Consultation paper on a draft framework to manage the Coastal Line Fishery

Contents

LIST OF FIGURES

LIST OF TABLES

1. Purpose statement

This consultation paper proposes a draft framework to manage the Coastal Line Fishery based on advice received from the Coastal Line Fishery Management Advisory Committee (CLFMAC) and Coastal Line Advisory Group (CLAG). A formal management framework will result from the merger of this document, input received from stakeholders during the consultation period, and the Departments technical consideration of the proposed management arrangements.

2. Funding the management framework

Core to the implementation of the framework is the recovery of costs from sectors that derive private benefit from administration and operation of the Fishery. It is proposed that costs will be recovered based on projected services required (administration, monitoring, research and compliance/enforcement) and will start as soon as the framework is implemented in the CLF. The advances in management sophistication proposed in this draft framework (e.g. transitioning from input to quota-based output controls) will result in increased costs. Note the NTSC levy, currently collected at licence application or renewal by the Fisheries Division on behalf of the NTSC, will not be affected by these measures.

3. Description of the fishery

The Coastal Line Fishery (CLF) is the name of the multi-sector fishery that spans the entire Northern Territory coastline, from the high water mark to 15 nm from the low water mark (Figure 1), which fishes for coastal reef fish using predominately hook and line methods. The fishery includes commercial, recreational, fishing tourism and Aboriginal traditional sectors. The fishery catches a wide range of coastal reef fish such as Black Jewfish, Golden Snapper, Grass Emperor, Coral Trout, cods and red snappers.

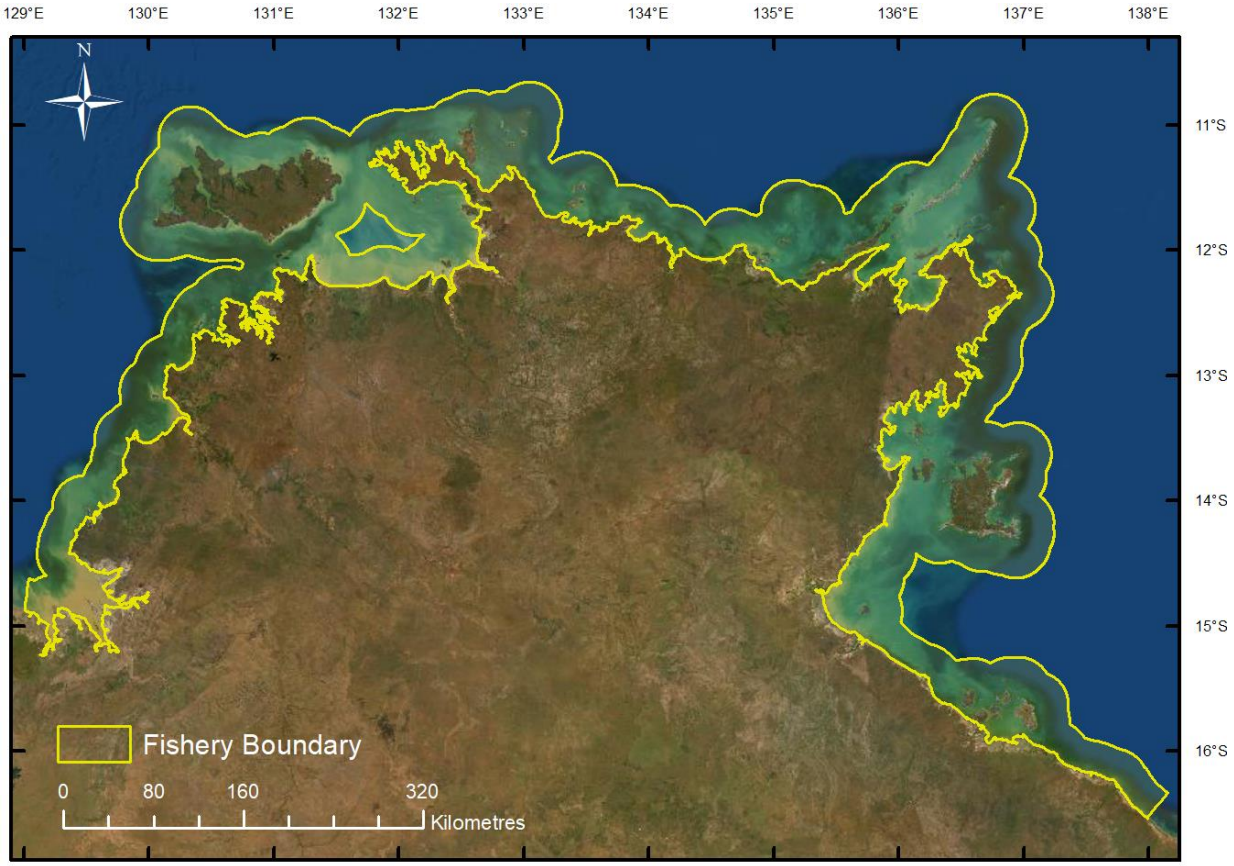

Figure 1. Indicative spatial extent of the Coastal Line Fishery.

3.1. Fishing method

The principal fishing method used by all fishing sectors in the CLF is hook and line. This involves the use of weighted hand or reel lines (generally with baits or jigs). Hand lines are the simplest form of fishing; they consist of one or more baited hooks attached to a line, which is retrieved by hand. Hand lines are also the most common traditional fishing method used by Aboriginal fishers. Hand reels can be attached to a rod (rod and line) or mounted on the side of a vessel. Recreational fishers and tourism clients mainly use rods and lines, while hand reels mounted to vessels (commonly known as deck winches) are used by commercial fishers. Reels are used to deploy and retrieve the line and are usually fitted with a drag system (a 'brake' system, which is designed to create resistance in the reel as the fish takes out line). Commercial fishers can also use drop lines that may contain up to 40 hooks. The hook and line methods employed in the CLF do not include fishing from a vessel that is under way and making way (e.g. fishing methods that involve trolling). Other fishing methods are available to each sector and listed in other sections of this document but are not as frequently used.

3.2. Catch

More than 40 different species of fish are caught by the recreational, commercial, fishing tourism and Aboriginal traditional sectors of the CLF. These species are predominately caught while fishing in coastal waters using hook and line. While most species are reef species there is capture of pelagic species associated with hook and line fishing. The approximate weight of reef fish caught by the CLF in 2018-19 is listed below (Figure 2). Note this indicative figure does not include catch by the Aboriginal traditional sector.

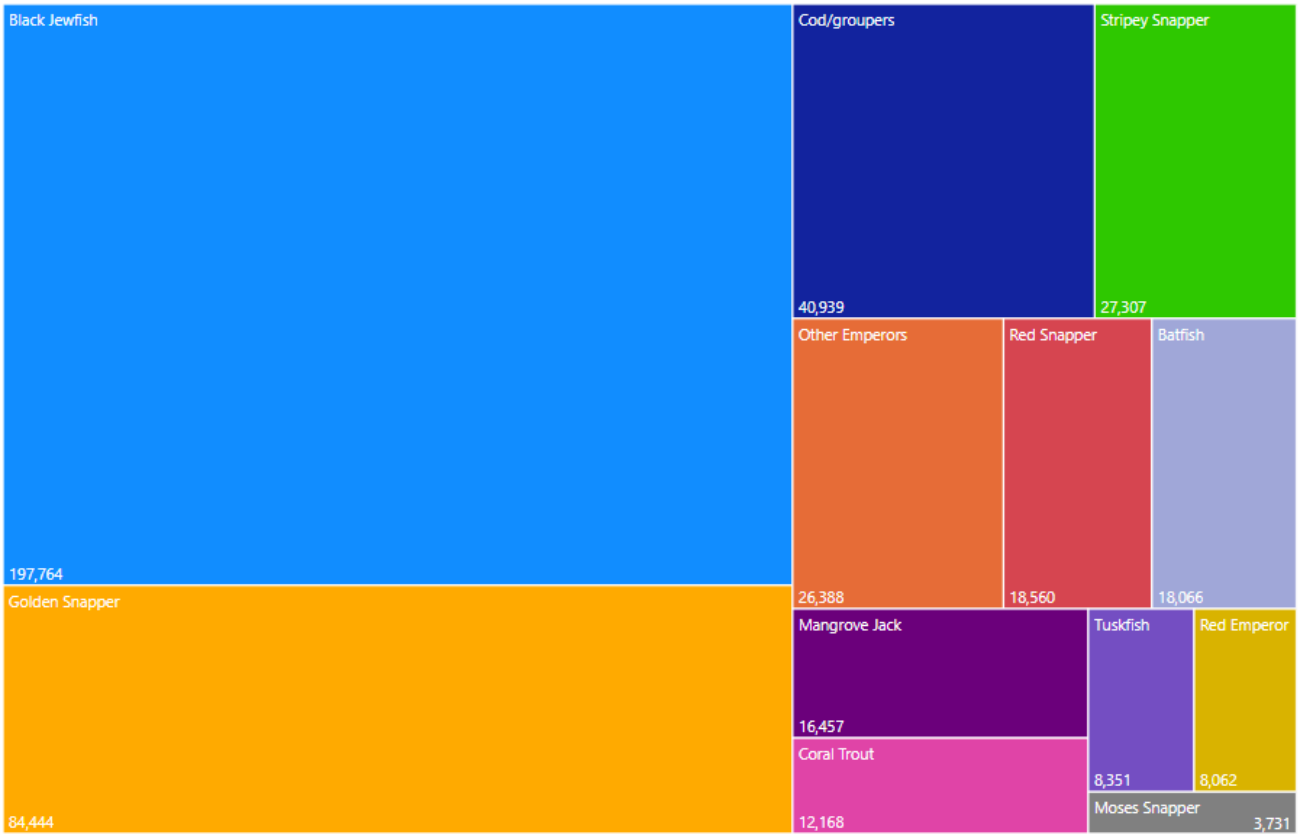

Figure 2. Treemap of the indicative catch (in kilograms) of common retained species in the CLF in 2018-19.

3.3. Resource Sharing

The resources of the fishery are shared between the recreational, fishing tourism, commercial and Aboriginal traditional sectors of the CLF. The majority of fishing activity by recreational, fishing tourism and commercial fishers is concentrated around rocky reefs within 150 km of Darwin. Although at a lower overall level, fishing activity is also relatively high around other population centres including Nhulunbuy and Borroloola (King Ash Bay). Information relating to the resource sharing between the sectors is contained in the sector allocation and access arrangements in this Framework (Section 5).

The most recent data from recreational fishing surveys indicate this sector is the largest with an estimated reef fish catch of 242 tonnes in 2018-19. Logbook data from the commercial and fishing tourism sectors estimate that these sectors caught 142 and 78 tonnes of reef fish respectively in 2018-19. While there are no recent estimates of Aboriginal traditional catch, the 2000/01 National Recreational and Indigenous Fishing Survey (NRIFS) provides an indication this sector caught an estimated 54 tonnes of reef fish. The NFRIS does not distinguish catch to a species level but it is likely that traditional harvest of primary species targeted by other sectors is relatively low. The proportions of these total catch estimates provide an indication of overall resource use in the fishery (Figure 3).

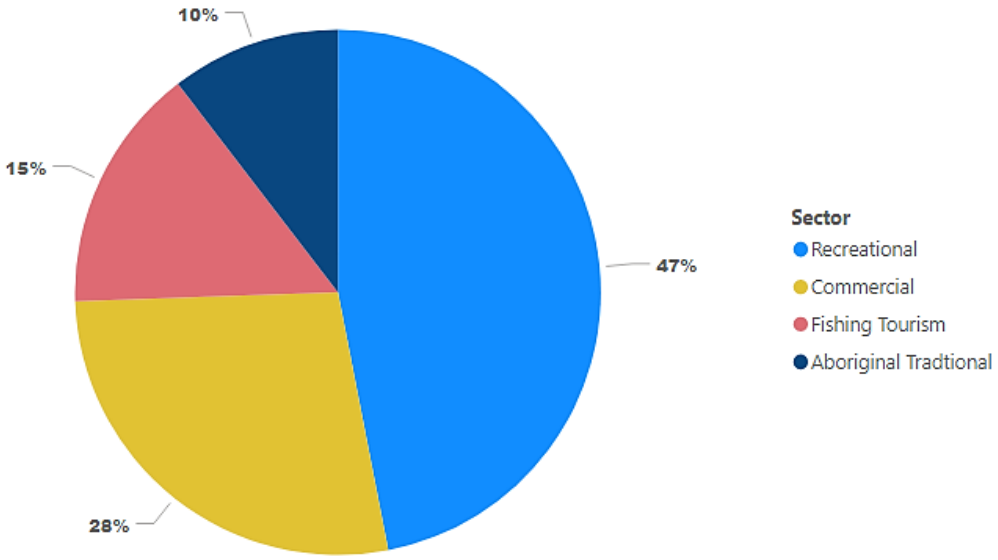

Figure 3. Indicative proportional resource use by sectors of the CLF.

The CLF also shares some resources with other managed fisheries in the Northern Territory including the Barramundi Fishery, Coastal Net Fishery, Bait Net Fishery, Spanish Mackerel Fishery and Offshore Net & Line Fishery. These fisheries are permitted to retain most species captured using their respective gear types within the spatial extent of the CLF. However, the commercial Barramundi Fishery can only retain a limited amount of Black Jewfish and Golden Snapper each trip as by-product. Sharing of resources may also occur for some species taken by the Demersal Fishery that borders the CLF.

3.4. Proposed management summary

3.4.1. Commercial sector

CLF licences are managed using a combination of input and output based management controls. The management controls differ between the two zones of the fishery; the Western Zone and Eastern Zone (see section 6.1.1). The primary management control used to limit catch in the Western Zone is an Individual

Transferable Quota (ITQ) system. With the implementation of this Framework the CLAG has recommended that management in the Eastern Zone also transition to quota-based output control in the form of ITQs[1]. If introduced, quota will not be interchangeable between the two zones of the Fishery. Quota will be able to be bought, sold or leased but a licence must hold a minimum amount of quota prior to fishing. A summary of the intended commercial management controls is provided in the table below (Table 1).

Table 1. Summary of proposed management controls for CLF licences in both zones of the CLF.

Management controls	
Individual Transferable quota (ITQ)	Western Zone quota Eastern Zone quota (proposed) Minimum quota holdings
Permitted gear	Vertical line (1-5 hooks) Drop line (6-40 hooks)* Fish traps*+ Cast nets (for bait collection only) Scoop net and gaff
Reporting	Logbooks (submitted within 28 days after the month fishing occurred) Catch Disposal Record (submitted within 1 day of weighing fish) Prior-landing notice (1 hour before landing in Darwin and 2 hours before landing away from Darwin)
Prohibited species	Barramundi, King Threadfin, Spanish Mackerel and Mud Crab. Note these prohibited species are those listed under the *Fisheries Act 1988* and does not include prohibited species listed under other Acts (e.g. the EPBC Act).
Catch restrictions	Shark (500 kg whole weight per trip)
Closed areas	Reef Fish Protection Areas

*permitted for use between 2nm and 15nm only

+permitted for use in the Eastern Zone only

3.4.2. Recreational sector

Recreational fishers are managed through a combination of input and output management controls. The controls include spatial and temporal closures (e.g. temporary Reef Fish Protection Areas), gear restrictions, size limits, personal possession limits, and vessel limits. Recreational fishers cannot sell or barter their catch. A summary of the recreational controls that relate to the taking of reef fish species in the NT is provided in the table below (Table 2).

Table 2. Management controls for the recreational sector of the CLF.

Management controls		
Permitted gear (that relates to reef fishing)	Vertical line Scoop net and gaff Cast nets	Spear-gun and hand spear Float Line Troll line

[1] Note the Department has cost and feasibility concerns associated with transitioning the Eastern Zone (a remote and undeveloped portion of the fishery) to complex output based management in the short term.

General personal possession limit	15 fish per person	
Personal possession limits. * At-risk species, vessel limits apply	2 Black Jewfish* 3 Golden Snapper* 3 Mangrove Jack* 5 Tricky Snapper (Grass Emperor)* 5 Stripey Snapper (Spanish Flag)* 5 Cod (all species)*	5 Russell's Snapper* 5 Tuskfish* 5 Coral Trout* 5 Red Emperor* 3 Sharks 5 for all other fish species not subject to specific individual limits
Vessel limits	Vessels with 4 or less people on board, each person can take their personal possession limit Vessels with 5 to 7 people on board can take a maximum of 4 times the personal possession limit of 'at-risk' species Vessels with 8 or more people on board can take a maximum of 8 times the personal possession limit of designated 'at risk' species	
Size limits	Mangrove Jack, 35 cm minimum length Cod and groper, 120 cm maximum length	
Reporting	Recreational fishing surveys	
Closed areas	Reef Fish Protection Areas	

3.4.3. Fishing Tourism sector

Fishing Tour Operators are managed using the same input and output management controls as recreational fishers (Table 2). However, fishing tour operators (FTO) must have a licence to take clients fishing in the Northern Territory. There is no cap on the number of FTO licences that may be granted in the NT, but targeted reef or bottom fishing in the Western Zone is restricted to licences granted before 2015 (approx. 140 licences). None of the catch, or product from the catch, can be sold or bartered. FTOs are also required to submit monthly logbook returns.

3.4.4. Aboriginal Traditional sector

Aboriginal fishers are entitled to use the resources of an area of land or water in a traditional manner. This entitlement does not extend to engaging in commercial fishing activities without a licence. Commercial engagement by the Aboriginal sector is encouraged through the purchase of a commercial licence, or through the Aboriginal Coastal licence program, which was established to give Aboriginal people living in remote areas an opportunity to participate in small-scale fishing enterprises for community benefit and as a 'stepping stone' for entry into larger scale commercial fishing business.

3.5. Species of significance

The broad range of species harvested across all sectors and the proportion of individual species caught vary significantly between sectors depending on the economic or social value of each species respectively. Herein species are classified as primary, secondary, or tertiary species for assessment and management purposes:

- **Primary species** are the two species targeted by most fishing sectors (Black Jewfish and Golden Snapper).
- **Secondary species** are reef fish species that comprise more than five percent of both the recreational and fishing tourism reef fish catch by weight (Grass Emperor and Stripey Snapper)

- **Tertiary species** include all remaining reef fish species with vulnerable biological characteristics that place them at a greater risk of becoming overfished (Tuskfish, Coral Trout, Red Emperor, Mangrove Jack, cod/groupers, red snappers).

Further information on the primary, secondary and tertiary species monitored in this Framework is provided below. Those species which are caught and retained but are not reef fish species will continue to be monitored as part of the Ecological Risk Assessment process for the fishery.

3.5.1. Primary species

Black Jewfish is a widespread Indo-Pacific species found across northern Australia from Exmouth Gulf, Western Australia to the east coast of Queensland. The biology (Phelan 2002, 2008) and stock structure (Phelan 2008, Saunders et al 2017) of Black Jewfish within 150 km of Darwin, NT, is understood, however the ecological or climatic drivers of population dynamics are unclear. Black Jewfish in the Darwin area has been identified as an at risk species by the most recent Ecological Risk Assessment (NTG 2018) and classified as *Recovering* by the Status of Australian Fish Stocks assessment (Penny et al 2018a).

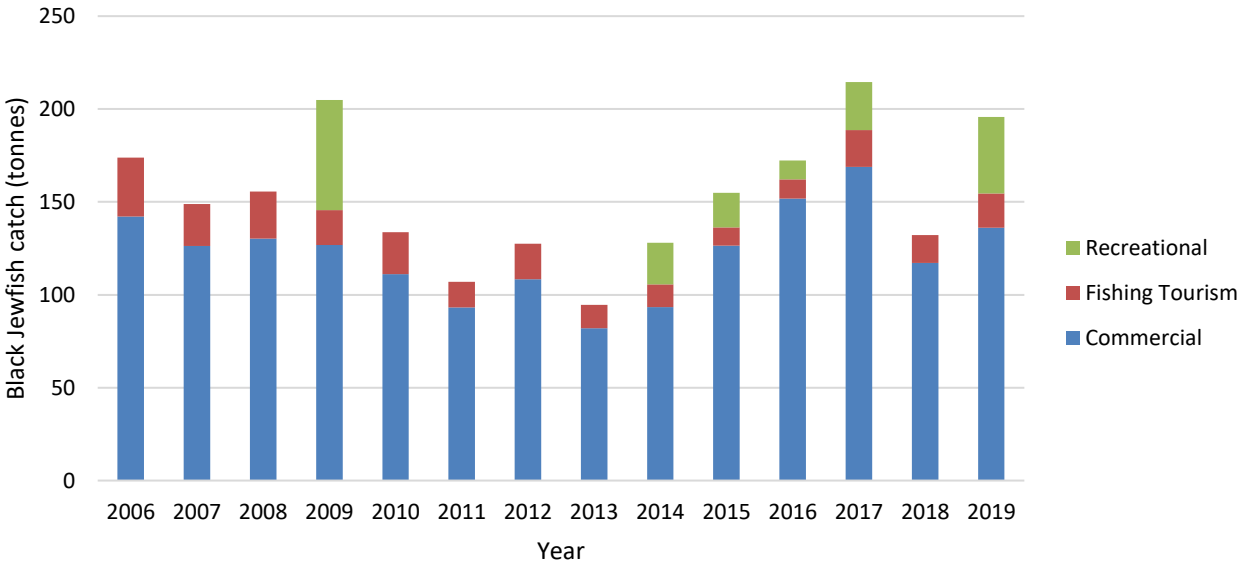

Figure 4. Black Jewfish catch by the commercial, tourism and recreational fishing sectors in the CLF. There are no estimates of Aboriginal catch of Black Jewfish. Recreational and tourism catch reported in quantities and were converted to weights using the average of weights measured during FTO observer trips. Note the 2014 to 2017 recreational catch is based on the Greater Darwin region surveys while the 2009 and 2019 catches are taken from the NT wide surveys.

Golden Snapper is broadly distributed across the Indo-West Pacific and occurs across northern Australia from Kimberley region in Western Australia, around the north of the continent to the southern Great Barrier Reef (around Rockhampton) (Travers et al 2009). The biology (Cappo et al 2013) of Golden Snapper and aspects of its life history (Allen 1985, Kiso and Mahyam, 2003, Tanaka et al. 2011) is understood. The stock structure of Golden Snapper within the area surrounding Darwin is likely to be at scale of tens of kilometres although the boundaries are unclear (Saunders et al 2016). Golden Snapper in the Darwin area has been identified as an at risk species by the most recent Ecological Risk Assessment (NTG 2018) and classified as *Depleted* by the Status of Australian Fish Stocks assessment (Penny et al 2018b).

