

**IN THE HIGH COURT OF NEW ZEALAND
WELLINGTON REGISTRY**

CIV 2007-485-2199

UNDER the Judicature Amendment Act 1972

BETWEEN ANTONS TRAWLING COMPANY
LIMITED
First Applicant

AND ESPERANCE FISHING CO LIMITED
AND ORNEAGAN DEVELOPMENTS
LIMITED
Second Applicant

AND THE MINISTER OF FISHERIES
First Respondent

AND THE CHIEF EXECUTIVE OF THE
MINISTRY OF FISHERIES
Second Respondent

Hearing: 28 January 2008

Counsel: F M R Cooke QC and M S Sullivan for Applicants
A Ivory, P A McCarthy and S J Ritchie for Respondents

Judgment: 22 February 2008

JUDGMENT OF MILLER J

Introduction

[1] On 24 September 2007 the Minister of Fisheries, Mr Anderton, announced a decision to cut the total allowable catch in the ORH 1 orange roughy fishery from 1,470 tonnes to 914 tonnes for the fishing year beginning on 1 October. The applicants for review, respectively the largest fisher and quota holders within the fishery, invite the Court to quash the decision, so reinstating the former catch limit.

[2] The application calls attention to important questions about some longstanding methods of setting total allowable catches in fisheries where stock levels and population dynamics have not been estimated.

The fishery

[3] Orange roughy, a deepwater species, is susceptible to overfishing. The fish are believed to live for as long as 120-130 years, and they reproduce slowly. They cluster in large numbers around seamount features, particularly when spawning. These characteristics mean both that overfishing may cause a catastrophic decline in stock numbers that may take many years to reverse and that catch histories are an unreliable guide to the health of the fishery, for they may not reveal the fact and extent of overfishing until the damage has been done.

[4] The ORH 1 fishery covers vast tracts of water reaching northwards from Waikanae, around Cape Reinga, and southwards to the East Cape. Orange roughy are known to cluster around some features, but there may be features and populations in areas of the fishery that have yet to be explored. Some known populations may not be fishable physically, if they prove to be in difficult terrain, or economically, if they are dispersed.

The Fisheries Act 1996

[5] The Minister made his decision under s13(2)(b) of the Act. I should set out the entire section by way of context:

(1) Subject to this section, the Minister shall, by notice in the Gazette, set in respect of the quota management area relating to each quota management stock a total allowable catch for that stock, and that total allowable catch shall continue to apply in each fishing year for that stock unless varied under this section, or until an alteration of the quota management area for that stock takes effect in accordance with sections 25 and 26.

(2) *The Minister shall set a total allowable catch that—*

(a) Maintains the stock at or above a level that can produce the maximum sustainable yield, having regard to the interdependence of stocks; or

(b) *Enables the level of any stock whose current level is below that which can produce the maximum sustainable yield to be altered—*

(i) *In a way and at a rate that will result in the stock being restored to or above a level that can produce the maximum sustainable yield, having regard to the interdependence of stocks; and*

(ii) *Within a period appropriate to the stock, having regard to the biological characteristics of the stock and any environmental conditions affecting the stock; or [emphasis added]*

(c) Enables the level of any stock whose current level is above that which can produce the maximum sustainable yield to be altered in a way and at a rate that will result in the stock moving towards or above a level that can produce the maximum sustainable yield, having regard to the interdependence of stocks.

(3) In considering the way in which and rate at which a stock is moved towards or above a level that can produce maximum sustainable yield under paragraph (b) or paragraph (c) of subsection (2) of this section, the Minister shall have regard to such social, cultural, and economic factors as he or she considers relevant.

(4) The Minister may from time to time, by notice in the Gazette, vary any total allowable catch set for any quota management stock under this section by increasing or reducing the total allowable catch. When considering any variation, the Minister is to have regard to the matters specified in subsections (2) and (3).

(5) Without limiting subsection (1) or subsection (4) of this section, the Minister may set or vary any total allowable catch at, or to, zero.

(6) Except as provided in subsection (7) of this section, every setting or variation of a total allowable catch shall have effect on and from the first day of the next fishing year for the stock concerned.

(7) After considering information about the abundance during the current fishing year of any stock listed in the Schedule 2 to this Act, and after having regard to the matters specified in subsections (2) and (3), the Minister may, by notice in the Gazette, increase the total allowable catch for the stock with effect from such date in the fishing year in which the notice is published as may be stated in the notice.

(8) If a total allowable catch for any stock has been increased during any fishing year under subsection (7) of this section, the total allowable catch for that stock shall, at the close of that fishing year, revert to the total allowable catch that applied to that stock at the beginning of that fishing year; but this subsection does not prevent a variation under subsection (4) of this section of the total allowable catch that applied at the beginning of that fishing year.

(9) The Governor-General may from time to time, by Order in Council, omit the name of any stock from Schedule 2 to this Act or add to that

Schedule the name of any stock whose abundance is highly variable from year to year.

(10) Subsection (1) does not require the Minister to set an initial total allowable catch for any quota management area and stock unless the Minister also proposes to set or vary a total allowable commercial catch for that area and stock under section 20.

