Rationale For Setting the 2025/26 Rock Lobster Fishery Total Allowable Commercial Catch

BACKGROUND

The Victorian Rock Lobster Fishery harvest strategy is included as Appendix 1 and summarised below.

- The harvest strategy is based on standardised catch per unit effort (CPUE), which is rounded to two decimal places.
- The total allowable commercial catch (TACC) is set using a CPUE-TACC table in conjunction with a harvest control rule (HCR). The HCR regulates the rate at which the TACC can increase and decrease in response to CPUE changes.
- The HCR also implements the shift to more conservative exploitation rates over time and draws on the secondary PRI indicator to prevent TACC increases when undersize abundance is low.
- The performance of the fishery is evaluated against the stock performance indicators and associated limit reference points specified in the fishery's harvest strategy. The indicators and limit reference points include egg production, standardised CPUE and pre-recruit abundance. The annual TACC is determined using a set of decision rules.

The three biological indicators used in setting the TACC are as follows:

1. **Egg production**: the model estimated egg production must be above the limit reference point (LRP) of 20% of virgin levels, with a 90% probability.
2. **Standardised CPUE:** used in assessing CPUE-TACC relationship, and the resultant determinant of progression through the rebuilding steps.

   In addition, a CPUE proxy can be applied when a model-based stock assessment of egg production is unavailable, or there is insufficient data for the stock assessment model. The LRP proxys are:

   a. 0.30 kg per pot-lift in the Western Zone, and

   b. 0.25 kg per pot-lift in the Eastern Zone.
3. **Pre-recruit index (PRI)**: to be eligible for a TACC increase, the PRI for that stock assessment period must be above the PRI threshold level for that zone. The PRI thresholds are:

   a. 1.67 undersize per pot-lift in the Western Zone, and

   b. 0.25 undersize per pot-lift in the Eastern Zone.

HARVEST CONTROL RULE

Part 1: Ensure Egg Production Limit Reference Point is met

Part 2: Determine the TACC according to the following conditions:

1. The fishery will move to the next CPUE band (and possibly a higher TACC) if:

    i. the standardised CPUE is in a band higher than in the previous season;

    AND

    ii. the PRI (rounded to two decimal places) is at or above the threshold level of 1.67 undersize per pot lift for the Western Zone or 0.25 undersize per pot lift for the Eastern Zone.

** One-jump rule: the TACC can only be progress through one step per year.*

The TACC will be set at the level that corresponds to the standardised CPUE.

APPLICATION OF THE HARVEST STRATEGY

WESTERN ZONE

Decision Rule	2023/24 Stock Indicator Level	Outcome
<u>Part 1: Egg Production</u>		
Is the model estimated egg production above the limit reference point of 20% of unfished levels?	The 2023/24 egg production level is estimated at 22.4% of unfished levels.	Decision rule has been met. Go to Part 2
<u>Part 2: TACC Determination</u>		
a. Is standardised CPUE in a higher band than the previous season?	CPUE decreased from 0.79kg/pot-lift in 2022/23 to 0.78kg/pot-lift in 2023/24. This remains in the same 0.75-0.80 CPUE band	The CPUE band has remained the same.
a. Is the 2022/23 PRI at or above the threshold level of 1.67 undersize/pot-lift?	The combined PRI was 1.82 in 2023/24. This was a slight reduction from the previous three years but remains above the threshold level.	The combined PRI is above the threshold level.
	RESULT	**The Western Zone remains in the CPUE band 0.75-<0.80. This gives a TACC of 245t in 2025/26.**

EASTERN ZONE

Decision Rule	2023/24 Stock Indicator Level	Outcome
Part 1: Egg Production		
Is the model estimated egg production above the limit reference point of 20% of unfished levels?	The 2023/24 egg production level is likely to be above the 20% level based on the CPUE proxy and weight of evidence argument.	Decision rule has been met. Go to Part 2
Part 2: TACC Determination		
b. Is standardised CPUE in a higher band than the previous season?	CPUE increased from 0.48kg/pot-lift in 2022/23 to 0.60kg/pot-lift in 2023/24. This corresponds to a higher 0.60 -< 0.65 band.	The CPUE band has increased.
b. Is the 2023/24 PRI at or above the threshold level of 0.25 undersize/pot-lift?	The combined PRI was 0.02 in 2023/24. This is a significant reduction that is well below the threshold level.	The combined PRI is below the threshold level.
	RESULT	**The Eastern Zone remains in the same CPUE band (0.45-<0.50) with a TACC of 21t.**

