



BUSINESS PLAN · INDIA

Drone Services and Solutions

The client buys a number and receives a picture, so publish the error and not the model

AVIATION AND AEROSPACE SERVICES

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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 a **Drone Services and Solutions** business across a state cluster — survey, mapping and volumetrics; infrastructure inspection; agricultural spraying; a processing and analytics bureau; and remote-pilot training. By Year 3 it flies **2,580 hours on 9 airframes**, surveys **15,000 hectares**, inspects **4,500 kilometres**, sprays **30,000 acres**, and sells **₹9.00 crore**.

This plan opens vertical 57 and is its anchor: the ten aviation rules (a)-(j) set out in §17 are inherited by every other plan in this vertical.

Item	Detail	Year 3
What is sold	Survey, mapping and volumetrics for mining, construction and land; power-line, tower, solar and bridge inspection; agricultural spraying; processing and analytics for other operators; RPC training; equipment and AMC	₹9.00cr
Flight hours / fleet / pilots	825 survey, 405 inspection, 1,350 spray	2,580; 9; 9
PAT / net margin	Asset-light, skill-heavy, fast-depreciating fleet	₹0.53cr / 5.9%
ROCE on ₹2.80cr	Fleet, survey-grade GNSS, processing, field kit	32.9%
Median RMSE published on every survey deliverable	Horizontal / vertical, against withheld check points	31 mm / 46 mm
Third-party surveys re-checked and found out by more than 5%	Not one carried a stated accuracy	68 of 96

□ **THE CLIENT BUYS A NUMBER AND RECEIVES A PICTURE.** He commissions a volume, an area, a level or a defect list; what the aircraft produces is imagery, and the number comes out of photogrammetric processing whose accuracy depends entirely on things invisible in the deliverable — ground control density and placement, GNSS method, overlap, altitude, camera calibration, processing settings. **TWO SURVEYS OF THE SAME STOCKPILE CAN DIFFER BY A TENTH AND BOTH ARRIVE AS A HANDSOME 3D MODEL WITH A CONFIDENT NUMBER PRINTED UNDER IT.**

And it is worse than merely unverifiable, because the relationship runs backwards. Ground control points are physical targets that must be laid, surveyed and left in the imagery — SO SKIPPING THEM MAKES THE MODEL PRETTIER AND THE NUMBER WORSE. THE APPEARANCE OF THE DELIVERABLE IS NOT MERELY UNCORRELATED WITH ITS ACCURACY; IT IS MILDLY NEGATIVELY CORRELATED.

2. Business Description, Vision & Legal Structure

A private limited company holding DGCA remote-pilot and operator credentials, operating survey, inspection and spray fleets with its own survey control, photogrammetry and agronomy capability.

Element	Position
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Legal form	Private limited company; UIN and type-certified airframes under the Drone Rules; Remote Pilot Certificates for every pilot; Digital Sky registration; CIB&RC compliance for spray operations; third-party liability insurance
Where the money is made	Survey, inspection and the processing bureau carry the margin; spraying carries volume and the hardest regulatory problem in the business
What is different	Every survey ships with a measured error, and no spray flies on a label that does not contemplate the aircraft
Vision	A drone company whose deliverable states how wrong it might be

Why this shape	Reasoning
Independent check points on every survey	Points surveyed and then WITHHELD from the processing are the only way to measure error rather than assert it. It is ordinary practice in surveying and almost unknown in Indian drone services
Dose-based spray protocol	Drone application uses about a fifteenth of the carrier volume a knapsack does, and the label was written for the knapsack. Somebody has to reconcile that, and at present nobody does
Processing bureau sold outward	The photogrammetry capability is idle between our own jobs and no small operator can afford it
Training and certification	The constraint on this industry is competent remote pilots, and training them is both revenue and recruitment

3. Promoter & Ownership

Item	Position
Promoter	Licensed surveyor turned remote pilot, twelve years in geospatial work; spent three of them re-flying other people's stockpile surveys and discovering how far out they were
Promoter equity	₹1.01cr of the ₹2.80cr project cost (36%), unsecured and not withdrawable during the loan term
Ownership	Promoter family 74%; ESOP and key staff 18%; angel investor 8%
Governance	No survey deliverable leaves the office without a check-point residual table, and the processing system will not export a report with the check-point field empty. Occurrence reporting is non-punitive and sits outside the performance-review line entirely

The reporting separation is anchor rule (g) and it earns its place immediately. **A drone business generates near-misses constantly — a battery sag, a link drop, a bird, a person walking under the flight line — and every one of them is information. THE MOMENT A PILOT BELIEVES A REPORT WILL APPEAR IN HIS APPRAISAL, THE REPORTS STOP AND THE EVENTS DO NOT.**

4. Market Analysis — India

Segment	What drives it	Position taken
Survey, mapping and volumetrics	Mining stock reconciliation, construction earthwork, land records and cadastral work; the segment where an actual number is being bought	15,000 ha at ₹1,800

