Duckworth-Lewis Stern (DLS)

For Kent Cricket League
Emily Routh

What is Duckworth Lewis Stern (DLS)?

- Method used to calculate the **par score** for the **team batting second** in a limited-overs match, if a game is interrupted resulting in the **loss of overs**

- Only comes into play if **overs are lost after the start of play**

- DL vs. DLS – is the same thing!
  - Stern added an additional point to the formula in 2014 (to recognise that teams need to start out with a higher scoring rate when chasing high targets rather than keep wickets in hand)

How is DLS calculated?

$$\text{Team 2's par score} = \text{Team 1's score} \times \frac{\text{Team 2's resources}}{\text{Team 1's resources}}.$$
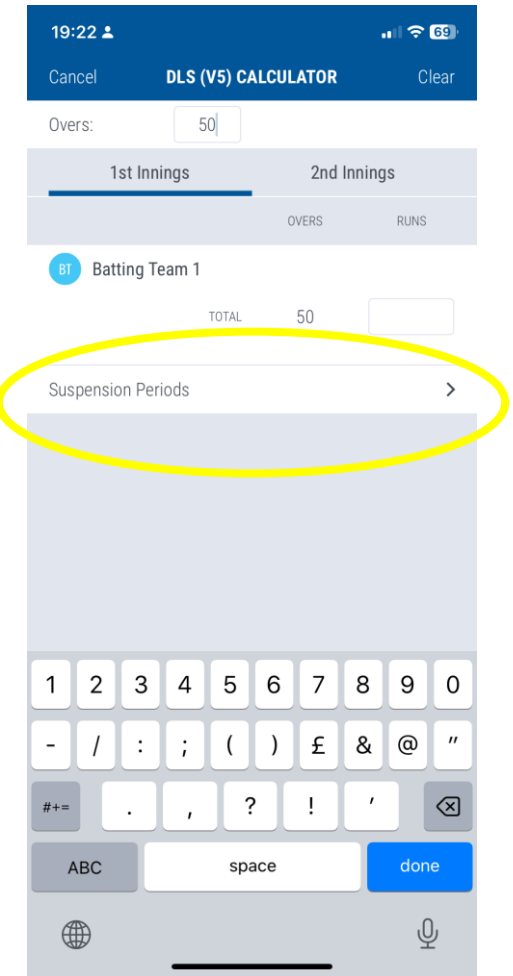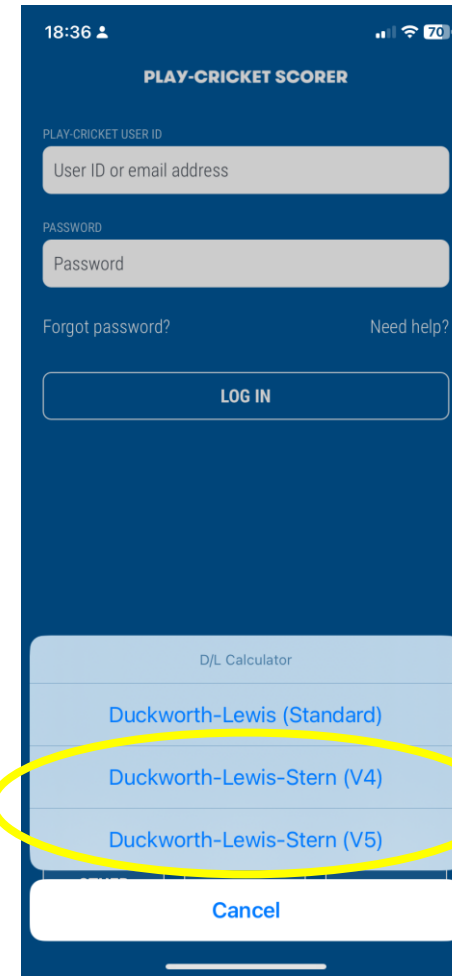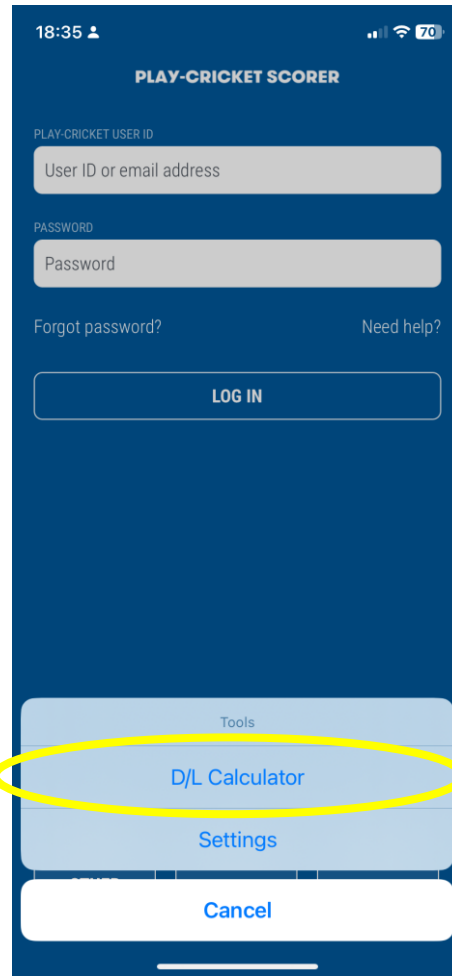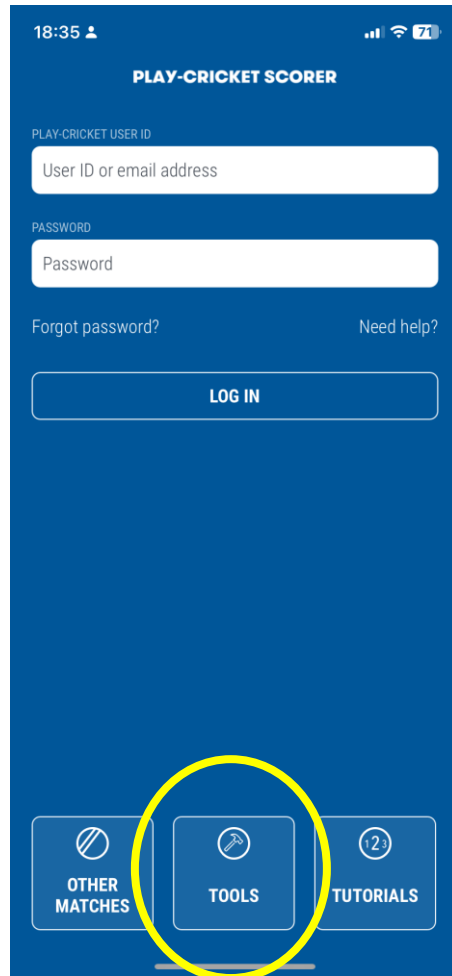
- DLS works on the basis that each team has two types of "resources" within their innings:
  - Overs
  - Wickets