VFA RECOMMENDATION

WESTERN ZONE

The stock indicators in the Western Zone continue to show improvement. The standardised CPUE remained at 0.78 in 2023/24, following consecutive years of improvement. The PRI has remained relatively consistent over the last three years. While the PRI reduced to of 1.82 undersize per pot-lift in 2023/24, it remains above the harvest strategy's threshold reference point of 1.67 undersize per pot-lift. Furthermore, egg production continues to remain well above the 20% limit reference point. Based on this information, the RLRAG unanimously endorsed the application of the harvest strategy.

The VFA endorses the RLRAG recommendation to set the TACC to 245 tonnes for the 2025/26 season consistent with the principles outlined in the harvest strategy.

EASTERN ZONE

The Eastern Zone continues to present concerning results regarding productivity. While the CPUE increased substantially in the most recent stock assessment, this needs to be considered with caution due to the low levels of data available in this fishery. The PRI was recorded at 0.02 undersize per pot-lift 2023/24. This is the lowest on record and well below the threshold of 0.25 undersize per pot-lift. This is the second consecutive decline for the zone and second year well below the threshold. Under the harvest strategy, if the zone experiences two consecutive years under the PRI threshold, a review is triggered. Based on the conservative rebuilding plan in the Eastern Zone, the RLRAG recommended that the TACC remains at 21 tonnes; and further recommended that a review of the harvest control rules be prioritised at its next meeting to determine an appropriate course of action should the trend in the PRI continue.

The VFA endorses the RLRAG recommendation to set the TACC to 21 tonnes for the 2025/26 season and prioritise a review of the harvest control rules at its next meeting.

APPENDIX 1 – Harvest Strategy

Harvest strategies provide a structured framework for assessing the status of a fishery and a set of rules to determine the annual catch limits. Decisions regarding catch limits are set out in advance, ensuring that fishers, fishery managers and other relevant stakeholders know what action will be taken in response to the conditions in the fishery (Sloane et al 2014).

Unlike the previous harvest strategy that focused on setting a constant exploitation rate to enable stock rebuilding, the foundation of this harvest strategy is based on establishing a clear rebuilding target to be achieved within a defined timeframe. As the stock rebuilds, more conservative exploitation rates will be adopted to increase the resilience of the fishery.

Operational Objectives

The harvest strategy aims to achieves three main operational objectives, all of which link to the overarching objectives for the management of the fishery. These operational objectives are:

1. Establish a clear target that guides rebuilding trajectories of the rock lobster population by setting appropriately conservative TACCs on an annual basis.
2. Ensure the agreed Target Reference Point (TRP) of 28 percent and 28.8 percent pre-fishing available biomass for the Western Zone and Eastern Zone, respectively, is reached by 2043.
3. As the stock rebuilds, gradually transition towards a more conservative exploitation rate to reduce the probability of future declines back to the current level.

Principles of the Harvest Strategy

- The harvest strategy is based on standardised CPUE from commercial catch and effort logbook information and is derived from the 'fishing year data series' (i.e. November to September). All estimates of standardised CPUE are rounded to two decimal places.
- TACCs are set by assessing the fishing zone's performance against stock performance indicators, biological reference points and applying decision rules. These factors include the standardised CPUE from that year's stock assessment, a pre-recruit index (PRI) and predefined TACC tables that determine whether the annual TACC is increased, maintained or decreased in the following season.
- TACCs are predetermined and have been calculated to ensure that the target reference points are achieved within the rebuilding timeframe.
- The exploitation rate is zero at or below the CPUE limit reference point.
- The TACC is calculated in each CPUE band on the basis of the exploitation rate in that band.
- The TACC is capped at a specified level, consequently the exploitation rate declines once this cap is reached.
- The fishery will be closed to all fishing if the annual standardised CPUE falls below 0.30kg/pot lift for the Western Zone and 0.25kg/pot lift for the Eastern Zone (the lower limit reference point)
- To receive an increase in TACC, the annual PRI must be above the PRI threshold set for each zone.
- The TACC can only be increased by one level at any time ('one-jump rule').
- An upper limit, or cap, on TACC levels has been included in this harvest strategy. The caps are 245 tonnes for the Western Zone and 32 tonnes for the Eastern Zone.