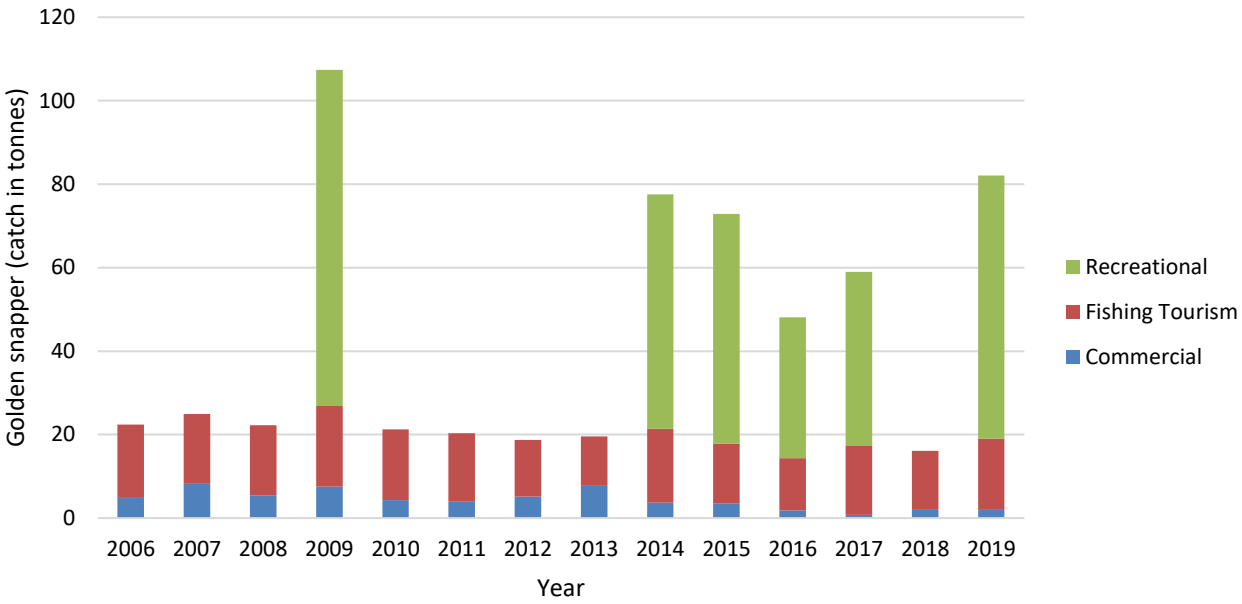

Figure 5. Golden Snapper catch by the commercial, tourism and recreational fishing sectors in the CLF. There are no estimates of Aboriginal catch of Golden Snapper. Recreational and tourism catch reported in quantities were converted to weights using the average of weights measured during FTO observer trips. Note the 2014 to 2017 recreational catch is based on the Greater Darwin region surveys while the 2009 and 2019 catches are taken from the NT wide surveys.

3.5.2. Secondary Species

Grass Emperor (*Lethrinus laticaudis*) and Stripey Snapper (*Lutjanus carponotatus*) are considered at risk species of concern (NTG 2018) and comprise more than 5% of the combined recreational and fishing tour operator catch (by weight). These species are subject to high levels of fishing pressure and there are significant knowledge gaps on the biology of both species. Little is known regarding the stock structure of Stripey Snapper in the Northern Territory. These species have not had a formal stock assessment. More information on these species can be found in the assessment information section of the NT Coastal Line Fishery Ecological Risk Assessment (NTG 2018).

3.5.3. Tertiary Species

Tuskfish, Coral Trout, Red Emperor, Mangrove Jack, cods and other species of reef fish that have biological and or life history characteristics (i.e. slow growth, longevity and late maturity) exposing their vulnerability to overfishing. These species are considered as at-risk species of concern from overfishing (NTG 2018). More information on these species can be found in the assessment information section of the NT Coastal Line Fishery Ecological Risk Assessment (NTG 2018).

3.5.4. Stock structure of tropical reef species

Stocks of Black Jewfish, Golden Snapper and Grass Emperor were found to have variable larval connectivity but are generally discrete and highly reliant on self-recruitment (Saunders et al., 2017). Black Jewfish stocks occur over tens to hundreds of kilometres. Golden Snapper and Grass Emperor stocks occur are at a finer scale of tens of kilometres. Clear differences in stock structures for all species were also found between inshore and offshore stocks, indicating there are significant geomorphic barriers. It is unknown whether these barriers are driven by currents or lack of suitable settlement habitat existing between inshore and offshore sites (Saunders

et al. 2017). Figure 6 indicates the likely scale of stock structuring of Black Jewfish and Golden Snapper across the NT based on the sample locations obtained in the stock structure project (Saunders et al., 2017).

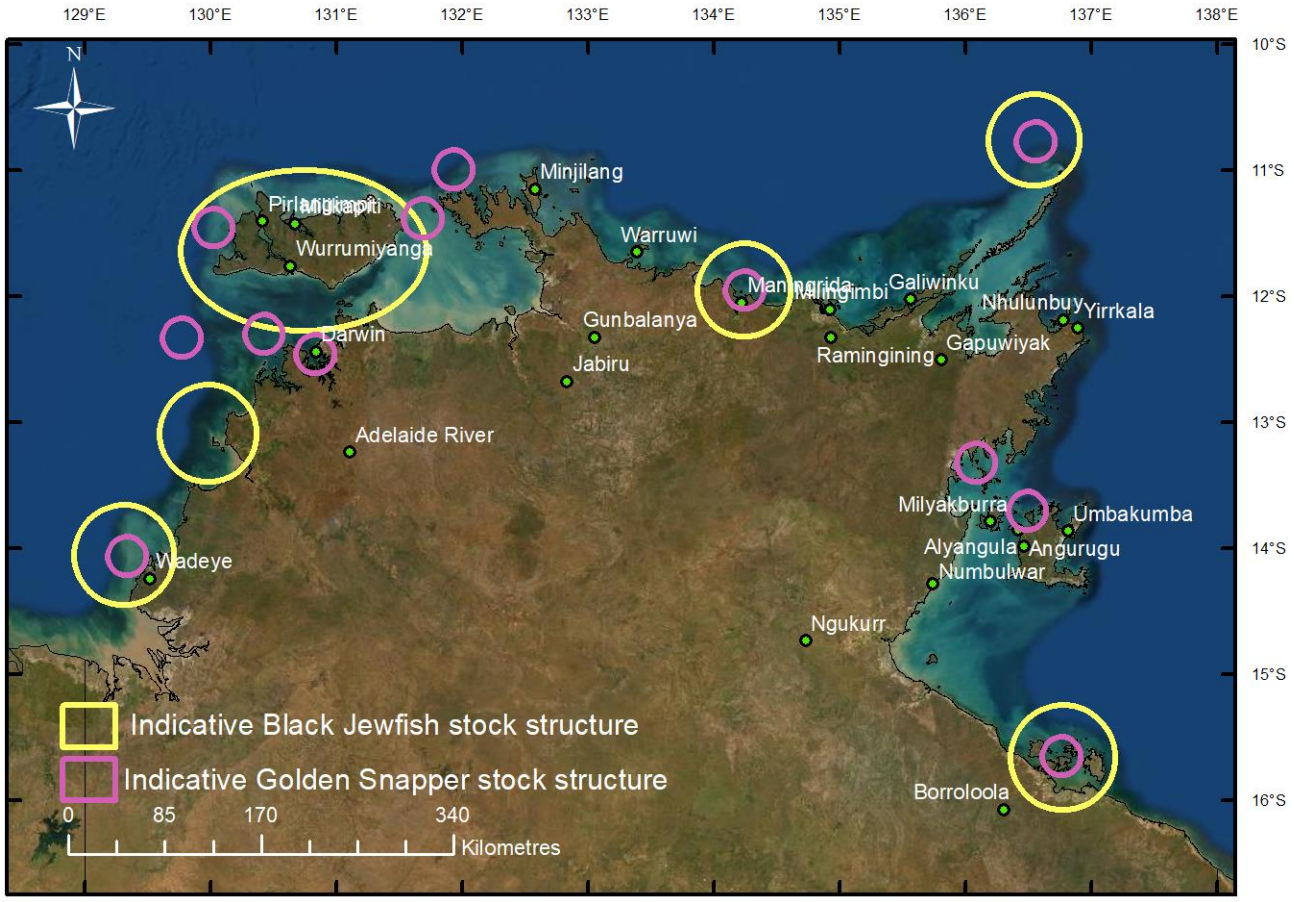

Figure 6. Indicative stock structuring of the primary species in Northern Territory waters.

3.6. Economic characteristics

Economic characteristics of the Fishery is able to be determined for the commercial sector using market returns provided to the Fisheries Division from CLF licences. Limited data is available to describe the economic characteristics of the recreational, fishing tourism, and Aboriginal traditional sectors in the CLF. Independent reports have estimated the contributions of the recreational and tourism sectors to the NT, but do not provide a breakdown to reflect expenditure specifically related to reef fishing with any accuracy.

In the 2019-20 financial year the gross value of product (GVP) of the commercial sector was estimated to be $2.84 million (Figure 7). Black Jewfish product contributed 98% of the GVP in this year, with swim bladders comprising 73.1% of the overall product value. The evidenced increase in GVP from 2014-15 onwards is attributed to significant increases in product value for Black Jewfish swim bladders. The price of swim bladders was estimated to have increased from an estimated annual average of $100 per kilogram in 2011-12 to a high of $767 in 2018-19.

In response to the increased market demand for swim bladders management changes were implemented in the CLF to protect reef fish stocks from depletion driven by the risk of an illegal swim bladder trade. For more information on these management changes see the management history (Section 4).

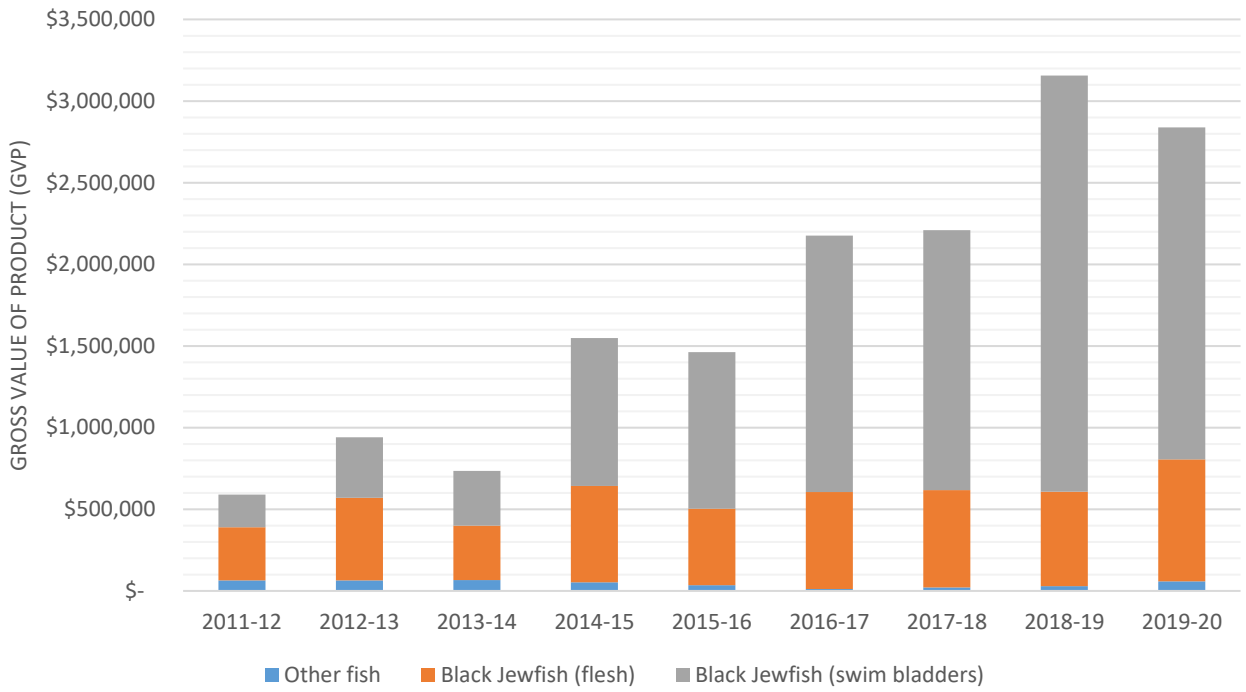

Figure 7. Gross value product of CLF licences between 2011-12 and 2019-20

3.7. Ecosystem impacts

The ecosystem impacts in the fishery were assessed in the NT Coastal Line Fishery Ecological Risk Assessment (NTG 2018). The ecological risk assessment (ERA) was based on the National ESD Framework How To Guide (see www.fisheries-esd.com.au).

The ERA was undertaken to help ensure that management for the CLF is both effective and efficient in the context of achieving Ecological Sustainable Development (ESD) outcomes. The principles of ESD are the basis of fisheries and aquatic resource management in the Northern Territory. In addition to meeting the statutory requirements of the Northern Territory *Fisheries Act 1988* (the Fisheries Act) and national environmental legislation, this approach provides the fishing industry and key stakeholders with an ongoing opportunity to contribute to, and influence, fisheries management outcomes.

In undertaking the ERA subject matter experts and key fishery stakeholders considered the range of potential consequences of an issue, activity, or event, how likely those consequences are to occur, and assigned a risk rating. It is important to note that the ERA was based on the existing management arrangements at the time of assessment. The outcomes of the ERA formed the basis for a comprehensive fishery review and development of contemporary management arrangements contained in this Management Framework.

The ERA can be located at https://dpir.nt.gov.au/__data/assets/pdf_file/0007/619405/NTCLF-ecological-risk-assessment-052018.pdf

4. Management history

Up until the early 1990s, CLF licences were known as Inshore Reef Fish Fishery licences with up to 160 licences issued. The number of licences was reduced to 65 after the introduction of the *Fisheries Regulations 1992* through a moratorium on both the renewal of inactive licences and the issuing of new licences, additionally, a "two-for-one" licence reduction scheme was introduced to reduce excess fishing capacity.

Further amendments to the regulations governing the CLF (as well as the Demersal Fishery) came into force in 1995. These regulations included extending the outer boundary of the fishery from two nautical miles (nm) to 15 nm. To avoid an overlap between the CLF and Demersal Fishery, the inner boundary of the latter was shifted from 2 nm to 15 nm. Demersal Fishery licensees who did not already hold a CLF licence were issued with one, leading to the creation of 26 additional licences in the CLF.

The need for the licence reduction scheme was reiterated during a workshop funded by the Fisheries Research and Development Corporation in 1996. The scheme to remove excess capacity by compelling new operators to purchase two non-transferable restricted licences and surrendering them to government for the grant of one fully transferable, unrestricted licence was kept in place. This scheme ceased after all CLF licences were made fully transferrable in 2015. By this time there were 52 fully transferable licences remaining in the fishery.

Management controls that govern the recreational and fishing tourism sectors take of target coastal fish species such as Black Jewfish and Golden Snapper have also been refined over the past two decades. In 1996, the possession limit for Black Jewfish was first introduced allowing recreational anglers to retain five individuals at any one time. In 1997, a general possession limit was introduced to limit the overall number of fish and other aquatic animals allowed in a person's possession. The general possession limit allowed each person 30 fish of any species, except those already managed under specific possession limit controls such as Black Jewfish. The specific possession limit controls were later included as part of the 30 fish general possession limit, together with a new possession limit of five Golden Snapper in 2002. The possession limit for Black Jewfish was later reduced from five to two fish per person on 1 January 2010.

Sustainability concerns for stocks of Black Jewfish and Golden Snapper in the area surrounding Darwin (within 150 km) were discussed by the CLF Management Advisory Committee (CLFMAC) in 2008. These concerns were later reinforced by the outcomes of the ERA in June 2009 (Grubert et al, 2010) and in response commercial catch limits of 185 tonnes for Black Jewfish and 9 tonnes for Golden Snapper were introduced for fishing grounds close to Darwin (i.e. in the Western Zone) in January 2011.

Stock assessments were undertaken for Black Jewfish and Golden Snapper in mid-2011 (Grubert et al. 2013) and again in 2014. The results indicated that stocks of Black Jewfish and Golden Snapper were overfished and required management to target 20% and 50% reductions in respective harvests (all sectors) to ensure stock recovery to sustainable levels could occur.

Extensive consultation and stakeholder engagement was undertaken following the stock assessments, which led to the fishery being restructured in 2015. Legislated changes to the recreational/tourism and commercial sectors were implemented in February and June 2015, respectively. The aim of the restructure was to protect and recover 'at-risk' fish stocks, build stewardship for marine resources, prepare for growth in the recreational sector and secure viable access for commercial operators in the Northern Territory.

After the fishery was restructured into the Western and Eastern Zones to facilitate the recovery of overfished resources, it was identified as an appropriate time to develop a long-term framework to provide greater certainty and confidence for all users of the fishery resources. This led to the re-instatement of the CLFMAC in August 2016 to provide advice on the development of a comprehensive framework for the CLF.

In 2016, preliminary results of an FRDC funded research project (Saunders et al. 2017) investigating the stock structure of coastal reef fish species including Black Jewfish, Golden Snapper and Grass Emperor became available. The project which determined that these species exist as a series of (largely) discrete populations along the NT coastline separated by distances of 10's to a few hundred kilometres. For fisheries management purposes, the project suggested that individual aggregation areas or reef complexes that are targeted by fishers should be managed independently so that localised depletions do not occur within a generic management framework.

The potential for an illegal trade of Black Jewfish swim bladders poses a significant threat to resource sustainability. The trade is driven by the high market value of swim bladders. Whilst commercial fishers can legally sell the swim bladders, high price continues to encourage black market racketeering and risks applying significant additional pressure to vulnerable Black Jewfish stocks around Darwin. In 2017, a number of management arrangements were implemented to improve transparency of commercial fishing operations including the requirement for commercial fishers to use authentication tags on all Black Jewfish swim bladders sold.

Significant restructure of the fishery was required to address the sustainability issues with coastal reef fish stocks in the Western Zone and to facilitate a sustainable fishery delivering optimal outcomes in the Eastern Zone. These issues were to be addressed in the development of the comprehensive framework for the fishery. Membership to the CLFMAC was reinstated from key stakeholders in June 2017 to provide advice on the development of the new framework.

New fishing regulations were implemented in July 2018 to protect reef fish stocks, particularly Black Jewish, from further depletion driven by the risk of an illegal swim bladder trade. The objectives of the management changes were to restrict opportunity to partake in illegal trade of swim bladders, increase awareness of the issues and improve stewardship of resources, and ensure the enforcement risks are sufficient to act as a disincentive to target vulnerable species for profit.

Taking advice from the CLFMAC and the Coastal Line Advisory Group, a draft CLF Framework was prepared by the Fisheries Division in line with the objectives of the *Fisheries Act* and other relevant policies and guidelines.

Table 3. Chronology of management of the NT CLF.

Year	Management milestone
<1980	Commercial fishing carried out under a General Fishing Licence and general logbooks submitted
1980	Inshore Reef Fish Fishery licences introduced for commercial fishing of inshore reef fish.
1993	Licence moratorium and reduction scheme for Inshore Reef Fish Fishery licences.
1994	Declaration of the CLF.
1995	CLF outer boundary extended from 2 nm to 15 nm. A survey of recreational fishing in the Northern Territory (FISHCOUNT)
1996	"2 for 1" licence reduction scheme initiated for CLF licences. A personal amateur possession limit of five Black Jewfish was introduced.
1997	A general amateur possession limit set to 30 fish per person was introduced.

Year	Management milestone
2000	The National Recreational Fishing and Indigenous Survey.
2002	A personal amateur possession limit for Golden Snapper set to five.
2008	Sustainability concerns identified for stocks of Black Jewfish and Golden Snapper in the area surrounding Darwin.
2009	Ecological Risk Assessment conducted reinforced concerns overfishing was occurring for Black Jewfish and Golden Snapper. NT wide Recreational Fishing Survey conducted.
2011	Commercial catch limits of 185 tonnes of Black Jewfish and 9 tonnes for Golden snapper were introduced for the greater Darwin area. Stock assessments indicated that Black Jewfish and Golden Snapper required a harvest reduction of 20% and 30%, respectively.
2012	Consultation paper 'Proposed Future Management Arrangements for the Northern Territory Commercial CLF' released.
2013	Consultation paper 'Protecting our Reef Fish and the future quality of our recreational fishery' released.
2014	Stock assessments indicated that Black Jewfish and Golden Snapper now required a harvest reduction of 20% and 50%, respectively. Commercial catch limits revised to 145 tonnes of Black Jewfish and 4.5 tonnes for Golden snapper. Annual recreational fishing surveys commenced around the greater Darwin area.
2015	Fishery restructured to achieve desired harvest reductions and included: • Restricting access to the Western Zone of the fishery for commercial and FTO fishers. • Reef Fish Protection Areas were implemented in the Western Zone. • General possession limit reduced from 30 to 15 fish per person. • Personal possession limit for Golden Snapper reduced from five to three. • Personal possession limit for Mangrove Jack reduced to three and a minimum size limit of 35cm. • Personal possession limit of five fish introduced for all other fish species not subject to specific individual limits. • Vessel limits introduced to limit the catch of 'at-risk' species. • Individual transferable quota of 145 tonnes of Black Jewfish and 4.5 tonnes of Golden Snapper introduced for commercial fishers in the Western Zone. • CLF licences were made unrestricted and became transferable. • Fish traps no longer permitted for use within the Western Zone.
2016	Stock structure of Black Jewfish and Golden Snapper identified as a series of discrete populations along the coastline.
2017	Management measures introduced to improve traceability of swim bladders detached from commercially caught product.

Year	Management milestone
2018	Amateur fishing regulations introduced for the possession of swim bladders. Black Jewfish and Golden Snapper listed as priority species under the *Fisheries Act.* Ecological Risk Assessment for the fishery completed.
2022	Consultation paper on the draft management framework based on advice from the CLFMAC and CLAG released to key stakeholders for consultation.

5. Management objectives

In modern best-practice fisheries both nationally and internationally there are three tiers of fishery management objectives that determine how a fishery is managed to provide clarity and certainty to all resource users. These include high level objectives, long-term fishing goals (also known as conceptual objectives) and operational objectives.

5.1. High level objectives

In the Northern Territory, the management of fisheries is conducted under the NT *Fisheries Act 1988*, which contains a set of high-level legislative objectives (Table 4). These objectives provide over-arching policy guidelines for the management of individual fisheries, and they influence and shape the nature of the framework for the CLF.

It is important to note that while the *Fisheries Act* guides the long-term management and day-to-day operation of the CLF (and other NT fisheries), there are other National policy drivers and legislation that influences their operation (for example Ecosystem Based Fisheries Management approaches and rulings under the *Environment Protection and Biodiversity Conservation Act 1999*).

