

Predicting the 2016 Big Bash



Predicting the big bash

Nine-Squared Pty Ltd (NineSquared) has produced a set of rankings for the 8 teams in the Men's 2015/2016 Big Bash League (BBL). These rankings are then used to predict the outcomes and winning margins of each game. Broadly, each of the 8 teams in the Big Bash have been assigned an Elo rating based on their performances since the inception of the league in 2011/2012. Prior to each match, the Elo rating of each team is compared to determine the expected winner. The higher the score, the more likely that team is to win. Further details on the approach and the assumptions made are presented later in the article. All match data was sourced from ESPN CricInfo.

The Big Bash 2016 Predictions build on the 2015 Rugby World Cup (RWC) Predictions, which can be found on the NineSquared website. Given the success of the RWC predictions (90% of the matches correctly predicted), much of the structure has been retained, with only two major adjustments made:

1. A margin of victory multiplier has been adopted which adjusts the changes in Elo rating based on the pre-match expectation. The purpose of this multiplier is to correct for autocorrelation which potentially overrated the best teams and underrated the worst teams.
2. Further adjustments have been made due to the seasonal nature of the Big Bash League. Players which have joined or left teams have been individually rated, with their rating converted to a change in Elo rating. While the rugby nations play continuously throughout the year, the Big Bash League operates for two months with an extended off-season. This leads to significant player movements and more noticeable changes in form.

The Big Bash Elo Ratings used to determine match outcomes are based on historical performance and off-season player movement.

A team's historic performance provides a base Elo rating, with adjustments then made based on player ratings. Teams which recruited highly rated players saw an increase in Elo rating while teams which lost players saw a decrease in Elo rating.

Previous Results

The Perth Scorchers have dominated the Big Bash League since its inception, winning two titles and being the runner-up the other two seasons. The Sydney Sixers won the inaugural trophy in addition to a runner-up last season, with Brisbane Heat winning in 2012/2013. The Melbourne Stars have made the semi-final in all four seasons, while the Sydney Thunder have seen themselves last three of the four seasons.

Team	Wins	Games	%
Perth Scorchers	24	39	62%
Sydney Sixers	22	36	61%
Melbourne Stars	21	35	60%
Hobart Hurricanes	16	34	47%
Melbourne Renegades	15	32	47%
Brisbane Heat	15	33	45%
Adelaide Strikers	14	32	44%
Sydney Thunder	5	31	16%
Total	132	272	49%

Round Robin Predictions

The Big Bash League is held over eight rounds in which each team plays each other once. This results in 32 games played over 35 days. The chance of winning for each match is displayed in Table 2. After these eight rounds, the top four teams qualify for the finals in a single elimination tournament.

Many of the games are relatively close. On average, the losing team still has a 40% chance of victory. This is largely due to two factors.

Firstly, the win percentages of most teams is relatively close to 50%. Perth, the team with the highest winning percentage and a grand finals appearance in every season, has a 62% win percentage. Conversely Adelaide, a team with only one top four finish in four years, has a win percentage of 44%. This narrow difference in win percentages across the teams leads to lower expected win percentages.

Secondly, Big Bash results are relatively volatile. That is, teams with a worse record or lower rating beat the team with a better record or higher rating more often than other sports.

