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Whom to back when the game is on the line

A data method for finding players who perform under chase pressure, and the six signings Rajasthan Royals should make at the IPL 2027 mini-auction.

Methodology report · **18 November 2026** · IPL 2027 mini-auction, 16 December 2026, Goa

The answer first

We read every legal ball of the contest data pack (867 matches, 200,999 deliveries, IPL and T20I, 2022 to 2026), built a model of how much one ball can swing a chase, and scored every player on what they do with those balls. Rajasthan Royals retained 19 players and released 9 plus one trade, which opens 6 squad slots, at most 3 of them overseas, with INR 27.05 crore to spend. Our recommendation is six signings: **Akash Madhwal, Kusal Mendis, Wanindu Hasaranga, Mustafizur Rahman, Nitish Rana and Mahipal Lomror** — three overseas, three Indian, roughly INR 16 to 19 crore of the purse, each one filling a named gap left by a released player.

Two honest caveats travel with that list. The pressure-weighted rating predicts future pressure performance only weakly (rank correlation 0.13 to 0.28 out of sample), so we treat it as a relevance lens, not a crystal ball. And every name is unconfirmed until the registered auction pool is published on 3 December.

1 What we did

We took the organisers' data pack and rebuilt it into a single question: when a chase is live, which players actually change the outcome, and which of those can RR buy on 16 December? The pack covers IPL and T20I cricket from 2022 to 2026. We fixed two scoring rules that the raw files get wrong: byes and leg-byes count as legal balls (they are not wides or no-balls), and wides and no-balls are charged to the bowler who bowled them. Without those fixes, bowler economy and over totals are quietly wrong.

From there the pipeline has four steps. A win-probability model scores every ball by how much its outcome can swing the match. Each player's deliveries are valued, weighted by that pressure, and shrunk toward the pool average so that a hot streak over 80 balls cannot outrank a career over 800. A consistency term counts how often a player beats his own baseline. Finally we validate the whole thing on matches the ratings never saw, and report the ugly parts as well as the good ones.

This report states every number so it can be checked. The fact sheet that accompanies it maps each figure to its source file and column.

2 Data and corrections

The pack holds 867 matches and 200,999 deliveries across five seasons. A draft pass at this data reported 883 matches; re-counting the matches table gives 867, and 867 is what this report uses everywhere. Chases and the model's quality score below come from our pipeline on the private ball-by-ball file, which is not part of the

submission package, so we label them *reported* rather than independently recomputed: 845 chases, of which 842 were decided, and a cross-validated AUC of 0.889.

The legal-ball rule was the one real bug we found and fixed. A delivery that goes for byes or leg-byes is a legal ball: the over advances, the batter did not score off the bat, and the bowler is not charged. Wides and no-balls are the opposite: not legal, and charged to the bowler. Getting this backwards inflates over counts by roughly one ball in fifty and distorts death-over economies most, which is exactly where the auction decisions live.

Item	Value	Source
Matches in pack	867	matches table, recounted
Deliveries	200,999	deliveries table, row count
Chases / decided chases	845 / 842	pipeline-reported (raw file not in package)
Win-probability model AUC	0.889	pipeline-reported, 5-fold grouped CV
Seasons / competitions	2022–2026, IPL + T20I	competitions table (141 competition rows)

3 What pressure means here

Pressure is not a slot in the batting order. It is the win-probability swing available to one ball. Before each ball of a chase we ask the model two questions: what is the win probability if the batter hits six and survives, and what is it if the ball is a dot that takes a wicket. The gap between those outcomes is the pressure score of the ball.

> PS = WP(need − 6, balls − 1, wickets) − WP(need, balls − 1, wickets + 1)
>
> WP is the win probability of the chasing side from a match state. High pressure is PS ≥ 0.30; low pressure is PS < 0.12. About 6.6% of chase balls clear the high-pressure bar, which is why pressure samples are small and why shrinkage (Section 4) exists.

The model behind WP is a gradient-boosted tree classifier constrained to be monotonic: needing fewer runs raises the win probability, more balls remaining raises it, more wickets lost lowers it. Trained on the 842 decided chases, grouped 5-fold cross-validation (whole matches held out, never a single match split across train and test) gives AUC 0.889. That is good but not perfect, which is what a noisy sport should produce.

