



Okanagan Region Large Lakes Foreshore Protocol May 2009

1.0 Background

Foreshore and riparian areas are important to fish and wildlife species, including species at risk. During the planning and evaluation of works affecting the foreshore, consideration needs to be given to applicable legislation and to ensuring that any works do not impose direct or long term cumulative impacts to fish and wildlife species and their habitats.

The Okanagan Shuswap Land and Resource Management Plan (OSLRMP) provides strategic direction for the management of large lake shorelines and associated fish habitat, above and below the high water mark (HWM). The OSLRMP directs agencies to manage proactively through identification of fisheries management zones, guide lakeshore development so as to reduce or avoid impacts to sensitive fish habitats, and minimize the potential for cumulative impacts resulting from individual projects. There is also direction to manage the lakeshore in a cooperative manner between all levels of government.

This approach is consistent with the Ministry of Environment's shared stewardship model to protect the natural resources of British Columbia. This includes an increased emphasis on fostering stewardship and cooperative approaches to environmental management through collaboration, information sharing, education and use of best management practices (BMPs).

2.0 Purpose

The purpose of this document is to elaborate on the strategic direction provided in the OSLRMP, and provide a forum for continuous improvements to fish and species at risk habitat information and the management of risks to those habitats. This document is intended to assist provincial and federal agencies, local governments, and the general public during the planning of developments, lower level planning (e.g. zoning) and/or the adjudication of applications for specific development activities (ego applications for foreshore leases for docks, boat launches or marinas). The Ministry of Environment (MOE) continues to update information related to shore-spawning fish habitat and inventories for species at risk. This document will be reviewed annually.

This document identifies the risks to fish and species at risk and their habitats based on specific development activity (Appendix 1). Knowledge of this information in the early planning stages can be beneficial in choosing an appropriate site or activity. A risk matrix (Appendix 1) has been developed based upon the best available science for species at risk and the habitat protection provisions of section 35 (1) & (2) of the Fisheries Act (Appendix 2).

3.0 Scope

This document is to be followed for all proposals for works below the HWM on the lakes described in this protocol.

This document provides foreshore sensitivity maps, risk ratings for specific development activities, and preferred procedures and practices. The combined use of this information will help to maintain important foreshore habitats.

This document applies to ‘large lakes’ (Mabel, Sugar, Okanagan, Kalamalka, Wood, Skaha and Osoyoos) as identified in the OSLRMP within the MoE Okanagan Region, and Christina Lake. It will also be used as guidance for all other lakes in the Okanagan Region (e.g. Vaseux Lake). Fish habitat mapping is currently available for Wood, Kalamalka, Okanagan and Christina lakes. Known occurrences of species at risk are mapped for Skaha, Vaseux, Okanagan and Osoyoos Lakes. Mara Lake is also within the region and does have some mapping classification which will be refined through the Shuswap Lake Integrated Planning process (SLIPP). Mara maps are available online at <http://shim.bc.ca/atlases/shuswap>

It is important to note that there are legislative requirements such as the Riparian Areas Regulation, Water Act, Navigable Waters Protection Act, Species at Risk Act or local government processes that need to be considered in an application.

4.0 Foreshore Sensitivity Maps

The maps have been categorized into 3 zones based on development activity risk, using kokanee spawning data, other fish habitat data, and known occurrences of species at risk (SAR). Okanagan Lake has had further analysis with more detailed inventory and has one additional category. These maps do not include habitat information for other fish, wildlife or plant species.

- i) BLACK (Okanagan and Kalamalka Lake) = critical habitat
- ii) RED = high to very high value habitat
- iii) YELLOW = generally moderate, with some high value habitat
- iv) NO COLOUR = unclassified or low value habitat

Kokanee spawning data is based upon current usage from a depressed population. As stocks recover it is possible that some areas within the yellow zone could change to a red designation. Therefore, it is important that the most current version of the foreshore sensitivity mapping is applied. Foreshore sensitivity maps are available at Okanagan Region, Ecosystem Section webpage:

<http://www.env.gov.bc.ca/okanagan/esd/ecosystems.html>

Local governments may have more detailed foreshore coding and zoning for applicable by-laws. If there is a discrepancy between appropriateness of activity, procedures or practices, the higher protection standard is to be applied.

4.1 Black Zones

These areas are critical for Okanagan and Kalamalka Lake shore spawning kokanee. Recent (2001-2008) kokanee shore spawning inventory data was used to identify where aggregations of 1000 or greater spawning fish were observed. **Development is to be avoided or moved to a lower risk area.** There is a high likelihood that a request for a HADD authorization under Section 35(2) of the Fisheries Act would be triggered with all works within this zone.