Expected round robin match results

Team 1	Pre-Season Win Probabilities (%)		Team 2
Sydney Thunder	37%	63%	Sydney Sixers
Adelaide Strikers	52%	48%	Melbourne Stars
Brisbane Heat	29%	71%	Melbourne Renegades
Sydney Sixers	59%	41%	Hobart Hurricanes
Melbourne Stars	59%	41%	Sydney Thunder
Perth Scorchers	59%	41%	Adelaide Strikers
Hobart Hurricanes	54%	46%	Brisbane Heat
Melbourne Renegades	59%	41%	Sydney Sixers
Perth Scorchers	69%	31%	Brisbane Heat
Sydney Sixers	54%	46%	Melbourne Stars
Sydney Thunder	39%	61%	Adelaide Strikers
Brisbane Heat	46%	54%	Hobart Hurricanes
Melbourne Renegades	53%	47%	Perth Scorchers
Adelaide Strikers	48%	52%	Sydney Sixers
Hobart Hurricanes	54%	46%	Sydney Thunder
Melbourne Stars	37%	63%	Melbourne Renegades
Perth Scorchers	57%	43%	Sydney Sixers
Brisbane Heat	50%	50%	Sydney Thunder
Hobart Hurricanes	32%	68%	Melbourne Renegades
Adelaide Strikers	41%	59%	Perth Scorchers
Melbourne Stars	56%	44%	Hobart Hurricanes
Sydney Thunder	31%	69%	Perth Scorchers
Brisbane Heat	39%	61%	Adelaide Strikers
Melbourne Renegades	63%	37%	Melbourne Stars
Hobart Hurricanes	34%	66%	Perth Scorchers
Sydney Sixers	63%	37%	Brisbane Heat
Sydney Thunder	29%	71%	Melbourne Renegades
Adelaide Strikers	57%	43%	Hobart Hurricanes
Melbourne Stars	59%	41%	Brisbane Heat
Sydney Sixers	63%	37%	Sydney Thunder
Perth Scorchers	60%	40%	Melbourne Stars
Melbourne Renegades	62%	38%	Adelaide Strikers

Finals Predictions

The top four teams from the round-robin stage advance to a single elimination tournament with the top team playing the fourth ranked team, and the second team playing the third ranked team.

Based on the Monte Carlo analysis undertaken, the Melbourne Renegades, the Perth Scorchers, the Sydney Sixers and the Adelaide Strikers are expected to finish in the top four and qualify for the finals.

Melbourne are clear favourites in the semi-finals, with a 62% chance of winning. The match between Perth and Sydney is expected to be a loser, with Perth being 57% favourites.

In the grand final, Melbourne are 53% favourites over Perth, leading the Renegades to their first title on the back of signing Chris Gayle.

To determine these chances of advancing or winning, a Bernoulli distribution is applied to the chances of winning. The rankings are then calculated across thousands of iterations of Monte Carlo analysis with a top four finish leading a team into the playoffs and a bottom four finish leading to elimination.

Since most betting odds in Australia are decimal odds, the implied probability is able to be calculated using the following formula:

$$\text{Implied Probability (\%)} = \frac{1}{\text{Decimal Odds}}$$

To be able to compare bookmaker odds and NineSquared odds, the bookmaker margin has been removed by converting the implied probabilities so they sum to 100%. These odds, along with the calculated odds, are displayed in the table below

Pre-Season calculated probability of making the playoffs, grand final and winning the BBL

Elo Rating	Team	Playoffs	Grand Final	Winner	Sportsbet (Winner)
1,089	Melbourne Renegades	69%	42%	26%	17%
1,068	Perth Scorchers	64%	35%	20%	17%
1,023	Sydney Sixers	55%	27%	14%	12%
1,006	Adelaide Strikers	49%	24%	12%	9%
995	Melbourne Stars	48%	22%	9%	17%
956	Hobart Hurricanes	44%	21%	7%	12%
931	Brisbane Heat	36%	16%	6%	10%
930	Sydney Thunder	36%	14%	5%	6%

Incorporating player movements into the analysis

During the offseason there have been player signings, transfers and retirements that have changed the make-up of this seasons Big Bash teams. These impact of these player movements have been incorporated into the Elo ratings for each team. Teams that recruited well will see their Elo rating increase over the 2014/15 rating. Teams which struggled to recruit top talent over the offseason will see their Elo rating decline.

For batsmen, key performance indicators include:

- **Strike rate** – the average number of runs a batsmen will score off 100 deliveries.
- **Average** – the average number of runs a batsmen scores per innings.
- **6's per innings** – the number of 6's a batsmen scores per innings on average.
- **4's per innings** – the number of boundaries a batmen scores per innings on average.

