging. That is the entire cost advantage over a sealed jar, and it is why a refill costs sixteen rupees where a branded jar costs fifty. BUT PACKAGING IS NOT ONLY A COST. IT IS THE LAST BARRIER — and in this model that barrier is a can of unknown history that arrives in a customer's hand, has often held something other than water, is rarely washed, and is frequently years old. THE THING THAT MAKES REFILL CHEAP AND THE THING THAT MAKES IT RISKY ARE THE SAME THING.

And the attribution runs entirely against the plant. A household that falls ill after refilling a can it has not washed in eight months blames the counter, because the counter is the only party in the transaction with a name. So an operator who invests in treatment carries the consequences of container hygiene he did not control and cannot observe — WHICH MEANS THE BETTER HIS WATER, THE LARGER THE SHARE OF HIS REMAINING RISK THAT SITS IN SOMEBODY ELSE'S KITCHEN.

So the container is brought inside the process. **Every container is inspected and sanitised at the counter — rinsed with product water, ozonated rinse in a cabinet — and one that has held anything but water is REFUSED, not cleaned: 164,000 refusals in Year 3. Customers who will not accept the step are offered a plant-owned sanitised can on deposit instead, and 505,000 refills a year are simply lost to those who want neither — ₹0.42**

crore of gross profit, which is the honest price of not filling a can we would not drink from.

8. Operations Plan (draw, treat, test, dispense)

- **Draw and treat.** Central plant on a sanctioned groundwater NOC; multimedia and carbon filtration, antiscalant dosing, reverse osmosis at 61.9% recovery, UV and ozonation; **43.0 million litres of reject recovered for washing, sanitation and municipal landscaping rather than discharged.**
- **Remineralise.** Product water dosed back to a target mineral profile, because RO strips calcium and magnesium along with everything else and **very low TDS is a specification failure, not an achievement.**
- **Test integrity.** Every element pressure-decay tested monthly, conductivity profiled vessel by vessel, and swabbed on the permeate side; a breached element is replaced before the outlet reopens.
- **Swab weekly.** Post-membrane microbiology at every outlet; a positive closes that outlet automatically in the dispensing system until a clear result is recorded.
- **Sanitise the container.** Inspection, product-water rinse and an ozonated cabinet cycle at the counter; containers that have held anything else are refused outright.

Step	What is recorded	Who sees it
Element test	Pressure decay, conductivity profile, permeate swab	Posted at the outlet
Outlet swab	Weekly result, pass or positive	Posted, with the date
Positive result	Automatic closure in the dispensing system	Nobody can override
Container	Inspected, sanitised, or refused with the reason	The customer, at the counter
Remineralisation	Product TDS against the specified floor	Posted beside the raw reading

The operational hinge is an outlet whose Tuesday-morning swab comes back positive for coliform, in the peak of summer, serving about 340 customers a day — where the TDS at that counter has read 28 that morning and every morning for a month. The money at stake is trivial: three days closed, 1,020 refills, ₹0.16 lakh. THE DIFFICULTY IS ENTIRELY THE CONVERSATION — a queue of people looking at a meter that reads 28, being told the water is not safe, by a business whose competitor down the road is showing them the same number and staying open. That is why the closure is automatic in the dispensing system: the cost of this rule is never money, it is somebody having to say it out loud.

9. FSSAI, Groundwater & Water-Quality Compliance (India)

Area	Requirement
Food safety	FSSAI licence for water dispensing and packing operations; hygiene requirements; complaint and recall procedures
Quality standards	IS 10500 for drinking water and IS 14543 where water is packed; both specify microbiological limits alongside chemical ones, AND BOTH SET A MINIMUM AS WELL AS A MAXIMUM ON DISSOLVED SOLIDS — very low TDS is out of specification, not superior
Groundwater	Central Ground Water Authority NOC with conditions on quantity, recharge and reporting; in a notified or over-exploited block this is the binding constraint on the network's size