Table 4. The high level objectives relevant to the CLF (and contained in the *Fisheries Act*).

High level objectives	
a)	To manage the aquatic resources of the Territory in accordance with the principles of ecologically sustainable development.
b)	To maintain a stewardship of aquatic resources that promotes fairness, equity and access to aquatic resources by all stakeholder groups, including: (i) Indigenous people (ii) commercial operators and aquaculture farmers (iii) amateur fishers (iv) others with an interest in the aquatic resources of the Territory.
c)	To promote the optimum utilisation of aquatic resources to the benefit of the community.

5.2. Long-term fishery goals

Long-term fishery goals (also referred to as conceptual objectives) have been developed by the CLFMAC and define how the fishery is carried out to the benefit of the community. The goals are needed to translate the high level objectives into fishery-specific objectives that underpin the Framework.

The long-term fishery goals create a clear vision for where the fishery intends to be in 5-10 years and were clearly defined and informed by key stakeholders early on in the process of developing the Framework. The long-term fishery goals directly influenced the management arrangements for the fishery in the development of this Framework.

The long-term fishery goals for the CLF and the management actions to work towards achieving the goal in this version of the Framework are provided below (Table 5).

Table 5. The CLF long-term fishery goals and associated management actions.

Goal 1: To manage coastal reef fish stocks within sustainable levels	
Objectives	***Management actions to work towards achieving the goal in this version of the Framework (1.0).***
Maintain the harvest of coastal reef fish stocks within sustainable levels taking into account natural variation.	✓ Included operational objectives in the Harvest Strategy to monitor and specify management actions for primary, secondary and tertiary species. ✓ Included the requirement for commercial vessels to use electronic logbooks. ✓ Established management areas and catch limits to prevent overfishing of Black Jewfish aggregations.
Establish management consistent with known stock structuring and exposure to fishing pressure so that risk is managed at biologically appropriate scales.	✓ Established finer scale management regions for the application of the Harvest Strategy. ✓ Included operational objectives to monitor coastal reef fish stocks at the finer scale regions in the Harvest Strategy.
Ensure management of coastal reef fish stocks is supported by effective compliance.	✓ Developed a Compliance Plan to supports the long-term goals and operational objectives for the fishery. ✓ Compliance of the commercial sector out-sourced to the Australian Fisheries Management Authority. ✓ Introduced the use of VMS for FTO vessels that target reef fish and carry more than 7 persons. ✓ Included the requirement for an annual compliance risk assessment. ✓ Included the requirement for the Fisheries Division and its compliance partners to compile an annual compliance report.
Goal 2: To manage fishing activities in a way that is ecologically sustainable	
Objectives	***Management actions to work towards achieving the goal in this version of the Framework (1.0).***
To ensure that fishing does not cause serious or irreversible harm to populations of bycatch species and interactions are reduced to as low as reasonably practical.	✓ Included an operational objective in the Harvest Strategy to monitor and manage impacts to by-catch species.
Ensure interaction with threatened endangered and protected species are measured and minimised and do not impact on the potential for those populations to persist in the long term.	✓ Included an operational objective in the Harvest Strategy to monitor and manage TEPS interaction levels on an annual basis
Mitigate the risk of causing serious or irreversible harm to habitat structure and function.	✓ Included an operational objective in the Harvest Strategy to monitor and manage impacts to habitat structure and function
Mitigate the risk of causing serious or irreversible harm to ecological processes	✓ Included an operational objective in the Harvest Strategy to monitor and manage impacts to ecological processes

Goal 3: Maintain a fair approach to management of coastal reef fish resources between all fishery sectors.	
Objectives	***Management actions to work towards achieving the goal in this version of the Framework (1.0).***
Ensure transparent decision-making processes in the management of the fishery.	✓ Included the long-term fishery goals to provide the basis and guiding principles for management of the fishery. ✓ Included a Harvest Strategy to provide greater certainty regarding management decisions for all resource users.
Ensure appropriate mechanisms exist for stakeholder involvement in the management of the fishery.	✓ Included the requirement to maintain an Advisory Group comprising persons with expertise in the field of each stakeholder's interest.
Ensure stakeholders have a high level of awareness in the management of the fishery.	✓ The Framework to be made publically available on NT.GOV.AU ✓ The Department to work with peak bodies to facilitate the distribution of relevant fishery materials to interested persons or organisations in accordance with the Education Plan
Improve management efficiency and removal of unnecessary regulatory burden for resource users.	✓ Included a Harvest Strategy to improve management efficiency in terms of monitoring and responsiveness to changes in resource use. ✓ Included formal review period of the Framework every 5 years for continual improvement of management efficiency and removal of unnecessary regulatory burden. ✓ Included the requirement for commercial vessels to use electronic logbooks. ✓ Removed the requirement for pre-departure notices now that commercial fishers have successfully transitioned to operating using VMS. ✓ Included commercial over-catch provisions to improve management efficiency of the ITQ system.
Goal 4: Maintain an equitable distribution of coastal fish resources between all fishery sectors.	
Objectives	***Management actions to work towards achieving the goal in this version of the Framework (1.0).***
Allocate shares of coastal reef fish resources between fishing sectors in line with the NT Fishery Resource Sharing Framework	✓ Included catch shares targeted resource user groups within the Western and Eastern Zone.
Goal 5: Maintain access to coastal reef fish resources between all fishery sectors.	
Objectives	***Management actions to work towards achieving the goal in this version of the Framework (1.0).***
Ensure access to resources to enable continuation of traditional activities.	✓ Included a statement that acknowledges customary use for the purpose of scientific assessment of sustainable resource use, however in no way limit the right of Aboriginal people to use those resources in a traditional manner

	✓ Included a requirement that allocation arrangements will be adjusted to reflect the actual catch portions of the Aboriginal traditional shares once the data is available
Maintain access for all relevant stakeholder groups to coastal reef fish resources in line with the NT Fishery Resource Sharing Framework.	✓ Included a requirement which recognises any action that results in a permanent change of access to aquatic resources between fishing sectors may require an adjustment of shares in accordance with the NT Resource Sharing Framework.
Seek to minimise external impacts that may restrict access to coastal reef fish resources.	✓ Included a requirement for fishing sectors (via the peak bodies) to be notified of any external impacts that may impact their access on the fishery.
Facilitate access to infrastructure needed for successful operation of fishing activities.	✓ Included a requirement for the Advisory Group to identify infrastructure priorities a priori to influence planning.
Goal 6: To promote the development of using coastal reef fish resources to the benefit of the community.	
Objectives	***Management actions to work towards achieving the goal in this version of the Framework (1.0).***
Determine the recreational and tourism fishing contribution to the community.	✓ Included recreational social experience as a priority objective in the Monitoring and Research Plan.
Optimise the recreational and tourism fishing experiences.	✓ Included recreational social experience as a research activity in the Monitoring and Research Plan. This involves the potential for development of indicators of performance in the Harvest Strategy.
Provide commercial entitlement certainty (fishing quota, licences and other fishing rights) to facilitate the delivery of economically optimal outcomes.	✓ Included the proposal to implement quota-based output controls to provide entitlement certainty for commercial operations in the Eastern Zone. ✓ Included an operational objective to monitor and prevent localised depletion of reef complexes in the Eastern Zone of the fishery within the Harvest Strategy.
Support development of commercial seafood businesses and expansion of markets and access to new markets	✓ Develop a Harvest Strategy to specify pre-determined management actions and provide greater certainty for commercial businesses and market access to assist with: o Ensuring that changes to resource harvest levels are forecast to facilitate business planning; and o Maintaining the commercial sectors export accreditation of the fishery. ✓ Included the pathway for the development of alternative or innovative commercial gear types in the Framework.
Support development of employment, business and economic opportunities that meet the aspirations of Traditional Owners.	✓ Maintained existing access and entitlements of Aboriginal Coastal licence holders in the development of the new Framework for the fishery. ✓ Utilised the marine rangers for targeted independent fisheries monitoring and research within the Research Plan where possible,

	particularly to assist the gathering of scientific information from remote regions of the fishery. ✓ Utilised the marine rangers in the Compliance Plan as a resource to assist with compliance in the fishery.
Maximise the flow-on benefits to local and remote communities.	✓ Included an objective to investigate methods to measure Indigenous catch and effort in the Monitoring and Research plan
Goal 7: To promote the social value of using coastal reef fish resources to the benefit of the community.	
Objectives	***Management actions to work towards achieving the goal in this version of the Framework (1.0).***
Improve community perceptions of the fishery.	✓ Finalise the new management framework for the fishery as a single document that contains all the relevant information required to form an understanding of the fishery. ✓ Make the Framework for the fishery publically available and readily accessible on the Government's website. ✓ Developed an Education Plan to plan, promote and provide accountability of key educational messaging relevant to the fishery resources. ✓ Included the requirement for the establishment of an advisory group to provide transparency opportunity for all stakeholders to be involved in the management of the fishery.
Maintenance of cultural and heritage values related to fishing activities.	✓ Identified a need for stewardship documents (i.e. code of conducts) to contain key contact details for fishers to engage with community leaders and/or representative organisations when fishing in proximity to a community. This may help identify sacred sites that are not registered or recorded on AAPA and help fishers abide by cultural norms.
Maximise community trust in the fisheries agency to manage the fishery.	✓ Finalisation the new management framework for the fishery is achieved in collaboration with all relevant stakeholders ✓ Included the agreed long-term fishery goals and, where possible, operational objectives in the management framework to demonstrate how the fishery is achieving the ecological, economic, social and customary sustainability of the fishery. ✓ Included the requirement for the establishment of an advisory group to provide transparency opportunity for all stakeholders to be involved in the management of the fishery.

In addition to the long-term goals for the Fishery by the CLFMAC, specific long-term objectives have been developed by the CLAG to facilitate development of the Eastern Zone of the fishery (Figure 8). These long-term objectives are unique to the Eastern Zone, which unlike most of the Western Zone, contains many areas that are under-utilised and is regarded as a developing part of the fishery. The CLAG recognised that previous management arrangements did not provide certainty or security to maximise economic development opportunities and new arrangements were necessary to facilitate a viable fishery. Defining the long-term objectives was considered necessary by the CLAG in order to provide the appropriate structure for development to occur under this Framework.

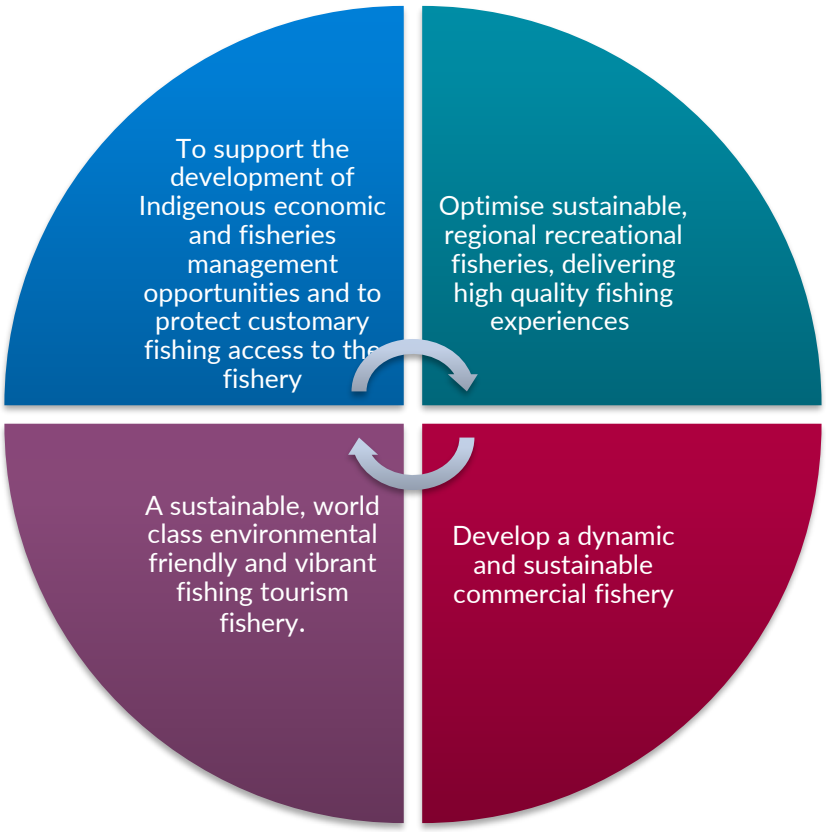

Figure 8. Long-term objectives for each sector required to develop the Eastern Zone of the fishery

5.3. Operational objectives

The operational objectives for the CLF (developed by the CLAG) are set out in the Harvest Strategy. These objectives are designed to ensure that the long-term fishery goals are effectively pursued (where applicable) and are more precise and are worded in a way so that they can be easily measured and achieved within a specified period. The operational objectives are explicitly linked to performance indicators, reference points and decision rules in the Harvest Strategy. Note that only long-term fishery goals associated with the operational use of resources in a fishery will have a defined operational objective in the Harvest Strategy.

6. Sector access and allocation arrangements

The *Fisheries Act* (and its subordinate legislation) provides the legal basis for managing the NT's fisheries resources. The objects set out in the *Fisheries Act* must underpin all decisions relating to the management of fisheries.

To provide guidance on sharing the NT's fisheries resources in accordance with the objects of the *Fisheries Act*, the Northern Territory Fisheries Resource Sharing Framework (the Resource Sharing Framework) was endorsed by all key stakeholders and published in May 2015.

In accordance with the NT Fishery Resource Sharing Framework, catch sharing arrangements for the Northern Territory's fisheries resources are to be defined in terms of **access** and or **allocation**:

- **Access** shall be expressed in terms of the ability for a fishing sector to access the resource (or their allocation of a resource) within a specified geographical area and/or during specified time periods.
- **Allocation** shall be expressed in terms of the amount of the resource (e.g. a specific species) that is available to a fishing sector.

Allocation and/or access should seek to optimise community benefit and equitably share the fishery resources within ecologically sustainable limits. Aspirations (long-term fishery goals) and current participation should be taken into account when considering resource allocation and access.

Additionally, the NT has endorsed the National Guidelines to Develop Fisheries Harvest Strategies (Sloan *et al.* 2014) and has developed the '*Northern Territory Harvest Strategy Policy*' to guide development of harvest strategies in the NT. To ensure that harvest strategy development is properly informed, the policy identifies a number of pre-requisites to their establishment including resource access and allocation arrangements between fishery sectors.

6.1. Access arrangements

Access arrangements link to the long-term fishery goals and determine where users can access resources within specified areas of the fishery.

6.1.1. Management zones

The CLF is managed as two separate zones that establish management of the commercial and fishing tourism sectors. The Western Zone extends from the Western Australia border to Vashon Head on Cobourg Peninsula at the point of latitude 11° 07.516' south, longitude 131°59.650' east. The Eastern Zone extends east from Vashon Head to the Queensland border (Figure 9).

Access to the Western Zone is restricted for CLF and Fishing Tour Operator (FTO) licences. CLF licences must hold individual transferrable quota (ITQ) to fish in the Western Zone. CLF Licences that do not have access must purchase quota in order to gain access to the fishery in the Western Zone. FTO licences that existed prior to the fishery restructure in 2015 (approx. 140 FTO licences) have access to reef fish resources in the Western Zone but all new licences are restricted, and do not have the ability to target reef fish in the Western Zone.

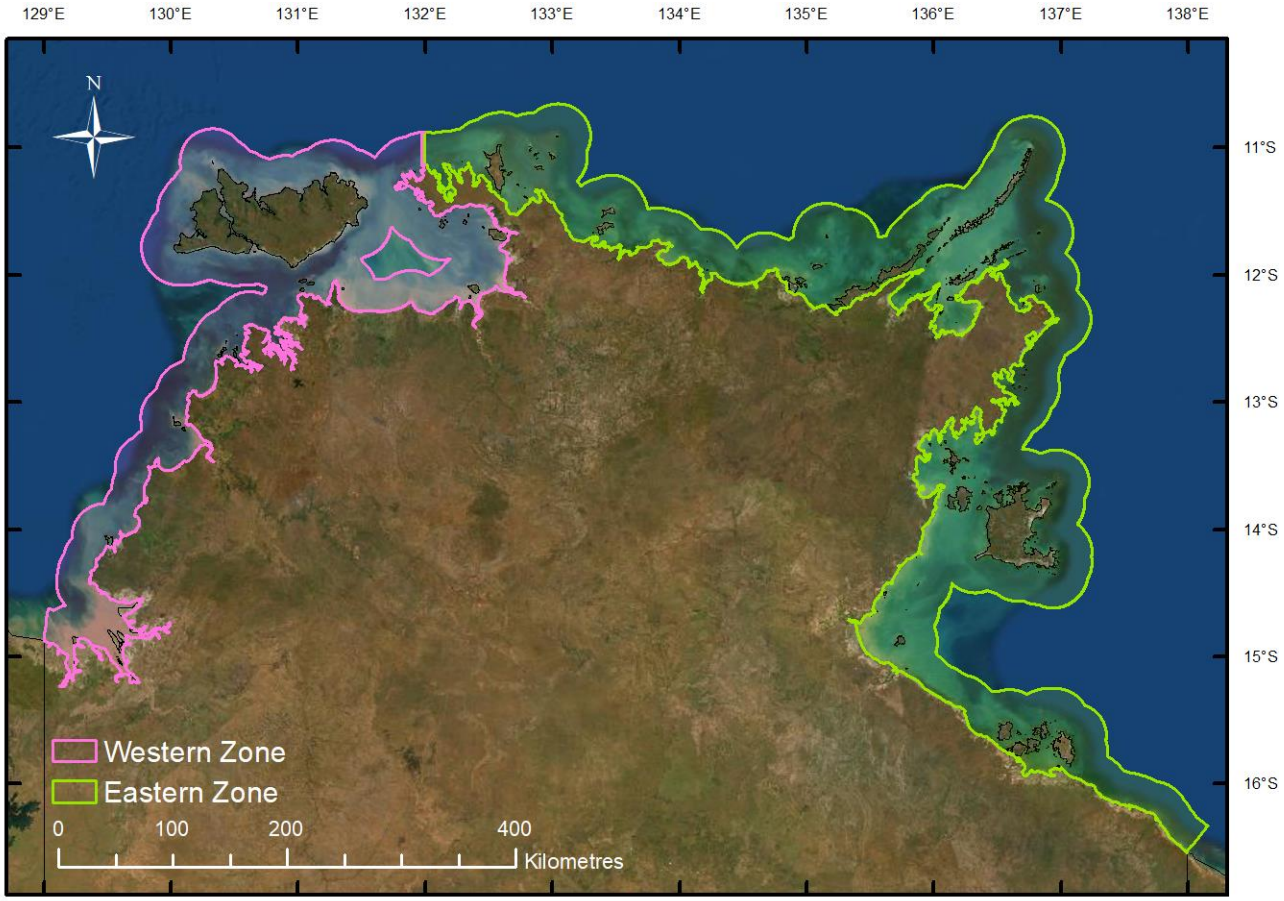

Figure 9. Current management zones for the CLF.

6.1.2. Management regions

The stock structure of the primary species occurs at a finer scale than the management zones currently in place and risk-based management at an appropriate biological scale is necessary. It is proposed that management regions within the management zones will be implemented, and future risk assessments conducted at this scale, to ensure the decision rules of the Harvest Strategy are applied at an appropriate spatial scale (Figure 10). The management regions were developed using current knowledge of the primary species stock structures (Saunder's et al 2017) and exposure to fishing pressure. The management regions monitored in the Harvest Strategy are listed below:

- Western Region – Western Australia Border to Cape Ford
- Greater Darwin Region – Cape Ford to Vashon Head
- Arnhem Region – Vashon head to the Wessel Islands
- Northern Gulf Region – Wessel Islands to the Roper River
- Southern Gulf Region – Roper River to the Queensland Border

Access to discrete areas within the management regions by sectors may be limited by the decision rules of the Harvest Strategy should performance indicators breach defined trigger or limit reference points (Table 14). The coordinates for the management regions will be specified in the *Coastal Line Fishery Management Plan*.

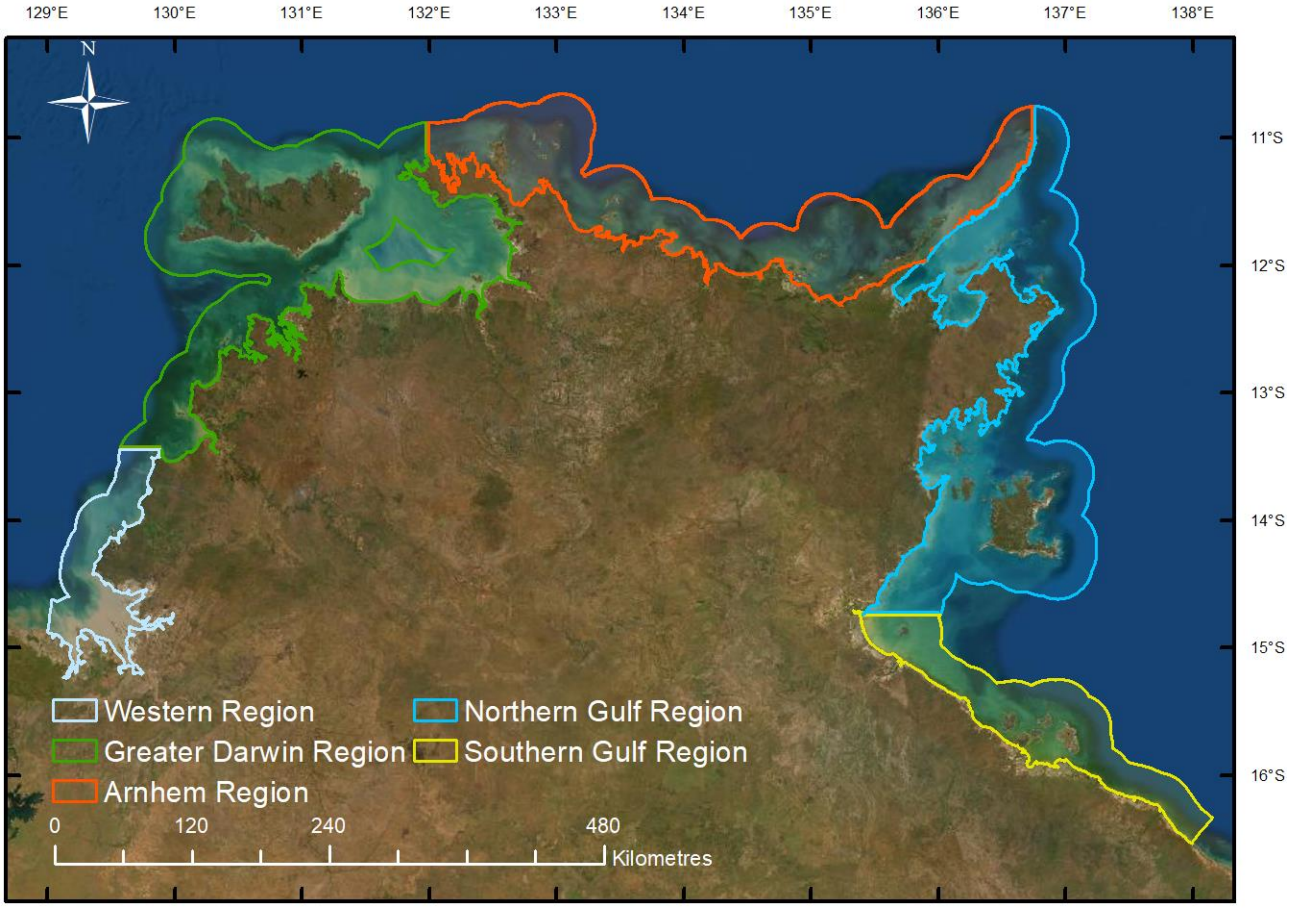

Figure 10. Management regions recommended for implementation

6.1.3. Management areas

Inside the Greater Darwin Region, it is proposed that management areas will be implemented to improve management of Black Jewfish aggregations (Figure 11). These aggregations are separated by sufficient distance with negligible mixing between aggregations that indicate they are likely to be separate stocks highly reliant of self-recruitment at time scales relevant to fisheries management (Saunders et al., 2017). Independent management of the aggregations is necessary to minimise the risk of overfishing and any associated displaced fishing effort within the broader ITQ management system for the Western Zone.