For Bowlers the key performance indicators chosen were:

- **Average** – the average number of runs a bowler will concede per wicket they take.
- **Economy** – the average number of runs a bowler concedes per over they bowl.
- **Maidens per innings** – the average number of overs bowled per innings where no runs are conceded.
- **3 Wickets per innings** – the frequency at which a bowler will take 3 wickets in a single match.

These performance indicators were assessed over the 2014 and 2015 calendar years to determine a player's **current form**. Their entire T20 career was reviewed to better assess the player's potential and overall ability and the results incorporated into the analysis through a **career impact index**.

To understand the potential impact in the BBL specifically, these players have been compared against an average BBL player of last season.

Current form

For current form, recognised bowlers and batsmen from last season's BBL were combined and averaged to benchmark an 'average' player in the BBL under each of the four metrics for batsmen and bowlers. The result can be thought of as the statistics of the 'average' batter and the 'average' bowler from last season.

Career impact

The career impact factor has been included to compensate for inconsistent player form. For this KPI, NineSquared has used career stats from the key recruited players against an average BBL player using a simple technique developed by Davis, Perera and Swartz in 2014:

- **Batting Index:** Average x Strike Rate
(higher indicates better performance)
- **Bowling Index:** Average x Economy
(lower indicates better performance)

In this analysis the average BBL player was given 50% (half a shaded circle) equating to 3207 for a batting index and 214 for the bowling index. The potential impact factors were capped at the highest performing recruits:

- **Batting Index:** Chris Gayle, ranked 5th T20 batsmen with a career batting index of 6598.
- **Bowling index:** Samuel Badree, ranked 1st T20 bowler with a career bowling index of 97.

The average 2015 BBL batsman and bowler

The average BBL Batsman

Average	25.7
Strike Rate	122.3
4's per innings	1.7
6's per innings	0.7



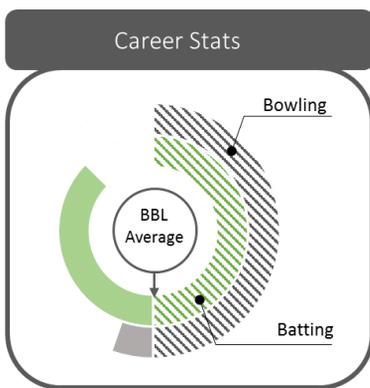
The average BBL Bowler

Average	27.6
Economy	8.0
Maidens per innings	0.3
3 wickets per innings	0.8

To determine the value of each player signed and released in the off-season, a number of individual player metrics were reviewed. Presented in this report are three sets of metrics:

1. Career statistics for batting and/or bowling compared to BBL averages
2. 2014/15 BBP batting or bowling form compared to BBL averages
3. Batting and/or bowling reliability (i.e. consistency)

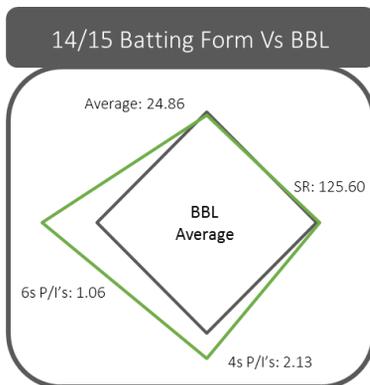
The measures and how to interpret them are outlined below



Career bowling and batting index scores were calculated based on average and strike rate for batters, and average and economy for bowlers. These index scores were then compared to an 'average' Big Bash League batter and bowler.

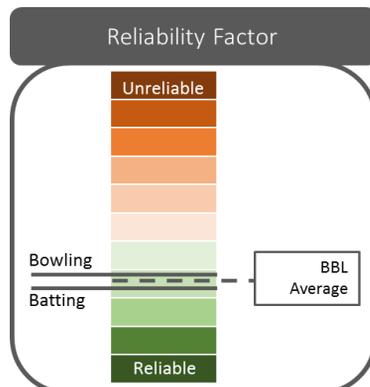
Players which record statistics better than average fill more than half of the circle and are completely shaded. Players which have performed below the Big Bash League average fill less than half of the circle and fall into the cross-hatched area.