4.2 Red Zones

These areas are recognized as being very important for the long-term maintenance of kokanee productivity in these lakes. Recent (2001-2008) kokanee shore spawning inventory data was used to identify where aggregations of greater than 50 spawning fish were observed. Historical data (1974-1980) was used to identify where aggregations of 1000 or greater spawning fish were observed. In addition, the Red Zone includes the mouth of all kokanee spawning streams and known occurrences of select species at risk. **Depending on the risk rating of the activity (Appendix 1), development is to be avoided or moved to a lower risk area.**

Based on the Federal Fisheries Act and Project Review Process compensation is not an option for the loss of critical habitats or for the loss of habitat productive capacity due to deposition of deleterious substances in any type of habitat. Critical habitats are most often included in the Black Zone, but may also occur in the Red Zone.

4.2 Yellow Zones

These areas represent high to moderate value habitat required for the long term maintenance and recovery of kokanee productivity in these lakes. These areas were identified from: recent (2001-2008) kokanee shore spawning data where aggregations of 50, or fewer, fish were observed; documented historic shore spawning activity with aggregations of less than 1000 fish; the proximity to the mouth of streams; or locations of western ridged mussel shells. **Activities in this zone are to follow the protocol provided in this document.**

4.3 No Colour Zones

These are areas where no recent or historic shore spawning is known to occur. Certain development activities can have impacts to adjacent fish habitats. **In this zone approving agencies are to ensure that applicable BMPs are applied and/or a qualified professional has been engaged.**

5.0 Risk Associated with Development Activities

Risk, in this context, is based on ‘likelihood’ of impact and ‘magnitude’ of impact for each of the development activities based on the underlying habitat use or characteristics. Risk ratings (Appendix 1) have considered the ability to reduce impacts through the use of mitigation measures, such as those provided in BMPs. Where the underlying values are high, and the mitigation for the activity is less certain, the risk of impacts resulting from the development is higher. Alternatively, if the underlying values are lower, and/or the mitigation is more certain, the risk of that development activity impacting the habitat is lower.

Appendix 1 outlines the risk ratings with development activities for each zone. The risk assessment is based upon the assumption that appropriate site level assessments have occurred, and appropriate BMPs would be applied. If works are inconsistent with the BMPs the proponent is to engage a qualified professional to ensure that the appropriate level of protection is provided through science based alternatives and legislative requirements are being met. Varying from the BMP should only occur with low or moderate risk rated activities. BMPs are listed in Appendix 3. **There is a high likelihood that a request for a HADD authorization under Section 35(2) of the *Fisheries Act* would be triggered with “Very High” and “High” risk development activities within any of these zones.**

6.0 Protocol for Works

This protocol is based on the Federal Department of Fisheries and Oceans’ (DFO) sequence of mitigation options (see Appendix 2):

1. avoidance of impacts;
2. minimization of unavoidable impacts; and
3. compensation for residual impacts that cannot be minimized.

Prior to submitting an application, the proponent will have gone through a process to determine sensitivity, assess risk, and avoid or minimize impacts. This information is to be documented and submitted with the application.

- STEP 1:** From the mapping, determine what zone the application occurs within. If the works are on a lake other than Okanagan, Kalamalka, Wood, or Christina, a qualified professional (QP) must assess the site, to ensure that the activity would not cause a HADD or impact species at risk.
- STEP 2:** Determine if development activity can be moved to a lower sensitivity zone (e.g. from Red to Yellow or No Colour).
- STEP 3:** Determine what the activity risk rating from Appendix 1. If the activity is not listed, contact the MOE office for advice.
- STEP 4:** Determine if the risk can be reduced through an alternate activity (ego type of erosion protection).
- STEP 5:** Follow procedures described for each sensitivity zone and applicable activity risk (see Appendices 4-7). Where several activities with differing risk factors occur as a result of one project, the potential for cumulative impact may increase the risk and move the activity into a higher risk. A QP is to be engaged to determine if the overall risk has increased.

Contact Information for Okanagan Region MoE: 250-490-8200.

6.1 Activities with a Very High Risk Rating

The provincial opinion is that development activities that result in a “very high” (VH) risk rating raise significant concerns. Proposals in the VH risk category have significant challenges related to providing adequate mitigation or compensation to address the loss of values associated with such development, and to the costs to implement acceptable mitigation measures. In addition, there is a high likelihood that a request for a HADD authorization under Sec 35(2) of the Fisheries Act would be triggered. Proponents are strongly encouraged to avoid activities with a VH risk associated with them, revising those activities to a lower risk option, or relocating that activity to an area where the overall activity risk is lowered.

6.2 Activities with High Risk Rating

The sequence of mitigation steps outlined above (in Section 6.0) is to be followed for activities/zones with a “high” (H) risk rating. If the activity can not be avoided, the proponent is to engage a QP to determine appropriate mitigation for the site. QPs must include a completed checklist (Appendix 8) in the submission. If the mitigation will not eliminate the risk of a HADD, then a HADD authorization process will be required (see Appendix 2).