[6] The term “total allowable catch” (**TAC**) is defined to mean the total allowable catch as set by notice in the Gazette under ss13 or 14 of the Act. And “maximum sustainable yield” (**MSY**):

... in relation to any stock, means the greatest yield that can be achieved over time while maintaining the stock's productive capacity, having regard to the population dynamics of the stock and any environmental factors that influence the stock.

[7] In practice, fisheries scientists customarily define MSY in terms of biomass and that concept is used in the Final Advice Paper on which the Minister relied. The biomass or stock level that can produce MSY is called B_{MSY} . This terminology is uncontroversial. It corresponds to s13(2) and the definition of MSY, which together refer to stock levels and relate them to yield that can be achieved over time while maintaining the stock's productive capacity. To estimate MSY the Minister must form a view about both the size of the existing stock and its capacity to sustain itself over time.

[8] The Act contains a mechanism for setting TAC when it is not possible, because of the biological characteristics of the species, to estimate MSY. Such species may be added by Order in Council to Schedule 3 of the Act, and the Minister is then permitted to set a total allowable catch for that stock that he or she thinks appropriate to achieve the purpose of the Act. Section 14 provides so far as relevant:

(1) Notwithstanding anything in section 13 of this Act, if satisfied, in the case of any quota management stock listed in Schedule 3 to this Act, that the purpose of this Act would be better achieved by setting a total allowable catch otherwise than in accordance with subsection (2) of that section, the Minister may at any time, by notice in the Gazette, set in respect of the quota management area relating to the quota management stock a total allowable catch for that stock that he or she considers appropriate to achieve the purpose of this Act.

(2) Every total allowable catch set under subsection (1) of this section for any stock shall continue to apply in each fishing year for the stock unless varied under subsection (3) of this section.

(3) The Minister may from time to time, by notice in the Gazette, vary any total allowable catch set under subsection (1) of this section for any stock by increasing or reducing the total allowable catch.

(4) Without limiting subsection (1) or subsection (3) of this section, the Minister may set or vary any total allowable catch at, or to, zero.

(6) After considering information about the abundance during the current fishing year of any stock listed in the Schedule 3 to this Act, the Minister may, by notice in the Gazette, increase the total allowable catch for the stock with effect from such date in the fishing year in which the notice is published as may be stated in the notice.

(8) The Governor-General may from time to time, by Order in Council,—

(a) omit the name of any stock from the Schedule 3 to this Act:

(b) add to that Schedule the name of any stock if—

(i) it is not possible, because of the biological characteristics of the species, to estimate maximum sustainable yield; or

(ii) a national allocation for New Zealand has been determined as part of an international agreement; or

(iii) the stock is managed on a rotational or enhanced basis; or

(iv) the stock comprises 1 or more highly migratory species.

[9] The purpose statement of the Act provides, inter alia, that the Act is to recognise New Zealand's international obligations relating to fishing. Under s5, the Act is to be interpreted, and all those exercising or performing functions, duties, or powers imposed by or under it shall act, in a manner consistent with those international obligations. They include Articles 61 and 62 of the United Nations Convention on the Law of the Sea:

“Article 61
Conservation of the living resources

1. The coastal State shall determine the allowable catch of the living resources in its exclusive economic zone.

2. The coastal State, taking into account the best scientific evidence available to it, shall ensure through proper conservation and management measures that the maintenance of the living resources in the exclusive

economic zone is not endangered by over-exploitation. As appropriate, the coastal State and competent international organizations, whether subregional, regional or global, shall cooperate to this end.

3. Such measures shall also be designed to maintain or restore populations of harvested species at levels which can produce the maximum sustainable yield, as qualified by relevant environmental and economic factors, including the economic needs of coastal fishing communities and the special requirements of developing States, and taking into account fishing patterns, the interdependence of stocks and any generally recommended international minimum standards, whether subregional, regional or global.

...”

“Article 62
Utilization of the living resources

1. The coastal State shall promote the objective of optimum utilization of the living resources in the exclusive economic zone without prejudice to article 61.

2. The coastal State shall determine its capacity to harvest the living resources of the exclusive economic zone. Where the coastal State does not have the capacity to harvest the entire allowable catch, it shall, through agreements or other arrangements and pursuant to the terms, conditions, laws and regulations referred to in paragraph 4, give other States access to the surplus of the allowable catch, having particular regard to the provisions of articles 69 and 70, especially in relation to the developing States mentioned therein.

...”

[10] It will be seen that New Zealand has assumed an obligation to promote the objective of optimum utilisation and must allow other States access to a surplus where it lacks the capacity to harvest the entire allowable catch.

[11] Section 8 of the Act provides that the purpose of the Act is to provide for the utilisation of fisheries resources while ensuring sustainability. The concepts of “ensuring sustainability” and “utilisation” are also defined:

Ensuring sustainability means—

- (a) Maintaining the potential of fisheries resources to meet the reasonably foreseeable needs of future generations; and
- (b) Avoiding, remedying, or mitigating any adverse effects of fishing on the aquatic environment:

Utilisation means conserving, using, enhancing, and developing fisheries resources to enable people to provide for their social, economic, and cultural wellbeing.

[12] In light of the Convention and ss8 and 13(2)(c), the Minister's objective when setting a TAC must be utilisation to the extent sustainable; see also *Westhaven Shellfish Ltd v Chief Executive of Ministry of Fisheries* [2002] 2 NZLR 158 at [46].