- Total resources available to a batting team is determined by the **"resources used"** and **"resources remaining"**
  - As overs are completed or wickets fall - the "resources remaining" falls

- **Par score is based on the resources a team has <u>going into</u> their innings and the resources they have <u>used before</u> any interruptions**
- **It depends on <u>when</u> the interruption occurs and <u>who</u> is disadvantaged by the interruption / reduction in overs**

"Resources"

- DLS includes a mathematical model which calculates the resources as a **percentage** depending on how many **overs** are left in **combination** to how many **wickets** are in hand

- At the beginning of a game both teams have **50 overs + 10 wickets = 100%**

- As overs are completed and wickets fall the percentage falls:
    - After 1 over has been bowled , if no wicket has fallen = 99%
    - After 1 over has been bowled, if 1 wicket has fallen = 93%
    - Etc, etc.

- If all overs are used OR all wickets are lost, resources are 0%
    - After 30 overs have been bowled, 10 wickets have fallen = 0%
    - After 50 overs have been bowled, 0 wickets have fallen = 0%
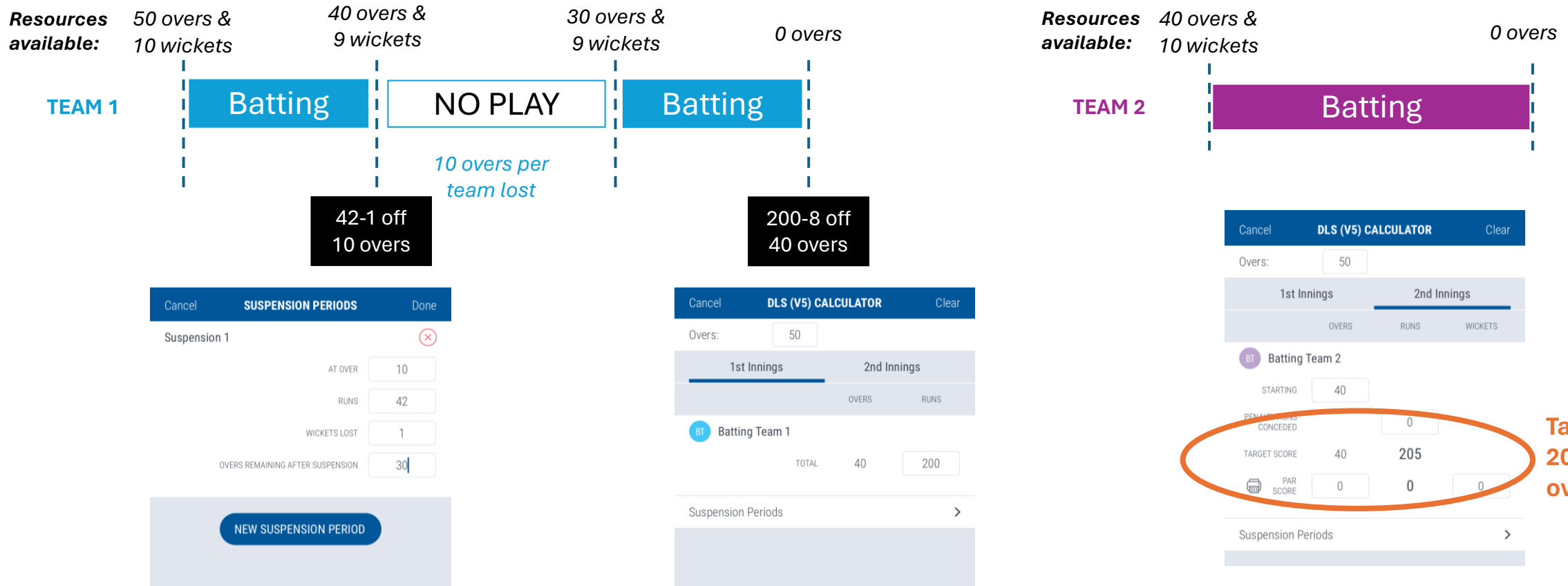
Play Cricket App

Example 1: Interruption at the beginning of the game

*50 overs &
10 wickets*   *30 overs &
10 wickets*   *0 overs*

TEAM 1   NO PLAY   Batting

*30 overs &
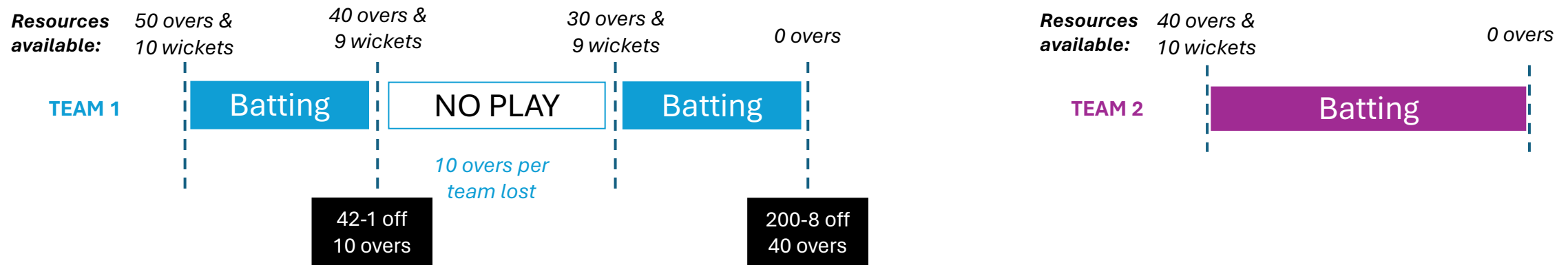10 wickets*   *0 overs*

TEAM 2   Batting

- Start delayed and game is reduced to 30 overs a side

- NO DLS IS REQUIRED as both teams start the game with the same "resources"

Example 2: Interruption in the 1ˢᵗ innings

Resources available: 50 overs & 10 wickets | 40 overs & 9 wickets | 30 overs & 9 wickets | 0 overs

TEAM 1   Batting   NO PLAY   Batting

10 overs per team lost

42-1 off 10 overs

200-8 off 40 overs

Resources available: 40 overs & 10 wickets | 0 overs

TEAM 2   Batting

Target score: 205 off 40 overs

Delay is a disadvantage to team 1 and therefore goes in their favour (i.e. team 2's par score is higher than what team 1 scored after 40 overs)