Stock performance indicators

Performance indicators measure and track the performance of the stock against the operational objectives in this harvest strategy and are integral in determining the level at which the TACC will be set.

Three biological performance indicators are used in setting the TACC:

1. **Egg production** – an estimate of the reproductive potential of the population. It is a crucial determinant of the health of the stock and is used in this strategy as a primary indicator in the decision rules.
2. **Standardised CPUE** – Catch per unit effort (CPUE) data comes from the catch and effort logbooks submitted by commercial fishers. It is expressed as the catch (kilograms) achieved per pot lift. In lobster fisheries, CPUE closely correlated to abundance and is widely accepted as being a proxy for abundance of legal-size rock lobsters. Standardised CPUE is calculated from logbook data that has undergone a quality control process and has been standardised for a range of factors that affect catchability, such as month, year, depth, region and fisher (i.e. the ability and practices of fishers). Throughout this document all references to CPUE refer to standardised CPUE.
3. **Pre-recruit index** – is the number of undersize lobsters per pot lift and is derived from the data collected through the fixed-site survey and on-board observer programs. This provides a measure of the level of recruitment to the legal-size biomass likely to be experienced in the next few years.

The total biomass (for all lobsters >60mm) is also available from the stock assessment model and is used as an additional performance indicator in the assessment of the fishery. This indicator does not directly impact TACC adjustments but is used as a secondary indicator to track the stock status and performance against the rebuilding trajectory.

Reference points for the performance indicators

Reference points are the benchmarks of performance that define acceptable levels of impact on a stock (Sloane et al. 2014). Reference points are usually linked to the performance indicators and three types have been used; these are limit, threshold and target reference points.

Limit reference points

A limit reference point (LRP) provides a level below which the risk to the stock is unacceptably high and severe management action is required. For this fishery egg production compared to the pre-fishing stock is the indicator used to assess performance against the LRP. This provides the most direct indicator for the capacity of this component of the stock to continue to provide recruitment into the future.

The LRP is set to 20 percent of the unfished level of egg production. The 20 percent level is widely used and is the default level in several policy frameworks including the Marine Stewardship Council sustainable fishing standard and the Australian Commonwealth Harvest Strategy Policy. Due to the high potential consequence of falling below the LRP, a 90 percent probability of the fishery being above the LRP is required. Work in other crustacean fisheries indicates that generally these fisheries are resilient to exploitation and 20 percent is a conservative LRP.

LRP Proxy

The LRP is assessed annually on the basis of egg production estimates from the stock assessment model. However, the LRP is also used in formulating the CPUE-TACC relationship, hence a CPUE proxy for the LRP is needed. This proxy can also be used where model-based egg production estimates are unavailable (for example if there is insufficient data for the stock assessment model, or if the stock assessment is not

conducted annually as a cost saving measure). Analysis of past egg production estimates and CPUE resulted in a CPUE proxy for the egg production LRP of 0.30kg/pot lift for the Western Zone and 0.25kg/pot lift for the Eastern Zone.

A limitation of this proxy is that whilst CPUE is correlated with egg production, it is not a direct measure. For instance, egg production is only influenced by mature females whilst CPUE is also influenced by male lobsters and not influenced by undersize mature females. This limitation should be clearly kept in mind, particularly in future stock assessment years where the model-based assessment of biomass and egg production may differ from what the CPUE proxy indicates. For example, a situation could arise where CPUE is below the proxy for the egg production LRP, but due to good abundance of undersize lobsters the model-based assessment may indicate that egg production is above the LRP. However, this limitation is of limited concern given that the LRP proxy is only used for formulating the lower bands of the CPUE-TACC table.

Threshold reference point

Threshold reference points can represent a threshold value which triggers a certain management action or a pre-determined management response.

Pre-recruit index threshold

The Pre-Recruit Index (PRI) is determined using data from the fixed-site surveys and on-board observer program and is averaged, weighted by region.

In this harvest strategy, threshold reference points have been established for the PRI. These thresholds are set at the 40th percentile of a normal distribution fitted to the PRI during a reference period of 2008 to 2022.

To be eligible for an increase in the TACC in an upcoming season, the PRI for that stock assessment period must be above the threshold level for that zone.

The PRI thresholds are:

- 1.67 undersize per pot lift in the Western Zone; and
- 0.25 undersize per pot lift in the Eastern Zone.