6.3 Activities with Moderate or Low Risk Rating

Activities with “moderate” (M) or “low” (L) risk rating are to follow applicable BMPs. If works are inconsistent with the BMPs the proponent is to engage a QP to ensure that the appropriate level of protection is provided through science based alternatives and that legislative requirements are being met. If this is not possible, then a HADD authorization may be required. Appendix 3 provides a list of BMPs. QPs must include a completed checklist (Appendix 8) in the submission.

7.0 Additional Information

It may be necessary to engage a qualified professional (QP) to provide an Environmental Impact Assessment (EIA) where additional information or a more detailed assessment is required (see Appendices 4-7). Generally, this is required when a development activity proposal is:

- designated as a H or VH risk,
- inconsistent with BMPs, or BMPs are not available,
- potentially impacting species at risk,
- not included in the risk rating,
- lacking site specific information, or
- when requested by a government agency.

The QP is to complete the ‘checklist’ (Appendix 8) which is to be included with the application. If there is a change in the development design after the initial application, the proponent must ensure that the QP re-assess the proposal, complete a new ‘QP Checklist’ (Appendix 8), and provide an addendum to the original EIA.

If the QP assessment determines that a harmful alteration, disruption or destruction of fish habitat is likely to occur, the “no net loss” procedure **must** be demonstrated should the proponent wish to proceed with applying for an authorization under Section 35(2) of the Fisheries Act (see Appendix 2). Monitoring results associated with an authorization are to be submitted to DFO, with a copy to MoE.

Appendix 1: Risk Assessment for Development Activities

Activity	Colour Zone			
	Black	Red	Yellow	No colour
Dock	VH	H	H	L
Marina *	VH	VH	H	M
Boat launch upgrade	H	H	H	M
New boat launch	VH	VH	H	M
Waterline drilled	M	M	M	L
Dredging	VH	VH	H	M
Waterline trenched	VH	VH	H	M
Geothermal loops	VH	VH	H	L
Infill	VH	VH	VH	H
Piled structure	VH	VH	H	H
Erosion protection (soft-bioengineered)	M	M	L	L
Erosion protection hard-joint planted	H	H	H	M
Erosion protection vertical wall or retaining wall	VH	VH	VH	H
Permanent rail launch system	VH	H	H	M
Removable rail launch system	H	M	M	L
Beach Creation below HWM	VH	VH	VH	VH
Milfoil & Invasive weed removal	H	H	M	L
Aquatic vegetation removal**	VH	VH	H	H
Boardwalk below HWM	VH	VH	H	H
Mooring buoy	H	M	M	L

* Marina threshold = Commercial Moorage Threshold = strata, marina or commercial wharf

** Some mapping is available for aquatic vegetation - See MoE regional website

VH The provincial opinion is that activities within the VH risk category raise significant concerns. Proposals within the VH risk category have significant challenges related to providing adequate mitigation or compensation to address the loss of values associated with such development and to the costs to implement acceptable mitigative measures. In addition, there is a high likelihood that a request for a HADD authorization under Sec 35(2) of the Fisheries Act would be triggered. Proponents are encouraged to avoid activities with a VH risk associated with them or to revise those activities to a lower risk option or to relocate that activity to an area where the overall activity risk is lowered.

NOTE: If the activity is not listed contact the Okanagan Region MoE office (250) 490-8200

Appendix 2: Fisheries Act Requirements and Related Policy

Two sections of the *Fisheries Act* are directly relevant to this protocol:

Section 35(1): No person shall carry on any work or undertaking that results in the harmful alteration, disruption or destruction of fish habitat.

Section 35(2): No person contravenes subsection (1) by causing the alteration, disruption or destruction of fish habitat by any means or under any conditions authorized by the Minister or under regulations made by the Governor in Council under this Act.

Responsibility for the administration of the *Fisheries Act* rests with the federal Minister of Fisheries and Oceans Canada (DFO). DFOs “Policy for the Management of Fish Habitat” contains a long-term objective of net gain of the productive capacity of fish habitats. Where a development activity may result in the harmful alteration, disruption, or destruction of fish habitat (referred to as ‘HADD’), DFO staff can authorize the activity to go ahead only under Section 35(2) of the Fisheries Act. To do that, DFO requires a screening level assessment of the development project under the Canadian Environmental Assessment Act (CEAA) and may refer the project plans and specifications to other federal agencies, such as the Canadian Wildlife Service and the Canadian Coast Guard Navigable Waters Protection Division and consults with provincial agencies on resident fish habitat and provincial concerns. Any residual impacts to fish habitat from the authorized development project are also subject to compensation under the *Fisheries Act*.