Effluent	State pollution board consents; 43.0 million litres a year of RO reject is a substantial discharge stream at this recovery rate
Municipal agreements	Site licences and tariff conditions for water-ATM operation; uptime and quality obligations under the contract
Measures and labelling	Legal Metrology for dispensed quantity and displayed tariff; display obligations at the counter
Labour and tax	Shops and Establishments, EPF, ESI, Minimum Wages; fully taxable business income; GST on water and services

What the law reaches	What it does not
The quality of water at the point of dispensing	The condition of the container it enters
Periodic testing obligations	Whether the membrane is physically intact between tests
Minimum and maximum dissolved solids	The market's belief that lower is always better
Groundwater extraction and effluent	The unlicensed operator two streets away

The standards themselves are not the problem and are in fact rather good — IS 10500 specifies microbiology explicitly and IS 14543 sets a FLOOR under dissolved solids as well as a ceiling. What no standard can do is make anybody measure the right thing between inspections, and what no standard reaches at all is the can the water is poured into.

10. Organisation & Manpower Plan

Function	Yr 1	Yr 3	Note
Managing director	1	1	Cannot reopen a closed outlet
Outlet staff: dispensing, inspection, sanitisation	44	67	Derived, not assumed: 28 outlets × 2.4 per outlet
Delivery crew and route	22	34	0.60m can deliveries
Central plant operations	13	18	113.0m litres drawn
Membrane integrity and microbiology laboratory	7	12	2,592 element tests, 1,456 outlet swabs
Maintenance and membrane service	9	14	216 elements
Institutional sales and service	6	9	—
Finance, admin and HR	6	8	—
Total	108	163	3.50m units; 28 outlets; 216 elements

The 12 people in the integrity and microbiology laboratory are the commitment made flesh. Their salaries are **₹0.32 crore — ₹2.67 lakh average CTC across 12** — and **₹0.48 crore** covers media, swabs, pressure-decay equipment and the outlet closures. **An element test costs ₹1,698 across 2,592 tests a year, and the whole apparatus of integrity testing, weekly swabbing and container sanitisation costs ₹3.37 per 20-litre unit dispensed.**

11. Implementation Timeline & Milestones

Phase	Months	Milestone
Approvals and finance	0-6	Groundwater NOC, pollution board consents, FSSAI, term loan; municipal ATM agreements
Central plant	3-11	Filtration, RO skid, UV, ozonation, remineralisation, reject recovery and storage
Integrity laboratory and closure lock	5-10	Pressure-decay rig, microbiology and the automatic outlet closure live BEFORE the first outlet opens
Outlet rollout	8-26	10 → 28 outlets, each with a sanitisation cabinet from day one
Can pool and delivery	10-22	Plant-owned sanitised cans on deposit; route build
Operator service launch	14-24	Integrity testing and AMC sold to other RO plants

Milestone that must not slip	Why
Closure lock before the first outlet opens	An outlet that has once dispensed on a positive result has established that it can, and every summer Tuesday afterwards argues from that precedent
Sanitisation cabinet with the outlet, not after	Customers accept a step that was always there and resent one added later; retrofitting the habit is far harder than starting with it
Remineralisation from the first litre	A network that markets ultra-low TDS for a year cannot then explain a floor without appearing to retreat
Reject recovery before the NOC review	An extraction NOC is renewed on what was done with what was drawn

12. Financial Plan (Illustrative)

All figures are illustrative model assumptions in Indian rupees, not forecasts or guarantees. Drivers are shown so every number can be changed.