Infrastructure inspection	Transmission lines, telecom towers, solar farms, bridges; replaces rope access and reduces outage time	4,500 km at ₹4,400
Agricultural spraying	Labour scarcity, terrain, speed of coverage, and a strong policy push; growing very fast and regulated in a way the technology has outrun	30,000 acres at ₹600
Processing and analytics bureau	Small operators can fly and cannot process; the bottleneck in this industry is not the aircraft	1,200 projects at ₹9,000
Training and equipment	Remote Pilot Certificates, type training, and the equipment and AMC that follow	180 candidates at ₹45,000

What decides a survey's accuracy, and what the client can see

Factor	Decides accuracy?	Visible in the deliverable?
Ground control point density and placement	Yes, heavily	Only as targets in the imagery
GNSS method: RTK, PPK or standalone	Yes	No
Flight altitude and image overlap	Yes	No
Camera calibration and processing settings	Yes	No
How smooth and dense the model looks	No	Completely

Indian drone services grew very fast on a genuinely good regulatory reform — **the Drone Rules simplified certification, opened green-zone flying to 400 feet without permission, and brought several thousand operators into the market in a few years. THE MARKET IT CREATED BUYS ON PRICE AND HAS NO MEANS WHATEVER OF COMPARING QUALITY, WHICH IS THE CONDITION UNDER WHICH THE CHEAPEST METHOD BECOMES THE STANDARD METHOD.**

5. Competition & Position

Competitor type	What they do well	Where the gap is
Independent drone operators	Cheap, mobile, quick to mobilise, and genuinely skilled at flying	No survey control, no check points, no stated accuracy; the deliverable looks identical to ours and costs 44% less
Surveying and geospatial firms	Real control discipline, instruments, and a professional standard of practice	Slower to adopt aerial workflows; often subcontract the flying to the operators above
Drone manufacturers' service arms	Equipment, financing, brand and national reach	Configured to sell airframes; services exist to demonstrate the product
Agri-input companies and FPOs	Own the farmer relationship and the product being sprayed	Spray as a service attached to a sale; label and dose questions sit with nobody
This business	Survey control, published error, dose-based spray protocol and a processing bureau	Positioned on a quality difference the buyer has no instrument to detect

The competitive position is uncomfortable and should be stated as such. A client comparing our ₹34,000 stockpile survey with a ₹19,000 one is comparing two documents that look the same, and one of them costs 79% more. WE ARE ASKING HIM TO PAY FOR A PROPERTY OF THE NUMBER RATHER THAN A PROPERTY OF THE

6. The Client Buys a Number and Receives a Picture

This is the finding, and it concerns a deliverable whose appearance carries no information about its correctness.

What was ordered	What arrives
A stockpile volume	A 3D model with a figure
An earthwork quantity	A surface with a figure
A plot area or boundary	An orthomosaic with a figure
A defect list	Images with annotations
How wrong any of it might be	Not stated anywhere

A client commissions a number: a volume for stock reconciliation, a quantity for an interim payment certificate, an area for a land transaction, a defect list for a maintenance plan. What the aircraft produces is photographs. The number is manufactured afterwards by photogrammetric processing, and its accuracy depends almost entirely on decisions that leave no trace in the thing delivered — how many ground control points were laid and where, whether the positioning was RTK, PPK or standalone, the flight altitude, the image overlap, the camera calibration, the processing parameters. TWO SURVEYS OF ONE STOCKPILE CAN DIFFER BY A TENTH, AND BOTH ARRIVE AS A CONFIDENT MODEL WITH A CONFIDENT NUMBER UNDER IT.

And the relationship between appearance and accuracy is not merely absent — it runs slightly backwards. Ground control points are physical black-and-white targets that must be carried out, laid, surveyed with a rover or total station, and left in place through the flight, which means they appear in the imagery. **SKIPPING THEM SAVES HALF A DAY, REMOVES THE TARGETS FROM THE ORTHOMOSAIC, AND PRODUCES A CLEANER-LOOKING PRODUCT WITH A WORSE NUMBER IN IT.** The client who prefers the tidier deliverable is selecting, without any way of knowing, for the less accurate one.

Nobody in this is behaving badly, which is why it persists. The operator quoting ₹19,000 is not lying; he has never been asked for an accuracy figure and has no obligation to produce one. The client is not careless; he has no instrument, no standard to cite and no second survey to compare against. **THE ONLY WAY HE COULD DISCOVER THE ERROR IS TO COMMISSION A PROPERLY CONTROLLED SURVEY — WHICH IS PRECISELY THE PURCHASE HE DECLINED TO MAKE.**

So the remedy is to make the error a delivered quantity. **EVERY SURVEY IS FLOWN WITH GROUND CONTROL AND WITH INDEPENDENT CHECK POINTS — points surveyed to the same standard and then WITHHELD FROM THE PROCESSING, so that the residual between their known and computed positions is a measurement of error rather than a claim about it.** Every deliverable ships with a check-point residual table and a stated RMSE: median 31 mm horizontal and 46 mm vertical, and the processing system will not export a report with that field empty. We also re-checked 96 third-party surveys and found 68 out by more than five per cent on volume — not one of which carried a stated accuracy of any kind. **GENERAL RULE: WHERE THE DELIVERABLE IS A PICTURE AND THE PRODUCT IS A NUMBER, APPEARANCE IS EVIDENCE OF NOTHING — SO PUBLISH THE ERROR, NOT THE MODEL.**

7. The Label Was Written for a Knapsack

The second thread is an instruction that became incoherent when the technology changed underneath it.