[13] Mr Ivory placed much emphasis on s10, which recognises that management decisions may be based on imperfect information. The section provides:

All persons exercising or performing functions, duties, or powers under this Act, in relation to the utilisation of fisheries resources or ensuring sustainability, shall take into account the following information principles:

- (a) Decisions should be based on the best available information:
- (b) Decision makers should consider any uncertainty in the information available in any case:
- (c) Decision makers should be cautious when information is uncertain, unreliable, or inadequate:
- (d) The absence of, or any uncertainty in, any information should not be used as a reason for postponing or failing to take any measure to achieve the purpose of this Act.

[14] "Best available information" is defined by reference to cost, effort, and time. It means:

the best information that, in the particular circumstances, is available without unreasonable cost, effort, or time:

and information includes:

- (a) Scientific, customary Maori, social, or economic information;
and
- (b) Any analysis of any such information:

[15] It is also necessary to mention s11, which allows the Minister to impose sustainability measures within a fishery, and s11A, which provides for fisheries plans. While TAC is set for the fishery as a whole, these provisions permit sustainability measures within it, including fishing methods and seasons and restrictions on areas from which fish may be taken.

The history of utilisation in ORH 1

[16] The total biomass or MSY in ORH 1 has never been estimated. Rather, successive Ministers have tried to gauge MSY over time by permitting and closely monitoring utilisation, a practice that Mr Ivory characterised as extra-statutory. It entails placing the stock under stress so that depletion can be monitored and MSY gauged. It is associated with adaptive management programmes (**AMPs**), which are agreements between the Ministry of Fisheries and fishers. The practice has apparently worked successfully in other fisheries; indeed, it may be the only practical method of arriving at MSY in some cases. It has not achieved that objective in ORH 1 despite more than a decade of fishing pressure, although the applicants maintain that it could do so with continued refinement and further research over time.

[17] The narrative begins in October 1995. Until then a nominal TAC of 190 tonnes had been set for the fishery. In October 1995 it was increased to 1190 tonnes, of which 1,000 tonnes was to be taken in one area known as the Mercury-Colville Box. The increase was associated with a five-year AMP, which adopted a target catch per trawl or catch per unit effort (**CPUE**) threshold in designated areas or features where known populations were located. This was a risk management measure. If catches fell below the target level at any given feature, the fishers were required to move to another. According to Mr Starr, a fisheries stock assessment scientist who swore an affidavit for the applicants, the selected CPUE threshold “effectively became a pragmatic surrogate for B_{MSY} in the absence of other information about the population”.

[18] Mr Cooke was at some pains to point out that the 1995 TAC was set under the Fisheries Act 1986, which took a somewhat less prescriptive approach than the 1996 Act. I have not been asked to determine whether the 1995 TAC was set lawfully; in *Antons Trawling Co Limited v Smith* [2003] 2 NZLR 23 at [60], the Court of Appeal plainly doubted it.

[19] Co-operation between the Ministry and the industry is not confined to the AMP. A number of working groups have been formed, including the 'Deepwater Fishery Assessment Working Group' and the 'AMP Working Group'. They include officials, fisheries scientists, and industry representatives.

[20] On 6 August 1998 the Deepwater Fishery Assessment Working Group considered CPUE data, which revealed a sharp decline. The Working Group thought it likely that heavier catches were not the cause of the decline, but the possibility remains that the 1,000-tonne limit in the Mercury-Colville Box was too high.

[21] On expiry of the first AMP, the TAC was reduced to 800 tonnes for the 2000-01 season. It appears that the reason for not reverting to a nominal TAC was that other populations had been discovered within ORH 1. It was made clear that the 2000-01 TAC had been set on an interim basis only.

[22] In 2001 the then Minister increased the TAC to 1,470 tonnes and a second five-year AMP was established. The TAC was derived from an industry AMP proposal, the objective of which was to determine stock size, geographical extent, and long-term sustainable yield of the ORH 1 stock. It also involved placing the stock under what Mr Starr describes as "some additional stress through heavier fishing pressure", and area and feature limits formed a "key component" of the proposal.

[23] It remained the position that no estimate had been made of biomass or MSY. The Final Advice Paper of 23 August 2001, on which the Minister based his decision to increase the TAC, concluded that there was insufficient information to assess the size and status of ORH 1 stock, and advised that there was no reliable estimate of yield available. The proposed area catch limits were set "at arbitrary levels" to allow exploratory fishing, which had already indicated that there were additional fishing grounds: at least 17 seamounts or seamount features had been found to be associated with orange roughy populations. Although the stock size was uncertain, the available information and analysis suggested a reasonable probability that the current biomass was greater than that which would support the MSY. On balance, the new TAC was likely to allow the stock to move towards a size that would support the

MSY. It is not clear what limb of s13(2) the Minister relied on when adopting these recommendations.

[24] Mr Starr explains that the second AMP was developed with the benefit of observations about fishing in the Mercury-Colville Box. The management approach adopted in the AMP included dividing ORH 1 into four quadrants each having a catch limit assigned, stipulating that within each quadrant catches at any single feature were limited to designated amounts, and providing that these feature-specific catch limits would fall as the CPUE dropped. Under this programme the fishing was dispersed over a larger number of features. He concedes that CPUE limits were set on an ad hoc basis but argues that they were conservative.