The management areas for Black Jewfish in the Greater Darwin Region include Channel Point, Mitchell Point and Point Stuart (shown as A, B and C respectively in Figure 11). Access to these areas for recreational, commercial and fishing tourism sectors is dependent on the performance of commercial catch rates inside these areas, in accordance with the decision rules of the harvest strategy (Table 14).

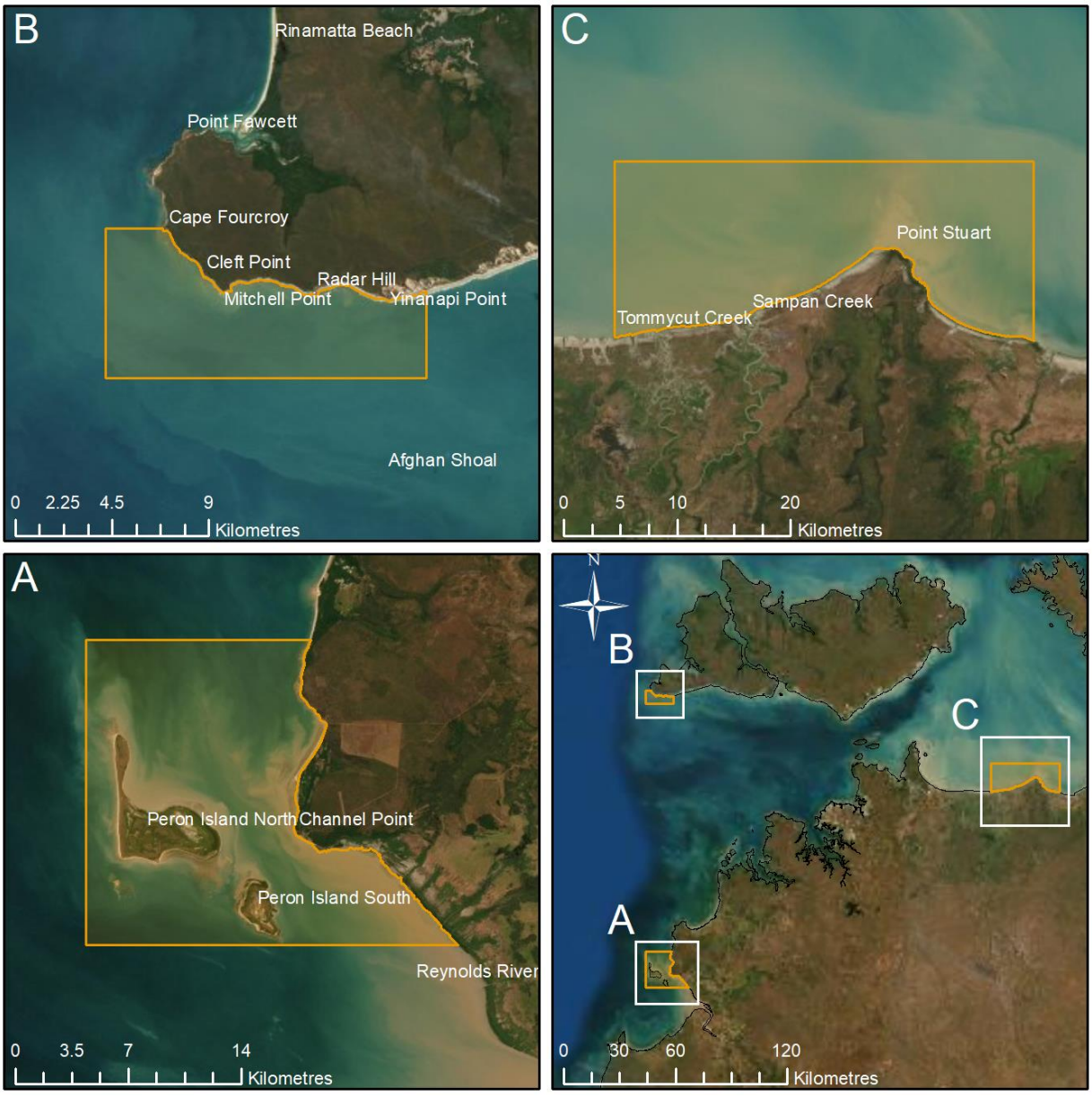

Figure 11. Map of the aggregation areas identified as priorities for management

It is proposed that a management area will be implemented to provide spatial separation between amateur and commercial fishing sectors inside the Greater Darwin Region. Commercial fishing by CLF licences will not be permitted within the spatial extent of the proposed management area (Figure 12). The management area prioritises resource use to the recreational and tourism sectors, minimises potential future conflict with commercial fishers and provides opportunity to optimise the recreational and tourism fishing experiences immediately adjacent to key access sites centred on Darwin, Bynoe and Dundee. The proposed area encompasses the majority of recreational and tourism fishing activity inside the Greater Darwin Region and when combined with augmented amateur fishing opportunity via artificial reef development, provides sufficient scope for expansion of recreational reef fishing in the region. Further information on the proposed management area is contained in the document titled 'Proposed resource sharing for primary species in the Western Zone'.

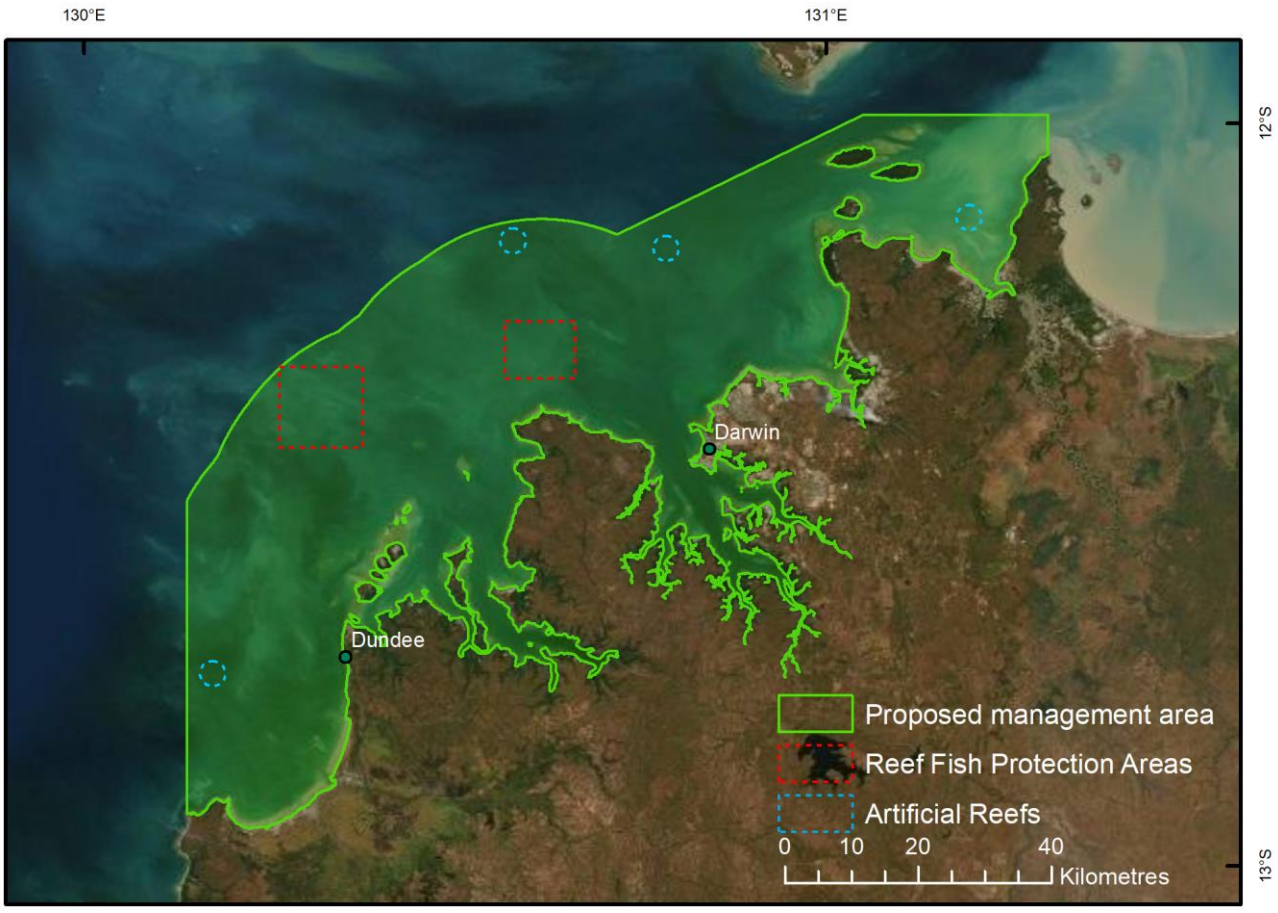

Figure 12. Proposed management area from Cape Hotham to Point Blaze.

It is proposed that a management area will be implemented within the Southern Gulf Region and encompass the McArthur River and Vanderlin Islands (Figure 13). This area was identified during the Ecological Risk Assessment (2018) as a moderate to high risk due to high recreational fishing pressure, predominately from visitor's fishing from King Ash Bay. The management area will allow for the development of specific amateur fishing controls for estuarine and nearshore coastal environments to sustainably manage stocks targeted within the McArthur River system and surrounding the Vanderlin Islands. Consultation on appropriate fishing controls will be undertaken between the Department and relevant stakeholders after the commencement of the Framework.

Figure 13. Proposed management area encompassing the McArthur River and Vanderlin Islands.

6.2. Allocation arrangements

Allocation arrangements between sectors determines the distribution of resources to user groups in the fishery. The process for determining sector allocations in this Framework was guided by the Northern Territory Fishery Resource Sharing Framework (the Resource Sharing Framework) which can be located at https://industry.nt.gov.au/__data/assets/pdf_file/0020/241067/fishery-resource-sharing-framework.pdf'

6.2.1. Information used to determine allocations

Allocation of resources was informed by the best available information on the current level of resource use by all fishing sectors. Resource use of commercial and fishing tour operator licences was taken from statutory catch and effort logbooks, while data to inform the resource use of the recreational fishers was taken from surveys of recreational fishing in the NT conducted during 2009-10 and 2018-19.

Data to inform resource use for the Aboriginal Traditional sector was taken from the NRIFS (Henry and Lyle 2003). It is acknowledged that this data is dated, and investigating methods to measure indigenous catch and effort has been identified as a priority research activity in this draft Framework to provide for more contemporary resource use data by this sector. When available, it is intended that the resource distribution will be adjusted to more accurately accommodate for the level of catch by Aboriginal Traditional fishers.

6.2.2. Allocation of catch shares

6.2.2.1. Western Zone

It is proposed that catch shares will be allocated between each user group that targets the primary species in the Western Zone. The shares will be expressed as the percentage portion of the allowable catch of Black Jewfish and Golden Snapper (Table 6).

Aboriginal traditional fishers and other commercial fisheries that do not target the primary species will not be allocated a catch share. Instead an amount of the total allowable catch (TAC) will be set aside for their use prior to the allowable catch being distributed to catch shares (see Section 7).

More information regarding the allocation of shares in the Western Zone is contained in the document titled 'Proposed resource sharing for primary species in the Western Zone'.

Table 6. Proposed catch shares (%) of Black Jewfish and Golden Snapper between user groups in the Western Zone.

User group	Black Jewfish	Golden Snapper
Recreational fishers	19.5%	74.8%
Fishing Tour Operator licences	10.4%	19.4%
Coastal Line Fishery licences	70.1%	5.8%
TOTAL	**100%**	**100%**

6.2.2.2. Eastern Zone

The CLAG has recommended that catch shares of reef fish should be allocated between sectors and apply to inshore (0 to 5 nautical miles (nm)) and offshore (5 to 15 nm) areas in the Eastern Zone. The shares will be expressed as the percentage portion of the allowable catch of each species group in the inshore and offshore areas (Table 7).

The methodology to determine shares was developed by the CLAG but has been modified to: set aside an amount of the TAC for Aboriginal traditional fishers and incidental resource use rather than allocate catch shares for these user groups; and allocate a five percent share for Aboriginal Coastal licences taken from the overall commercial share.

Table 7. Proposed catch shares of reef fish resources between user groups in the inshore and offshore areas of the Eastern Zone.

User group	**Inshore**				**Offshore**
	Black Jewfish	Golden Snapper	Grass Emperor	Grouped reef sp.	Grouped species
Recreational fishers	39.8%	52.5%	36.1%	75.9%	16.2%
Fishing Tour Operator licences	6.8%	9.3%	7.0%	10.0%	8.1%
Aboriginal Coastal licences	5.0%	5.0%	5.0%	5.0%	5.0%
Coastal Line Fishery licences	48.3%	33.2%	51.9%	9.1%	70.7%
TOTAL	**100%**	**100%**	**100%**	**100%**	**100%**

6.2.3. Review of allocations

Any future review of allocations will follow the process outlined in the Resource Sharing Framework. This includes consideration of resource sharing issues arising from specific formal proposals from user groups, fisheries management planning processes or government initiatives.

7. Total Allowable Catch

The total allowable catch (TAC) is the total amount (in weight) of a fishery resource that can be sustainably taken each year by user groups. It is proposed that distribution of the TAC to resource users involves two steps undertaken each time the TAC requires an adjustment:

1. A provisional amount of TAC that is set aside to accommodate for the catch of Aboriginal Traditional fishers and incidental capture by other non-targeted commercial fisheries; and
2. The remaining available TAC (the TAC minus the provisional amount) is distributed to user groups that target reef fish resources in accordance with the catch shares.

7.1. Western Zone

The TAC for each primary species in the Western Zone was determined using a stochastic Stock Reduction Analysis (SRA) (as documented in Lombardi and Walters 2011). This model provides probability distributions for stock size over time and includes estimates of maximum sustainable yield (MSY). The MSY estimate outputs will be used as the benchmark TAC in this Framework for Black Jewfish and Golden Snapper in the Western Zone.

It is proposed the stock assessment model derived biomass estimates will be used to guide any adjustments to the TAC for the 12 month licencing period (1 July to 30 June) in accordance with the decision rules of the Harvest Strategy. It is important to note that when trigger or limit points are reached in the Harvest Strategy, the reductions in mortality to allow the stock to recover will be undertaken by reducing future catch from the level of the previous year's catch and not the TAC. This is because the previous year's catch is driving the biomass and this figure is most likely to be different from the existing TAC. The revised catch figure will become the new TAC for the next fishing season.

The TAC will be distributed to target resource user groups in the Western Zone upon the commencement of a finalised Management Framework. The current recommended distribution is provided in Table 8. Note these amounts are a benchmark and may be adjusted in accordance with adjustments to the TAC (mentioned above) or based on any changes to the methodology post consultation.

Table 8. The proposed benchmark distribution of TAC (in tonnes) for user groups in the Western Zone.

User group	Black Jewfish	Golden Snapper
Recreational fishers	40.4t	58.1t
Fishing Tour Operator licences	21.5t	15.1t
Coastal Line Fishery licences	145.0t	4.5t
Aboriginal traditional fishers	11.2t	1.2t
Incidental user groups	5.6t	0.9t
TOTAL	**223.7t**	**79.8t**

Note amounts have been rounded to the nearest 100 kilogram for the purpose of displaying tonnages in the table.

7.2. Eastern Zone

The CLAG has recommended that a precautionary TAC be implemented across the Eastern Zone of the fishery, divided into inshore (0 to 5 nm) and offshore (5 to 15nm) species groupings. This spatial division is based on the CLAGs consideration of biological information provided by the Department and acknowledges that species composition would likely differentiate further away from the coastline.

It is proposed the TAC will be reviewed every five years or when contemporary information becomes available to improve the estimate of sustainable harvest volumes. The TAC may also be reviewed if the allowable catch for a species group is reached in a licensing year to ensure it remains appropriate for development in the region. Part of this review will consider implementing cost-recovered research to increase certainty and (potentially) revise TAC levels. It is intended that adjustments to the TAC will be incorporated into the Harvest Strategy when biomass estimates can be reliably estimated using a stock assessment or independent biomass survey.

The CLAG has recommended the TAC be distributed to resource user groups in the Eastern Zone for both the inshore and offshore areas upon the commencement of the Framework. The current recommended distribution is provided in Table 9. Note these amounts are a benchmark and may be adjusted in accordance with adjustments to the TAC (mentioned above) or based on any changes to the methodology post consultation.

Table 9. The proposed benchmark distribution of TAC (in tonnes) for user groups in the Eastern Zone.

User group	**Inshore**				**Offshore**
	Black Jewfish	Golden Snapper	Grass Emperor	Grouped reef sp.	Grouped reef sp.
Recreational fishers	29.4t	25.5t	13.4t	119.4t	104.4t
Fishing Tour Operator licences	5.1t	4.5t	2.6t	15.8t	52.2t
Aboriginal Coastal licences	3.7t	2.4t	1.9t	7.9t	32.2t
Coastal Line Fishery licences	35.7t	16.1t	19.2t	14.4t	455.0t
Aboriginal traditional fishers	4.0t	11.3t	2.9t	81.3t	52.2t
Incidental user groups	2.3t	0.1t	0t	1.4t	0t
TOTAL	**80t**	**60t**	**40t**	**240t**	**696t**

Note amounts have been rounded to the nearest 100 kilogram for the purpose of displaying tonnages in the table.

8. Commercial catch limits for management areas

It is proposed catch limits will specify the total amount (in weight) of Black Jewfish that can be sustainability taken each year by CLF licences inside the management areas within the Greater Darwin Region. The catch limits distribute the allowable catch for CLF licences in the Western Zone among known Black Jewfish aggregations and reduces the fishing pressure that could previously be exerted on individual aggregations.

The catch limits were modelled using a Schaeffer surplus production model adapted from Martell and Froese (2013) by Haddon et al (2019). This conservative model utilises a time-series of catch and randomly selected pairs of parameters for growth (r) and carrying capacity or unfished biomass (K) to predict plausible stock reduction trajectories consistent with known catches. Model outputs include a range of values for r and K in addition to a corresponding range of maximum sustainable yields (MSY) from which quantiles are drawn and the median MSY is estimated. The quantiles represent an upper and lower bound of plausible MSY values (e.g. the 5% quantile is the lower bound and 95% quantile the upper bound for which 90% of the model MSY values estimated are contained within. Henceforth, the 50% quantile is the median (middle value or most frequent result). Note the model outputs are based on commercial catch and are not to be used as an indicative MSY incorporating all fishing sectors.

The proposed catch limits for Black Jewfish in each management area will be equivalent to their respective MSY 95% quantile (Table 10). The MSY quantiles for each of the aggregation management areas will be reviewed every five years and coincide with the review of the Framework. Five years is considered an appropriate timeframe to allow for additional data to influence the model outputs.

Table 10. CLF licence catch limits for Black Jewfish inside each management area.

Management area	Black Jewfish catch limit
Channel Point	86t
Mitchell Point	32t
Point Stuart	25t
TOTAL	**143t**

9. Harvest Strategy

The Harvest Strategy proposed in this Framework has been developed in line with the *NT Harvest Strategy Policy*, and provides a structured framework for decision making to ensure that the goals and objectives of the fishery are achieved. This draft Harvest Strategy is intended to provide certainty to users and promote the long-term sustainable use of resources associated with the CLF.

Application of the Harvest Strategy involves two key steps to be undertaken each year:

1. Use performance indicators (and reference points) to measure and assess fishery performance with respect to an operational objective (or multiple objectives where appropriate); and
2. Utilise pre-determined decision rules to initiate the appropriate management actions that will ensure operational objectives are achieved.

The operational objectives, reference points and decision rules in this Harvest Strategy aim to mitigate risks identified in the ERA and are in line with the long-term fishery goals for the CLF.

9.1. Operational objectives

Operational objectives have been established to ensure the operation of the fishery is working towards achieving the long-term fishery goals. The operational objectives directly relate to retained and non-retained species, ecosystem impacts and social aspirations of the fishery. The operational objectives are more precise than the long-term fishery goals and are formulated in a way that can be easily assessed. They are linked to performance indicators and reference points and are contained in the Harvest Strategy (Table 14).

9.2. Performance Indicators and Reference Points

Performance indicators have been established for each operational objective and will be used to measure fishery performance with respect to achieving the objectives (by comparing where the indicator sits in relation to a linked reference point). The performance indicators vary according to which fishery region, species and ecosystem effect is being monitored.

The following reference points are used to assess fishery performance in this Harvest Strategy in accordance with the *NT Fisheries Harvest Strategy Policy*:

1. **Target Reference Points (Target)** define the values of a performance indicator for a fish stock or management unit that are desirable or ideal and at which management should aim.
2. **Trigger Reference Points (Trigger)** define the value of a performance indicator for a fish stock or fisheries management unit at which a change in the management is considered or adopted. Trigger reference points may be used to determine staged management responses to different stock levels or to define when a stock or management unit is transitional-depleting or transitional-recovering.
3. **Limit Reference Points (Limit)** define the value of a performance indicator for a stock or management unit that are considered unacceptable from a sustainability perspective. For example, when a stock or management unit has become recruitment overfished or environmentally limited.