12.1 Revenue build (₹ lakh)

Stream	Yr 1	Yr 2	Yr 3	Share	GM
Counter refill into a sanitised customer container	136	172	208	26.0%	58.0%
Plant-owned sanitised cans on deposit, delivered	142	192	240	30.0%	52.0%
Institutional and commercial supply	86	116	144	18.0%	46.0%
Membrane integrity testing, AMC and training	52	74	96	12.0%	56.0%
Water-ATM operation on municipal and CSR contracts	56	64	72	9.0%	38.0%
Consumables to the operator network	28	32	40	5.0%	32.0%
Total	500	650	800	100%	50.7%

The plant-owned can line is larger than the counter refill line, and that is the strategic point rather than an accident. It is the version of this business in which the container is inside the process instead of outside it — better margin, no refusals, no argument at the counter — and every customer moved from refill to can is a customer whose remaining risk the business actually controls.

12.2 What is committed, and what it is measured on

Commitment	Yr 1	Yr 3
Elements integrity-tested monthly / tests performed	41% / 1,062	100% of 216 / 2,592
Elements found breached while TDS still read within specification	6	19
Outlets swabbed weekly post-membrane / outlet-days closed on a positive	44% / 11	100% / 34
Containers inspected and sanitised at the counter / containers refused	51% / 62,000	100% / 164,000
Refills forgone where the customer declined sanitisation / gross profit forgone	190,000 / ₹0.16cr	505,000 / ₹0.42cr
Integrity result posted at the outlet beside the TDS reading	no	yes

Row two is the entire argument and it needs no interpretation. Nineteen membrane elements were passing organisms while reading within specification on the instrument the whole trade uses. Not one of those nineteen would have been found by any competitor in the district, because not one of them owns anything that could look.

12.3 Profit & loss (₹ lakh)

Line	Yr 1	Yr 2	Yr 3
Revenue	500	650	800
Cost of goods (water, power, membranes, media, cans, delivery)	(248)	(321)	(394)
Gross profit	252	329	406
Membrane integrity testing and posting the result	(26)	(34)	(44)
Weekly outlet microbiology and automatic closures	(20)	(28)	(36)
Container inspection, sanitisation and refusal	(22)	(30)	(38)
Outlet operations and rent	(40)	(48)	(58)
Delivery fleet and route	(28)	(36)	(44)
Plant, utilities and maintenance	(26)	(30)	(36)
Selling and administration	(24)	(27)	(32)
EBITDA	66	96	118
Depreciation and amortisation	(34)	(40)	(46)
Finance cost	(20)	(24)	(26)
Other income (reject water, scrap, misc)	4	6	8
PBT	16	38	54

Tax (fully taxable business income, ~25%)	(4)	(10)	(14)
PAT	12	28	40
Net margin	2.4%	4.3%	5.0%
ROCE on ₹4.00cr	8.0%	14.0%	18.0%

12.4 Project cost & funding (₹ lakh)

Use of funds	₹L	%	Source of funds	₹L
Central RO plant: filtration, RO skid, UV, ozonation, remineralisation	120	30%	Promoter equity	144
28 refill outlets: dispensing units, plumbing, fit-out	92	23%	Term loan	160
Container sanitisation cabinets at every outlet	60	15%	Municipal / CSR support for ATM sites	56
Membrane integrity rig and microbiology laboratory	48	12%	Working capital limit	40
Delivery fleet and plant-owned can pool	44	11%	—	—
Borewell, storage, reject recovery and utilities	20	5%	—	—
Working capital margin and pre-operative	16	4%	—	—
Total	400	100%	Total	400

The sanitisation cabinets and the integrity laboratory are 27% of the project cost between them, and neither produces a litre of water. A competitor building the same network without them spends ₹1.08 crore less and dispenses exactly as much — WHICH IS THE CAPITAL EXPRESSION OF THE SAME PROBLEM THE TDS METER CREATES.