[25] The second AMP expired on 30 September 2006, and was not renewed. Fisheries officials have concluded that orange roughy is not suited to using an AMP to gauge MSY, for it is too easy to deplete the stock by accident. In particular, they now believe that CPUE data is simply not a reliable method of estimating B_{MSY} . Put another way, a decline in CPUE data can signal that it is time to stop fishing on a given feature, but the data cannot be used to estimate B_{MSY} because CPUE levels will remain high until stock levels have already fallen well below B_{MSY} . (It is also common ground that there was some misreporting of catches by fishers, although this consideration does not appear to have played a large part in the subsequent decisions to reduce TAC.) Officials have also become concerned that some methods of setting TACs may not comply with s13.

[26] In 2006 the TAC for ORH 1 was reviewed as part of what Mr Barbarich, Antons' Managing Director, describes as a "sustainability round". The second AMP was about to expire. The applicants believed that it would be extended, with the TAC being adjusted in light of experience. CPUE levels had not fallen. The Minister decided, however, to reduce TAC to 870 tonnes and to abandon the AMP. That led to an application for a judicial review, in which the Minister capitulated. His reasons for doing so have no material bearing on the present dispute, which arose after he revisited TAC levels in the succeeding year. A Ministerial proposal to amend the legislation was not pursued for reasons that have not been explained.

[27] The Deepwater and AMP Working Groups met to discuss ORH 1 early in 2007. Mr Starr and Mr Barbarich were both members. The resulting plenary report of the Working Groups, dated May 2007, was later included in the Final Advice Paper to the Minister. The report noted that CPUE was used as a management tool; when it dropped on a feature, fishers should move to another one. But CPUE data do not provide any useful measure of abundance in ORH 1 due to the short time series, the nature of the fishery, and the impact of catch limits on features or areas. It was not known whether the current harvest was sustainable. The purpose of the AMP had been to spread effort across the large area of the fishery. The amount of fishing in some areas appeared to be low, but without any indication of current abundance, there was no way to determine whether that level was sustainable. The report acknowledged that in 2001 the Working Group had stated that the stock was likely to be above MSY, but information collected since that time had not improved understanding about the status of the stock. It was not possible to estimate B_{MSY} for any of the individual populations within ORH 1, let alone aggregate them to an estimate for ORH 1 as a whole. Moreover, a better understanding would not be possible in the near future.

[28] To some extent these conclusions are controversial. Mr Barbarich and Mr Starr maintain that estimates of B_{MSY} are possible and the risks of error are manageable with continued close monitoring and further analysis, possibly involving computer models and topographical surveys. However, there is no dispute that B_{MSY} for ORH 1 cannot be estimated at present, with the result that it is not known whether the current TAC is sustainable in the long term. Mr Starr maintains that there is nonetheless no short-term sustainability concern, partly because catch histories show no decline and partly because there remain large areas of the fishery that have yet to be developed or have been only lightly fished. If ORH 1 is treated as a single population, he believes that the population likely still exceeds B_{MSY} . He appears to assume that exploration will reveal other populations, or that populations that have been identified will prove to be of sufficient size to sustain the 2001 TAC. He also considers that populations in marine protected areas should be taken into account in management decisions.

The Final Advice Paper

[29] The Final Advice Paper on which the Minister based his decision is dated 5 September 2007. The paper reported the Working Group conclusions that it is not possible to determine the sustainability of catches and that a better understanding is not possible in the near future. CPUE data had been used as a management tool to reduce fishing pressure on any one feature, but did not seem to be a measure of abundance. Much of the area of the fishery had not been explored, and there might be other orange roughy populations. The Ministry is investigating the viability and utility of a characterisation (topographical) study of known but unfished features to inform future estimates. While that might be informative, “it would still not lead to any conclusive finding about the sustainability of current harvesting or the relationship of the stock to B_{MSY} ”. Given the best available information, officials considered that it is not possible to assess B_{MSY} for the fishery.

[30] Nevertheless, officials advised, the Minister must set or vary TAC with reference to where the stock is in relation to B_{MSY} . The Minister’s powers under s13(2)(a)(b), and (c) were identified. Officials recommended that he set TAC under s13(2)(a). They identified a need for caution. Given uncertainty in the best available information about stock size “and combined with a more cautious assessment of that information”, the Minister might consider that ORH 1 is more likely to be at a level below B_{MSY} . If so, TAC might also be set under s13(2)(b).

[31] Officials recommended that associated with the overall TAC should be a management and monitoring plan to spread effort. Such a plan is “critical to managing risk”, but requires industry co-operation since area and feature limits (and reporting on them) cannot be imposed without agreement. Area limits and catch-spreading “are not part of your TAC and TACC [total allowable commercial catch] decisions”. The industry had agreed to continue to implement AMP measures, including area limits, feature limits, biological sampling, observer coverage, and regular reporting. The paper also indicated that the principal parties supported the development of a fisheries plan under s11A, and outlined the stance taken by each of them. The Ministry intended to evaluate this option with the stakeholders. There was no reference to the Minister’s powers under s11.