Applying one acre	Knapsack or boom	Drone
Water carrier volume	150–200 litres	8–12 litres
Pesticide dose required	Identical	Identical
Tank concentration	As labelled	About 15× higher
What the label instructs	"X ml per litre of water"	Meaningless

A drone applies a fraction of the carrier volume that a knapsack or boom sprayer does — roughly eight to twelve litres an acre against a hundred and fifty to two hundred. The pesticide dose per acre must be exactly the same. Which means the tank concentration is about fifteen times higher — and every pesticide label in India is written as a dilution: so many millilitres per litre of water. FOLLOW THE LABEL WITH A DRONE AND YOU APPLY A FIFTEENTH OF THE DOSE. FOLLOW THE DOSE AND YOU ARE MIXING AT A CONCENTRATION THE LABEL NEVER CONTEMPLATED.

The regulator has begun to close this — CIB&RC has issued standard operating procedures for drone application and approved drone-specific labels for a growing but still limited set of formulations. THE GREAT MAJORITY OF WHAT IS SPRAYED BY DRONE IN INDIA TODAY HAS NO DRONE LABEL AT ALL, and the operator in the field is therefore choosing between two instructions that used to be the same instruction. He is not equipped to make that choice, he is paid by the acre to make it quickly, and whichever way he goes there is no document that says he was right.

So the protocol is written down and the refusals are counted. A spray flies only on a formulation carrying a CIB&RC drone label, or under a written dose-based deviation stating grams of active ingredient per acre and signed by our agronomist — 38% → 100% of jobs. Tank mixes are calculated from dose per acre rather than from the bottle, and deposition is verified on water-sensitive cards at ₹340 a job. 212 jobs covering 6,400 acres were declined in Year 3 because the product had no drone label and the client would not accept a dose-based deviation — ₹0.38 crore of revenue, in the fastest-growing segment this business has.

8. Operations Plan (plan, control, fly, process, publish)

- **Plan.** Airspace check on Digital Sky, zone status, permissions where required, and a site risk assessment covering third parties on the ground rather than only the client's boundary.
- **Control.** Ground control points laid and surveyed for every mapping job, plus independent check points withheld from processing; base station logged for PPK.
- **Fly.** Altitude, overlap and pattern set by the required tolerance rather than by habit; batteries logged by cycle; occurrence report filed on anything unexpected, without consequence.
- **Process.** Bundle adjustment, check-point residuals computed, RMSE stated; the export is blocked if the residual table is empty.
- **Publish.** Deliverable ships with the accuracy statement, the control diagram and the method — and where the client's tolerance is looser than his brief implied, the next job is quoted down.

Step	What is recorded	Why
Airspace and site	Zone, permission, third-party exposure	Anchor rule (e): risk is on the ground
Control	GCPs laid; check points withheld	₹253/ha, 14.1% of the survey rate
Processing	Check-point residuals; RMSE	31 mm / 46 mm median; export blocked without it
Spray	Drone label or signed dose deviation; deposition card	₹340 a job; 212 declined
Occurrence	Anything unexpected, non-punitive	Outside the appraisal line entirely

The operational hinge is a monthly stockpile volumetric for an aggregate quarry. Our quote is ₹34,000 and includes eleven ground control points and five withheld check points. The competitor quotes ₹19,000, RTK only, no control on the ground. Both deliver a 3D model, and HIS LOOKS BETTER, because there are no black-and-white targets scattered through the orthomosaic. Our stated vertical RMSE is 46 mm; his is unstated, and on the one occasion it was independently checked it was 640 mm. On an 18,000-tonne pile with a 3,000 square metre footprint, 640 millimetres of vertical bias is 1,920 cubic metres — about 3,070 tonnes, or ₹21.5 lakh of aggregate at ₹700 a tonne. THE CLIENT SAVED ₹15,000 AND THE ERROR IS WORTH A HUNDRED AND FORTY-THREE TIMES THAT — AND HE WILL NEVER FIND OUT, BECAUSE THE ONLY WAY TO DISCOVER IT IS TO BUY THE SURVEY HE DECLINED.

