

## Appendix 5 – NIWA significance assessment tool

| Consequence level | Recovery Period                                                                            | Key species                                                                         | Protected species                                          | Ecosystem functional impact                                                                                                                                                                                                                                                                                   | Proportion of habitat affected                                                  |
|-------------------|--------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|
| 0 - Negligible    | No recovery time needed                                                                    | Undetectable for populations of these species                                       | Almost none are impacted                                   | Interactions may be occurring but it is unlikely that there would be any change outside of natural variation                                                                                                                                                                                                  | Affecting <<1% of area of original habitat area                                 |
| 1 - Minor         | Rapid recovery would occur if stopped - measured in weeks to months                        | Possibly detectable but little impact on population size and none on their dynamics | Some individuals impacted but no impact on population.     | Affected species do not play a keystone role - only minor changes in relative abundance of other constituents                                                                                                                                                                                                 | Measurable but localized; affects <1-5% of total habitat area                   |
| 2 - Moderate      | Recovery probably measured in months - years if activity stopped                           | Affected but long-term recruitment/ dynamics not adversely impacted                 | Level of interaction/ impact moderately affects population | Measurable changes to the ecosystem components without there being a major change in function (i.e. no loss of components)                                                                                                                                                                                    | Impacts more widespread; 5-20% of habitat area is affected                      |
| 3 - Severe        | Recovery measured in years if stopped                                                      | Affecting recruitment levels of populations or their capacity to increase           | Level of impact severely affects population levels         | Ecosystem function altered measurably and some function or components are missing/ declining/ increasing well outside historical acceptable range and/or allowed/ facilitated new species to appear.                                                                                                          | Impacts very widespread; 20-60% of habitat is affected/ removed                 |
| 4 - Major         | Recovery period measured in years to decades if stopped                                    | Likely to cause local extinctions if continues                                      | Likely to cause local extinctions if continues             | A major change to ecosystem structure and function. Different dynamics now occur with different species or groups now affected.                                                                                                                                                                               | Activity may result in major changes to ecosystem; 60-90% affected              |
| 5 - Catastrophic  | Long term recovery to former levels will be greater than decades or never, even if stopped | Local extinctions are imminent/immediate                                            | Local extinctions are imminent/immediate                   | Total collapse of ecosystem processes. The diversity of most groups is drastically reduced and most ecological functional groups (primary producers, grazers etc.) have disappeared. Most ecosystem functions such as carbon cycling, nutrient cycling, flushing and uptake have declined to very low levels. | Entire habitat in region is in danger of being affected; >90% affected/ removed |

MacDiarmid et al. (2012). Expert Risk Assessment of Activities in the New Zealand Exclusive Economic Zone and Extended Continental Shelf. A Report prepared by NIWA for the Ministry for the Environment