This figure can be interpreted as a **player's overall rating**.



The 2014/15 batting and bowling form versus the BBL illustrates key statistics versus the BBL average player. For batter, a player's average, strike rate, number of 4's per innings and 6's per innings is compared. For bowlers, a player's average, economy, maiden overs bowled and three wicket hauls are compared.

Since the figures are for the most recent year, this figure can be interpreted as a **player's recent form**. Where the green diamond extends beyond the grey, the player is 'in-form' for that category when compared to an average player.



The reliability factor was calculated using the statistical package R. A seven sided die probabilistic game is played with the outcomes being 1 run to 6 runs and out. Essentially, this means there are two outcomes of game; either a scoring shot (heads) or a dismissal (tails). The game continues until a dismissal (tails) and the player is out. This then repeats as if the same player bats at each position (i.e. opener, middle order, tail ender, etc.).

The resulting figure is a standard deviation. This may then be interpreted as a **player's reliability**. Unreliable players (i.e. high standard deviation) have the potential to score big, but also find themselves out early. Reliable players are more consistent.



Team predictions



Melbourne Renegades

The Renegades had the best recruitment period overall, while also recruiting arguably the world's best T20 player in Chris Gayle. All told, the Renegade improved by **327 index points**, the most of any team in the competition.

This was led by the signing of Gayle, who added more than 100 index points. Cameron White also adds a significant boost in basis points, with a number of statistically below average players leaving the squad.

In	Out
Xavier Doherty	Fawad Ahmed
Chris Gayle	Alex Doolan
Nathan Hauritz	Andrew Fekete
Chris Tremain	Peter Nevill
Guy Walker	Aaron O'Brien
Cameron White	Ben Rohrer

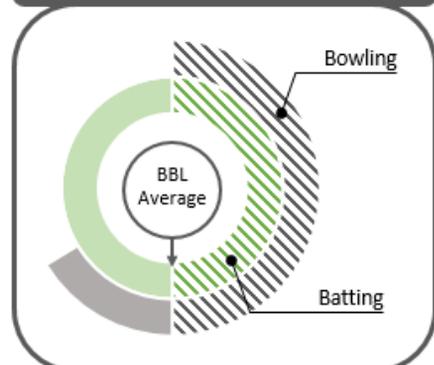
Current ranked as a top 10 T20 batsman in the ICC rankings, Chris Gayle is the Renegades premier signing. More than a part time spin bowler, Gayle also ranks in the top 100 T20 bowlers.

His current batting form belittles the BBL averages, making him one of the headline signings this season. Gayle's batting consistency is significantly above average, with his recent form showing his average is more than double the BBL average.

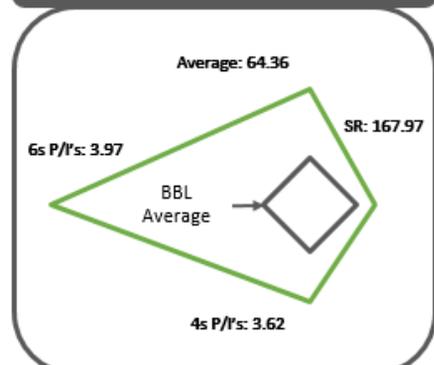
Overall prediction – 1st

Key Signing Chris Gayle

Career Stats



14/15 Batting Form Vs BBL



Reliability Factor



Perth Scorchers

Perth focused on quality over quantity during the recruitment period with only one signing. Willey is an all-rounder, but his statistics suggest his strength lies in his bowling while his batting skill is approximately league average.

Based on this one signing, Perth have improved by **31 index points** heading in to the 2015/16 BBL season.