9. Drone Rules, Airspace & Spray Compliance (India)

Area	Requirement
Airframe and operator	Drone Rules: type certification, Unique Identification Number, registration on Digital Sky, and a Remote Pilot Certificate for every pilot from a DGCA-authorised training organisation. Anchor rule (a): these are separate certificates that expire independently
Airspace	Green, yellow and red zones on the airspace map; green-zone flight to 400 feet without permission, yellow requiring ATC clearance, red prohibited; no-drone zones around airports, defence and strategic installations
Beyond visual line of sight	BVLOS remains restricted and requires specific approval; long linear inspection work is planned around this rather than against it
Spray operations	CIB&RC standard operating procedures for drone application and the Insecticides Act; drone-specific labels approved for a limited and growing list of formulations — AND THE MAJORITY OF WHAT IS SPRAYED BY DRONE HAS NO DRONE LABEL
Data and imagery	Aerial imagery of sensitive installations; the National Geospatial Policy liberalised acquisition substantially, and retention, custody and onward transfer remain the operator's own governance problem
Insurance and liability	Third-party liability cover; anchor rule (d) — aviation insurance is priced on the operator's own record, so a single event reprecises the business
Labour and tax	EPF, ESI, Minimum Wages; GST on services; import duty and forex exposure on airframes, payloads and batteries under anchor rule (h)

What the rules reach	What they do not
Who may fly, what may be flown and where	How accurate the resulting number is
Certification of aircraft and pilot	Any standard of survey practice

SOPs for drone spraying	The labels on most of what gets sprayed
Zone permissions	People under the flight line who are party to nothing

The Indian drone framework is a genuinely good piece of regulation — it is proportionate, it opened the market, and it certifies the aircraft and the person properly. **WHAT IT DOES NOT DO, AND WAS NEVER MEANT TO DO, IS SET ANY STANDARD FOR THE PRODUCT:** there is no accuracy requirement, no survey-practice obligation and no mandatory statement of error anywhere in it. A perfectly compliant operator may deliver a volume that is twenty per cent wrong and has breached nothing.

10. Organisation & Manpower Plan

Function	Yr 1	Yr 3	Note
Managing director	1	1	Cannot release an unchecked deliverable
Field crew, ground control and logistics	9	16	GCP laying is a real workload
Photogrammetry, processing and analytics	8	14	Own jobs plus 1,200 bureau projects
Remote pilots	5	9	Derived, not assumed: 2,580 flight hours ÷ 288 per pilot-year = 8.96
Sales, tendering and client management	6	9	—
Survey control: GNSS, GCP and check points	4	8	The commitment made flesh
Fleet maintenance and battery management	4	7	9 airframes, cycle-logged packs
Finance, admin and HR	4	6	—
Agronomy and spray protocol	3	5	Dose deviations and sign-off
Training and certification	2	4	180 RPC candidates
Total	46	79	2,580 hours; 15,000 ha; 30,000 acres

The 8 people in survey control are the commitment made flesh, and they exist to produce a number about a number. Their salaries are ₹0.22 crore — ₹2.75 lakh average CTC across 8 — with ₹0.16 crore for GNSS equipment running, targets and the additional processing time. **That is ₹253 per hectare surveyed, or 14.1% of the ₹1,800 survey rate; the spray protocol is ₹120 an acre, or 20% of the ₹600 rate.**

11. Implementation Timeline & Milestones

Phase	Months	Milestone
Certification and finance	0-5	UIN and type-certified airframes, Digital Sky registration, RPCs, insurance, term loan

Survey control before the first mapping job	1-6	GNSS base, rovers and check-point procedure live BEFORE the first volumetric is quoted
Fleet and field kit	3-12	9 airframes across survey, fixed-wing and spray; batteries, chargers, ground stations
Processing and export block	4-10	Photogrammetry pipeline with the residual-table export block in place from the first deliverable
Spray protocol and agronomy	6-14	Drone-label register and dose-deviation format agreed before the first spray season
Bureau and training	14-30	Processing sold outward; RPC training to 180 candidates a year

Milestone that must not slip	Why
Export block before the first deliverable	A firm that has shipped one report without a residual table has established that it can, and the field becomes optional within a season
Spray protocol before the first season	Spray demand arrives in a four-week window and a protocol written under that pressure is a protocol written to permit whatever was already loaded
Occurrence reporting from day one	A reporting culture cannot be introduced after an event; the first serious report must land in a system that already existed
Control kit before quoting volumetrics	Quoting accuracy the equipment cannot yet deliver is the one commercial promise in this plan that would be actively dishonest

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
Survey, mapping and volumetrics	150	210	270	30.0%	54.0%
Infrastructure inspection	110	154	198	22.0%	58.0%
Agricultural spraying	100	140	180	20.0%	34.0%
Processing and analytics bureau	60	84	108	12.0%	64.0%
Training, RPC and certification support	45	63	81	9.0%	50.0%
Equipment sales, AMC and spares	35	49	63	7.0%	23.0%
Total	500	700	900	100%	49.5%

Spraying is 20% of revenue and 14% of gross profit, and it is the segment growing fastest and carrying the hardest regulatory problem in this plan. It is retained deliberately: the label question will be resolved industry-wide within a few years, and the operators who have a written dose protocol and a deposition record when that happens will be the only ones who can prove what they applied.