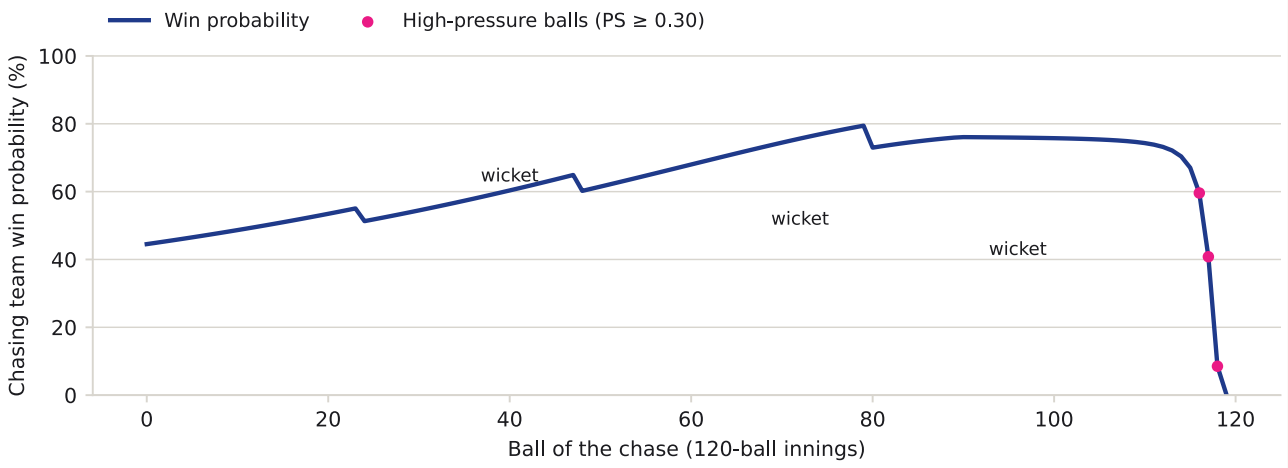


Figure 1. An illustrative chase traced with the PS formula's semantics: win probability through a 120-ball chase of 172, with wickets at balls 40, 72 and 96. Pink dots mark balls with PS ≥ 0.30. They cluster where the chase is genuinely live; they vanish once the equation is decided. The trace is drawn from the formula, not from the private model file.

One artefact needed a fix. Raw PS ran hot in the first over of an innings (mean 0.159) and the last (0.174) against 0.126 in the middle overs, an artefact of state extremes rather than a real swing. We normalised each over's mean PS to the overall mean (0.141), which flattens the bias without touching variation within an over.

4 How a player is scored

Every ball a player is involved in gets a value. For a batter, that is runs scored off the ball minus 12 if he is dismissed on it; the 12 is the run value of a wicket in a chase, and results barely move anywhere in the 10 to 14 range. For a bowler, it is 12 per credited wicket (caught, bowled, lbw, stumped, hit wicket) minus runs conceded, with run-outs excluded because they are mostly the fielder's doing.

Pressure weighting. Each ball's value is averaged with the ball's PS as its weight, giving V_p: what the player does when the game can swing counts more than what he does when it cannot.

Shrinkage. V_p is pulled toward the pool average in proportion to how little pressure the player has faced: $V_s = (S_w \cdot V_p + K \cdot \text{pool}) / (S_w + K)$, with K = 160 for batters and 60 for bowlers. $E_s = V_s - \text{pool}$ is the headline number: value above an average player under pressure. A hot fortnight over 80 balls cannot outrank three seasons over 900.

Consistency. c = (good + 1) / (apps + 2), the Laplace-smoothed share of chase appearances where the player beat his own low-pressure baseline. The +1 and +2 stop a player who did it twice from claiming a perfect record.

The score. PIS = $0.70 \cdot z(E_s) + 0.15 \cdot z(c) + 0.15 \cdot z(\text{Indian-venue share})$, each part standardised before combining. The 70/15/15 split is a disclosed judgement: pressure value does the work, consistency and familiarity with Indian conditions refine it.

For the final shopping list we also use a second scale, PIS v2 on 0 to 100, which mixes the rating with things the auction actually prices: 40% overall value per ball (uniform weights), 20% recent form, 20% fit to RR's specific gaps, 15% clutch (the E_s above), 5% durability. Where the two scales disagree, the signing section says which one is driving the pick.

5 Does it work?

Thirty times we split the matches in half, rated players on one half, and checked how well the ratings rank players on the half they never saw. The honest answer: modestly.