Note that the 40th percentile is used for the threshold to enable TACC increases in years where the number of pre-recruits is slightly less than average recruitment during the reference period. For the Eastern Zone the reference period includes some low years, resulting in a reduction in the threshold from the previous harvest strategy. However, this is consistent with the very precautionary TACC table that is implemented.

Target reference point

A target reference point (TRP) provides an indication of the level around which the fishery should be managed to best achieve its biological, social and economic objectives. For this fishery total biomass above 60mm carapace length, as compared to the pre-fishing stock, is used as the indicator to assess performance against the TRP. This provides a measure that is relevant across a range of objectives. Total biomass at the TRP level should meet the key objectives of the Management Plan to ensure a sustainable resource and optimised community benefit.

Explicitly translating the Management Plan objectives to a target biomass level is complicated, particularly as the objectives can be countervailing. Instead, this fishery uses a TRP of 40 percent of the biomass that would be available if fishing ceased. This level is the default level used in many fisheries and fishery standards globally including the Commonwealth Fishery Harvest Strategy Policy and the Marine Stewardship Council's (MSC) sustainable fishing standard. In this context it is often considered a proxy for B_{MSY}.

Across the Australian SRL stock, a substantial reduction in productivity has occurred which is likely a sign of an environmentally driven regime shift (Linnane et. al. 2020). The impact on the Victorian component of the population has been assessed by using the stock assessment model in conjunction with the reduced level of recruitment experienced from 2008 onwards. This analysis indicates that if fishing permanently ceased the biomass would only expect to return to 70 percent and 72 percent of the pre-fishing biomass level for the Western Zone and Eastern Zone respectively.

The productivity reduction is likely due to factors unrelated to the fishery. In line with many standards, the TRP has been adjusted to account for the reduction in productivity (Linnane et. al. 2019). Consequently, the TRP has been set at 28 percent and 28.8 percent for the Western Zone and Eastern Zone respectively. This is consistent with the intent behind the TRP of representing B_{MSY}, which has also reduced in-line with productivity changes.

TRP Proxy

A comparison of CPUE with model estimated biomass levels was used to obtain a CPUE proxy for the target reference point. This was calculated to be 1.20 and 0.86 kg/pot lift for the Western Zone and Eastern Zone respectively.

		Indicator Level		CPUE Proxy (kg/pot lift)	
Reference Point	**Indicator**	**Western Zone**	**Eastern Zone**	**Western Zone**	**Eastern Zone**
Limit	Egg Production	20%	20%	0.30	0.25
Target (B_{MSY} proxy)	Biomass (>60mm)	28%	28.8%	1.20	0.86

Current Stock State and Rebuilding Timeframe

The stock is currently well below the target reference point with 2021/22 standardized CPUE at 0.74 kg / pot lift in 2021/22 in the Western Zone and 0.49kg/pot lift in the Eastern Zone. This corresponds to a biomass of 22 percent of the unfished level in the Western Zone and 20.7 percent in the Eastern Zone. Consequently, a key element of the harvest control rule is to facilitate stock rebuilding to the target reference point.

A stock rebuilding time frame of 20 years has been set for this fishery. This long time frame is appropriate given the long generation time of lobster and consistent with standards such as the MSC standard which requires a rebuilding time frame that is the lesser of 20 years or 2 generations. The generation time used in the MSC standard is calculated as $1/M + A_{50}$ (where M is natural mortality and A_{50} the age at 50 percent maturity). Both of these quantities are difficult to estimate due to challenges in observing and/or tagging small lobsters. However, the best estimates are M=0.1 and A_{50} = 6. This gives a generation time of 16 years. Hence two generation times is equal to 32 years and the lesser period of 20 years applies for a rebuilding strategy.

The implementation of this harvest strategy provides a clear pathway to achieve the target reference point within the 20-year rebuilding timeframe. It is, however, important to note that progress towards the rebuilding target will be subject to continual review which may result in adjustment to the CPUE-TACC table to ensure the objectives of the Management Plan are achieved.

Harvest control rule principles

Exploitation Rate

The harvest control rule sets a TACC that implements an exploitation rate which starts at zero at the LRP and then increases linearly to a maximum level as biomass increases. The TACC is also capped, hence once biomass exceeds the level at which the TACC cap is reached the exploitation rate decreases. This relationship is depicted in Figure 11. A key principle underlying this harvest strategy is that as the stock rebuilds, more conservative exploitation rates will be adopted. This ensures that the risk of future stock declines is significantly reduced.