12.5 Sensitivities (₹ crore PAT, Year 3)

Scenario	What changes	PAT
Base case as planned	As above	₹0.40cr
Trade-standard practice instead	Fill any container presented (+₹0.42cr), run more outlets and the low-tariff tier without integrity or closure constraints (+₹0.52cr), cut tank and cartridge sanitisation and extend consumable life (+₹0.26cr), skip reject recovery and buy generic membranes (+₹0.36cr), close the integrity laboratory and the closure protocol (+₹1.18cr), and lose the testing service that depends on them (−₹0.96cr revenue): revenue ₹7.93cr at 64.1% gross margin	₹2.07cr
Groundwater extraction restricted	Volume down 25% with unabsorbed outlet and plant cost, ₹1.04cr	(₹0.38cr)
A contamination event traced to the network	Closures pending investigation, lost institutional contracts and legal cost, ₹0.94cr. THE PLAN EXISTS TO MAKE THIS LESS LIKELY AND CANNOT MAKE IT IMPOSSIBLE	(₹0.30cr)
Power and membrane cost +15%	₹0.32cr on the two largest variable costs	₹0.17cr

Municipal ATM contract not renewed	₹0.36cr including unabsorbed outlet cost	₹0.14cr
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Trade-standard practice earns ₹2.07 crore against ₹0.40 crore — more than five times — and the customer experience is identical in every observable respect. Same water to look at, same meter, same price, same queue. THE ENTIRE DIFFERENCE IS A NINETEEN-ELEMENT FINDING NOBODY ELSE CAN MAKE AND A CONVERSATION AT THE COUNTER NOBODY ELSE HAS TO HAVE.

12.6 Volumes and unit economics (Year 3)

Physical driver	Volume	Realisation	Revenue
Counter refills	1.30m	₹16	₹208L
Plant-owned can deliveries	0.60m	₹40	₹240L
Institutional units	0.40m	₹36	₹144L
Water-ATM dispenses	1.20m	₹6	₹72L
Testing service and consumables	—	—	₹136L
Total 20-litre units	3.50m	₹22.86 blended	₹800L

Derived figure	Working	Result
Water balance	113.0m litres drawn, 70.0m dispensed, 43.0m recovered as reject	61.9% recovery
Cost of one element integrity test	₹0.44cr over 2,592 tests (216 elements, monthly)	₹1,698
Outlet swabs	28 outlets, weekly, 52 weeks	1,456 swabs
Commitment per 20-litre unit	₹1.18cr over 3.50m units	₹3.37, or 14.7% of realisation
Refills forgone on the sanitisation step	505,000 at ₹16 and a 52% marginal margin	₹0.42cr
Outlet staff	28 outlets × 2.4 per outlet	67

₹3.37 on a unit that sells for ₹22.86 is the number a competitor does not spend, and it is 14.7% of the price. In a trade where the customer chooses on price and distance and is shown a reassuring meter at every door, that is a very large fraction of the decision to be spending on something he cannot see.

Where the ₹1.60 crore of commitments goes	₹cr	Could a competitor tell?
Membrane integrity testing and posting the result	0.44	No. Nothing about the water looks different
Refills forgone where the customer declined sanitisation	0.42	Yes — those customers are visibly at his counter instead
Container inspection, sanitisation and refusal	0.38	Only as a slower queue
Weekly outlet microbiology and automatic closures	0.36	Yes — as a closed shutter on a summer Tuesday

Two of these four lines are invisible and two are visibly worse than a competitor's offering. A closed outlet and a refused container are the only parts of this programme a customer ever perceives, AND BOTH OF THEM LOOK LIKE FAILINGS RATHER THAN STANDARDS. That is the peculiar cruelty of safety work in a trade with no observable quality: the only evidence the customer gets that you are doing it is the inconvenience it causes him.