12.2 What is committed, and what it is measured on

Commitment	Yr 1	Yr 3
Survey deliverables with independent check points and a published RMSE	27%	100%
Median RMSE reported, horizontal / vertical	not measured	31 mm / 46 mm
Third-party surveys re-checked and found out by more than 5% on volume	not done	68 of 96
Jobs quoted DOWN to the tolerance the client actually needed	nil	140 jobs, ₹0.34cr
Spray jobs on a drone-labelled product or a signed dose deviation	38%	100%
Spray jobs declined for want of a drone label or an accepted deviation	nil	212 jobs, 6,400 acres, ₹0.38cr

Row four is the one that surprises people. Quoting a client **DOWN** — telling him that his stock reconciliation does not need survey-grade control and that a cheaper method will do — cost ₹0.34 crore of revenue in Year 3. **IT IS ALSO THE ONLY CREDIBLE WAY TO SELL ACCURACY WHEN IT IS GENUINELY NEEDED**, because a firm that says every job requires its most expensive method is indistinguishable from a firm that simply sells the expensive method.

12.3 Profit & loss (₹ lakh)

Line	Yr 1	Yr 2	Yr 3
Revenue	500	700	900
Cost of goods (crew, batteries, chemicals, travel, processing, subcontract)	(252)	(353)	(454)
Gross profit	248	347	446
Survey control, check points and published RMSE	(22)	(30)	(38)
Spray dose protocol, label register and deposition verification	(20)	(28)	(36)
Non-punitive occurrence reporting and site risk assessment	(14)	(20)	(26)
Flight operations, crew and field logistics	(40)	(52)	(66)
Sales, tendering and client management	(30)	(40)	(50)
Fleet maintenance, batteries and spares	(26)	(34)	(44)
Administration, insurance and overhead	(24)	(32)	(40)
EBITDA	72	111	146
Depreciation and amortisation	(42)	(48)	(54)
Finance cost	(22)	(26)	(30)
Other income (equipment hire, scrap, misc)	4	7	9
PBT	12	44	71

Tax (fully taxable business income, ~25%)	(3)	(11)	(18)
PAT	9	33	53
Net margin	1.8%	4.7%	5.9%
ROCE on ₹2.80cr	10.7%	22.5%	32.9%

12.4 Project cost & funding (₹ lakh)

Use of funds	₹L	%	Source of funds	₹L
Fleet: 9 airframes across survey, fixed-wing and spray, with payloads	87	31%	Promoter equity	101
Survey-grade GNSS: base, rovers, total station, GCP kit	50	18%	Term loan	112
Processing hardware and photogrammetry licences	45	16%	Working capital limit	39
Batteries, chargers, field kit and spares pool	39	14%	Scheme and subsidy support	28
Vehicles, field logistics and mobile ground station	31	11%	—	—
Training, certification and simulator	17	6%	—	—
Working capital margin and pre-operative	11	4%	—	—
Total	280	100%	Total	280

12.5 Sensitivities (₹ crore PAT, Year 3)

Scenario	What changes	PAT
Base case as planned	As above	₹0.53cr
Trade-standard practice instead	Fly survey with no ground control or check points (+₹0.32cr), stop quoting clients down (+₹0.34cr), take the 212 declined spray jobs (+₹0.13cr) and spray 40% more with no protocol (+₹0.25cr), fly cheaper airframes to failure with no spares pool (+₹0.26cr), minimum insurance and no site risk assessment (+₹0.18cr), close the control, protocol and reporting programmes (+₹1.00cr) — but lose half the bureau line (–₹0.54cr revenue) and half the training line (–₹0.41cr), both of which rest on the reputation: revenue ₹9.50cr at 67.3% gross margin	₹2.65cr
A safety or airspace event	Third-party injury or a zone violation: grounding, licence action, legal cost and reinsurance — ₹1.24cr. ANCHOR RULE (d) MADE CONCRETE: aviation insurance is priced on the operator's own record, so one event reprices everything	(₹0.40cr)
Price competition from uncontrolled operators	Survey and inspection margins down 10 points: ₹0.47cr	₹0.18cr
Airframe, payload and battery cost +22%	₹0.38cr; anchor rule (h) — this fleet is dollar-priced and a rupee move is a cost event, not a market event	₹0.25cr
Spray segment restricted or a residue incident	Spraying down 60% with fleet unabsorbed: ₹0.61cr	₹0.07cr

The trade-standard gross margin of 67.3% against our 49.5% is the single most revealing number in this plan. **SKIPPING SURVEY CONTROL IS NOT A SMALL SAVING — IT REMOVES HALF A DAY OF FIELD LABOUR, A ₹50 LAKH INSTRUMENT SET AND EIGHT PEOPLE FROM THE COST BASE, AND THE CUSTOMER RECEIVES A DOCUMENT HE CANNOT DISTINGUISH FROM OURS.** That is not a market failure at the margin; it is a market in which the correct method is structurally unaffordable unless somebody asks for the error figure.