The exploitation rate is implemented through a relationship between CPUE and the TACC. Table 9 and 10 show the highest TACCs that can be set for each CPUE band in order to achieve the TRP within the rebuilding time frame. More details of how this is operationalized in practice are provided in the commercial harvest control rule section.

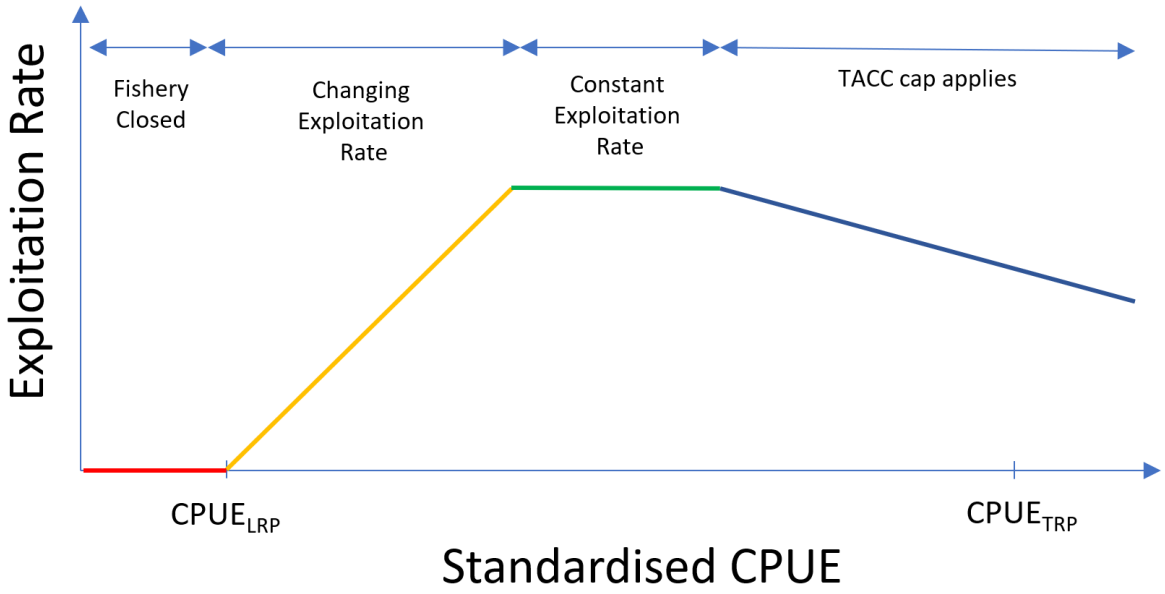

Figure 11: Conceptual relationship between exploitation rate and the stock status indicator (standardised CPUE). The exploitation rate rises from 0 at the CPUE LRP proxy to its maximum value. It then remains at this maximum value until the TACC cap is reached after which it declines. This decline is because no further TACC increases are permitted but the stock continues to increase.

Table 9: *The highest TACC (t) that can be set in the Western Zone and still achieve a rebuild to the TRP within the rebuilding time frame. The TACC depends on the stock state as indicated by the standardized CPUE. A recreational catch of 6t has been assumed. Red indicates when the fishery is closed, orange where the exploitation rate is increasing, green a constant exploitation rate and blue a capped TACC.*

CPUE	TACC
<0.25	**0**
0.250 - <0.275	**0**
0.275 - <0.300	**0**
0.300 - <0.325	**5**
0.325 - <0.350	**15**
0.350 - <0.375	**27**
0.375 - <0.40	**40**
0.40 - <0.425	**55**
0.425-<0.45	**71**
0.45 - <0.475	**89**
0.475<-0.50	**108**
0.50 - <0.525	**129**
0.525<-0.55	**151**
0.55 - <0.575	**175**
0.575<-0.60	**200**
0.60 - <0.625	**227**
0.625<-0.65	**236**
0.65 - <0.675	**245**
0.675<-0.70	**245**
>=0.70	**245**

Table 10: *The highest TACC (t) that can be set in the Eastern Zone and still achieve a rebuild to the TRP within the rebuilding time frame. The TACC depends on the stock state as indicated by the standardized CPUE. A recreational catch of 6t has been assumed. Red indicates when the fishery is closed, orange where the exploitation rate is increasing, green a constant exploitation rate and blue a capped TACC.*