The performance indicators and their target, trigger, and limit reference points used in this Harvest Strategy are described in greater detail in the tables below (Table 11, Table 12 and Table 13) and set out in the Harvest Strategy (Table 14).

9.2.1. Greater Darwin Region

Table 11. Performance Indicators and Reference Points specific to the Greater Darwin Region

Performance Indicator	Reference Points
Biomass estimates relative to unfished levels derived from a stock reduction analysis (SRA) will be used as a biological performance indicator for the primary species.	Target = 50% Biomass estimates
	Trigger = 40% Biomass estimates
	Limit = 30% Biomass estimates
	The biomass figures chosen for the target, trigger and limit reference points are above the internationally accepted benchmarks for moderate to long-lived fish species (target = 40%, trigger = 30%, limit = 20%). This reflects the vulnerability of the primary species to overfishing due to their biological characteristics. The target biomass of 50% represents a level that maximises fish availability for all sectors. The SRA model outputs will be calculated at 95% confidence intervals (i.e. the 95% confidence bounds encompass the value of the reference point).
Commercial CPUE (nominal) will be used as a biological performance indicator for Black Jewfish inside the management areas.	Target = mean CPUE
	Trigger = 50% of mean CPUE
	Limit = 25% of mean CPUE
	The reference points were calculated using the mean quarterly CPUE inside each management area between 2015/16 and 2019/20. This timeframe provides a baseline period for fishing operations under the ITQ management system. The reference points for each aggregation management area are contained in Appendix B.
Maximum Sustainable Yield (MSY) estimated from Catch MSY models will be used as the primary biological performance indicator for secondary species.	Target = Grass Emperor - Lower bound of the 90th Percentile of the Mean MSY value. Stripey Snapper - Mean MSY value
	Trigger = Median value between the Target and Limit points.
	Limit = Grass Emperor - Mean MSY value. Stripey Snapper - Upper bound of the 90th Percentile of the mean MSY value.
	The reference points are derived from the mean CPUE for the 60 x 60 nautical mile grid area (grid code 1230) that encompasses Darwin and Bynoe Harbour. This area represents the highest fishing pressure inside the Greater Darwin Region. The reference points for secondary species monitored in this harvest strategy are contained in Appendix C.

9.2.2. Western, Arnhem, and Gulf Regions

Table 12. Performance Indicators and Reference Points specific to the Western, Arnhem, Gulf and Vanderlin Regions.

Performance Indicator	Reference Points
Commercial and FTO catch will be used as the biological performance indicator for all primary, secondary and tertiary species.	Target = NA
	Trigger = 10000 kilograms
	Limit = 20000 kilograms
	The reference points are based on the level of cumulative catch for each 10 x 10 nm sub-grid area (currently utilised for reporting purposes for FTO logbooks) that is considered sufficient to control and prevent localised depletion from occurring.

9.2.3. All Fishery Regions

Table 13. Performance Indicators and Reference Points applicable to all regions of the fishery.

Performance Indicator	Reference Points
The risk of overfishing derived from a quantitative sustainability assessment for fishing effects (SAFE) will be used as the biological performance indicator for tertiary species.	Target = Low risk ($F < F_{MSM}$)
	Trigger = Medium risk ($F_{MSM} <= F < F_{CRASH}$)
	Limit = High risk ($F >= F_{CRASH}$)
	F_{MSM} is the instantaneous fishing mortality rate that corresponds to the maximum number of fish in the population that can be killed by fishing, yet the population remains sustainable in the long term. F_{CRASH} is the minimum unsustainable instantaneous fishing mortality rate that, in theory, will lead to the population extinction in the long term. F_{MSM} is equivalent to F_{MSY} and the relationship with natural mortality differs between Chondrichthyans and teleosts (Chondrichthyans, 0.41M and Teleosts, 0.87M).
The risk ratings derived from an Ecological Risk Assessment will be used as the primary biological performance indicator for bycatch, TEPS, habitat and ecological processes.	Target: Low risk
	Trigger: Medium risk
	Limit: High risk
	The risk ratings will be based on the definitions used in accordance with the *NT Fisheries Ecological Risk Assessment Guidelines 2020*.

9.3. Decision rules

The decision rules used in this Harvest Strategy provide direction for pre-determined management actions to achieve the operational objectives. For each performance indicator and reference point, an accompanying decision rule directs the management needed to achieve the operational objectives (Table 14). These decision

rules are designed to maintain the performance of the indicator above the trigger point (i.e. within the target range), or rebuild it where it has fallen below the trigger (undesirable) or the limit (unacceptable) points.

9.3.1. Reviewing the performance indicators

The process of reviewing the performance of the CLF against the draft Harvest Strategy will depend on the review period of the chosen performance indicator:

- Indicators with a quarterly review period will have decision rules that specify pre-determined management actions that come into effect immediately if a trigger or limit reference point is met during the course of the fishing season.
- Indicators with an annual or longer review period will have decision rules that specify pre-determined management actions which require consideration by the Advisory Group before they are recommended to the Director of Fisheries for implementation.

Indicators with an annual or longer review period will be assessed based on calendar year. For these indicators the Advisory Group will be required to review all available evidence associated with performance of the indicator and help determine the extent of the management action taken, increasing in line with an increasing risk to the resource.

The Advisory Group must develop its advice and provide a recommendation to the Director of Fisheries within a three month period between February and April each year. This will provide sufficient time for the management actions to be implemented at the start of the next fishing season.

Extraneous circumstances will be taken into consideration when assessing the performance of indicators.

9.3.2. Recovery Plan

In the event that a species does not show evidence of recovery under the application of the decision rules (i.e. the performance indicator remains below the limit reference point for an unacceptable timeframe) the Advisory Group will be tasked with developing a recovery plan for the species.

It is important to note existing management has already been put in place to recover stocks of primary species from overfishing in the Greater Darwin Region prior to development of this Harvest Strategy.

9.4. Application of the decision rules

To enable the application of the draft Harvest Strategy decision rules, flexibility provisions will be built in to the *Coastal Line Fishery Management Plan*, which will allow the Director of Fisheries to impose the management actions. While all efforts will be made to implement the management actions prior to the start of the next fishing season, the ability and timeframe for implementing some management actions may depend on the legal instrument under which the management action occurs.

An example of the decision rule process for the biological performance indicator for primary species in the Greater Darwin Region is outlined below (Figure 14).

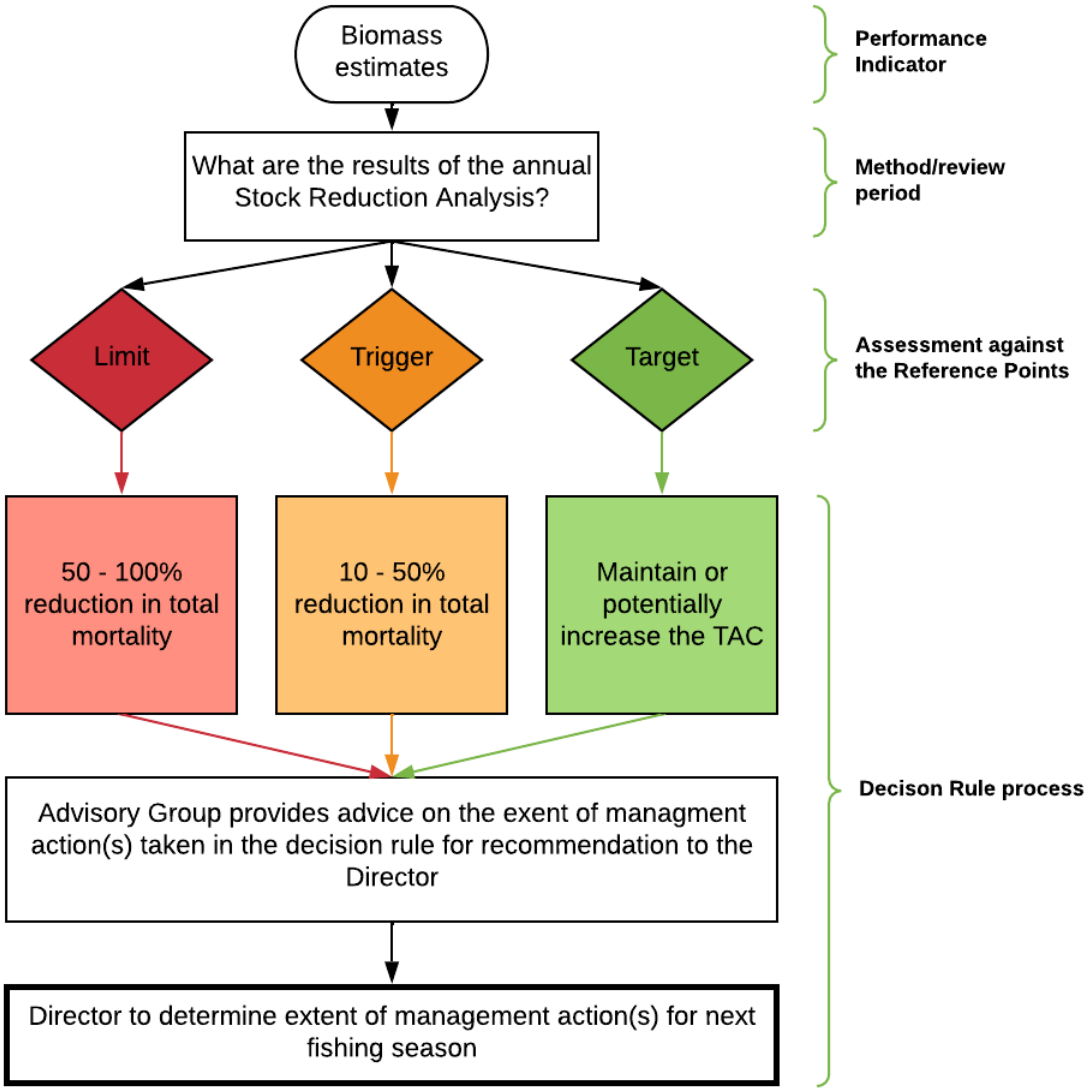

Figure 14. Decision rule process for biomass estimates of primary species in the Greater Darwin Region.

9.5. Harvest Strategy for the NT Coastal Line Fishery

Table 14. Harvest Strategy performance indicators, reference points and decision rules for the CLF.

GREATER DARWIN REGION					
Long-term fishery goal	**Operational objective**	**Performance Indicator**	**Method / review period**	**Reference Points**	**Decision Rules**
Maintain the harvest of coastal reef fish stocks within sustainable levels taking into account natural variation	Maintain the biomass of primary species in the Greater Darwin Region above 50% B_0.	Biomass estimates:	Stock reduction analysis conducted on an annual basis.	**Target:** 50% Biomass	Continue management aimed at achieving long-term fishery goals and if above Target for three consecutive years then consider providing an increase in the Total Allowable Catch.
				Trigger: 40% Biomass	If below Trigger then reduce the total mortality by 10 to 50% as determined by scientific modelling to enable a return to Target within one generation by: Commercial: Reducing the previous year's catch by an appropriate reduction in quota. Recreational & FTO: Reducing the previous year's catch by implementing a temporal or spatial closure. All sectors: Implementing an education and awareness program. *Note: Management actions will be applied at a scale commensurate with sector specific use/risks* *Note: Existing management has been put in place to recover overfished populations within one generation.*
				Limit: 30% Biomass	If below Limit then reduce the total mortality by 50 to 100% as determined by scientific modelling to enable a return to Target within one generation by: Commercial: Reducing the previous year's catch by an appropriate reduction in quota. Recreational & FTO: Reducing the previous year's catch by implementing a temporal or spatial closure. All sectors: Implementing an education and awareness program. *Note: Management actions will be applied at a scale commensurate with sector specific use/risks* *Note: Existing management has been put in place to recover overfished populations within one generation.*

	Maintain the catch rate of Black Jewfish in the management areas within sustainable levels.	Commercial CPUE of Black Jewfish	Analysis of mean CPUE on a quarterly basis.	**Target:** Target reference points for each management area are defined in Appendix A	Continue management aimed at achieving long-term fishery goals.
				Trigger: Trigger reference points for each management area are defined in Appendix A	If below Tigger and biomass of Black Jewfish is above 40% then: • conduct observations on commercial vessels to validate CPUE; and • if below Trigger for the next quarter then implement a closure of the management area for three months for the commercial sector. If below Trigger and biomass of Black Jewfish is below 40% then implement a closure of the management area for three months to the commercial sector. *Note: The Trigger will not apply to the management area if a quarter has less than two commercial fishers or less than 72 hours fished.*
				Limit: Limit reference points for each management area are defined in Appendix A	If below Limit and biomass of Black Jewfish is above 40% then: • conduct observations on commercial vessels to validate CPUE; and • if below Limit for the next quarter then implement a six month closure of the management area to the commercial sector and the designated closure area for the recreational and tourism sectors (see Appendix C). If below Limit and biomass of Black Jewfish is below 40% then implement a six month closure of the management area to the commercial sector and the designated closure areas for the recreational and tourism sectors (see Appendix C). *Note: The Limit will not apply to a management area if a quarter has less than two commercial fishers or less than 72 hours fished.*
	Maintain the catch rate of secondary species in the Greater Darwin Region within sustainable levels.	Maximum Sustainable Yield	Analysis of total mortality on an annual basis.	**Target:** Target reference points for secondary species are defined in Appendix B	Continue management aimed at achieving long-term fishery goals.
				Trigger: Trigger reference points for secondary species are defined in Appendix B	If above Trigger then conduct key research projects identified in the research and monitoring plan to inform stock assessment models.

				Limit: Limit reference points for secondary species are defined in Appendix B	If above limit then conduct key research projects identified in the research and monitoring plan to inform stock assessment models and reduce the total mortality by: Commercial: Restricting catch by a condition on licences. Recreational & FTO: Reducing the previous year's catch by amending existing possession and or vessel limits, and or implementing a temporal or spatial closure. All sectors: Implementing an education and awareness program. *Note: Management actions will be applied at a scale commensurate with sector specific use/risks.* *Note: If a management arrangement is in place for a primary species that is identified to provide an appropriate level of catch reduction for a secondary species. No additional closures will be implemented.*
WESTERN, ARNHEM AND GULF REGIONS					
Long-term fishery goal	**Operational objective**	**Performance Indicator**	**Method / review period**	**Reference Points**	**Decision Rules**
Maintain the harvest of coastal reef fish stocks within sustainable levels taking into account natural variation	Maintain catches of reef fish stocks in the Western, Arnhem, Northern and Southern Gulf Regions within sustainable levels.	Commercial and FTO catch.	Monitoring of cumulative catch inside a sub-grid (10x10 nm^2 area) on a quarterly basis.	**Target:** NA	Continue management aimed at achieving long-term fishery goals
				Trigger: 10000 kg	If above Trigger and mean CPUE of the main contributing species is 70% less than the previous quarter, then implement an immediate closure for 3 months, applicable to commercial and FTO sectors. Conduct fishery dependant monitoring in the next fishing season.
				Limit: 20000 kg	If above Limit then immediately implement a temporary closure of the sub-grid for the remainder of the fishing season, applicable to the commercial and FTO sectors. Conduct fishery dependant monitoring in the next fishing season. If monitoring confirms an aggregation then consider implementing a management area to further reduce the risk of overfishing.

ALL FISHERY REGIONS					
Long-term fishery goal	**Operational objective**	**Performance Indicator**	**Method / review period**	**Reference Points**	**Decision Rules**
Maintain the harvest of coastal reef fish stocks within sustainable levels taking into account natural variation.	Maintain a low risk of overfishing for tertiary species.	Risk of overfishing	Conduct a SAFE assessment every 2 years	Target: Low risk	Continue management aimed at achieving long-term fishery goals.
				Trigger: Medium risk	Conduct key research projects identified in the Research and Monitoring Plan to inform stock assessment models.
				Limit: High risk	Conduct key research projects identified in the Research and Monitoring Plan to inform stock assessment model and reduce the total mortality to enable a return to Target within one generation by: Commercial: Restricting catch by a condition on licences. Recreational & FTO: Amending existing possession and or vessel limits, and or implementing a temporal or spatial closure. All sectors: Implementing an education and awareness program. *Note: Management actions will be applied at a scale commensurate with sector specific use/risks.* *Note: If a management arrangement is in place for a primary or secondary species that is identified to provide an appropriate level of harvest reduction for a tertiary species then no additional closures will be implemented.*
Ensure that fishing does not cause serious or irreversible harm to populations of bycatch species and interactions are reduced to as low as reasonably practical.	Maintain a negligible or low risk to populations of bycatch species.	Risk of fishing impact to bycatch populations.	Ecological risk assessment conducted every 5 years.	**Target:** Low risk	Continue management aimed at achieving long-term fishery goals.
				Trigger: Medium risk	Reduce amount of by-catch to enable a return to Target by: Commercial and FTO: Implementing move on provisions by a condition on licences. All sectors: Reviewing gear types to reduce interactions, and implementing an education and awareness program.
				Limit: High risk	Reduce amount of by-catch to enable a return to Target by: Commercial and FTO: Implementing move on provisions by a condition on licences.

					All sectors: Reviewing gear types to reduce interactions, implementing an education and awareness program, and implementing spatial closure for area(s) of concern.
Ensure interaction with threatened endangered and protected species are measured and minimised and do not impact on the potential for those populations to persist in the long term.	Maintain a negligible or low risk to populations of threatened endangered and protected species.	Risk of fishing impact to TEPS species as informed from logbook and observer coverage.	Ecological risk assessment conducted every 5 years, or unless there is a clear shift in interactions as identified by bi-annual fishery reporting.	Target: Low risk	Continue management aimed at achieving long-term fishery goals.
				Trigger: Medium risk	Monitor and reduce interactions with TEPS to enable a return to Target by: Commercial and FTO: Increasing the amount of observer coverage to 20% for the responsible sector(s). All sectors: Investigating the options to reduce the risk within three months and implement appropriate management action as soon as practicable.
				Limit: High risk	Monitor and reduce interactions with TEPS to enable a return to Target by: Commercial and FTO: Increasing the amount of observer coverage to 30% for the responsible sector(s). All sectors: Investigating the options to reduce the risk within three months and implement appropriate management action as soon as practicable.
Mitigate the risk of causing serious or irreversible harm to habitat structure and function.	Maintain a negligible or low risk to habitat structure and function.	Risk of fishing impact to habitat structure and function.	Ecological risk assessment conducted every 5 years.	**Target:** Low risk	Continue management aimed at achieving long-term fishery goals.
				Trigger: Medium risk	Reduce impact to habitat structure and function to enable a return to Target by implementing an education and awareness program and limiting methods of vessel positioning to non-destructive methods for 'at risk' habitat identified by benthic mapping.
				Limit: High risk	Reduce impact to habitat structure and function to enable a return to Target by implementing an education and awareness program and specific area closures on 'at risk' habitat identified by benthic mapping.
Mitigate the risk of causing serious or irreversible harm to ecological processes.	Maintain a negligible or low risk to ecological processes.	Risk of fishing impact to ecological processes.	Ecological risk assessment conducted every 5 years.	**Target:** Low risk	Continue management aimed at achieving long-term fishery goals.
				Trigger: Medium risk	If the catch and habitat management actions do not provide sufficient protection then implement additional area closures to enable a return to Target.
				Limit: High risk	If the catch and habitat management actions do not provide sufficient protection then implement additional area closures to enable a return to Target.

9.6. Review of the Harvest Strategy

It is proposed that a review of the Harvest Strategy will be conducted after the first year of its implementation to ensure it is operating as intended. A comprehensive review of the Harvest Strategy will coincide with the review of the Framework (see Section 16).

10. Monitoring and Research Plan

The aim of the proposed Monitoring and Research Plan is to utilise the best available assessment and monitoring tools to underpin the Harvest Strategy and to improve research and monitoring of key species in the CLF Framework.

10.1.1. Monitoring activities

The monitoring activities evaluate key performance indicators within the Harvest Strategy. These are listed below and summarised in Table 15.

1. Conduct stock assessments aligned with the performance indicators;
2. Analyse Catch Per Unit Effort (CPUE) from the commercial sector in each management area;
3. Analyse catch and CPUE from the commercial and tourism sectors in the Western, Arnhem and Gulf Regions
4. Complete life history, reproductive biology and investigate stock structure for secondary and tertiary species (if required);
5. Validate fishery dependant data from commercial and FTO licences; and
6. Monitoring of spatial or temporal closures (if required).

10.1.2. Research activities

The research activities are designed to fill knowledge gaps and investigate potential monitoring tools that may provide better information to inform the Harvest Strategy (e.g. investigation of fish abundance survey methods). These are listed below and are summarised in Table 16.

1. Investigate methods for monitoring recreational and tourism fishing experiences and ways this can inform the Harvest Strategy;
2. Improving stock assessment methods for primary species and developing estimates of relative virgin and or spawning biomass for secondary species to improve estimates for sustainable TAC, biomass, and MSY;
3. Periodically conducting research to update key biological parameters (e.g. growth and reproductive biology) on key species;
4. Utilise data from recreational research activities to inform the management of the fishery;
5. Update knowledge of the stock structure of primary and secondary species; and
6. Investigate methods to measure Indigenous catch and effort.

Table 15. Monitoring activities for all species and species groups (including Threatened, Endangered and Protected Species (TEPS)).

Performance Indicator	Frequency	Management region	Data sources	Species					
				Primary		Secondary		Tertiary/bycatch	TEPS
				Black Jewfish	Golden Snapper	Grass Emperor	Stripey Snapper		
Stock assessment	Annually	Greater Darwin	All sectors catch Commercial CPUE Biological data						
CPUE	Quarterly	Greater Darwin (Management Areas)	Commercial CPUE						
CatchMSY	Annually	Greater Darwin	All sectors catch						
Biology	As required	All regions	Reproductive biology Stock connectivity Age structure						
SAFE assessment	Annually	All regions	Biological data Area fished						
Catch	Annually	Western, Arnhem and GOC	All sectors catch						
ERA	Every five years	All regions	Stock assessments All sectors catch Biological data Area fished						

Table 16. Research activities for all species and species groups.

Research and monitoring activity	Management region	Knowledge Improvement	Species					
			Primary		Secondary		Tertiary/bycatch	TEPS
			Black Jewfish	Golden Snapper	Grass Emperor	Stripey Snapper		
Stock assessment	All regions	Improve assessments for primary and secondary species.						
Stock structure	All regions	Periodically update knowledge of key species stock structure.						
Catch and Effort	Greater Darwin	Develop recreational research activities to inform the management of the fishery (e.g. expert angler CPUE time series). Investigate methods to measure Indigenous catch.						
Biology	All regions	Periodically update knowledge of primary and secondary species biology.						
Fishing Experience	All regions	Investigate methods for monitoring recreational and tourism fishing experience.						