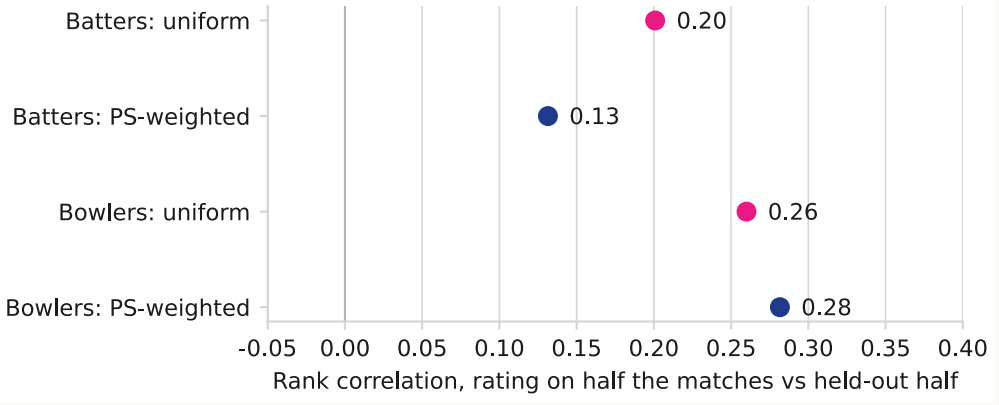


Figure 2. Half-split validation, final configuration. For bowlers, pressure weighting matches plain stats (rank correlation 0.28 vs 0.26). For batters, plain unweighted stats actually predict the held-out half better (0.20 vs 0.13). A pure win-probability-added ranking was clearly worst and was dropped.

So pressure performance is only weakly persistent: past clutch is a weak signal of future clutch. We keep the pressure lens for two reasons and no more. The contest question asks for players under pressure, so the metric matches the brief; and the weighting never claims predictive superiority, only relevance. Most entries to this problem will quietly assume clutch is a stable skill. It is not, and we say so.

Bootstrap stability is the second test. Resampling matches 200 times and rebuilding each top-10 shows that only the very top of a list is stable. Among batters, no auction-pool player exceeds 44% membership (Reeza Hendricks); among bowlers, Shoriful Islam appears in 66% of resamples. Places 7 to 10 on both final lists are close calls and should be read as a band, not an order.