CPUE	TACC
<0.25	0
0.250 - <0.275	1
0.275 - <0.300	4
0.300 - <0.325	7
0.325 - <0.350	10
0.350 - <0.375	14
0.375 - <0.40	19
0.40 - <0.425	23
0.425 -< 0.45	29
0.45 - <0.475	30
0.475 -<0.50	32
0.50 - <0.55	32
0.55 - <0.60	32
0.60 - <0.65	32
0.65 - <0.70	32
0.70 - < 0.75	32
>= 0.75	32

Resource Allocation

The assessment modelling conducted to develop Tables 9 and 10 assumed a recreational catch of 6t in both zones. This is based on the reported catch from the 2018/19 fishing period. 2018/19 is considered the most accurate year of recreational catch estimates since mandatory catch reporting was introduced due to subsequent years data being disrupted as a result of bushfires, COVID and data collection challenges from the transition to digital tagging. Recreational catch has the potential to increase significantly in the future as the planned rebuilding occurs and lobsters become easier to catch. This has the capacity to undermine the rebuilding strategy and time frame and will need to be addressed through additional management measures or resource sharing considerations. The impact of the assumed recreational catch will be monitored on an annual basis.

Commercial Harvest Control Rule (HCR)

The TACC is set using a CPUE-TACC table in conjunction with a harvest control rule. The harvest control rule (HCR) regulates the rate at which the TACC can increase and decrease in response to CPUE changes. The HCR also implements the shift to more conservative exploitation rates over time and draws on the secondary PRI indicator to prevent TACC increases when undersize abundance is low.
The commercial HCR is based on CPUE-TACC look up tables that differ from that in Table 9 and 10 in two ways:

1. A stepped approach that reduces the exploitation rate across all CPUE bands as rebuilding takes place to ensure that any future declines are halted earlier.

2. More conservative TACCs in the Eastern Zone than what is permitted in Table 10.
   This was chosen to address greater uncertainty about this component of the fishery and concerns about potential further reductions in productivity at this extreme end of the SRL distribution. Further, the Management Plan Review Steering Committee strongly recommended adopting a more rapid rebuilding plan that sought to achieve the TRP within 10 years. This was determined as a result of the recent performance of the fishery where key indicators have reached historical lows and declining catch rates have impacted operational viability. The more rapid rebuild plan will improve resilience against future climate change threats, such as increasing urchin abundance, loss of kelp forests and ocean acidification.

The resulting tables are shown in Table 11 and 12. TACCs are initially set according to the column "Step 1" and as rebuilding occurs the more conservative exploitation rates in Step 2 onwards are gradually adopted.
Note that from step 7 onwards the maximum TACC for the Eastern Zone exceeds the maximum 32 tonnes indicated in Table 10. This is a benefit of the more precautionary approach adopted by industry and will at the earliest occur in eight years, by which time progress against the rebuilding target will have been re-evaluated multiple times and likely reflected in updates to the harvest strategy.

The formal harvest control rule can be divided into parts:

Harvest Control Rule Part 1: Ensuring Egg Production LRP is met

Model estimated egg production must be above the limit reference point of 20 percent of the virgin level with a 90 percent probability. This decision rule must be satisfied before the CPUE-based harvest strategy can be used to set the TACC. In circumstances where a model-based estimate of egg production is unavailable, a CPUE based proxy may be used to evaluate the fishery against the limit reference point identified in Section 7.2.2.

If this decision rule is not met, the TACC will be determined using the rock lobster fishery model to ensure that the TACC returns the egg production to above the limit reference point within two years with a 90 percent probability.

Harvest Control Rule Part 2: TACC Determination

When Decision Rule #1 has been met, the TACC is set using the standardised CPUE-TACC Table 11 and 12 for the Western Zone and Eastern Zone, respectively. Note that the HCR initially, at the time of its adoption, commences in Step 1.

1. The fishery will move to the next CPUE band (and possibly a higher TACC unless the cap has been reached) if:

   i) the standardised CPUE is in a band higher than in the previous season;

AND

   ii) the PRI (rounded to two decimal places) is at or above the threshold level of 1.67 undersize per pot lift for the Western Zone or 0.25 undersize per pot lift for the Eastern Zone.