13. Funding Requirement & Bankability

Item	Position
Requirement	₹4.00cr: ₹1.44cr promoter equity, ₹1.60cr term loan, ₹0.56cr municipal and CSR support for ATM sites, ₹0.40cr working capital limit
Security	Plant, outlets, laboratory, sanitisation cabinets, fleet and can pool; hypothecation of stock and receivables; personal guarantee of the promoter
Debt service	Year 3 EBITDA ₹1.18cr against interest ₹0.26cr and scheduled repayment; DSCR above 1.7x from Year 3
The groundwater question comes first	An extraction NOC in a notified block caps the network's size and is renewable rather than permanent. A lender should establish the block's status before assessing the outlet plan, because the outlet plan is downstream of it
Contract dependence	Municipal ATM revenue is 9% of turnover on renewable agreements; the plan does not assume renewal beyond the current term
What a lender should test	Not the TDS logs — every operator has good ones. Ask for the breached-element register. A network that finds nineteen breaches a year is looking; a network that finds none owns no instrument that could

Year	EBITDA	Interest	Repayment	DSCR
Year 1	₹0.66cr	₹0.20cr	Moratorium	—
Year 2	₹0.96cr	₹0.24cr	₹0.32cr	1.71x
Year 3	₹1.18cr	₹0.26cr	₹0.42cr	1.74x

14. Risk Analysis & Mitigation

Risk	Impact	Mitigation
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The instrument everyone trusts is blind to the hazard	Every RO counter in India runs on a TDS meter, and TDS is conductivity — it measures ions, and BACTERIA ARE NOT IONS. An element rarely fails by losing salt rejection; it fails physically — a micro-tear, a delaminated glue line, a failed brine seal — and each of those passes organisms while still producing 28 ppm. Biofilm downstream of the membrane contributes nothing to conductivity at all. SO THE READING THAT REASSURES EVERYBODY IS PRODUCED BY THE ONE PART OF THE SYSTEM THAT IS STILL WORKING. IT IS NOT WEAK EVIDENCE — IT IS REASSURANCE MANUFACTURED BY THE HAZARD ITSELF, and there is not a dishonest party anywhere in the sequence	MEASURE THE BARRIER, NOT WHAT GETS THROUGH IT. All 216 elements pressure-decay tested monthly, conductivity profiled by vessel and swabbed on the permeate side — 2,592 tests a year at ₹1,698 each — WITH THE RESULT POSTED AT THE OUTLET BESIDE THE TDS READING. 19 ELEMENTS FOUND BREACHED WHILE TDS STILL READ WITHIN SPECIFICATION, none of which any competitor could have found. Weekly post-membrane swabs at every outlet, with AUTOMATIC CLOSURE ON A POSITIVE that nobody can override — 34 outlet-days lost. GENERAL RULE: WHERE THE ONLY INSTRUMENT ANYONE USES IS BLIND TO THE FAILURE THAT ACTUALLY HARMS PEOPLE, THE READING IS NOT WEAK EVIDENCE BUT REASSURANCE PRODUCED BY THE HAZARD ITSELF — SO MEASURE THE INTEGRITY OF THE BARRIER
The customer brings the last handling step himself	The refill model is cheap because the customer supplies the packaging — that is the whole cost advantage over a sealed jar. BUT PACKAGING IS ALSO THE LAST BARRIER, and here it is a can of unknown history that has often held something else and is rarely washed. THE THING THAT MAKES REFILL CHEAP AND THE THING THAT MAKES IT RISKY ARE THE SAME THING. And attribution runs entirely against the plant: a household blames the counter, because the counter is the only party in the transaction with a name	Bring the container inside the process: inspection, product-water rinse and an ozonated cabinet at every counter, and a container that has held anything but water is REFUSED rather than cleaned — 164,000 refusals. Customers who will not accept the step are offered a plant-owned sanitised can on deposit, which is why that line is the largest in the book. 505,000 refills a year are lost to those who want neither, at ₹0.42cr — the honest price of not filling a can we would not drink from
A contamination event	Closures pending investigation, lost institutional contracts and legal cost — ₹0.94cr and a ₹0.30cr loss, and in a network business the reputational damage crosses all 28 outlets at once	The integrity and swab programme itself; automatic closure limits exposure to days rather than weeks; every outlet traceable to element, batch and date; product liability cover; a rehearsed rather than filed recall procedure
Groundwater restriction	The binding constraint on network size. A 25% volume cap is ₹1.04cr and a ₹0.38cr loss, and in a notified block the NOC is renewable rather than permanent	43.0m litres of reject recovered for washing, sanitation and municipal landscaping rather than discharged; recharge structures reported; the water balance published; outlet expansion planned against sanctioned quantity rather than demand
Municipal contract dependence	9% of turnover on renewable agreements with tariff and uptime conditions; non-renewal is ₹0.36cr	Five revenue lines with only one contract-dependent; institutional supply and the testing service are unrelated to municipal tariffs
Power and membrane cost	The two largest variable costs; +15% is ₹0.32cr	Solar at the central plant; element life extended by the integrity programme rather than shortened by it; consumables bought for the operator network at scale
Price competition	An operator with a TDS meter and no laboratory undercuts permanently and looks identical	Institutional buyers who ask for evidence; the posted integrity result; the plant-owned can tier where the comparison is not price alone