In	Out
David Willey	

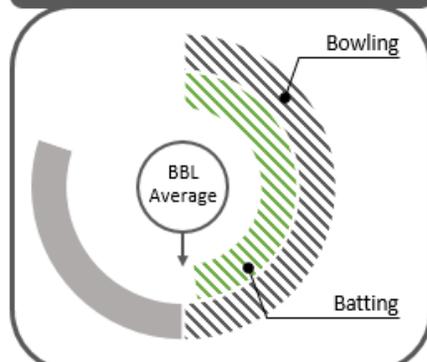
David Willey is an all-rounder with international experience in both T20 and 50 over forms of the game, as well as U19 England experience in test matches.

As his statistics show, his batting performances in T20 fixtures is significantly above the BBL average, as is his more recent form. However, his bowling is just below league average over his career. Despite his good performances with the bat, he has been unreliable. This has the potential to lead to massive scores, but also has the potential to lead to single digit scores. This is tied to his spectacular batting style. Willey hits 1.65 sixes per innings on average, more than double the BBL average of 0.7 and has an impressive Strike rate at **155.44**.

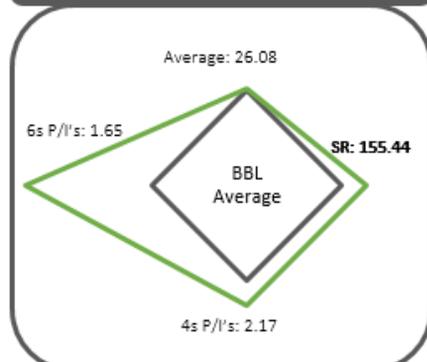
Overall prediction – 2nd

Key Signing David Willey

Career Stats



14/15 Batting Form Vs BBL



Reliability Factor





Sydney Sixers

The Sixers had a very successful recruitment period with three key signings and Brett Lee their only significant loss. Jackson Bird and Johan Botha both provide significant bowling improvement with respect to the bowling index. Haddin's new found availability provides experience both behind the wickets and at the crease.

Overall, the Sixers see their team index score **increase by 34 index points.**

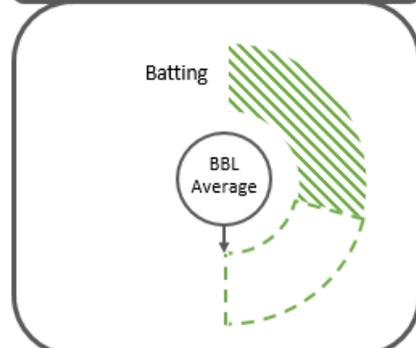
In	Out
Jackson Bird	Brett Lee
Johan Botha	
Mickey Edwards	
Brad Haddin	
Ming Li	

The recent retirement of long serving wicketkeeper Brad Haddin from test cricket has allowed him to join this year's BBL. Across all metrics, Haddin is significantly below the BBL average. This is largely due to the competition Haddin has faced. All of Haddin's T20 experience has been at the international level, while other key signings have had the benefit of playing in domestic leagues. Expect a sharp improvement in Haddin's statistics as the season progresses.

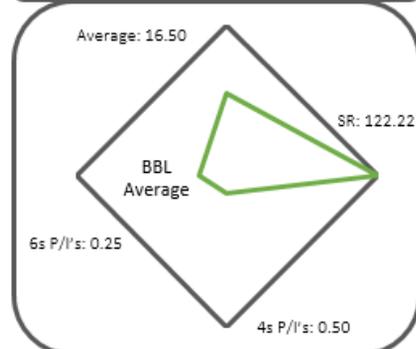
Overall prediction – 3rd

Key Signing Brad Haddin

Career Stats



14/15 Batting Form Vs BBL



Reliability Factor



Adelaide Strikers

Adelaide Strikers have lost two key bowlers in Shaun Tait and Johan Botha during the off season. To counter this loss, they have employed the services of Adil Rashid who is a promising leg spinner from England.

Based on the lack of replacements for key losses, Adelaide had nowhere to go but down. Their index score has **declined by 27 points**.