10.2. Monitoring activities

10.2.1. Conduct stock assessments aligned with the performance indicators

10.2.1.1. Stock assessment methods and data requirements

Modelling is the primary means for providing quantitative estimates on the status of a stock biomass and rate of fishing mortality in order to determine the sustainability of current harvest levels. The choice of model is determined on the quality and quantity of data available from catch and effort returns, observer monitoring, targeted biological and population research. Therefore, the complexity and options for modelling decrease as gaps in data and knowledge are exposed. Table 17 outlines the models that are available (but not limited to) for each species or species group, the quality of data available and data used to complete modelling assessments.

Table 17. List of models and tools used to assess fish stocks. Models are ordered in decreasing complexity and or data requirements. Colours indicate the capacity to conduct model/assessment and letters represent the primary source for used executing the model.

Model	Primary		Secondary		Tertiary
	Black Jewfish	Golden Snapper	Grass Emperor	Stripey Snapper	
Stock Reduction Analysis (SRA)	A	F,R			
Catch MSY	C	F	F	F	
Sustainability Assessment for Fishing Effects (SAFE)	A	A	A	A	A
Environmental Risk Assessment (ERA)	A	A	A	A	A

C – Completed with Commercial Data, F – Completed with Fishing Tour Operator, R - Completed with Recreational, A – All available data.

Accurate and relevant is available	Unknown or Insufficient Data Available

10.2.1.2. Stock reduction analysis (SRA)

Both primary species will have an annual SRA model (Walters et al 2006) undertaken or similar data moderate model to identify current biomass and fishing mortality levels in the Greater Darwin Region. These models require species catch data from all sectors; from commercial and FTO logbooks and recreational fishing surveys (Coleman 1998, Henry and Lyle 2003, West et al 2012, Matthews et al. 2019a, Matthews et al. 2019b), an abundance time series, annual estimates of vulnerability to the fishing gear and biological information. This allows the model to develop a 'productivity' schedule that calculates all removals (mortalities) and all additions (recruitment) for each year to calculate the biomass relative to unfished levels. The abundance time series that are used for each species are; Black Jewfish CPUE from CLF licences and Golden Snapper CPUE from FTO licences.

10.2.1.3. Catch MSY

Secondary species are primarily harvested by recreational fishers and FTOs. Given fishing for these species is less targeted than the primary species, CPUE from either of these sectors is unsuitable to be incorporated in the SRA stock assessment model. Consequently, assessments on these species in the Greater Darwin Region will be undertaken using catch data in a catch MSY model. Catch of these species will be determined from logbooks (commercial and FTO) and recreational fishing surveys. Biological parameters for these species are also used in the model. While this model is peer reviewed (Haddon et al 2019), there are numerous caveats that need to be considered when analysing the outputs, most importantly is that the catch history is assumed to represent a proxy for abundance and this assumption can often be violated.

10.2.1.4. Sustainability Assessment for Fishing Effects

Tertiary species represent a low proportion of the total harvest by the fishery. Consequently, even catch only models cannot be undertaken for these species. Therefore, a semi quantitative Sustainability Assessment for Fishing Effects (SAFE) (Zhou and Griffiths, 2008; Zhou et al., 2009, 2011) will be used to assess the sustainability of these species across all regions of the fishery. The SAFE assessment estimates the proportion of overlap between an area fished and the distribution of a species as a relative measure of the proportion of a population vulnerable to fishing pressure. Adjustments are made to account for catchability and escapement to give an estimate of fishing mortality rate and the relative risk to measure against reference points. F_{MSM} and F_{CRASH} are the primary statistics calculated by SAFE. F_{MSM} is the instantaneous fishing mortality rate that corresponds to the maximum number of fish in the population that can be killed by fishing (F_{MSY}), yet the population remains sustainable in the long term. F_{CRASH} is the minimum unsustainable instantaneous fishing mortality rate that, in theory, will lead to the population extinction in the long term. Note the SAFE assessment is only valid for species that are not targeted by the fishery.

10.2.1.5. Ecological Risk Assessment

By-catch species, TEPS and ecosystem components are unlikely to be significantly impacted by the CLF given the line fishing gear that is predominately used and the small footprint of the fishery. Because of the low impact on these components, they will be assessed under the *Northern Territory Fisheries Ecological Risk Assessment Guidelines* every five years. The ERA methodology is based on that identified in Fletcher et al. (2015) and is consistent with International Standard ISO 31000 Risk Management processes (Standards Australia 2018). The ERA will incorporate all sources of information including current management arrangements, annual fishing effort and catch, habitat distribution, ecosystem information, observer data and other available research. The guideline can be found online (To be inserted).

10.2.2. Analyse catch per unit effort (CPUE) in each management area

CPUE can be used as a proxy for fish abundance as long as it accounts for factors that influence CPUE that are unrelated to abundance (e.g. weather, fisher skill or economics). CPUE is being used as a performance indicator in each management area to monitor the short term changes in abundance of Black Jewfish and allow for additional management to be applied quickly if there appears to be an ongoing decline in abundance given this species inherent vulnerability to overfishing. This is particularly important in the management areas as the Stock Reduction Analysis that is being used to monitor biomass is heavily influenced by the CPUE in the highest catch area (Channel Point) so declines in abundance in Mitchell Point and Chambers Bay could be masked by high catch rates in Channel Point.

The analysis of CPUE will be calculated from logbooks submitted by commercial fishers and based on line hours fished. These figures will be monitored against the reference points specified with in the Harvest Strategy. It is expected that the transition to electronic logbook reporting for the commercial licences will significantly reduce the timeframe for the Fisheries Division to receive catch and effort data and allow CPUE to be monitored within a quarterly basis.

10.2.3. Analyse catch from the commercial and tourism sectors in the Western, Arnhem and Gulf Regions

There is insufficient information on primary, secondary and tertiary species in the Western, Arnhem and Gulf regions of the fishery to identify areas that may require specific monitoring. Instead, a non-specific catch limit is being applied across these regions at the scale of a ten by ten nautical mile grid system to reduce the potential risk of localised overfishing from occurring if fishing activity were to increase in these regions under the new management arrangements in the Framework. Catch information from both commercial and FTO logbooks will be analysed on a quarterly basis to assess whether breaches of grid catch limits have occurred during a fishing season. Note FTO catch, reported in quantities will be converted to weights based on estimates using the most recent fishery observer data. If a breach has occurred then CPUE of the main contributing species will be analysed. It is expected that the transition

to electronic logbook reporting for the commercial and FTO licences will significantly reduce the timeframe for the Fisheries Division to receive catch data and allow grid catch limits to be closely monitored within the required timeframes.

10.2.4. Complete life history, reproductive biology and investigate the stock structure for secondary and tertiary species (if required);

Secondary or tertiary species may have a biological collection program initiated if a trigger or limit reference point is exceeded in the Harvest Strategy. This biological collection program will be used to elevate its current assessment to a more complex model (see Table 17) with the aim of better informing the assessment of the species. The data that will be collected could include some or all of the following information: Growth and reproductive biology, stock structure information and ageing studies. The type of data collected and the anticipated resourcing requirements will be identified and considered during the annual Harvest Strategy review by the Advisory Group.

10.2.5. Validate fishery dependant data from commercial and FTO licences

10.2.5.1. Validation methods

There are variety of methods that can be used to validate reported catch and effort data in the fishery:

- Human observers: This involves staff from the Fisheries Division being on-board commercial or FTO vessels for the duration of the fishing activity. Information from human observers will be used to assess (and validate) catch and effort logbook data, and the type and amount of bycatch and any TEPS that are interacted with during fishing operations.
- Electronic monitoring: Electronic monitoring is a system of video cameras (and may include sensors) capable of monitoring and recording fishing activities which can be reviewed later to verify logbook data and fishing operations.
- Vessel Monitoring System (VMS): VMS can only be used to validate the location of fishing activities reported on logbooks.

10.2.5.2. Coverage

The level of observer coverage was determined based on the number of trips required to validate the catch and effort data used in the assessment of the Harvest Strategy. Given the Ecological Risk Assessment identified a negligible interaction with Threatened, Endangered and Protected Species (TEPS), a high level of observer coverage was not considered appropriate for this fishery.

For the commercial sector it is important to validate the CPUE in the management areas that represent greater than 90% of the commercial catch of Black Jewfish in the fishery. The following observer or electronic monitoring coverage will occur during the highest catch months in each area:

- Channel Point Management Area - four trips between April and June;
- Mitchell Point Management Area - four trips between October and December; and
- Point Stuart Management Area - four trips between January and March.

Additional coverage will be conducted if the relevant reference points are breached under the application of the Harvest Strategy. This would occur when the CPUE of Black Jewfish declines below the trigger reference points in the management areas, or when the risk of fishing impact to TEPS species is identified as medium or higher. Alternatively in the Western, Arnhem and Gulf management regions, observer coverage may be required as the fishery develops to validate commercial catch and effort information.

For the fishing tourism sector, a minimum of 40 observer trips will be conducted on vessels that target reef species. This amount of coverage has already been proven to be sufficient in picking up existing reporting issues by this sector.

10.2.6. Monitoring of spatial or temporal closures (if required)

Any closures that are implemented when biomass reference points are breached under the application of the Harvest Strategy will have an explicit fishery independent monitoring plan that will monitor the recovery of the population. The duration of the closure will be determined by the biology of the species and will be tailored to allow for new female recruits to reach maturity and spawn at least once (e.g. Golden Snapper females take at least 6 years to reach maturity). The duration of the closure may be shortened if the monitoring program indicates that the abundance of the population increases substantially. Baited Remote Underwater Video and controlled line fishing surveys are the most likely independent monitoring activities that will be associated with these closures. The fishery independent monitoring plan will be developed in consultation with the Advisory Group and may be distributed for broader stakeholder consultation.

10.3. Research activities

10.3.1. Recreational Social Experience

The Coastal Line Advisory Group (CLAG) has identified recreational experience and economic contributions as a priority objective and a potentially important indicator of performance to be incorporated into the Harvest Strategy. However, current data streams from recreational boat ramp surveys do not currently collect fisher experience data. The lack of data on recreational experience, and economic contribution, is not unique to the NT and has been highlighted at the national level and is the subject of a current FRDC project FRDC 2018-161 National Social and Economic Survey of Recreational Fishers 2019 with the following objectives:

1. Assess social and economic contribution of recreational fishing using multiple methods, including direct and flow-on economic benefits, and market and non-market benefits;
2. Identify which approaches to recruiting survey participants and completing surveys produce the most representative and robust results; and
3. Recommend most appropriate and cost effective survey method to use to track change social and economic aspects of recreational fishing in Australia over time.

To obtain data to inform satisfaction levels an FRDC project will be developed in conjunction with key fishing stakeholders that will seek to engage specialist expertise to design an online survey or appropriate survey questions that can be added into existing boat ramp surveys to measure social performance in the Northern Territory. The FRDC project is expected to take approximately 12-18 months to complete. On completion the survey will be used to begin gathering baseline data for the fishery.

The FRDC project will also seek to understand how the social experience can be incorporated into the Harvest Strategy for the fishery i.e. how the data can be used to inform the operational use of resources. The outcomes of which will be considered for inclusion into the Harvest Strategy either during an annual review (post completion of the project) or at formal review of the Harvest Strategy and Framework in five years' time.

10.3.2. Improving stock assessment methods for primary and secondary species

The primary species are currently assessed using a 'data moderate' stock assessment model. These model outputs will be improved by inputting annual age structure information for these species. Including age frequency samples in the model will greatly improve the outputs. To facilitate this data collection, research staff will liaise with commercial and FTO fishers to obtain Black Jewfish heads (100-200) from each Management Area during each fishing

season. Observers on board these vessels will also collect other biological samples (e.g. reproductive biology) on an opportunistic basis.

Additionally, there will be ongoing investigation to improve the abundance time series (currently commercial and FTO CPUE) through ongoing CPUE standardisation (trying to account for factors that influence catch but are not biomass related e.g. weather) and/or investigating the development of fishery independent abundance estimation methods (e.g. BRUVs, controlled line fishing). Improving abundance time series will be very important to increase the accuracy of the model outputs for secondary species as currently these assessments only consider total catches as the CPUE time series by the various sectors are not meaningful due to other species being targeted.

10.3.3. Updating biological parameters for key species

The majority of the biological information for the key species in this fishery was collected more than 10 years ago and often from specific locations. Consequently, there will be opportunistic collection of biological data by fisheries observers and marine rangers, from portside sample collections and samples from recreational anglers to compile updated estimates. Biological information that will be collected will include: size at maturity, seasonality of spawning and morphometric data (e.g. length: weight ratios). This information will be opportunistically collected over the next 1-5 years. The new estimates of the biological parameters will be used to inform future versions of the stock assessment models for primary and secondary species.

10.3.4. Use recreational research activities to inform fisheries management

Information gathered from the recreational sector is limited to the total catch by species inside a broad area, as well as total effort from periodic surveys. Given this sector harvests the majority of species, aside from Black Jewfish, the Fisheries Division will be undertaking ongoing investigations to try and get better information from this sector. Initially, this work may focus on recruiting 'expert anglers' to electronically complete fishing diaries on an application that is planned to be researched and developed by the Fisheries Division. This information would provide an estimate of abundance based on the fishers catch rates at different spatial scales across the fishery.

10.3.5. Update knowledge of the stock structure of primary and secondary species

Updating the knowledge of primary and secondary species stock structures is often a large and expensive undertaking. Unless there is an identified need for a dedicated research project, this research will be undertaken opportunistically (as part of other formal funded projects) to address known connectivity issues in the fishery. For example, identifying connectivity of Black Jewfish between Mitchell Point and Caution Point, or between Mitchell Point and Point Stuart and between offshore and coastal stocks of Mangrove Jack and Red Emperor.

10.3.6. Investigate methods to measure Indigenous catch and effort

The only estimates of indigenous catch and effort across the Northern Territory are reported from the National Recreational and Indigenous Fishing Survey conducted in 2000/01 (Henry and Lyle 2003). These results also had large underlying assumptions that have not been thoroughly examined.

There is support at the national level for a proposal to undertake a national indigenous fishing survey and the Fisheries Division will engage with the commonwealth and other jurisdictions to investigate methods to record this data. Within the NT, the Fisheries Division has recently incorporated an identifier within the recent NT Recreational Fishing Survey 2019 which asks whether surveyed persons identify as Aboriginal or Torres Strait Islander within the onsite (boat ramp) survey component. There is potential for this to be included as a requirement in the onsite surveys undertaken in the Greater Darwin Region.

Initially, NT Fisheries will investigate the potential of using the recreational fishing application to get information on catch and effort by this sector in key Aboriginal communities. It is expected that getting results from this work will

take between three to five years. Updated estimates of Indigenous catch and effort data will be used to better inform the stock assessments for primary and secondary species. This data can also be used to revise the Aboriginal traditional sectors allocation of species in the fishery, rather than using the current assumption made for resource use by this sector.

10.4. Review of the plan

A review of the performance of the monitoring and research plan as well as progress towards achieving the objectives will be conducted on an annual basis and coincide with assessment of the Harvest Strategy.

11. Compliance Plan

The aim of the proposed compliance plan is consistent with the NT Fisheries Compliance Strategy: to maximise voluntary compliance by all sectors with fisheries legislation; and provide effective deterrence and strong enforcement to breaches in fisheries legislation.

Voluntary compliance is maximised through ensuring that: fishers are aware of the rules that apply to their fishing activities; understand the rules and the purpose of those rules; and operate in a culture of compliance. Effective deterrence and strong enforcement is created through the presence of Fisheries Officers appointed under the *Fisheries Act 1988* and the community's awareness of compliance operations, as well as through detection and prosecution of illegal activity, and on-going monitoring.

It is important to note the proposed compliance plan is not an operational compliance plan. The operational aspects of compliance in the fishery will be developed in consultation between the Fisheries Division and its enforcement partners.

11.1. Roles and responsibility

Compliance in the fishery is achieved using a multi-agency capability. The Fisheries Division is responsible for administering the regulatory function of the fishery. Fisheries enforcement is vested with the Northern Territory Department of Police, Fire and Emergency Services through the Water Police Section (WPS). Monitoring of fishing activity is shared between the WPS, the Australian Fisheries Management Authority (AFMA), the Fisheries Division and Fisheries Inspectors (FI). Education is achieved by all agencies and also relies on the marine rangers and the general community. Table 18 contains the roles and responsibilities applicable to each sector of the fishery:

Table 18. Compliance roles and responsibilities in the CLF.

Sector	Regulatory	Enforcement	Monitoring	Education
Recreational	Fisheries Division	WPS	WPS, Fisheries Division, FI	WPS, Fisheries Division, FI, Marine Rangers, peak stakeholder bodies, public
Tourism	Fisheries Division	WPS	WPS, Fisheries Division, FI	WPS, Fisheries Division, marine rangers, peak stakeholder bodies, public
Commercial	Fisheries Division	WPS, AFMA	AFMA, Fisheries Division, FI	WPS, AFMA, Fisheries Division, marine rangers, peak stakeholder bodies, public
Aboriginal Traditional	NA	WPS	NA	NA

11.1.1. AFMA fee for service arrangement

AFMA will undertake land-based compliance activities for the commercial sector on a fee for service basis. This arrangement will enable the commercial sector to meet the increased land-based compliance requirements that are inherent in quota managed fisheries and maintain the integrity of commercial fishing operations. This arrangement will free up existing WPS resources to focus their compliance efforts on recreational, tourism and other non-compliant fishing activities. AFMA compliance services will be in line with a terms of agreement with AFMA (approximately every five years) and will be informed by the compliance planning and risk assessment processes.

11.2. Compliance planning

The compliance planning for the fishery will be designed to ensure that compliance:

- Supports the long-term goals and operational objectives for the fishery;
- Identifies and respond to compliance risks in the fishery;
- Has an appropriate mix of tools designed to maximise voluntary compliance and create effective deterrence; and
- Establishes benchmarks against which to measure responses to risks.

11.3. Compliance risk assessment

A compliance risk assessment will be undertaken by the Fisheries Division, in liaison with WPS and AFMA, and reviewed on an annual basis for the fishery.

The compliance risk assessment will identify and prioritise the compliance risks that exist in the fishery. Risks will be ranked according to the likelihood and consequence of the risk occurring, and be based on a variety of factors including the current levels of non-compliance being observed or reported and the impact that this activity may have on the sustainability of the target species or the ecosystem. In addition, a stakeholder workshop will be undertaken every five years and coincide with the review of the Framework to ensure that any substantive management changes or new and emerging risks are identified for inclusion into the annual risk assessment process.

The compliance risk assessment enables the Fisheries Division and its compliance partners to prioritise and plan compliance actions to mitigate the risks. A compliance action (or a combination of actions) will be identified and applied to the prioritised risks to maximise voluntary compliance and mitigate the likelihood of the non-compliance from occurring (or to optimise the likelihood of enforcement success). The chosen action must have regard to the available resources and cost benefits, noting that the selected strategy should be measured to evaluate the effectiveness of the actions chosen and adjusted or changed as appropriate.

11.4. Compliance reporting

The Fisheries Division and WPS will compile an annual compliance report in relation to activities in the fishery, and will include a component prepared by AFMA as part of the agreement. The annual compliance report may include a:

- description of compliance risks (and their attributes) impacting the fishery during the previous year;
- summary of the actions undertaken to address each risk and the outcomes achieved;
- description of the mitigation strategy in place to address each risk; and
- identification of risk reduction options for future consideration.

11.5. Vessel monitoring systems

Vessel monitoring systems (VMS) are required to monitor fishing activity and ensure compliance with fishery management arrangements. VMS are already are requirement for commercial vessels operating in the fishery and

with the implementation of this Framework, the requirement will be extended to include all FTO vessels that target reef fish and have the capacity to carry more than seven persons (see section 14.5.1). The VMS also provides improved quality of location derived data for management and research purposes. The administration of the VMS will be carried out in accordance with the Guideline: Vessel monitoring system in Northern Territory fisheries. The guideline can be accessed using the below link:

https://industry.nt.gov.au/__data/assets/pdf_file/0007/923929/vms-in-northern-territory-fisheries.pdf

11.6. Compulsory observer trips under the Harvest Strategy

The Director may serve a compulsory observer notice to a commercial fisher or fishing tour operator if the relevant reference points are breached under the application of the Harvest Strategy. This would occur when the catch per unit effort of Black Jewfish declines below the trigger reference points in the Management Areas, or when the risk of fishing impact to threatened endangered and protected species is identified as medium or higher.

The observer notice will permit a Fisheries Division observer on board the vessel for one or more voyages during which the holder intends to take fish under the licence. The notice requires the licence holder to pay the costs incurred for the on-board observer within 14 days of the end of each fishing trip.

11.7. Costs for compliance and monitoring

The costs of the compliance in the fishery are funded in various ways:

- the costs attributed to the land–based component of the commercial sector (that will be largely undertaken by AFMA on a fee for service agreement) will be recovered from licence holders through ITQ levies;
- the costs attributed to the recreational and tourism sectors are funded by the NT government through the Fisheries Division and the WPS;
- the ongoing cost of VMS on each vessel will be cost recovered from licence holders (including FTOs) through a levy at licence renewal;
- the cost of the ongoing annual observer coverage for commercial fishers to validate CPUE in the Management Areas will be met by annual levies based on ITQ holdings. If the observer trip is due to breaching a reference point or required to validate CPUE in the Eastern Zone, the costs of that observer trip will be met by the particular licensee; and
- the cost associated with any electronic monitoring gear procurement, installation and maintenance and the ongoing electronic monitoring program will be met by licence holders through annual levies.

12. Education Plan

The proposed education plan has the following aims:

- To ensure that key educational messages regarding resource use in the fishery remain relevant and are distributed to resource users;
- To provide guidance on implementing an education and awareness program; and
- To provide links to educational materials for resource users.

Education in the fishery is a shared responsibility between all users groups. The Fisheries Division is primarily responsible for providing education on the legislative arrangements (fishing rules) as well as the ongoing biological status of the fish stocks. In this responsibility, the Division is supported by each sectors peak representative body, particularly with regard to the dissemination of educational materials. The peak bodies are primarily responsible for promoting the stewardship of the fisheries resources among their respective user groups. This includes the development of best practice standards such as code of conducts, environmental management systems among other relevant educational materials.