12.6 Volumes and unit economics (Year 3)

Physical driver	Volume	Realisation	Revenue
Survey, mapping and volumetrics	15,000 ha	₹1,800/ha	₹270L
Infrastructure inspection	4,500 km	₹4,400/km	₹198L
Agricultural spraying	30,000 acres	₹600/acre	₹180L
Bureau projects processed	1,200	₹9,000	₹108L
RPC candidates trained / equipment	180	₹45,000	₹144L
Total flight hours	2,580	9 airframes	₹900L

Derived figure	Working	Result
Flight hours by segment	825 survey + 405 inspection + 1,350 spray	2,580
Remote pilots	2,580 flight hours ÷ 288 productive hours per pilot-year	8.96, staffed at 9
Survey control cost	₹0.38cr over 15,000 hectares	₹253/ha, 14.1% of the rate
Spray protocol cost	₹0.36cr over 30,000 acres	₹120/acre, 20% of the rate
Deposition verification	₹340 a job across 1,360 spray jobs	₹4.62L
Fleet utilisation	2,580 hours over 9 airframes	287 hours each

₹253 a hectare is what it costs to know how wrong the number is. On a hundred-hectare site that is ₹25,300 against a survey worth ₹1.80 lakh — and it is the entire difference between a document that asserts a volume and one that measures it. NOTHING IN THE DRONE RULES REQUIRES IT, NO CLIENT ASKS FOR IT BY NAME, AND EVERY COMPETITOR'S QUOTATION IS CHEAPER BY ROUGHLY THAT AMOUNT.

13. Funding Requirement & Bankability

Item	Position
Requirement	₹2.80cr: ₹1.01cr promoter equity, ₹1.12cr term loan, ₹0.39cr working capital limit, ₹0.28cr scheme support
The fleet is poor security	Airframes depreciate very fast, batteries are consumables with a two-year life, and payload technology turns over in three. A lender securing on this fleet is securing on something worth a third of its cost in thirty months
Security	Fleet, GNSS instruments and processing hardware; hypothecation of receivables; personal guarantee of the promoter
Debt service	Year 3 EBITDA ₹1.46cr against interest ₹0.30cr and scheduled repayment; DSCR above 1.9x from Year 3

Licence dependence	Anchor rule (b): revenue cannot exceed what the approvals permit. BVLOS restriction alone caps the addressable inspection market, and no amount of demand changes that
What a lender should test	Not the order book — the published RMSE series and the occurrence-report count. A firm reporting no occurrences is not a safe firm, it is a firm whose pilots have stopped reporting, and that is visible two years before it is expensive

Year	EBITDA	Interest	Repayment	DSCR
Year 1	₹0.72cr	₹0.22cr	Moratorium	—
Year 2	₹1.11cr	₹0.26cr	₹0.32cr	1.91x
Year 3	₹1.46cr	₹0.30cr	₹0.44cr	1.97x

14. Risk Analysis & Mitigation

Risk	Impact	Mitigation
The client buys a number and receives a picture	A volume, quantity, area or defect list is ordered; what the aircraft produces is imagery, and the number is manufactured afterwards by processing whose accuracy depends on things that leave NO TRACE in the deliverable — control density and placement, GNSS method, altitude, overlap, calibration, processing settings. Two surveys of one stockpile can differ by a tenth and both arrive as a confident model with a confident number. And the relationship runs backwards: ground control points are physical targets that appear in the imagery, SO SKIPPING THEM MAKES THE MODEL PRETTIER AND THE NUMBER WORSE — the client preferring the tidier deliverable is selecting for the less accurate one. Nobody misbehaves: the cheap operator has never been asked for an accuracy figure, and THE ONLY WAY THE CLIENT COULD DISCOVER THE ERROR IS TO BUY THE CONTROLLED SURVEY HE DECLINED	MAKE THE ERROR A DELIVERED QUANTITY. Ground control on every mapping job PLUS INDEPENDENT CHECK POINTS — surveyed to the same standard and then WITHHELD FROM PROCESSING , so the residual measures error instead of asserting it. Every deliverable ships a residual table and a stated RMSE: median 31 mm horizontal, 46 mm vertical, and the export is blocked if the field is empty. 96 third-party surveys re-checked and 68 out by more than 5% on volume, NOT ONE CARRYING A STATED ACCURACY. Cost ₹253 a hectare, 14.1% of the rate. And quote clients DOWN where their tolerance is looser — 140 jobs and ₹0.34cr forgone — because a firm that says every job needs its dearest method is indistinguishable from one that simply sells the dearest method. GENERAL RULE: WHERE THE DELIVERABLE IS A PICTURE AND THE PRODUCT IS A NUMBER, APPEARANCE IS EVIDENCE OF NOTHING — SO PUBLISH THE ERROR, NOT THE MODEL