15. SWOT Analysis

Strengths	Weaknesses
Central plant, 28 outlets, sanitisation cabinets and an integrity laboratory in one entity, which is the only configuration in which monthly testing across 216 elements is affordable; automatic closure nobody can override; a plant-owned can tier that puts the container inside the process; an integrity service saleable to a district full of operators who own no instrument	5.0% net margin on a low-ticket business; the commitment costs ₹1.60cr against ₹0.40cr of PAT; 27% of project cost produces no water; groundwater NOC caps the network and is outside the company's control; the customer cannot perceive what he is paying for
Opportunities	Threats
Institutional and school contracts increasingly ask for microbiological evidence and nobody can supply it; hundreds of small RO operators need integrity testing and have no access; the plant-owned can tier is a route out of the container problem entirely; remineralisation is a genuine differentiator once explained	Unmonitored operators undercutting permanently; groundwater restriction; a contamination event whatever the discipline; power and membrane cycles; and the permanent difficulty that the customer has been taught to trust a meter that cannot see the hazard

The honest reading is that this plan is arguing with an instrument rather than with a competitor, and instruments are much harder to argue with. The TDS meter is accurate, cheap, instant and visible, and everything this plan measures is slow, invisible and has to be explained. That asymmetry is the business risk, and no amount of being right about the physics removes it.

16. Recommended AiSevak Tools for This Business

- **Business plan and project report generator** — for the term loan file and municipal or CSR ATM proposals.
- **Compliance calendar** — FSSAI renewal, groundwater NOC reporting, pollution board consents, Legal Metrology verification, EPF and ESI.
- **Cost and pricing calculator** — cost per 20-litre unit by channel, the water balance, membrane life and the cost of an outlet-day closed.
- **GST and invoicing helper** — water and service rates, institutional billing, AMC contracts, municipal invoicing.
- **Labour and payroll toolkit** — outlet rosters, Shops and Establishments registers, EPF and ESI.
- **Loan and subsidy application helper** — municipal and CSR support for ATM sites and the working capital assessment across a seasonal demand curve.
- **Contract and terms drafting helper** — can deposit terms, institutional supply agreements with posted-result conditions, and AMC contracts for the operator network.

Every tool above is **free to use on AiSevak and needs no signup to explore**. The toolkit link at the end of this plan opens the whole water set.

17. Key Assumptions & Notes

- **All financials are illustrative model assumptions, not forecasts, projections or guarantees.** Revenue, volumes, tariffs, recovery, breach rates and refusal rates are editable inputs; outcomes depend on groundwater status, municipal contracts, competition and input costs. Figures are in Indian rupees. **This plan is the second in vertical 56 and inherits its ten anchor rules (a)-(j).**