In	Out
Hamish Kingston	Johan Botha
Adil Rashid	Shaun Tait
Kelvin Smith	Adam Zampa
Billy Stanlake	

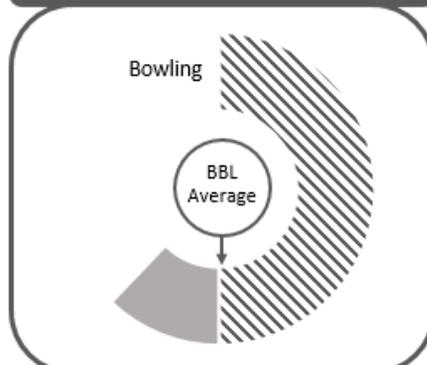
Shane Warne described Adil to be 'as good as anyone I've seen, ever'. Although his current form is below BBL averages, Career stats indicate he could make some impact in this seasons BBL.

Rashid has a high reliability factor, indicating his bowling is a bit erratic. If he can improve his consistency, his above average economy will prove valuable to the Strikers.

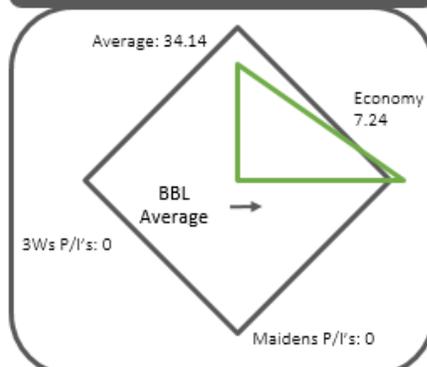
Overall prediction – 4th

Key Signing Adil Rashid

Career Stats



14/15 Bowling Form Vs BBL



Reliability Factor



Melbourne Stars

The Melbourne Stars had the worst recruitment period with respect to total index points. As a team, **the Stars lost 91 index points**. This was led by the loss of Jackson Bird on the bowling front and Cameron White on the batting front. While Michael Clarke was a significant loss with respect to talent, he was not involved in any matches so does not factor into the index point calculations.

Ben Hilfenhaus provides a significant benefit to the team with respect to index points; however, Adam Zampa and Evan Gulbis provide little over an average BBL player.

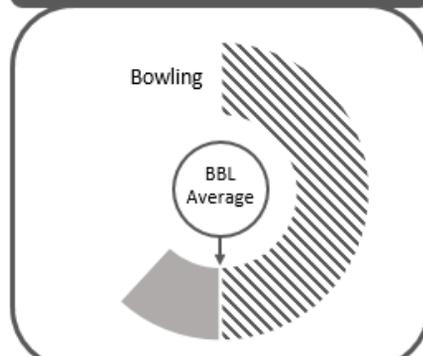
In	Out
Evan Gulbis	Jackson Bird
Ben Hilfenhaus	Michael Clarke
Adam Zampa	Luke Feldman
	Clint McKay
	Clive Rose
	Cameron White

Hilfenhaus is the Star's key signing. He has been an effective bowler since signing for the Hurricanes in the BBL's inaugural season. His current form has exceeded the BBL average for runs conceded per wicket, but is backed with solid career KPIs. His bowling is hit and miss, with his reliability factor higher than the BBL average.