The label was written for a knapsack	A drone applies 8–12 litres of carrier an acre against 150–200 for a knapsack, and the pesticide dose per acre must be identical — so tank concentration is about fifteen times higher. Every Indian label is a dilution instruction in millilitres per litre of water: FOLLOW THE LABEL AND YOU APPLY A FIFTEENTH OF THE DOSE; FOLLOW THE DOSE AND YOU MIX AT A CONCENTRATION THE LABEL NEVER CONTEMPLATED. CIB&RC has issued SOPs and approved drone labels for a limited list, but most of what is sprayed by drone in India has no drone label at all, and the operator is choosing between two instructions that used to be one	Write the protocol down and count the refusals. A spray flies only on a CIB&RC drone-labelled formulation or under a written dose-based deviation stating grams of active per acre and signed by our agronomist — 38% → 100%. Tank mixes calculated from dose per acre rather than from the bottle; deposition verified on water-sensitive cards at ₹340 a job. 212 jobs and 6,400 acres declined for want of a label or an accepted deviation — ₹0.38cr in the fastest-growing segment we have. The line is retained deliberately: when the label question is resolved industry-wide, the operators holding a dose protocol and a deposition record will be the only ones who can prove what they applied
Safety or airspace event	The defining aviation risk. Third-party injury or a zone violation brings grounding, licence action, legal cost and reinsurance: ₹1.24cr and a ₹0.40cr loss. Anchor rule (d): insurance is priced on the operator's own record	Non-punitive occurrence reporting outside the appraisal line; site risk assessment covering third parties on the ground rather than the client's boundary; airspace checked on Digital Sky per sortie; currency and recurrent training budgeted as opex under rule (c); third-party liability cover reviewed annually against actual exposure
Price competition	Uncontrolled operators quote 44% below us for a document the client cannot distinguish; 10 points off survey and inspection margin is ₹0.47cr	The re-check service is the argument — 68 of 96 is a number no brochure can answer; tenders steered toward stated-accuracy specifications; the bureau line sells our processing to the very operators competing on flying
Import and forex exposure	Airframes, payloads and batteries are dollar-priced; +22% is ₹0.38cr, and anchor rule (h) says this is a cost event rather than a market one	Fleet purchased in tranches against a rupee view; batteries cycle-logged so replacement is scheduled rather than surprising; domestic airframe options qualified for the spray fleet where performance permits
Spray segment regulation	Restriction or a residue incident takes spraying down 60%: ₹0.61cr; the segment is 20% of revenue and 14% of gross profit	Survey, inspection and bureau are unaffected; the dose protocol and deposition record are exactly what a post-incident inquiry asks for; agronomist sign-off transfers no liability but does create a defensible record
Utilisation	Anchor rule (e): utilisation is the whole economics, and it is capped by weather, daylight, permission and battery turnaround rather than by demand	Segment mix so monsoon-limited survey work is offset by spray season; batteries and chargers sized for turnaround rather than for the aircraft count; processing work absorbs field-weather downtime productively

15. SWOT Analysis

Strengths	Weaknesses
A published error on every deliverable, which nobody else in the district produces; a re-check dataset that is itself a sales argument; a written dose protocol before the regulation arrives; a processing bureau sold to competitors; RPC training that doubles as recruitment	5.9% net margin; the commitment costs ₹1.72cr against ₹0.53cr of PAT; a 17.8-point gross-margin disadvantage to uncontrolled operators; a fast-depreciating dollar-priced fleet; utilisation capped by weather and permission
Opportunities	Threats

Tenders are beginning to specify stated accuracy; drone-label approvals are widening and early protocol holders benefit; BVLOS liberalisation would transform inspection economics; the bureau scales without airframes

A safety event; price competition on an indistinguishable document; spray regulation; forex; and the structural fact that the regulation certifies the aircraft and the pilot and says nothing at all about the product

The honest summary opening this vertical is that aviation regulation is very good at the things it regulates and silent on the thing this business sells. A fully compliant operator can deliver a volume that is twenty per cent wrong without breaching anything at all. THE PLAN THEREFORE RESTS ON A BET THAT STATED ACCURACY BECOMES A TENDER REQUIREMENT BEFORE PRICE COMPETITION MAKES CONTROL UNAFFORDABLE — AND THAT RACE IS NOT YET DECIDED.

16. Recommended AiSevak Tools for This Business

- **Business plan and project report generator** — for the term loan on a fast-depreciating fleet.
- **Compliance calendar** — UIN and type-certificate renewals, RPC currency, Digital Sky registrations, insurance, CIB&RC obligations, EPF and ESI — noting anchor rule (a), that these expire independently.
- **Cost and pricing calculator** — cost per flight hour by segment, cost per hectare and per acre, and the true cost of ground control against the tolerance actually required.
- **GST and invoicing helper** — service billing, bureau work for other operators, equipment sales and AMC at differing treatment.
- **Labour and payroll toolkit** — pilot and field-crew rosters, recurrent training records, EPF and ESI.
- **Loan and subsidy application helper** — drone and agri-mechanisation schemes, and a lender file that explains a three-year asset life.
- **Contract and terms drafting helper** — the accuracy-statement clause, the dose-deviation format and agronomist sign-off, and data retention and custody terms for aerial imagery.

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 aviation set.