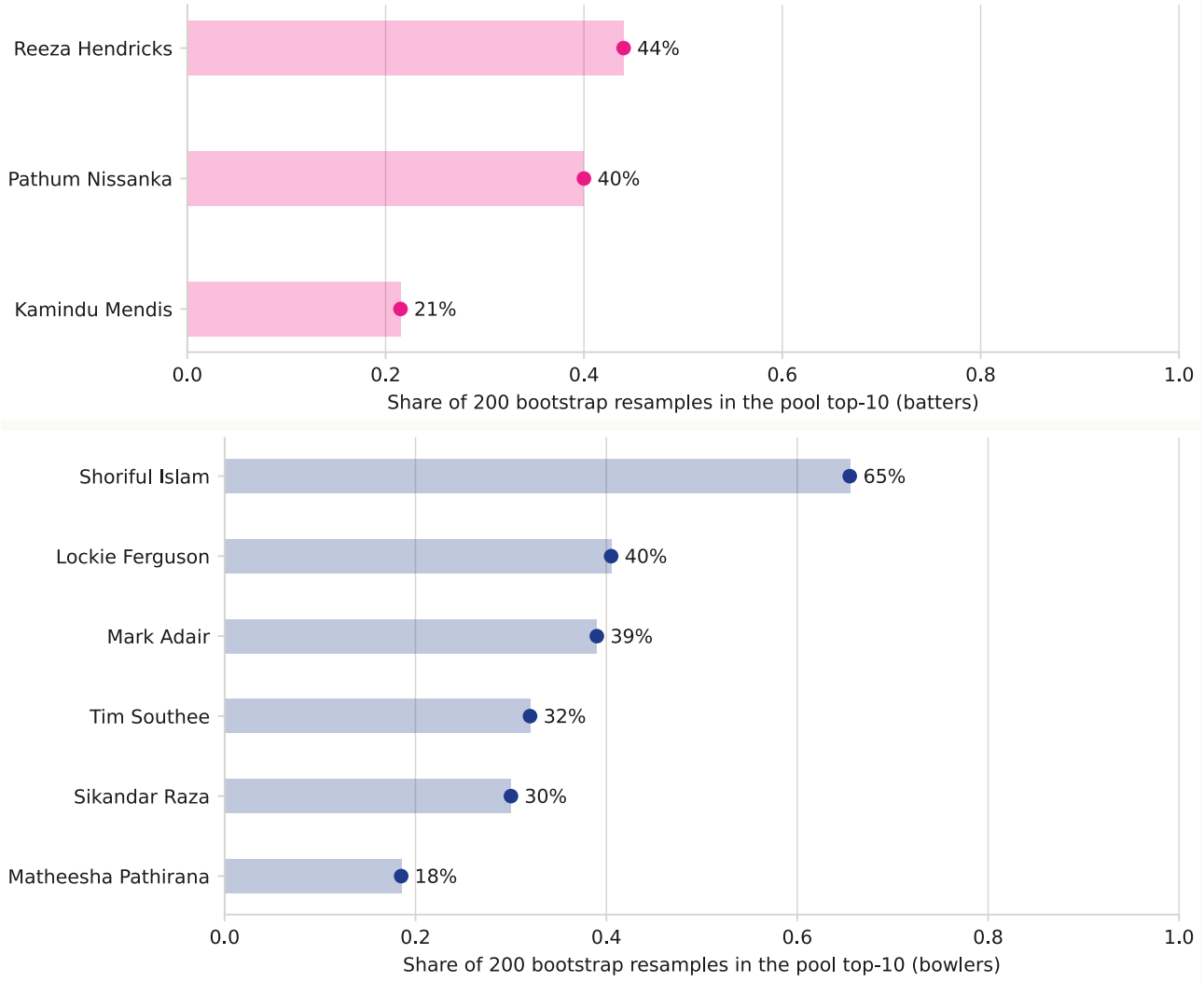


Figure 3. Share of 200 bootstrap resamples in which each player appears in the top 10, drawn only for auction-pool players who appear in the stability tables. Names absent from those tables have no share printed; we do not impute one.

6 Rajasthan Royals: what the squad leaves open

Retention day was 17 November 2026. RR retained 17 players and traded in Mohammed Shami (INR 8 cr) and M. Siddharth (INR 0.75 cr), a 19-man squad. Nine players were released and Sam Curran was traded out. The arithmetic drives everything: squad cap 25 minus 19 gives 6 open slots; overseas cap 8 minus 5 retained overseas players (Archer, Burger, Shanaka, Ferreira, Pretorius) gives at most 3 overseas signings. The purse is INR 27.05 crore.

Retained (19)	Role	Price (cr)	Released (9 + trade)	Role	Price (cr)
Yashasvi Jaiswal	Top-order bat	18.00	Shimron Hetmyer	Overseas finisher	11.00
Jofra Archer	Overseas pace	12.50	Tushar Deshpande	Death pacer	6.50
Riyan Parag	Middle bat, captain	14.00	Adam Milne	Overseas pace	2.40
Dhruv Jurel	Wicketkeeper-bat	14.00	Kwena Maphaka	Left-arm pace	1.50
Ravindra Jadeja	Spin all-rounder	14.00	Ravi Singh	Wicketkeeper-bat	0.95
Mohammed Shami (trade)	Powerplay/death pace	8.00	Kuldeep Sen	Pace	0.75
Ravi Bishnoi	Leg spin	7.20	Yudhvir Singh	Pace all-rounder	0.35
Sandeep Sharma	Powerplay/death pace	4.00	Vignesh Puthur	Wrist spin	0.30

Retained (19)	Role	Price (cr)	Released (9 + trade)	Role	Price (cr)
Nandre Burger	Overseas left-arm pace	3.50	Emanjot Chahar	Spin all-rounder	n/p
Sushant Mishra	Backup seam	0.90	M. Siddharth (trade in)	Left-arm spin	0.75
Vaibhav Sooryavanshi	Top-order bat	1.10	Sam Curran	Seam all-rounder (to LSG)	2.40
Shubham Dubey, A. Perala, Y. R. Punja, B. Sharma	Squad depth	1.70	Dasun Shanaka, D. Ferreira, L. Pretorius	Retained overseas (not released)	1.60

Table 1. Squad state on 18 November 2026, from the retention lists. Five overseas players are retained, so exactly 3 overseas slots and 6 total slots are open, with INR 27.05 crore of purse.

The released players define the gaps. The data pack is blunt about most of them: every released player with a real sample scores at or below the pool average under pressure. Deshpande's E_s is −0.143, the worst eligible pacer in the pool; Milne's is −0.101 with a serious hamstring tear in January 2026; Hetmyer's is −0.014 on 590 pressure balls, a poor return at INR 11 crore. RR did not lose clutch players; they freed slots and money. Three releases (Kuldeep Sen, Yudhvir Singh, Puthur) simply have no evidence either way, and we watch rather than mourn them.