- **The central finding is that the only instrument anybody in this trade uses is a TDS meter, and it measures the one thing a failing membrane still gets right.** TDS is conductivity; it measures dissolved ions; **bacteria are not ions and neither is a biofilm.**
- **An RO element rarely fails by losing salt rejection — it fails physically.** A micro-tear, a delaminated glue line, a failed brine seal or an O-ring that has taken a set each opens a path organisms can cross and dissolved salts barely notice, **so the element goes on producing 28 ppm while passing what it was installed to stop.** And biofilm downstream of the membrane contributes nothing to conductivity because it is not dissolved in anything.
- **What makes this different from an ordinary imperfect proxy is the direction of the error.** A weak signal sometimes misses; **this one actively reports safety while the hazard develops, with complete accuracy about the thing it measures. IT IS REASSURANCE MANUFACTURED BY THE HAZARD ITSELF, and there is not a dishonest party anywhere in the sequence. GENERAL RULE: WHERE THE ONLY INSTRUMENT ANYONE USES IS BLIND TO THE FAILURE THAT ACTUALLY HARMS PEOPLE, THE READING IS NOT WEAK EVIDENCE BUT REASSURANCE PRODUCED BY THE HAZARD ITSELF — SO MEASURE THE INTEGRITY OF THE BARRIER, NOT THE CONDUCTIVITY OF WHAT GETS THROUGH IT.**
- **19 elements were found breached in Year 3 while their TDS still read within specification.** 216 elements tested monthly, 2,592 tests at ₹1,698 each, with the result posted at the outlet beside the TDS reading; weekly post-membrane swabs and automatic closure on a positive, at 34 outlet-days lost. **Not one of those nineteen would have been found by any competitor in the district, because not one of them owns anything that could look.**
- **The second thread is that the customer brings the last handling step himself.** The refill model is cheap because he supplies the packaging — **and packaging is also the last barrier, so the thing that makes refill cheap and the thing that makes it risky are the same thing.** Attribution runs against the plant because the counter is the only party with a name. Containers are inspected and sanitised or refused (164,000 refusals), and 505,000 refills are lost at ₹0.42cr to customers who want neither that step nor a plant-owned can.
- **Volumes and unit economics.** 113.0m litres drawn and 70.0m dispensed at 61.9% recovery in 3.50m 20-litre units: 1.30m counter refills at ₹16, 0.60m can deliveries at ₹40, 0.40m institutional at ₹36, 1.20m ATM dispenses at ₹6. The commitment costs ₹3.37 per unit, or 14.7% of a ₹22.86 blended realisation. Outlet headcount is derived, not assumed: $28 \times 2.4 = 67$. **Note also that RO strips calcium and magnesium, so product water is remineralised to a specified floor — very low TDS is a specification failure and not an achievement, which is the same instrument misunderstood in the other direction.**
- **Compliance and professional advice.** FSSAI licensing for dispensing and packing; **IS 10500 and IS 14543, both of which specify microbiological limits alongside chemical ones and BOTH OF WHICH SET A MINIMUM AS WELL AS A MAXIMUM ON DISSOLVED SOLIDS; Central Ground Water Authority NOC, which in a notified or over-exploited block caps the network's size and is renewable rather than permanent;** state pollution board consents, under which **43.0 million litres a year of RO reject is a substantial discharge stream at this recovery rate;** municipal site licences and tariff conditions for ATM operation; Legal Metrology for dispensed quantity and displayed tariff; Shops and Establishments, EPF, ESI and Minimum Wages; GST. **No standard reaches the container the water is poured into, and none can require anybody to measure membrane integrity between inspections.** Professional advice should be taken on groundwater block status before siting, municipal contract terms, product liability cover, and the consumer-law standing of a posted integrity result.

► **Use these tools now — free on AiSevak**

Every tool referenced in this plan is available on aisevak.in. Open the [Water Supply, Treatment and Solutions toolkit](https://aisevak.in/verticals/water) to browse and use them all at <https://aisevak.in/verticals/water> — or go straight to any specific tool at <https://aisevak.in/service/<tool-name>>. No signup needed to explore; each tool guides you step by step.

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