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Example 2: Interruption in the 1ST innings

Resources available:

TEAM 1

50 overs & 10 wickets — 40 overs & 9 wickets — 30 overs & 9 wickets — 0 overs

| Batting | NO PLAY | Batting |

10 overs per team lost

42-1 off 10 overs

200-8 off 40 overs

Resources available:

TEAM 2

40 overs & 10 wickets — 0 overs

| Batting |

- The more wickets lost at the time of the interruption reduces the resource % available to team 1

- As all remaining available overs to team 1 are then bowled the number of wickets lost at the end of the 40 overs does not feed into the par score

- Team 2 go into their innings know they only have 40 overs (1st team thought they had 50 so disadvantage is to 1st team)

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Example 3: Interruption at the end of the 1ˢᵗ innings

Resources available: 50 overs & 10 wickets   5 overs & 4 wickets   0 overs

TEAM 1   Batting   NO PLAY   *5 overs lost*

200-6 off 45 overs

Resources available: 45 overs & 10 wickets   0 overs

TEAM 2   Batting

SUSPENSION PERIODS

Cancel   **SUSPENSION PERIODS**   Done

Suspension 1   ⊗

AT OVER   45
RUNS   200
WICKETS LOST   6
OVERS REMAINING AFTER SUSPENSION   0

NEW SUSPENSION PERIOD

Cancel   **DLS (V5) CALCULATOR**   Clear

Overs: 50

1st Innings   2nd Innings
OVERS   RUNS

BT Batting Team 1
TOTAL   45   200

Suspension Periods   >

Cancel   **DLS (V5) CALCULATOR**   Clear

Overs: 50

1st Innings   2nd Innings
OVERS   RUNS   WICKETS

BT Batting Team 2
STARTING   45
PENALTY RUNS CONCEDED   0
TARGET SCORE   45   225
PAR SCORE   0   0   0

Suspension Periods   >

Target score: 225 off 45 overs

Delay is a disadvantage to team 1 and therefore goes in their favour (i.e. team 2's par score is higher than what team 1 scored after 45 overs)

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Example 3: Interruption at the end of the 1ˢᵗ innings

Resources available: *50 overs & 10 wickets* ... *5 overs & 4 wickets* ... *0 overs*

TEAM 1 | Batting | NO PLAY

5 overs lost

200-6 off 45 overs

Resources available: *45 overs & 10 wickets* ... *0 overs*

TEAM 2 | Batting

- The number of wickets lost by Team 1 will impact the par score for Team 2 (they went into their innings thinking they had 50 overs but were not able to use them all)

- Because Team 2 have more resources going into their innings (i.e. they know they only have 45 overs, whilst 1st team went into their innings thinking they had 50 overs) the par score is higher than what the Team 1 scored in their 1st innings

Example 4: Interruption at tea

Resources available: 50 overs & 10 wickets

0 overs

TEAM 1

Batting

20 overs lost at tea

200-6 off 50 overs

Number of wickets lost does not influence par score as all overs have been used

Resources available: 30 overs & 10 wickets

0 overs

TEAM 2

Batting

Target score: 155 off 30 overs

Example 5: Interruption in 2ⁿᵈ innings

Resources available: 50 overs & 10 wickets — 0 overs

TEAM 1 — Batting — 200-6 off 50 overs

Number of wickets lost does not influence par score as all overs have been used

Resources available: 50 overs & 10 wickets — 40 overs & 9 wickets — 30 overs & 9 wickets — 0 overs

TEAM 2 — Batting — NO PLAY — Batting

10 overs per team lost

42-1 off 10 overs

Number of wickets lost at the interruption WILL influence par score

Target score: 178 off 40 overs

Example 5: Interruption in 2ⁿᵈ innings

Target score: 178 off 40 overs

Par score at 10 overs (with 1 wicket down): 32 (33 to win)

Delay is a disadvantage to team 2 and therefore goes in their favour

What is required from umpires?

- Agreement on **who** will be "DLS operator"

- Confirmation of **how many overs have been lost** in total (and per innings)
- Confirmation of **how many overs are remaining after the suspension**

- Confirm if **par or target** score is to be shown on the scoreboard

- Confirm if showing par score at end of each over (and where it will be displayed on the scoreboard)
  - This is useful if further rain is expected which may mean the game is likely to finish before all remaining overs can be bowled