[32] The Minister was provided with three options. The first would retain the existing TAC of 1,470 tonnes. The second would reduce it to 1,208 tonnes. This option was said to place greater weight on the level of uncertainty generally, and the risk that a sustainability problem might not be detected until too late. The third option would reduce TAC to 914 tonnes. These options were not related to B_{MSY} , although it is unfair to characterise them as entirely arbitrary since officials evidently had the impact on fishers in mind. Neither of the reduction options analysed the way and rate at which stock might be moved to B_{MSY} , inevitably so given that there were no B_{MSY} estimates. The Minister was advised that he might select the third option under either s13(2)(a) or s13(2)(b), but that a reduction of that magnitude might be more suited to s13(2)(b). It is implicit in the paper that officials supported options 1 or 2, because they recommended that the Minister deploy s13(2)(a). That hint aside, he was given no guidance to which subsection he ought to invoke.

[33] The paper summarised the views of industry participants, who generally supported continued adaptive management and argued that there was nothing to suggest that the current catch rates are unsustainable. The Ministry agreed that there was no evidence of an immediate sustainability risk. The officials drew attention to the impact of a TAC reduction on industry participants, noting that the possible reductions would impose significant economic hardship on the largest firm (Antons).

[34] The Minister met officials on 18 September 2007. He noted the degree of uncertainty surrounding the stock and the impact that fishing may be having on it. He asked officials to confirm that there was no other information available, and was told that they had assessed all relevant information and that no new information was expected at any time.

The Minister's decision

[35] The Minister selected option 3 by endorsing it and signing the Final Advice Paper. He explained in a letter of 24 September 2007 to stakeholders that he had decided to set TAC under s13(2)(b) to enable the stock to rebuild to a level at or above that which can produce MSY. To effect that rebuild, he had next determined the appropriate way and rate of the rebuild, having regard to social, cultural,

economic and other factors. He had concluded that a “substantial and immediate reduction” in TAC was “required to effect the rebuild.”

[36] It will be obvious from the above summary of the Final Advice Paper that the Minister reached this decision without benefit of any data or estimates on which he might assess current biomass, B_{MSY} , or the way and rate at which the stock should be “rebuilt” under option 3. He did not assess biomass at all. Rather, the Minister opted for a precautionary approach, founded not on any estimate of yield but on the high level of uncertainty about B_{MSY} and the vulnerability of the stock to overfishing. He said:

Some submissions argued that the current TAC and TACC are appropriate, given that there is no sign of immediate sustainability concern, the geographic extent over which orange roughy is fished within ORH1, and the potential existence of orange roughy in unexplored or unexploited areas of ORH1. Their preference is to maintain the current catch limits, and to instead focus on the development of a well-designed and structured fishing programme to ensure the careful development and management of the fishery.

I do not find these arguments convincing. While I understand that there appears to be no imminent threat, I am alarmed by the possibility that a serious and irreversible sustainability problem may not be detected before it is too late. The low productivity of orange roughy, its aggregating behaviour, and the litany of orange roughy management failures around the world have convinced me that caution in favour of sustainability is the responsible course of action.

I believe that in this instance, the lack of information on stock levels requires me to take firm action. I have balanced my desire to reduce the sustainability risk with the very real and immediate economic consequences. My preference is to be as certain as I can that I have looked after the long-term interests of the fish and the fishery. I am not willing to wait for evidence of decline before I take action – if I did, it may be too late to ensure the sustainability of this orange roughy stock.

[37] The Minister added that he agreed that fine-scale management provided the best opportunity to detect and respond to a sustainability risk, and that catch spreading is critical to appropriate management. He requested that the general management approach that had been in place for the past several years continue; in particular, there should be area and feature limits.

The application for judicial review

[38] There is a single cause of action. Mr Cooke developed his submissions under three heads, which he expressed as alternatives. The first was that the Minister essentially abandoned the approach mandated by s13(2) by making no attempt to estimate biomass or MSY, still less the rate of alteration necessary to move the stock to MSY.

[39] Second, it is said that the Minister did not base his decision on the best available information, for a topographical survey could be undertaken to indicate the likely order of magnitude of orange roughy stocks. Instead, the Minister assumed that no new information was expected at any time. A topographical survey would take some time, but it is not necessary to reduce TAC in the meantime, for there is no evidence that the fishery is under immediate threat.

[40] The applicants thirdly contend that the Minister was not supplied with advice and information about sustainability measures developed in ORH 1 to mitigate the risk of collapse. This error is said to have resulted from officials' views that because they required industry agreement the AMP management tools were irrelevant.

[41] The Minister generally denies these allegations. He pleads that it is not reasonably possible to estimate biomass or MSY, and admits that the Final Advice Paper did not calculate rates and alteration of the level of the stock for that reason. He says that the paper did alert him to his obligation to consider the way and rate of moving to sustainable biomass.

[42] The respondents have filed a counterclaim in which they allege that the biological characteristics of orange roughy do not make it impossible to estimate the MSY of the ORH 1 stock. They seek a declaration that the ORH 1 stock cannot be added to the third schedule of the Fisheries Act as the orange roughy species does not comply with s14(8)(b)(i).

[43] On 25 October I refused interim relief, finding no adequate evidence that it was needed to preserve the applicants' position pending the January fixture, which had been assigned to me. I declined to venture a preliminary view of the merits. Interim relief was granted on appeal, the Court of Appeal observing that the

applicants had a cogent case. That warning the respondents chose to ignore. I gained the impression at a pretrial conference and during the hearing that there is a sense in which a decision on the first ground of challenge is not wholly unwelcome to the Ministry.