12.1. Key educational messages

It is important that key educational messages specific to the management of coastal reef fish resources targeted by the fishery are reviewed and disseminated to fishers on a regular basis. The key messages should be designed to promote awareness of sustainable fishing practices and voluntary compliance in the fishery. The review of the messages should be undertaken on an annual basis in consultation between the Fisheries Division and each sectors peak representative body. The review should consider the following information:

- The relevance of the key messaging in regards to its objectives and content;
- The target audience and ways the messaging is being delivered;
- Whether the key messaging or any associated content is publically accessible (i.e. on a website);
- Setting of performance indicators regarding the promotion of key messages; and
- Identification of any new messages required to address emerging issues within the fishery.

The key messages currently being promoted in the fishery are contained in Table 19.

12.2. Education and awareness program

Many of the harvest strategy decision rules require the implementation of an education and awareness program if a performance indicator breaches a trigger or limit reference point. The program accompanies the implementation of other more direct management actions contained within the decision rules designed to recover the affected species or stock (i.e. mechanisms to reduce catch). The aim of the program is to provide an understanding to fishers regarding why management action has been taken and to raise awareness of all stakeholders regarding the declining status of the affected species or stock.

The education and awareness program may include the following information:

- Scientific evidence that supports the performance of the indicator;
- Reasons for the decline in the affected species or stock;
- How the management actions will improve the status of the species or stock;
- Species specific information regarding biology, life characteristics, stock structure and vulnerability; and

- What role fishers can play in assisting the recovery of the affected species (aside from the management actions).

Input into the development of an education and awareness program (if required under the application of the harvest strategy) will be sought from the Advisory Group during the annual review of the harvest strategy. It is expected that all peak stakeholder bodies will play a role in disseminating information to fishers regarding the contents of the education and awareness program.

12.3. Educational materials

The following section provides links to key education materials:

- Know your limits – Northern Territory Fishing Controls

  https://nt.gov.au/__data/assets/pdf_file/0005/275171/know-your-limits-booklet.pdf

- Status of key Northern Territory fish stocks report 2017

  https://dpir.nt.gov.au/__data/assets/pdf_file/0005/744278/FR121.pdf

- Status of Australian Fish Stock Reports

  https://www.fish.gov.au/

Table 19. Key messages regarding the use of resources in the fishery

Key message	Objectives	Content	Audience	Responsibility
Think before you release	• Increase awareness of barotrauma • Increase voluntary compliance	• Reef fish are not suitable for catch and release • Barotrauma impacts and shark predation • Utilise your catch and limit wastage	• Recreational fishers • Tourism fishers • Community	• Fisheries Division • AFANT • NTGFIA
Tomorrows fishing starts today	• Increase awareness of possession limits • Increase voluntary compliance • Increase reporting on non-compliant fishing activity	• Reminders on possession limits • Cumulative effects of fishing behaviour • Promote education amongst peers • Ethical treatment of fish kept (ikijime) and released (best practice handling)	• Recreational fishers • Tourism fishers • Commercial fishers • Community	• Fisheries Division • AFANT • NTGFIA • NTSC
#mycatch NT	• Reduce reef fishing bycatch	• Utilise fish that are typically deemed as bycatch or those suffering barotrauma. • Demonstrated recipes on how to prepare, and eat smaller or more undesirable fish • Reduced impact of shark predation	• Recreational fishers • Tourism fishers • Commercial fishers • Community	• Fisheries Division • AFANT • NTGFIA • NTSC
Key reef species profiles	• Increase awareness of reef fish species to promote stewardship	• Information on species biology • Information on seasonal variation in abundance • Information on sustainability	• Recreational fishers • Tourism fishers • Commercial fishers • Community	• Fisheries Division • AFANT • NTGFIA • NTSC
Report your TEPS interactions	• Increase awareness of TEPS species • Improve reporting of TEPS species	• Raise awareness of local TEPS species • Provide simple identification descriptions • Provide website links to facilitate reporting of TEPS species	• Commercial fishers • Recreational fishers • Tourism fishers	• Fisheries Division • AFANT • NTGFIA • NTSC

Reef Fish Protection Areas	• Increase voluntary compliance	• Importance of the closed areas to recovering stocks • Report any suspicious fishing behaviour • Stock status of key reef fish species • Updates on monitoring progress	• Recreational fishers • Tourism fishers • Commercial fishers	• Fisheries Division • AFANT • NTGFIA • NTSC

13. Consultation

Management changes are generally given effect through amendments to legislation, such as, Regulations, Gazette Notices and development of the new CLF Management Plan. These changes generally require consultation with key stakeholders and the approval of the Minister for Industry, Tourism and Trade and/or the Director of Fisheries (or appropriate delegates). In making decisions relevant to fisheries, the Minister may choose to receive advice from any source, but has indicated that:

1. The Fisheries Division is the primary source of management advice and decision-making; and
2. Peak bodies for the commercial, recreational, traditional and fishing tourism sectors are the primary source of advice regarding their sectors i.e. NT Seafood Council (NTSC), Amateur Fishermen's Association of the NT, Aboriginal land councils (Northern Land Council, Tiwi Land Council and Anindilyakwa Land Council) and the NT Guided Fishing Industry Association.

The Fisheries Division will also ensure that fishing sectors (via the peak bodies) are notified of any external impacts that may impact their access on the fishery. This will provide an opportunity for stakeholders to provide consolidated advice to the Director of Fisheries on appropriate measures to mitigate any potential impacts. The consolidated advice would then form part of the formal consultation process surrounding the proposed external activity.

An appropriate advisory structure (i.e. Management Advisory Committee or Working Group) may be formed as required to provide coordinated advice regarding issues that fall outside the scope of this Framework.

9.6.1. Advisory Group

The Director of Fisheries will establish an Advisory Group to provide advice regarding the performance of the fishery in accordance with this Framework. This may include:

- Assessing the performance of the Harvest Strategy;
- Reviewing the Monitoring and Research Plan;
- Providing input into the development of the education and awareness program (if required);
- Identifying any relevant infrastructure priorities a priori to influence planning for the fishery;
- And any other matters as required in this Framework.

Advisory Group membership will formed in accordance with an agreed Terms of Reference and comprise persons with expertise in the fields of commercial, recreational and tourism fishing, traditional marine harvest and environmental science.

14. Regulatory arrangements

It is proposed that regulatory arrangements regarding the management of CLF will be primarily contained within a new legislated *Coastal Line Fishery Management Plan.* The proposed regulatory arrangements detailed within this Framework do not include a list of all the amateur fishing arrangements but does include those that are primarily associated with the take of reef fish species. Details of the proposed regulatory arrangements are provided in the sections below:

14.1. Management zones

There are two management zones in the CLF; the Western and the Eastern Zone (see Section 6.1.1) It is proposed each zone will have an allocated total allowable catch to limit overall harvest of specified species (see Section 7). The allowable commercial catch for each species group within a management zone will be allocated to licence holders commensurate with their share of fishery units of each particular species group.

14.2. Licences

A Coastal Line Fishery (CLF) licence is required to undertake commercial fishing in both management zones. If a quota-based output framework is adopted in the Eastern Zone then the existing restriction on the number of licences would be removed to improve flexibility of commercial operations. New licences could be issued by the Director of Fisheries providing the licence has the minimum holdings of quota to commence fishing.

Fishing Tour Operator (FTO) licences are required for fishing guides to take clients fishing. There are no limits on the number of FTO licences that can be issued, but new licences can no longer be issued to target reef fish in the Western Zone of the fishery.

Recreational fishers and FTO clients do not require a licence to fish in the NT.

14.3. Licence conditions

Conditions on licences operating in the fishery can be imposed relating to: reporting requirements, areas/zones; species; quantities; methods; types of fishing gear; harvesting, handling, or places where fish or aquatic life may be landed, and periods of time as the Director of Fisheries considers appropriate.

14.4. Approved Operator

CLF licence and FTO licence holders must appoint an approved operator to be the person in charge of fishing operations. Once an approved operator is appointed, details of the appointment must be forwarded to the Fisheries Licensing Office on the appropriate form within 24 hours. Approved operator authorisations are obtained by applying in writing using the specified forms to the Director of Fisheries. This includes conducting an interview with the relevant fishery manager informing of the operational requirements and legislative controls that exist in the fishery, and providing a police certificate to be considered by the Director as a fit and proper person to be in charge of fishing operations.

14.5. Vessels

CLF licence holders and approved operators must meet the requirements of Sections 17k to 19 of the *Fisheries Act* and Regulations 53 to 57 of the *Fisheries Regulations* with respect to registration, paying registration fees, nomination and marking of vessels. Only one vessel may be used to fish under the authority of a CLF licence at any one time. However, CLF licence holders may apply to the Director of Fisheries to use a support vessel for storage of catch, accommodation and supplies. Support vessels must be registered, equipped with a VMS

and not engage in fishing.

Recreational fishers and FTO licence holders do not require a registered vessel to fish in the NT.

14.5.1. Vessel monitoring system

It is proposed that all vessels used under a CLF licence and all vessels that target reef fish and have a carrying capacity of more than seven persons used under a FTO licence, must have an approved vessel monitoring system (VMS) installed on the vessel. The administration of the VMS will be carried out in accordance with the Guideline - Vessel monitoring system in Northern Territory fisheries: https://industry.nt.gov.au/__data/assets/pdf_file/0007/923929/vms-in-northern-territory-fisheries.pdf

Commercial and FTO licence holders and approved operators must maintain the VMS in accordance with the manufacturer's instructions and ensure the VMS unit must operate on a permanent and continuous basis when the approved operator undertakes any fishing activity. The Director of Fisheries may provide written approval for the VMS not to be operating, if an approved operator has a genuine reason for the VMS unit not to be operating (i.e. fishing season closures, exceptional circumstances (such as repairs) or failure of a VMS unit), that will remain subject to specific conditions specified in the approval.

Licence holders and/or approved operators need to apply for permission to the Director of Fisheries to switch off a unit or to manually report, following the relevant guidelines:

Guideline – VMS Temporary Switch Off: https://industry.nt.gov.au/__data/assets/pdf_file/0009/923931/vms-temporary-switch-off.pdf

Guideline – VMS Manual Reporting: https://industry.nt.gov.au/__data/assets/pdf_file/0008/923930/vms-manual-reporting.pdf

14.6. Complying gear

All CLF licences will be approved for the use of vertical lines, droplines, fish traps, scoop nets, gaffs and cast nets. The use of fish traps is only permitted in the Eastern Zone. Note it is proposed that the restriction on the number of fish traps used by a commercial operation will be removed if ITQ is implemented in the Eastern Zone of the fishery.

The use of cast nets by a CLF licence holder is only permitted to take fish or aquatic life to be used as bait under the licence.

The use of droplines and fish traps is restricted to the area extending seaward from an imaginary line following the coastline 2 nautical miles seaward from the low water mark to an imaginary line following the coastline 15 nautical miles from the low water mark.

Recreational fishers and FTO clients (amateur fishers) are approved to use the below gear types to fish in both management zones of the fishery:

- vertical line, as hand line or rod and reel
- float line
- troll line
- complying freshwater pot
- complying marine pot
- dilly pot
- amateur drag net
- cast net
- scoop net
- bow and arrow other than crossbow
- spear-gun
- gaff (including hand-held hook)
- hand spear
- knife

Note further information relating to the possession and use of fishing gear for amateur fishers can be located in Part 4 and Part 5 of the *Fisheries Regulations 1992*.

14.6.1. Gear development

The development of alternative or innovative commercial gear types is permitted in the Fishery but is subject to an assessment by the Director of Fisheries. All new gear proposed for trial in the fishery will be assessed in accordance with the *Northern Territory Fisheries Development and Exploration Policy*. The Policy is intended to provide guidance to fishery managers, fishers and other stakeholders on the management of proposals for the development and exploration of aquatic resources for commercial purposes in the NT.

14.7. Reporting

It is proposed that all CLF approved operators will be required to use electronic logbooks to facilitate effective management of the fishery under this Framework.

It is proposed that approved operators fishing under a CLF licence will be required to complete the reporting requirements outlined below:

1. Electronic logbooks of daily catch and effort information and market details. This includes the following information:
    - Licence details (approved operator name, licence number, vessel name, vessel registration)
    - Fishing session details (Date and time, area fished, coordinates, fishing method, number of lines or traps);
    - Catch details (species, cut, estimated weight and quantity);
    - Discarded species (species, weight and status);
    - TEPS interactions (species, quantity and status); and
    - Market details (species, cut, weight sold, storage, value, destination)

2. Prior Landing Notice provided at least 1 hour before landing in Darwin or 2 hours before landing in another location. This includes the following information:
    - Licence details (approved operator name, licence number, vessel name, and vessel registration).
    - Number of fish from each quota species group on board the vessel:
    - Number of swim bladders on board the vessel;
    - Time and place of landing;
    - Time and place of transferring of any fish from the vessel to a vehicle (if required);
    - The registration number of the vehicle transporting the fish (if required); and
    - Time and place the fish will be weighed.

3. Catch Disposal Record (CDR) designed to verify recorded information about catches (*Fisheries Act* s.34) for each consignment of fish sold or put into storage completed within one hour of weighing fish. This includes the following information:
    - Licence details (approved operator name, licence number, vessel name and registration)
    - Fishing method;
    - Catch consignment (whole or part);
    - Name of Fish Receiver;
    - Kilograms of each species group unloaded;
    - Number and weight of swim bladders unloaded; and

- Date and time the fish leaves the Approved Operators possession.

Approved operators fishing under a FTO licence will be required to complete logbooks of daily catch and effort information and market details. This includes the following information:

- Licence details (Approved Operator name, licence number);
- Fishing session details (duration, date, grid and sub grid fished, area fished);
- Client details (number of fishers, client origin);
- Target method and line hours fished; and
- Catch details (species, number caught, number released)

14.8. CLF licence operational requirements

14.8.1. Prohibited species

A person fishing under a CLF licence must not take other managed species that includes Barramundi, King Threadfin, Shark, Spanish mackerel, Trepang, or Mud Crab when fishing under a CLF licence.

14.8.2. Individual Transferable Quota

An individual transferrable quota (ITQ) system in the CLF includes two components; fishery units (1) and quota units (2).

1. Fishery units are a permanent entitlement that provides a licence with a portion of the CLF catch share (and thereby a portion of the TAC) of each species group. Each fishery unit receives an allocation of quota units at the commencement of each licensing year (1 July each year).

2. Quota units are temporary (valid for 12 months) and determine the amount of a species group that can be taken by a licence. The value of a quota unit will always be equal to 1 kilogram but the number of quota units may change depending on the TAC in any given year.

ITQ has already been implemented in the Western Zone of the fishery to provide secure access to resources for CLF licences. The previous number of fishery units in the Western Zone and their allocation to CLF licences will be maintained under this Framework.

With the implementation of this Framework, the CLAG has recommended that a quota framework should be implemented for CLF licences in the Eastern Zone. If a quota framework is adopted it is proposed that fishery units would be allocated equally between all CLF licences. The total amount of fishery units allocated to licences would be commensurate with the allowable catch for CLF licences in the Eastern Zone under a final management framework i.e. one fishery unit will equate to one kilogram of a particular species group at the time of issue and the relative value of a fishery unit under changed TAC settings adjusted accordingly.

At the commencement of each licensing year the number of quota units for a species group allocated to a CLF licence will be calculated in accordance with the following formula:

A = **L** ÷ **T** x **TAC**

A is the number of quota units for the relevant species group to be allocated to the CLF licence

L is the number of fishery units for the relevant CLF species attached to the CLF licence on the date of the allocation before any transfers of fishery units to or from the licence take effect.

T is the total number of fishery units for the relevant CLF species.

TACC is the total allowable catch for CLF licences of the relevant CLF species

Note: partial numbers will be rounded to the nearest whole number.

HYPOTHETICAL EXAMPLE: There are 100,000 fishery units of x_species in a fishery. A licence has 15,000 fishery units of x_species. The TACC for x_species was reduced from 100,000 to 70,000 for the next licensing year. The licence will then be allocated the following number of quota units at the commencement of the next licensing year:

Quota units of x_species = 15000 / 100,000 * 70,000 = **10500**

14.8.3. Minimum quota holdings

Minimum quota holdings are required for commercial licences to operate in the Western Zone. The CLAG recommendation to transition to a quota framework will also require consideration of appropriate minimum holdings for operations in the Eastern Zone. The onus is on licence holders to be aware of their quota balance to ensure they have sufficient quota to cover the minimum quota holdings requirement, and the entire catch for each trip. Fishery unit and quota unit transfers

A licence holder may sell the fishery units on a CLF licence (i.e. a permanent transfer of entitlement). If the licence holder sells all of the fishery units in a licensing year, then the licence holder will not be entitled to receive any future allocation of quota units in the next licensing year. The new holder of the transferred fishery units will not have any quota units allocated until the commencement of the next licensing year. The sale of fishery units attracts stamp duty obligations.

A licence holder may sell the quota units on a CLF licence (also known as leasing quota). As quota units are only temporary (valid for twelve months) they may be sold only within the licensing year to which the quota units were allocated. Note all sold quota units will automatically expire at the end of a licensing year.

14.8.4. Overcatch

It is the responsibility of the person in charge of fishing operations to ensure their quota balance is sufficient to cover their catch for each trip. Any discrepancies or errors should be reported to NT Fisheries.

In the event the person in charge of fishing operations catches more fish than the licence quota holdings permit, they must reconcile the overcatch within seven days. If the overcatch has not been reconciled within seven days of the Fisheries Division receiving the CDR, a formal Overcatch Notice will be issued from the Fisheries Division providing an additional seven days to reconcile the quota. Failure to reconcile the quota after this period will result in a penalty. Additionally, fishing is not allowed to resume under the licence until the overcatch of quota is reconciled and the appropriate minimum holdings are attached to the licence.

In the event a licence holder is in an overcatch position at the end of the licencing year, the overcatch must be reconciled before 30 June. If there is no ability to reconcile quota for the licensing year in which the overcatch occurred, the licence holder must pay a penalty before the licence can be renewed.

14.8.5. Fishing in more than one management zone

The person in charge of fishing operations under a CLF licence may fish in more than one management zone during a single fishing trip subject to a notice given by phone or email 1 – 12 hours prior to entering another management zone to fish. The notice must provide the following information:

- Licence details (approved operator name, licence number, vessel name, and vessel registration).
- Management zone to be fished;
- Confirmation of minimum quota holdings in the management zone to be fished.
- Estimated weight (in kilograms) of fish onboard by species group;
- Type of gear to be used; and
- Estimated time of entering new management zone.

In addition to the notice above it is proposed that electronic logbooks are to be completed relevant to each management zone and separate CDR's are to be completed declaring the weight of each species group taken from each management zone.

14.8.6. No fish on vessel at start of voyage

The persons in charge of fishing operations under a CLF licence must not have a quota species group intended for sale on board a vessel upon commencement of the next voyage without written approval from the Director.

14.8.7. Fish not to be moved between vessels

A person must not transfer any quota species group from one vessel to another without the approval of the Director of Fisheries. The capacity to tranship product may be reviewed in the future once the arrangements in this Framework have been well established. A person may apply to the Director seeking once-off approval to tranship quota species under exceptional circumstances (to be outlined in a written application).

Special arrangements may be considered for persons wishing to unload in Australian ports outside of the NT. The Director may require the person to pay for any costs associated with compliance management operations that may be required at the ports outside of the NT.

14.8.8. No fishing under another licence during a voyage

The person in charge of fishing operations cannot take fish under the CLF licence and on the same fishing trip take fish under another fishing licence without written approval from the Director of Fisheries.

14.8.9. Fish not to be processed before unloading

The person in charge of fishing operations must ensure that fish taken on a voyage using fish traps are not processed before they are unloaded from the vessel from which it was taken without written approval from the Director, except for Black Jewfish which are required to have their swim bladders individually tagged (see section 14.8.12).

14.8.10. Weighing fish

The person in charge of fishing operations must ensure that, as soon as practicable, after a fish has been taken under the CLF licence and they are unloaded from the vessel or transport vehicle, the fish are weighed using scales that are an appropriate size, taking into account the amount of fish to be weighed and have been properly calibrated immediately before being used to weigh the fish.

14.8.11. Jewfish requirements

Swim bladders from jewfish (family Sciaenidae) must be individually tagged using certified authentication tags in a secure and visible position prior to a vessel making landfall (landing). Certified authentication tags are only

valid for use in the licensing year in which they are issued and any unused tags must be returned to Fisheries Licensing by 31 July each year.

The person in charge of fishing operations shall not discard a fish with its swim bladder removed. The amount of swim bladders on board a vessel shall be no more than a 1:1 ratio to trunks, or no more than a 1:2 ratio to fillets. Fish are only able to be discarded with their swim bladder removed if there has been an interaction with a marine organism which reduces the value of the fish to the point that it cannot be utilised for sale, or the fish cannot be used for sale due to mechanical or on-board processing error. If a fish is discarded without its swim bladder for the above listed reasons then approved operators must report the reason for the discard in their logbook.

The person in charge of fishing operations must ensure that Black Jewfish are trunked in a standard manner to maintain the integrity of the ITQ system. The trunking of Black Jewfish is limited to the removal of the head, gills and internal viscera from the fish.

14.8.12. Shark requirements

The person in charge of fishing operations must ensure there is no more than 500 kilograms of shark (whole weight) on board the vessel. This acknowledges incidental capture of sharks while fishing for reef fish and prevents targeted fishing for sharks for which an established fishery already exists.

All sharks retained during a voyage must be landed with the fins naturally attached. This does not prevent a shark from being trunked at sea. The weight of trunks with fins naturally attached must be converted to whole weights to comply with the voyage limit.

14.9. Amateur fishing operational requirements

14.9.1. General possession limit

A general possession limit of 15 fish applies for recreational fishers and persons fishing under a FTO licence. This is the maximum number of fish a person may have in their possession at any time while away from their permanent residence. A permanent residence does not include temporary occupancy, caravanning or camping but rather a fixed address which can be substantiated by photographic identification or similar.

14.9.2. Personal possession limit

Included within the 15 fish general possession limit, recreational fishers and persons fishing under a FTO licence may only have a maximum number of the following specified fish as shown in Table 20 (below).

Table 20. Personal possession limits for amateur fishers.

Species	Personal possession limits	Special controls and key information
Golden snapper★	3	Not suitable for catch and release in water 10 m+ in depth, susceptible to barotrauma. Vessel limit applies, see overleaf.
Black jewfish★	2	Not suitable for catch and release in water 10 m+ in depth, susceptible to barotrauma. Vessel limit applies, see overleaf
Barramundi	5	55cm minimum overall length NT-wide. Mary and Daly River fish management zones: 3 per person possession limit and vessel limit of 1 fish over 90 cm.
King threadfin	3	Mary and Daly River fish management zones: Vessel limit of 1 fish over 90 cm (fork length).