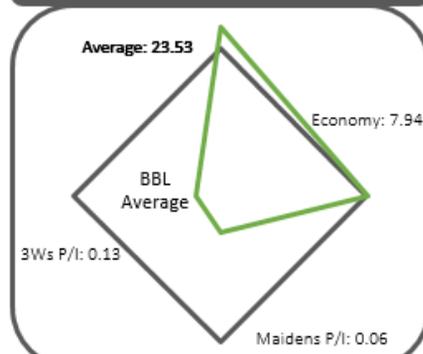
Overall prediction – 5th

Key Signing Ben Hilfenhaus

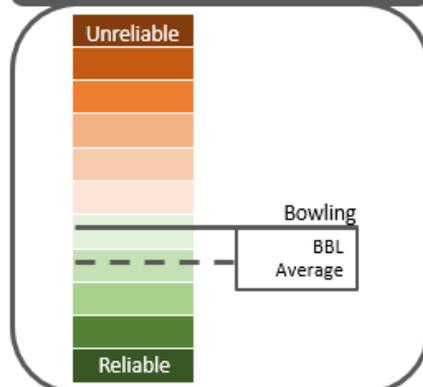
Career Stats



14/15 Bowling Form Vs BBL



Reliability Factor



Hobart Hurricanes

Hobart have had a busy off season, headlined by the recruitment of Kumar Sangakkara and Shaun Tait. However, Darren Sammy provides the highest index gain and should not be overlooked.

Losing Hilfenhaus and Doherty will prove challenging for the Hurricanes. However, the quality of the new players in the team has led to a **net decrease in the team index points of 43.**

In	Out
Dan Christian	Xavier Doherty
Simon Milenko	Evan Gulbis
Clive Rose	Alex Hales
Kumar Sangakkara	Ben Hilfenhaus
Shaun Tait	Shoaib Malik

Considered one of the all-time greats, Sangakkara comes off good form leading in to this season's competition. He has scored 24 half centuries in the shorter form game, with a T20 career average exceeding 30 runs.

Sangakkara's batting metrics are all above BBL average. His career stats are higher than average, with his recent form above average in each of the four categories including an average of **2.59** boundaries per game.

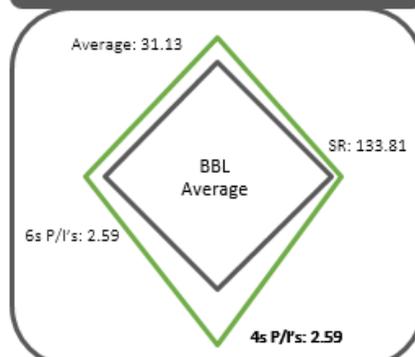
Overall prediction – 6th

Key Signing Kumar Sangakkara

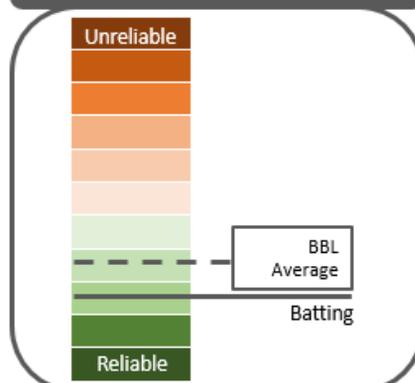
Career Stats



14/15 Batting Form Vs BBL



Reliability Factor





Brisbane Heat

The loss of Daniel Vettori and Andrew Flintoff is a significant loss. Samuel Badree is the second best recruit in the competition this year according to the combined indices. While the Heat lost key players in Shane Watson and Ryan Harris, neither played a significant number of games in the previous season. As such, they have been excluded from the team index score. Overall, the Heat have **declined by 74 index points**.

In	Out
Samuel Badree	Dan Christian
Alex Doolan	Andrew Flintoff
Andrew Fekete	Ryan Harris
Luke Feldman	Simon Milenko
	Daniel Vettori
	Shane Watson

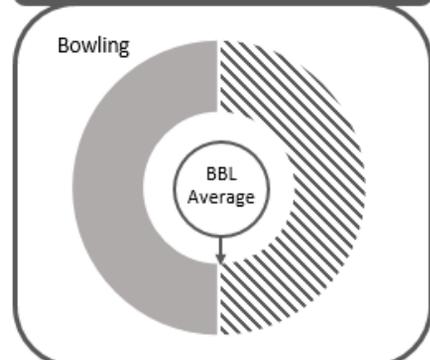
Samuel Badree, a leg spin bowler, is currently ranked the no. 1 T20 bowler in the world by ICC rankings with an extremely impressive career average of 18.42 and economy rate of just 5.25. Last year he took an impressive 4 wickets for just 15 runs in a T20 International and will be trying to continue his form into this seasons BBL competition.