Non-compliance with s13(2)

[44] The first question is whether, as Mr Cooke would have it, the Minister abandoned s13 by selecting an arbitrary TAC that was not based on any assessment of B_{MSY} . If the section insists on such an assessment, the Minister erred in law by concluding that he could set TAC without it.

[45] Mr Ivory's argument began with the proposition that ss8 and 10 are the "main drivers" of the Act. The former requires sustainable utilisation while the latter recognises in subsection (d) that the absence of, or uncertainty in, information should not be used as a reason for postponing or failing to take any measure to achieve the Act's purpose. The 1995 and 2001 decisions were not intended to settle a permanent TAC, and the AMPs conspicuously failed to produce estimates of B_{MSY} . TAC-setting is always an exercise in weighing risk. In the circumstances, the Minister reasonably reduced the TAC substantially while, having regard to the position of the applicants, setting it at a more than nominal level.

[46] Faced with the suggestion that each of the three limbs of s13(2) appears to envisage that MSY will be estimated, however imperfectly, Mr Ivory acknowledged that B_{MSY} underpins the subsection. He submitted that s13, "read literally, just doesn't work." There are many species for which a TAC has been established although it is not possible to estimate B_{MSY} . In such cases, the sort of analysis that the Court of Appeal outlined in *New Zealand Fishing Industry Association v Minister of Fisheries* CA82/97 22 July 1997 is "not possible". The snapper fishery in issue in that case, SNA 1, is one of the few for which very full information is available. He pointed to the evidence of Mr Leslie, the Ministry's Deepwater Manager. Mr Leslie explains that MSY cannot practically be calculated for most stocks, saying:

12. A literal interpretation of B_{MSY} cannot practically be calculated for most stocks, so other methods are used as a matter of routine. Risk assessments, and the subsequent management of that risk, are based on the available information and what is most appropriate for the particular stock. ORH 1 is no different in that regard.
13. Estimating a particular stock's relationship to 'biomass that can support maximum sustainable yield' requires an estimate of B_{MSY} (which typically ranges from 30 to 40% of the unfished biomass [B_0]) and an absolute estimate of current biomass of the stock ($B_{current}$). An absolute estimate is how much fish there is, whereas a relative abundance estimate is how much more or less there is now in comparison to a point in history. Assessing $B_{current}$ is technically difficult, usually expensive, and has to be modelled (i.e. derived from a model rather than directly observed). For some high value stocks, for which it is both feasible and cost-effective [sic] to derive the information (and there is the capacity to do so), this can be done and a stock's $B_{current}$ can be compared to B_{MSY} and appropriate management action taken as required. This literal approach to B_{MSY} is applied to about 2% to 5% of the 629 QMS stocks.

[47] For these reasons, Mr Leslie explains, the Ministry uses MSY-related reference points or analytical or conceptual proxies:

14. Because of the difficulties of estimating B_{MSY} itself for many stocks, the interpretation of section 13 has always included using MSY-*related* reference points, depending on the type and amount of data available, the characteristics of the fisheries and international practice. This approach is common around the world. A common non- B_{MSY} reference point is F_{MSY} , which is the fishing mortality rate (e.g. harvesting a portion of available fish) that, if applied constantly, would result in an average catch corresponding to MSY and an average biomass corresponding to B_{MSY} .
15. In the absence of adequate information to estimate B_{MSY} , F_{MSY} or MSY itself, *analytical proxies* can be used. These are often more appropriate (i.e. would more likely lead to sustainable fisheries) where estimates of MSY-related reference points are not reliable. One B_{MSY} proxy is percentage of B_0 (unfished biomass), and an MSY proxy is the Constant Annual Yield (CAY) that is considered sustainable through all probable future biomass levels. An analytical proxy approach is applied to about 15% to 20% of the 629 QMS stocks.
16. Where such proxies are themselves inappropriate or unavailable, then *conceptual proxies* have been used. For example, where catch per unit of effort (CPUE) and abundance are assumed more or less proportional, an historical period when both CPUE and catches were relatively high can be used to define a reference period, setting this CPUE level as a target. In cases where an estimate of relative biomass exists (size of stock relative to another point in time), a catch limit could be set to manage to the identified historical period when both catches and biomass were high. In other cases, the only

useable information is the catch history and fishing effort. Here, a catch limit can be set at a proportion of the average landings, taking into consideration natural variability. A conceptual proxy approach is applied to about 30% of QMS stocks.

[48] In the result, TACs for about 50% of total fish stocks by number, representing 10% of total stocks by value, are set without any form of assessment or are nominal. Many of those stocks are small. TAC is set on a “literal interpretation” of B_{MSY} for only two to five percent of stocks by number, representing 30% of total stocks by value.

[49] But as a matter of construction s13(2)(b), under which the decision was made, does require an assessment of both the current stock level and the stock level required to produce MSY. Having concluded that the current level is below B_{MSY} , the Minister must further decide how to restore it. With respect to the last of these points, the Court of Appeal in *New Zealand Fishing Industry Association v Minister of Fisheries* (above) held that the Minister must consider the way in and rate at which stock will be moved to B_{MSY} and would be wise to examine the costs and benefits of choosing different rates and periods.