7 The six signings

Each signing fills a named gap and replaces a specific released player. The verdict column says whether the new player beats the old one on the same pressure metric, on the same balls, and we include the answer "no" where that is the truth.

Signing	Fills / replaces	Role match %	Beats him under pressure?	PIS v2	Price band	Main risk
Akash Madhwal (IND)	Indian death pacer; replaces Deshpande	high (2.5/3)	Yes: E_s +0.125 vs −0.143	70	1.5–2 cr	Weak 2026 form (career econ 10.06); only 125 pressure balls
Kusal Mendis (SL)	Backup wicketkeeper + middle bat; replaces Ravi Singh	high (2.8/3)	n/a: Ravi Singh has no chase sample	66	3–4 cr	Hamstring missed LPL 2026; registration closes 23 Nov
Wanindu Hasaranga (SL)	Fourth spinner; replaces Chahar's role	mod-high (2.4/3)	Yes: E_s +0.137 on 1,060 balls	62	4–5 cr	RR spin already deep (Bishnoi, Jadeja, Siddharth)
Mustafizur Rahman (BAN)	Left-arm pace angle; replaces Maphaka	mod-high (2.6/3)	n/a: Maphaka has no chase sample	59	4–5 cr	India–Bangladesh political availability risk, disclosed
Nitish Rana (IND)	LHB middle order; replaces Hetmyer's role	low (0.6–2.2/3)	No: −0.015 vs −0.014, effectively equal	59	3–4 cr	Not better under pressure than the man he replaces
Mahipal Lomror (IND)	LHB finisher; replaces Hetmyer	high (2.7/3)	Yes: E_s +0.004 vs −0.014, on 61 balls	58	2–3 cr	Thin finisher sample; 2026 form unverified
Total	**6 slots: 3 overseas + 3 Indian**				**16–19 cr**	**Leaves 7+ cr buffer of 27.05 cr**

Table 2. The six recommended signings. Role match is a 0-3 similarity score between the candidate's fingerprint (phase use, hand, style) and the released player's role. E_s comparisons are on the same pressure metric from the same data pack.

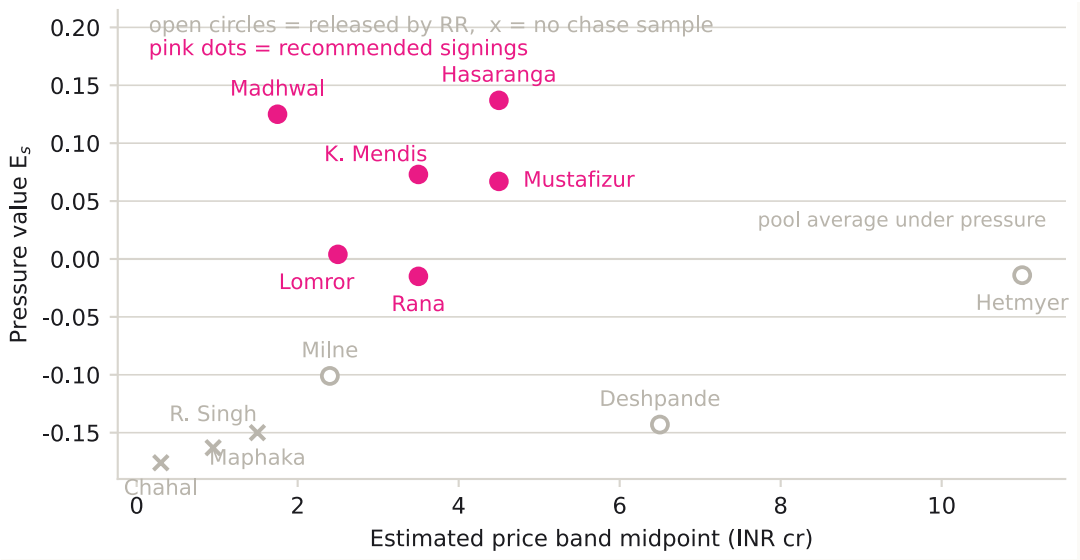


Figure 4. Released players (open circles) against recommended signings (pink dots): estimated price versus pressure value. The signings cluster above the pool-average line at a fraction of the released salaries. Crosses mark released players with no usable chase sample.