Note that the CPUE band can only increase a single level per year. If the new CPUE band has reached the final value for that step, as indicated by the arrow, then the next step will be used for setting this TACC and the TACC in all subsequent years.

2. The TACC will remain at the same level and the same band when:

i) the standardised CPUE remains in the current band;

OR

ii) the standardised CPUE has increased to a higher band but the PRI is below the trigger point.

3. The TACC will be **decreased** when:

   i) the standardised CPUE has decreased into any lower band. In this circumstance the TACC will be set at the level that corresponds to the standardised CPUE band in the current step.

4. The harvest control rule will be reviewed when:

   i) The catch rate band decreases for two consecutive years; or
   ii) The PRI is below threshold for two consecutive years.

Both of these conditions provide an early warning sign that the recruitment assumptions underpinning the harvest control rule may no longer be valid (as happened with the reduction in recruitment and productivity experience in the late 2000s). Consequently, a review of the harvest control rule to investigate this further will be required.

Western Zone

Table 11: *The TACC (t) corresponding to each CPUE band for the Western Zone. The steps indicate a progression towards a more precautionary HCR with lower exploitation rates which will be adopted as the stock rebuilds. Red indicates when the fishery is closed, orange where the exploitation rate is increasing, green a constant exploitation rate and blue a capped TACC. If the HCR indicates a shift to a cell containing an arrow, the step will be increased and the TACC will be taken from the new step used.*

CPUE	Step 1	Step 2	Step 3	Step 4	Step 5
<0.25	0	0	0	0	0
0.250 - <0.275	0	0	0	0	0
0.275 - <0.300	0	0	0	0	0
0.300 - <0.325	5	4	4	3	3
0.325 - <0.350	15	13	12	10	9
0.350 - <0.375	27	24	21	18	16
0.375 - <0.40	40	36	32	28	24
0.40 - <0.425	55	49	43	38	32
0.425-<0.45	71	64	56	49	42
0.45 - <0.475	89	79	70	61	53
0.475<-0.50	108	97	85	75	64
0.50 - <0.525	129	115	102	89	76
0.525<-0.55	151	135	119	104	89
0.55 - <0.575	175	156	138	120	103
0.575<-0.60	200	178	157	138	118
0.60 - <0.625	227	202	178	156	134
0.625<-0.65	236	227	201	176	150
0.65 - <0.675	245	236	224	196	168
0.675<-0.70	245	245	232	217	186
0.70 - <0.75	245	245	245	229	215
0.75 - <0.80	⇨	245	245	245	230
0.80 - <0.85		⇨	245	245	245
0.85 - < 0.90			⇨	245	245
>= 0.90				⇨	245

Eastern Zone

Table 12: *The TACC (t) corresponding to each CPUE band for the **Eastern Zone**. The steps indicate a progression towards a more precautionary HCR with lower exploitation rates which will be adopted as the stock rebuilds. Red indicates when the fishery is closed, orange where the exploitation rate is increasing, and blue a capped TACC. If the HCR indicates a shift to a cell containing an arrow, the step will be increased and the TACC will be taken from the new step used.*

CPUE	Step 1	Step 2	Step 3	Step 4	Step 5	Step 6	Step 7	Step 8	Step 9	Step 10
<0.25	0	0	0	0	0	0	0	0	0	0
0.25 - < 0.30	1	1	1	1	1	1	1	0	0	0
0.30 - <0.35	5	4	3	2	2	2	2	2	2	2
0.35 - <0.40	9	7	6	5	4	4	4	3	3	3
0.40 - <0.45	15	11	9	8	7	6	6	5	5	5
0.45 - < 0.50	21	16	13	11	10	9	9	8	7	7
0.50 - <0.55	21	22	18	15	14	13	12	10	10	9
0.55 - <0.60	21	22	23	19	18	16	15	13	13	12
0.60 - <0.65	⇨	22	23	24	22	20	19	17	16	15
0.65 - <0.70		⇨	23	24	27	25	23	21	19	18
0.70 - <0.75			⇨	24	27	30	28	25	23	22
0.75 - <0.80				⇨	27	30	33	29	28	25
0.80 - <0.85					⇨	30	33	34	32	30
0.85 - <0.90						⇨	33	34	37	34
0.90 - <0.95							⇨	34	37	39
0.95 - <1.00								⇨	37	39
1.00 - < 1.05									⇨	39