[50] I accept that B_{MSY} cannot be calculated accurately for many species. But s10 undoubtedly applies to TAC-setting under s13, so that the Minister may act, cautiously, when information is uncertain, unreliable, or inadequate, and should not postpone a measure to achieve the Act’s purpose only because of the absence of or uncertainty in any information. The section accordingly admits estimates of stock levels, and ‘way and rate’ evaluations, although the quantity and quality of the best available information is poor. Risks must be weighed, and there is room for a precautionary approach where information is inadequate: cf *Squid Fishery Management Co v Minister of Fisheries* CA39/04 5 April 2004 at [75]-[80]. But s10 does not allow the Minister to set TAC under s13(2)(b) without assessing stock levels at all. Only when such an assessment has been made can he determine whether s13(2)(b) is available to him on the facts.

[51] One sympathises with the Minister, confronted as he was with a Final Advice Paper that correctly advised him that he must set TAC with reference to where the stock is in relation to B_{MSY} yet supplied him with no estimate whatever of current

stock levels or B_{MSY} , nor even an opinion that, although the stock levels are unknown, they are likely to be below (or above) MSY. (In making the latter observation, I do not mean to suggest that this approach, which was relied on in setting the 2001 TAC, is compatible with the scheme of s13 and purpose of the Act.) He was not referred to s14. In circumstances where he was also warned in clear terms of the risk of overfishing, it is unsurprising that he took the most risk-averse of the three options offered and that there was no real evaluation of alternative time periods for the “rebuild”.

[52] I have already noted that the legislation contemplates in s14 that there will be species in respect of which no estimate of B_{MSY} is possible. Mr Ivory’s response was that s14 is unavailable in this case, for the inability to estimate MSY is not due to the biological characteristics of the stock. He referred to the affidavit of Mr Sullivan, Science Manager, Stock Assessment, with the Ministry. Mr Sullivan says there are no biological characteristics of orange roughy that would preclude a MSY estimate, although the information required to estimate MSY for ORH 1 is deficient. He accepts that the species is characterised by long life, late sexual maturity and low reproductive productivity, and a tendency to form large spawning aggregations, but says these characteristics are common to other deepwater species. By contrast there are species, such as squid, for which the life history can make it difficult or impossible to estimate the maximum yield that can be taken without reducing the biomass; it is for such species, he says, that s14 was designed.

[53] Mr Cooke did not accept that biological characteristics of the species comprising the relevant fish stock preclude an estimate of MSY in ORH 1. The applicants’ position is that s14 is unavailable for that reason, although Mr Starr does concede that it is difficult to apply s13 in this fishery. Thus the parties agree that the Minister could not deploy s14, but for very different reasons. Mr Cooke urged me to avoid reaching a conclusion about it, pointing out that before a species is added to Schedule 3 by Order in Council a consultation process must be followed. Presumably other orange roughy fisheries would be affected by such a decision, albeit indirectly since they comprise different fish stocks for purposes of the legislation.

[54] I need not determine whether impossibility of estimating B_{MSY} is attributable to biological characteristics such that s14 is unavailable, and it is unwise to do so, not only for the reason given by Mr Cooke but also and more importantly for reasons given in the next section of this judgment. For present purposes, the short answer to Mr Ivory's submission is that the legislature foresaw the problem of impossibility of estimating MSY and established a separate mechanism, s14, to deal with it.

[55] It is true that, in light of Mr Sullivan's evidence, any attempt to invoke s14 would likely encounter resistance on the dual grounds that estimates are possible, given time and more expense, and that any difficulty in estimating MSY is attributable to causes other than biological characteristics. Section 14(8)(b)(i) sets a high standard, that of impossibility. And because an existing TAC continues until changed, any attempt under s13 to reduce a TAC that has been set without benefit of a stock estimate may summon a challenge on the ground that there is no stock estimate. The lay observer might think that perverse, but it aptly summarises this case. Mr Ivory sought guidance. It is not for the Court to say whether policy dictates that s14 should be available when present ignorance of stock levels is attributable not to impossibility resulting from biological characteristics but to insufficient exploration or research into the relevant fish stock. If it does, the legislation wants amending.

[56] Mr Cooke accepted that the Minister might rely on s13(2)(a) in a case, such as the present, where there is an existing TAC. I agree. Subsection (a) allows the Minister to set TAC at a level at "or above" that needed to produce MSY and Mr Cooke acknowledged that this language admits a precautionary approach. He argued, however, that the language of s13(2)(a) nonetheless requires an assessment of stock levels needed to produce MSY. Again, I agree. He also argued that in light of the Act's purpose the TAC could not be far above MSY. That question cannot be answered in the abstract, for the extent to which the Minister may set TAC above MSY without departing from the purpose of the Act may depend, for example, on the nature of a sustainability risk to any given fish stock.

Failure to act on best available information

[57] Mr Cooke submitted that the Minister was not supplied with the best available information, contrary to s10(a). In particular, he was not told that a topographical survey could be undertaken. He emphasised that under the Act “information” includes analysis of information.

[58] The parties agree that the costs of carrying out an acoustic survey to find the fish are prohibitive. Under the legislation the fishers bear such costs. But Mr Ivory accepted that a topographical study is feasible. It is common ground that in conjunction with trial fishing on such features, such a survey might indicate the likely order of magnitude of orange roughy stocks. Something is already known of orange roughy spawning patterns in large areas of ORH 1, based on 20 years of research.