Mangrove Jack★	3	35 cm minimum length. Vessel limit applies, see overleaf.
Spanish mackerel	2	Sensitive to handling. The use of barbless hooks for catch and release fishing is recommended.
Red snappers (saddletail, crimson, Indonesian)	10	Any combination to a limit of 10 total
Tricky snapper★ (Grass emperor)	5	Susceptible to barotrauma. Vessel limit applies, see overleaf.
Stripey snapper★ (Spanish flag)	5	Susceptible to barotrauma. Vessel limit applies, see overleaf.
Russell's snapper★	5	Susceptible to barotrauma. Vessel limit applies, see overleaf.
Tuskfish★	5	Susceptible to barotrauma. Vessel limit applies, see overleaf.
Coral trout★	5	Susceptible to barotrauma. Vessel limit applies, see overleaf.
Red emperor★	5	Susceptible to barotrauma. Vessel limit applies, see overleaf.
Cod and grouper★	5	Susceptible to barotrauma. Vessel limit applies, see overleaf.
Sharks (excluding protected species)	3	Any combination up to a limit of 3. Sawfish, northern river and speartooth sharks are protected and must not be taken.
Marlin and sailfish	1	
Bream (*Acanthopagrus sp*)	15	
All other fish species not subject to specific individual limits	5	

★ At-risk species - those fish species with vulnerable biological characteristics that place them at a greater risk of becoming overfished. These include slow growth, late maturity and a preference for aggregating either for shelter, food or to spawn. Most at-risk species are also prone to barotrauma. Many of the common reef fish found in NT waters (snappers, emperors, cods and groupers) meet the criteria for being considered as 'at-risk'.

14.9.3. Vessel limits

Vessel limits apply to at-risk species for fishers onboard recreational and FTO vessels:

- Vessels with four or less people on board - each person can take their personal possession limit.
- Vessels with four to seven people on board can take a maximum of four times the personal possession limit of designated "at risk" species. The balance of the GPL can be made up of other fish.
- Vessels with eight or more people on board can take a maximum of eight times the personal possession limit of designated "at risk" species. The balance of the GPL can be made up of other fish.

14.9.4. Processing catch

The entire skin must be left on fillets and trunks of all fish. Frozen fillets from different species must be kept in separate packaging. Two fillets together are deemed to comprise one fish. A piece of fish, other than a fillet, is to be counted as one fish, unless you can prove that two or more pieces of fish were obtained from the one fish.

14.9.5. Fish not for sale

Recreational fishers, FTO guides and clients must not sell or barter their catch.

14.9.6. Swim bladders

If recreational fishers and persons fishing under a FTO licence intend to retain a swim bladder for personal consumption then they must keep the swim bladder inside the fish until they arrive at their permanent place of residence. If fishers process fish away from their permanent residence then they must immediately discard any swim bladders. A personal possession limit of two detached swim bladders (any species) applies at a person's permanent residence. Fishers must not be in possession of a detached swim bladder anywhere outside of their permanent residence.

14.9.7. Protected species

Recreational fishers and persons fishing under a FTO licence must not be in possession of protected species that include:

- All species of cod or grouper longer than 1.2 metres
- Sawfishes, Northern River and Speartooth sharks
- Giant clams

If caught, all protected species must be returned to the water unharmed.

14.10. Reef fish protection areas

Five temporary Reef Fish Protection Areas were implemented as an integral part of a management package to aid in the protection and recovery of at-risk reef fish. Some of the areas protect known healthy stocks of reef fish, while others were to allow reefs that have been depleted by overfishing to recover. Such as by protecting spawning aggregations and removing any form of fish mortality (e.g. barotrauma).

Five areas are being protected are remain subject to ongoing review. The areas are located near Bathurst Island, Melville Island, Charles Point Wide, Lorna Shoal and Moyle/Port Keats (Figure 15). These areas apply to the recreational, fishing tourism and commercial sectors of the CLF. Access to these areas is permitted to other commercial fisheries that have no impact on the mortality of reef fish (Spanish Mackerel, Aquarium and Trepang). All of the protection areas are located within the Western Zone of the fishery.

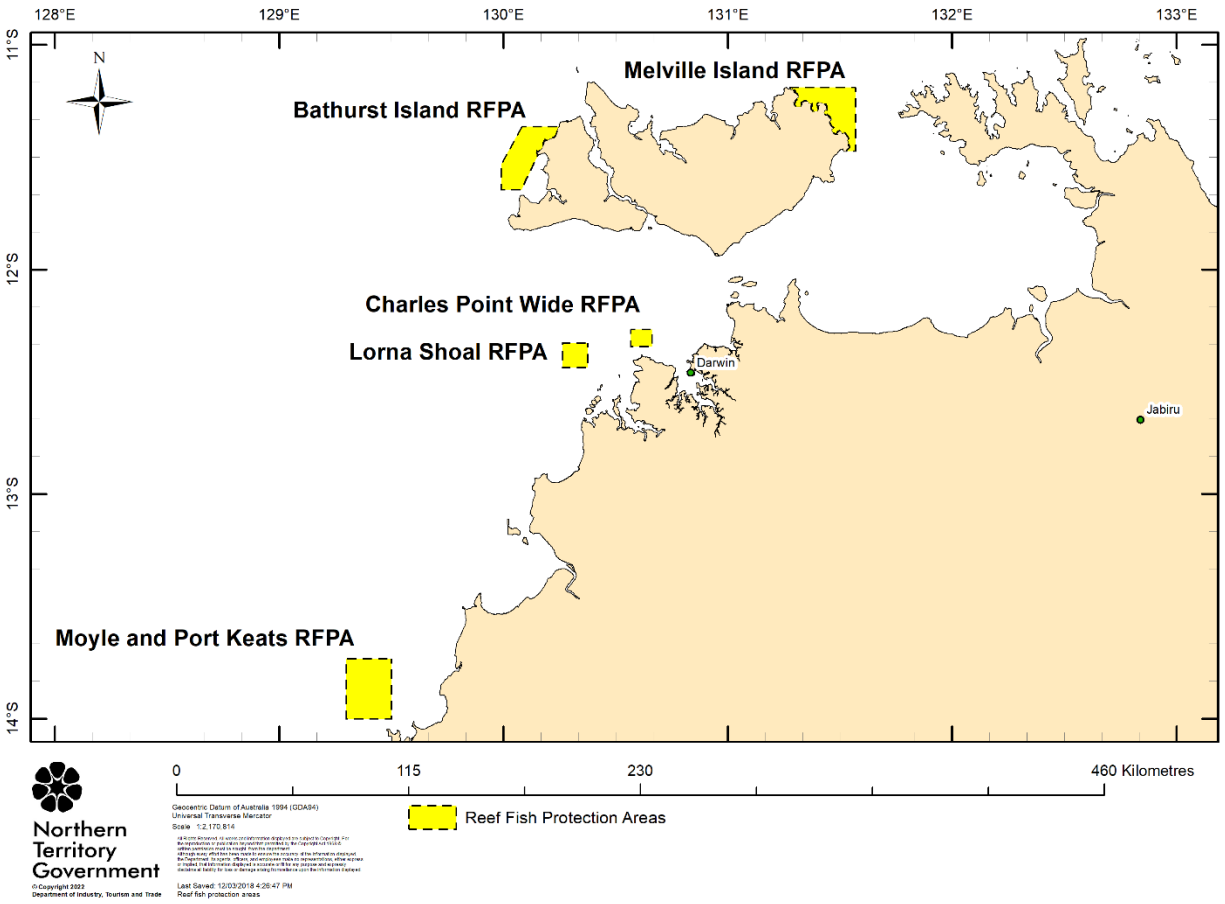

Figure 15. Map showing the location of the five temporary Reef Fish Protection Areas in the Western Zone of the CLF.

15. Review of the Framework

A comprehensive formal review for the purpose of determining whether the Framework should be amended, replaced, or reinstated without amendment, will be undertaken after 5 years or earlier if required.

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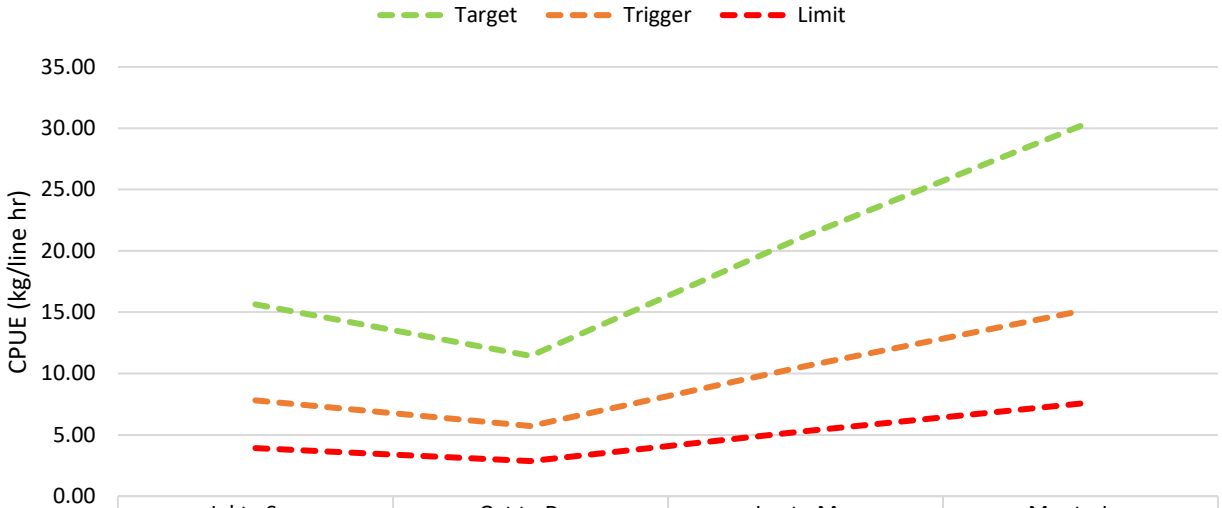
Appendix A - Reference Points for management areas

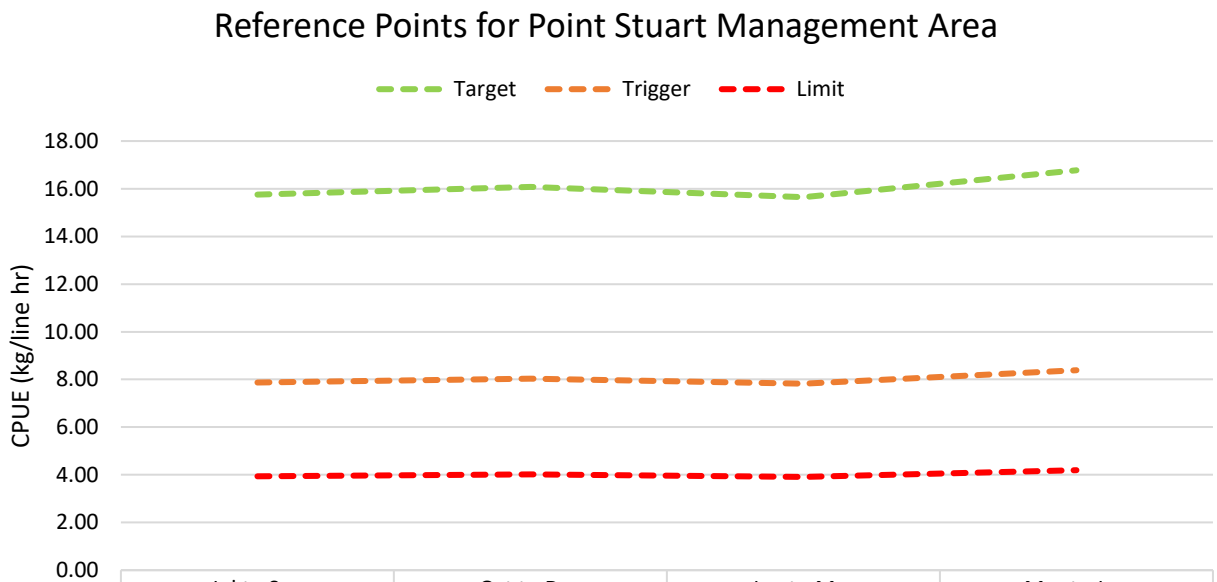
Reference Points for Channel Point Management Area



	Jul to Sep	Oct to Dec	Jan to Mar	Mar to Jun
Target	15.63	11.44	21.22	30.19
Trigger	7.82	5.72	10.61	15.09
Limit	3.91	2.86	5.31	7.55

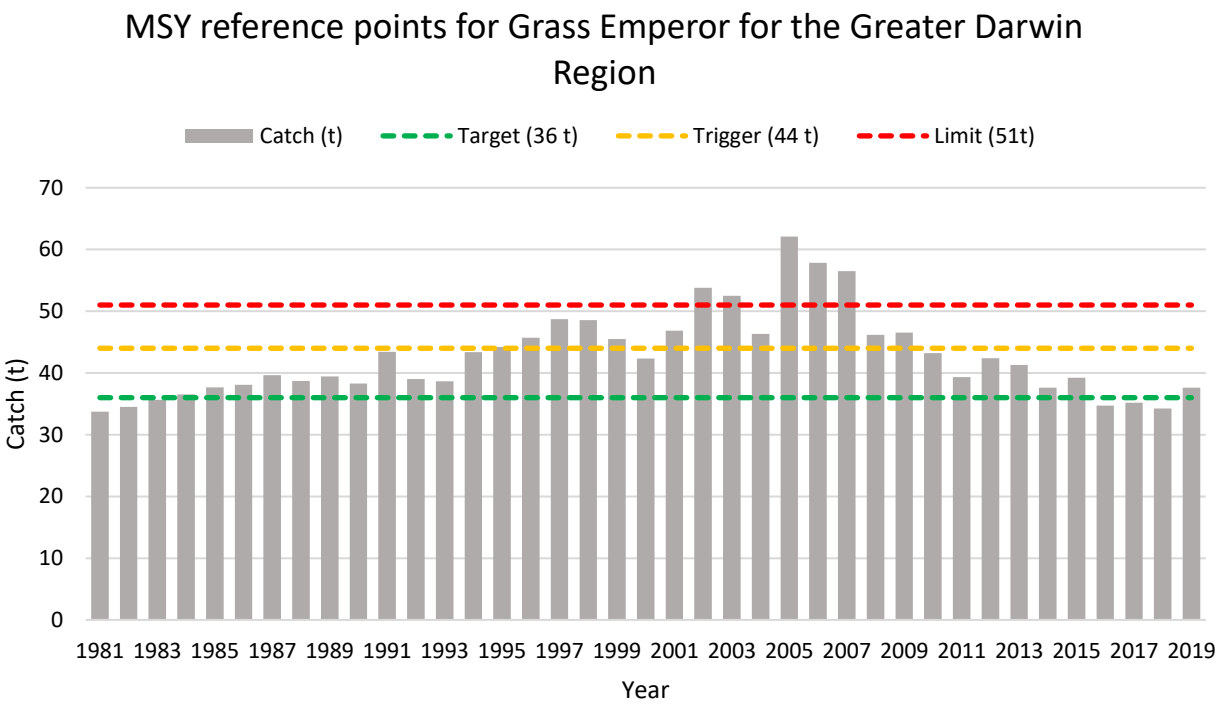
Reference Points for Mitchell Point Management Area

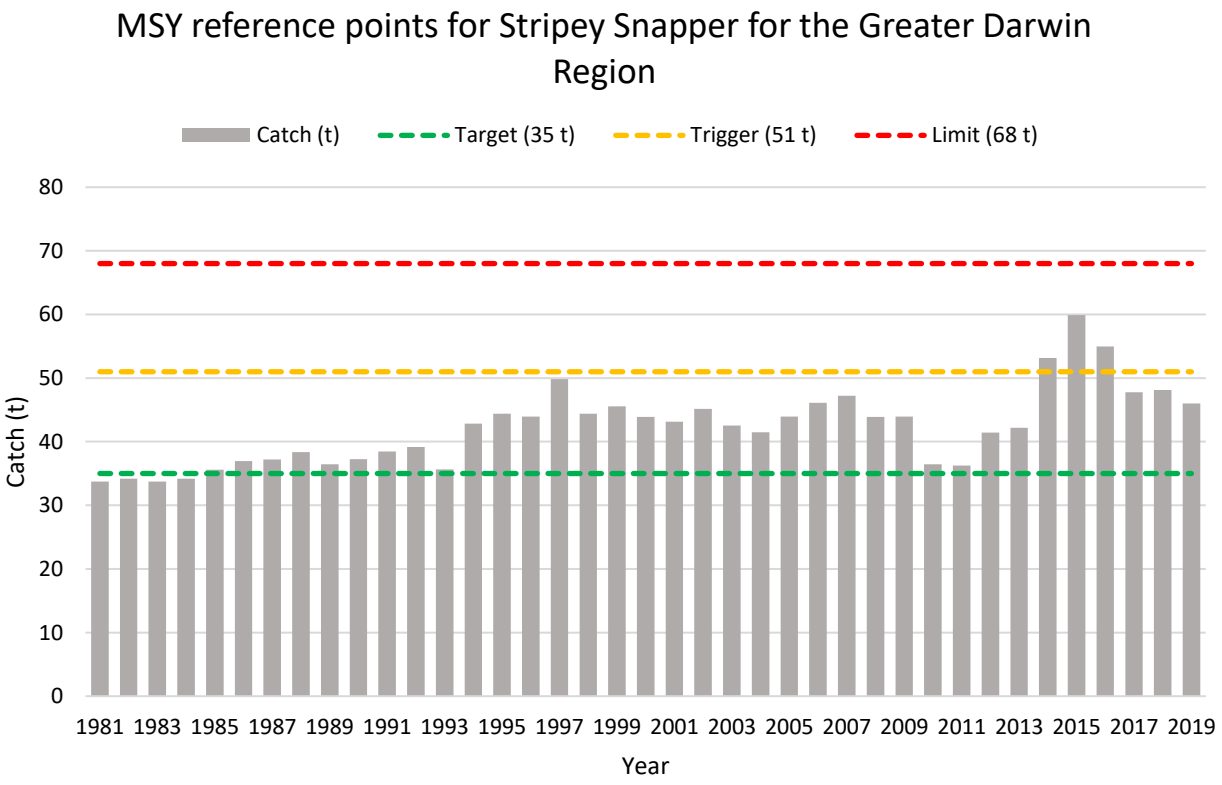
	Jul to Sep	Oct to Dec	Jan to Mar	Mar to Jun
Target	20.51	28.18	29.15	25.08
Trigger	10.26	14.09	14.57	12.54
Limit	5.13	7.05	7.29	6.27



	Jul to Sep	Oct to Dec	Jan to Mar	Mar to Jun
Target	15.75	16.08	15.65	16.77
Trigger	7.87	8.04	7.82	8.39
Limit	3.94	4.02	3.91	4.19

Appendix B - Reference Points for secondary species





Appendix C - Designated spatial closures for recreational and tourism fishers (yellow boxes)

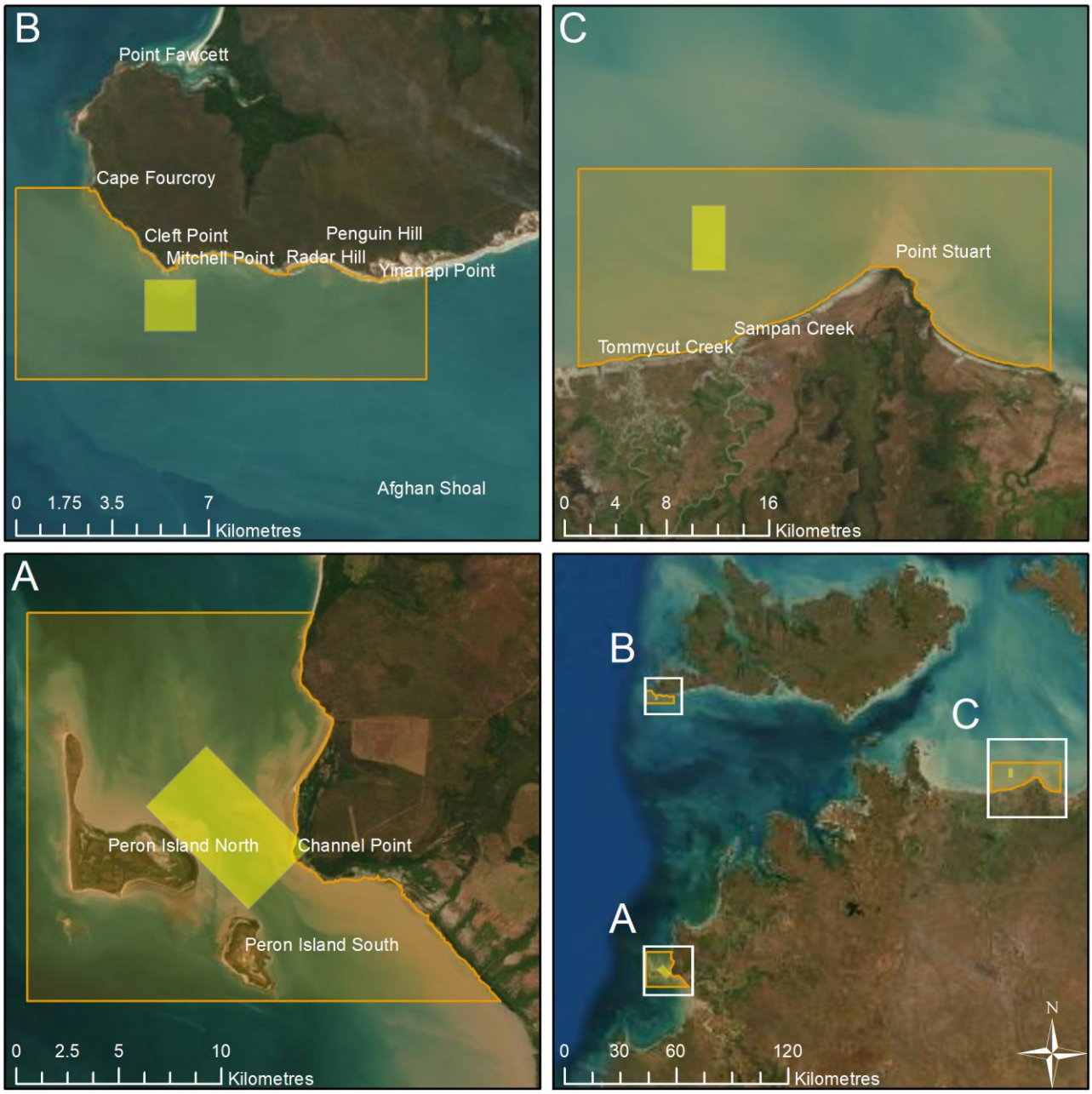


Figure 16. Designated spatial closures within the extent of the management regions