17. Key Assumptions & Notes

- **ANCHOR RULES FOR VERTICAL 57, INHERITED BY EVERY AVIATION PLAN THAT FOLLOWS. (a)** DGCA approvals are per-organisation, per-person and per-asset — three separate certificates that expire independently, and "we are DGCA approved" is never one fact. **(b)** The licence is the asset: revenue cannot exceed what the scope of approval permits, so approval scope rather than market demand sets the ceiling. **(c)** Airworthiness and currency are recurring, not achieved — recurrent training, checks and renewals are opex, never capex. **(d)** Aviation insurance is priced on the operator's own record, so a single event reprecises the whole business; every plan states the exposure rather than assuming cover. **(e)** Utilisation is the entire economics of an aviation asset, and it is capped by weather, slots, duty limits, permission and maintenance windows — never by demand alone. **(f)** Duty and rest limits are hard constraints that look like staffing choices; headcount derived without them is wrong. **(g)** Safety and occurrence reporting must be non-punitive and separated from performance management or it stops — and a plan with no reporting line has no safety data. **(h)** Import and foreign-exchange dependence is structural: airframes, parts, avionics and simulators are dollar-priced, so a rupee move is a cost event rather than a market event. **(i)** All financials are illustrative model assumptions in Indian rupees, not forecasts, projections or guarantees, with drivers shown so every number can be changed. **(j)** Every aviation plan states its own general rule and does not repeat another plan's finding.

- **The central finding is that the client buys a number and receives a picture.** A volume, quantity, area or defect list is ordered; the aircraft produces imagery, and the number is manufactured afterwards by photogrammetric processing whose accuracy depends on ground control, GNSS method, altitude, overlap, calibration and processing settings — **none of which leaves any trace in the delivered document.**
- **And the relationship between appearance and accuracy runs slightly backwards.** Ground control points are physical targets that appear in the imagery, **so skipping them saves half a day, produces a cleaner orthomosaic, and gives a worse number.** The client preferring the tidier deliverable is selecting, with no way of knowing, for the less accurate one.
- **Nobody misbehaves, which is why it persists.** The cheap operator has never been asked for an accuracy figure and has no obligation to produce one; the client has no instrument, no standard to cite and no comparison available. **The only way he could discover the error is to commission the controlled survey he declined to buy.**
- **The remedy is to make the error a delivered quantity.** Independent check points surveyed and then withheld from processing, a residual table and a stated RMSE on every deliverable — median 31 mm horizontal and 46 mm vertical — with the export blocked when the field is empty. 96 third-party surveys re-checked, 68 out by more than 5% on volume, not one carrying a stated accuracy. **GENERAL RULE: WHERE THE DELIVERABLE IS A PICTURE AND THE PRODUCT IS A NUMBER, APPEARANCE IS EVIDENCE OF NOTHING — SO PUBLISH THE ERROR, NOT THE MODEL.**
- **The second thread is that the label was written for a knapsack.** A drone applies 8–12 litres of carrier an acre against 150–200, the dose per acre must be identical, and so tank concentration is about fifteen times higher — **while every Indian label instructs a dilution in millilitres per litre of water. Follow the label and you apply a fifteenth of the dose; follow the dose and you mix at a concentration the label never contemplated.** CIB&RC drone labels exist for a limited list; most of what is sprayed by drone has none. Remedy: drone label or a written dose-based deviation signed by an agronomist, tank mixes from dose per acre, deposition cards at ₹340 a job, and **212 jobs and 6,400 acres declined — ₹0.38 crore in the fastest-growing segment here.**
- **Volumes and unit economics.** 15,000 hectares at ₹1,800, 4,500 km at ₹4,400, 30,000 acres at ₹600, 1,200 bureau projects at ₹9,000, 180 RPC candidates at ₹45,000; 2,580 flight hours across 9 airframes at 287 hours each. Pilots are derived, not assumed: $2,580 \div 288$ productive hours per pilot-year = 8.96. Survey control costs ₹253 a hectare (14.1% of the rate) and the spray protocol ₹120 an acre (20%). **The trade-standard gross margin of 67.3% against our 49.5% is the most revealing figure here: skipping control removes half a day of field labour, a ₹50 lakh instrument set and eight people from the cost base, and the customer receives a document he cannot distinguish from ours.**
- **Compliance and professional advice.** Drone Rules type certification, UIN, Digital Sky registration and Remote Pilot Certificates from a DGCA-authorized training organisation, **noting anchor rule (a) that these expire independently**; green, yellow and red airspace zones with green-zone flight to 400 feet without permission, and BVLOS restricted and specifically approved — **which under rule (b) caps the addressable inspection market regardless of demand;** CIB&RC standard operating procedures for drone application and the Insecticides Act, with drone-specific labels approved for a limited and growing list; National Geospatial Policy and the operator's own retention and custody governance for aerial imagery of sensitive installations; third-party liability insurance under rule (d); EPF, ESI, Minimum Wages and GST; import duty and forex exposure under rule (h). **Note the structural gap: the Drone Rules certify the aircraft and the pilot and set no standard whatever for the product — a fully compliant operator may deliver a volume twenty per cent wrong and has breached nothing.** Professional advice should be taken on accuracy-statement contract terms, dose-deviation documentation and liability, imagery retention and custody, and insurance scope against actual third-party exposure.

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

Every tool referenced in this plan is available on aisevak.in. Open the [Aviation and Aerospace Services toolkit](#) to

browse and use them all at <https://aisevak.in/verticals/aviation> — 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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