[59] It remains true that as at September 2007 B_{MSY} could not be estimated. And topographical work would take some time, for the fishery covers a very large area. The evidence does not disclose how long it would take, and neither side has taken the initiative to set it in train. It may have been reasonable to suppose that nothing more would be known in the near future. Mr Cooke’s response was that the Minister was under no duty to review TAC, so he could have waited until the work had been done.

[60] I do not want to endorse a submission that there is no duty to review TACs. All TACs carry risks, of sustainability on the one hand and underutilisation on the other. Those risks are likely to be asymmetric, at least in orange roughy fisheries. The Minister alone is in a position to control them. I accept, however, that the Minister is not required to review TACs at regular intervals. In this instance he might have acted at once to address a risk posed by continued fishing pressure when stock levels are unknown. But he might also have delayed until further work was done, setting an interim TAC in the meantime in conjunction with continued area and feature limits to spread the catch and manage risk. The future availability of information that might allow stock estimates was a relevant consideration in his decision to set a new TAC at that time. The Final Advice Paper invited the Minister to discount it completely. When he inquired, the Minister was told unequivocally that no further information was expected at any time. That justifies the inference

that he did not take the availability of a topographical survey into account in his decision.

[61] Underlying this omission was a decision by officials to discount a topographical survey because it would not produce “conclusive” information. That overlooked s10. A TAC-setting decision should begin by identifying the best available information, being information that is available without unreasonable cost, effort, or time, and decisions may be based on such information although it is incomplete or inadequate or unreliable. To overlook this was an error of law that has apparently led officials to conclude too readily that it will not be possible to estimate B_{MSY} in the near future.

Failure to consider risk management measures

[62] The third ground of challenge is that the Minister failed to address “sustainability measures” or risk management tools developed in ORH 1 to guard against the risk of collapse, and failed to appreciate that because they could be imposed under s11 such measures were relevant to TAC-setting. Mr Cooke focused on area and feature limits and CPUE thresholds. He argued that the Minister must have overlooked these management tools, for they mitigate the risk of collapse that so concerned him.

[63] The argument was skilfully presented but loses its appeal on closer analysis. To begin with, the applicants argue that officials advised the Minister that voluntary feature and area limits were irrelevant. I accept Mr Ivory’s submission that this rests on a misreading of the Final Advice Paper, which explained that the Minister did not set such limits as part of his TAC decision. It may have been an error to say that such limits required agreement, but the paper did not treat them as irrelevant. On the contrary, it made it plain that such limits would continue, because industry participants had agreed to them. No question of compulsion arose, so nothing turns on the failure to point to the Minister’s powers under s11.

[64] Further, the Minister did take feature and area limits into account, as risk management tools to guard against a collapse in the fishery while subject to the new

914-tonne TAC. The Final Advice Paper described them as critical to managing risk. He also referred to them in his letter to stakeholders, plainly concluding that they were necessary in circumstances where he had set the TAC at a level that was more than nominal.

[65] The applicants' real complaint, on closer examination, is not that the Minister failed to take risk management tools into account for risk management purposes, but that he did not base the TAC upon them. Mr Cooke argued that these tools, rather than "the traditional approach to TAC setting" undertaken in the Final Advice Paper, best provide for sustainable utilisation. The argument must fail once it is established that the Minister must comply with s13 by assessing B_{MSY} when setting the TAC. The gist of the Minister's advice, reflecting the views of the Working Groups, was that these risk management tools did not allow an estimate of B_{MSY} . That was so notwithstanding more than a decade's experience with them in this fishery. Their relevance to TAC-setting was accordingly indirect, in that they might reduce the need for caution to the extent that they reliably manage the sustainability risk. So the Minister did not err by taking feature and area limits into account as risk management tools when setting a new TAC while discounting them as a measure of biomass or MSY. Nor did he err by discounting CPUE data as a measure of abundance.

The counterclaim

[66] For reasons given above, it is neither necessary nor appropriate to make the declaration sought by the respondents. The counterclaim is dismissed.

Decision

[67] The application for review succeeds. The Minister's decision to set a new TAC of 914 tonnes for ORH 1 is quashed, and the notice in the Gazette of 27 September 2007 giving effect to his decision is set aside. The rationale for these orders is twofold. First, the Minister set the TAC under s13(2)(b) although his advice was that B_{MSY} could not be estimated and he had no information from which

he might estimate B_{MSY} or the current biomass, still less the way and rate at which the stock should be moved to B_{MSY} . Second, a topographical survey appeared feasible and in conjunction with trial fishing might indicate the likely order of magnitude of orange roughy stocks, but this consideration was overlooked.

[68] The immediate consequence of this decision is that the 2001 TAC will govern the fishery until the Minister decides to change it. I recognise that my conclusions on the first ground of challenge invite questions about the bases on which the 2001 and 1995 TACs were set. But neither party has asked me whether the 2001 TAC is lawful, so I express no view about it.

Costs

[69] The applicants will have costs, which I am minded to set on a 3B basis with provision for two counsel. Memoranda may be filed if counsel cannot settle costs between them.

Miller J

In accordance with r540(4) I direct the Registrar to endorse this judgment with the delivery time of 11.00am on the 22nd day of February 2008.

Solicitors:

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