Three of the six are strong picks on the data. Hasaranga carries the largest positive pressure sample among pool spinners (E_s +0.137 across 1,060 balls) and would be the squad's fourth spinner only because the Puthur re-buy is voided by injury. Madhwal is a value play, not a form play: best value per ball among Indian pacers, bought cheap in a role RR otherwise has to re-purchase at Deshpande's old price. Kusal Mendis is the best recent form on the list, with 493 runs in PSL 2026 and 505 T20I runs for Sri Lanka in 2026.

Two are weak, and the weakness is the point. Rana does not beat Hetmyer under pressure; he is effectively identical (−0.015 vs −0.014). He is in the list for Indian left-handed middle-order depth and availability, and if RR would rather spend that INR 3 to 4 crore elsewhere, dropping him is defensible. Lomror's edge over Hetmyer is real but built on 61 balls, which is close to no evidence at all; he is a depth signing at a depth price. Mustafizur carries an off-field risk no model prices: his January 2026 release by KKR came amid diplomatic tension, and availability is a genuine unknown.

Backups, in order: Reeza Hendricks (overseas top-order bat, PIS v2 69, excellent 2025-26 SA20 and T20I form, unsold last auction on age discount), Umran Malik (highest Indian clutch score, E_s +0.224, but injury-plagued and ruled out of SMAT 2026-27 after one match), Karun Nair, Nehal Wadhera, and Abishek Porel. Porel is demoted rather than excluded: the best Indian wicketkeeper-batter form available, but an unresolved legal case makes availability the whole question.

8 Final top-10 lists

The contest's dropdown lists, restricted to the auction pool: no retained players, no retired (Dhoni, Mohit Sharma), no long-term injured (Puthur, Bethell), no withdrawals (Head, Starc), and Pakistani players flagged because no franchise has signed one since 2008. Indians enter on a relaxed threshold (30+ balls, 2+ appearances) because the pack's Indian domestic data is thin.

#	Batter	PIS v2	Status	#	Bowler	PIS v2	Status
1	Reeza Hendricks	98	Likely	1	Shoriful Islam	84	Confirmed*
2	Pathum Nissanka	93	Confirmed	2	Akash Madhwal (IND)	83	Confirmed
3	Habibur Rahman Sohan	82	Likely	3	Mark Wood	82	Likely
4	Harry Brook	81	Likely	4	Mahedi Hasan	78	Likely
5	Kusal Mendis	81	Likely	5	Jimmy Neesham	75	Likely
6	Towhid Hridoy	80	Confirmed	6	Junaid Siddique	75	Likely
7	Mark Chapman	79	Likely	7	Mark Adair	74	Likely
8	Matthew Wade	76	Likely	8	Gudakesh Motie	74	Likely
9	Daryl Mitchell	74	Likely	9	Matheesha Pathirana	73	Confirmed
10	Ajinkya Rahane (IND)	69	Confirmed	10	Umran Malik (IND)	70	Confirmed

Table 3. Auction-pool top-10 by PIS v2 (0-100, empirically shrunk). "Confirmed" = released by a franchise on 17 Nov 2026 or reported registered; "Likely" = on no retention list, registration closes 23 Nov. *Shoriful Islam is Bangladesh-registered per reports; he is not Pakistani, unlike pool players Muqeem, Nawaz and Abrar, who are excluded from consideration though they score well.

Glenn Maxwell (74) and Faf du Plessis (74) fall just outside the batter list on the tie-band rule; they are next in line, not dropped.

9 Limitations

Samples are small where they matter most. Only 6.6% of chase balls are high-pressure, so a full season's finisher might carry 80 to 120 of them; shrinkage handles the arithmetic but cannot manufacture evidence. Three of our six signings rest on fewer than 130 pressure balls.

The pack mixes IPL and T20I cricket. For Pakistan and Bangladesh players the mix is T20I-heavy, and sensitivity tests show those bowlers fall most when IPL-only data is used; for Australians and Indians the lists barely move. The over-level normalisation fixes early- and late-over inflation but imposes a uniform mean across overs, which is an assumption, not a discovery. Availability is not confirmed for anyone: the registered pool reaches franchises only on 3 December 2026, and the five exclusions for injury, retirement, withdrawal and legal risk rest on public reporting, not the data pack. Finally, the pack contains no Indian domestic cricket, so Syed Mushtaq Ali form is invisible to the model; the Indian watchlist behind our relaxed domestic threshold is correspondingly thin, and an uncapped domestic spinner who is cheap and in form will not appear in any number we printed.