His bowling is one of the most reliable in the league. This will need to continue for the Heat to make an impact this season.

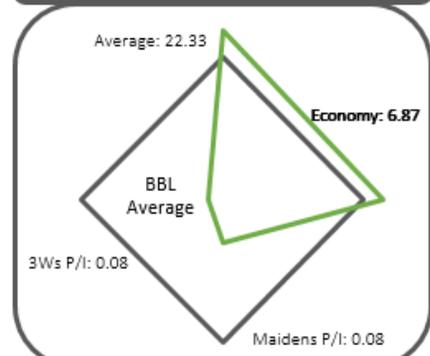
Overall prediction – 7th

Key Signing Samuel Badree

Career Stats



14/15 Bowling Form Vs BBL



Reliability Factor



Sydney Thunder

Sydney Thunder have had a mixed bag with recruitment. The loss of Pat Cummins to injury is a major negative to the team. Based on their averages and strike rates, Ben Rohrer and Fawad Ahmed are below league average. This is offset by Chris Tremain, Josh Lalor and Nathan Hauritz who left the team this summer. All three of these players posted below average statistics.

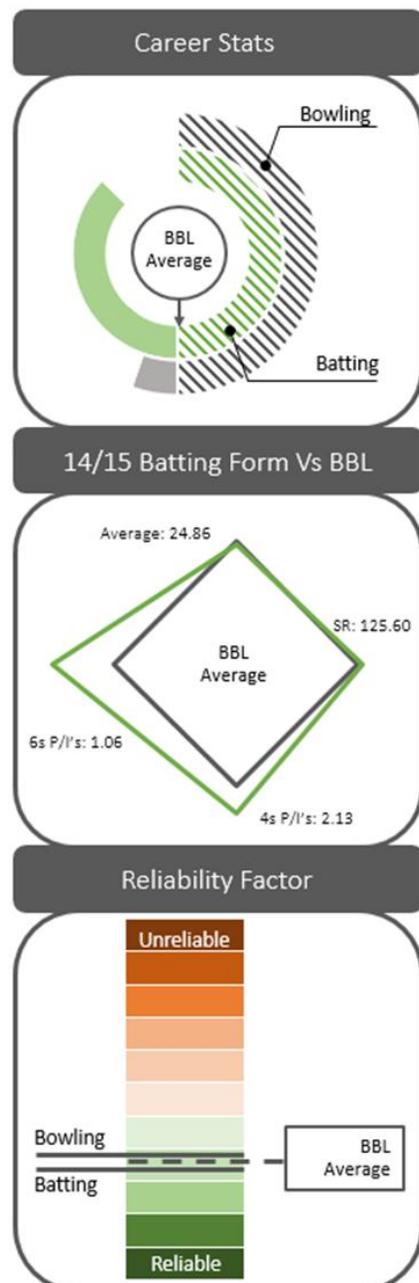
Overall, Sydney Thunder's recruitment has been marginal with the team's overall index scoring **declining by 13 index points**

In	Out
Fawad Ahmed	Pat Cummins (Injury)
Ben Rohrer	Nathan Hauritz
Clint McKay	Chris Tremain
Andre Russell	
Shane Watson	

Shane Watson is the premier Sydney Thunder recruit. Given his ability with both the bat and ball, Shane Watson's performance index is the highest amongst Australians. Public perception has Watson as unreliable. However, his T20 statistics show he is close to the league average in both batting and bowling in reliability, with his career batting statistics significantly exceeding the BBL average.

Overall prediction – 8th

Key signing: Shane Watson



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NineSquared provides clients with economic, commercial and strategic advice in relation to transport. Our principals, directors and consultants have significant experience in working in, and advising clients on, both passenger and freight sectors and across both public and private sectors. Our experience, expertise and skills cover economic research and analysis, commercial advisory services and public policy development and analysis.

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