The DFO principle of “no net loss”, within the above noted habitat policy, should be applied to proposals within or immediately adjacent to fish habitat. This involves following a progressive sequence of mitigation alternatives, which include:

- (1) avoidance of impacts,
- (2) minimization of unavoidable impacts, and
- (3) compensation for residual impacts that cannot be minimized.

It is important to understand that mitigation contains a hierarchy of choices, the first always being avoidance. More detail on mitigation alternatives is provided below.

STEP 1

The first step, “avoidance”, involves the prevention of impacts, either by choosing an alternate project, alternate design or alternate site for development. It is the first and best choice of mitigation alternatives. Because it involves prevention, the decision to avoid a high value area or to redesign a project so that it does not affect a high value area must be taken very early in the planning process. It may be the most efficient, cost effective way of conserving important habitats because it does not involve minimization, compensation or monitoring costs. Avoidance may include a decision of not to proceed with the project.

STEP 2

The next step, “minimization”, should only be taken once the decision has been made that a project must proceed, that there are no reasonable alternatives to the project, and that there are no reasonable alternatives to locating the project in an area that will impact important critical/high value habitats. Minimization involves the reduction of adverse effects of development on the functions and values of the habitat at all project stages (including planning, design, implementation and monitoring), to the smallest practicable degree.

STEP 3

The last, and least preferred, alternative in the mitigation process is “compensation”. This will require an indication of failure in the two earlier steps. It should only be considered for residual effects that were not possible to avoid or minimize. Compensation refers to a variety of alternatives that attempt to “make up for” the unavoidable loss of, or damage to, habitat functions and values. Habitat compensation is an option for achieving ‘no net loss’ when residual impacts of projects on habitat productive capacity are deemed harmful after relocation, redesign or mitigation options have been implemented. **The Federal Fisheries Act and Federal Project Review Process indicates states that compensation is not an option for the loss of critical habitats or for the loss of habitat productive capacity due to deposition of deleterious substances in any type of habitat.**

Compensation involves replacing the loss of fish habitat with newly created habitat or improving the productive capacity of some other natural habitat. Depending on the nature and scope of the compensatory works, habitat compensation may require, but not limited to, 5 years of post-construction monitoring. For matters related to compensation:

http://www-heb.pac.dfo-mpo.gc.ca/publications/publications_e.htm

Obtaining a Section 35 (2) Authorization:

Only the DFO has authority to issue section 35(2) authorizations. When an authorization is applied for in areas where there are resident fish, DFO consults with the Province as to the fish values and provincially managed resources at the site, however; DFO has the final decision. The Decision Framework for the Determination and Authorization of HADD of Fish Habitat (1998) describes DFO-Habitat’s approach to reviewing requests for subsection 35(2) authorizations:

http://www.dfompo.gc.ca/canwaterseauxcan/infocentre/guidelinesconseils/guides/law-lois/index_e.asp

Fisheries Act and the Project Review Process:

See Lower Fraser Fisheries Act and Project Review process http://www-heb.pac.dfo-mpo.gc.ca/publications/publications_e.htm for general information on the review process. For Specific details of what is required for the Interior project review process, please contact the Salmon Arm DFO Office 250-804-7000 as this document is not available online.

Appendix 3: Best Management Practices and Regional Operating Statements

Ministry of Environment BMPs (provincial level) can be found on the Ministry BMP web site, or through the Regional web site.

Ministry of Environment Provincial BMPs:

<http://www.env.gov.bc.ca/wld/BMP/bmpintro.html>

1. Develop With Care: Environmental Guidelines for Urban & Rural Land Development:
2. Standards and Best Management Practices for Instream Works (under review 2007)
3. Commercial Recreational Wildlife Guidelines
4. Stormwater Planning: A Guidebook for British Columbia
5. Best Management Practices for Amphibians and Reptiles in Urban and Rural Environments in British Columbia
6. Best Management Practices for Raptor Conservation in urban & Rural Development in British Columbia

Ministry of Environment – Okanagan Region BMPs:

<http://wlapwww.gov.bc.ca/okr/esd/bmp.html>

1. Best Management Practices for Installation and Maintenance of Water Lines
2. Best Management Practices for Small Boat Moorage on Lakes
3. Best Management Practices for Hazard Tree and Non-Hazard Tree Limbing, Topping or Removal
4. Best Management Practices for Lakeshore Stabilization
5. Best Management Practices for Boat Launches
6. NOTE: Best Management Practice documents for rare plants and molluscs are currently under development. Check with regional staff for updates.

Fisheries and Oceans Canada - Regional Operating Statements

1. http://www-heb.pac.dfo-mpo.gc.ca/publications/publications_e.htm#Guidelines

- Guidelines for the use of explosives in or near Canadian fisheries waters
- Freshwater Intake End-of-Pipe Fish Screen Guideline
- Guidelines to protect fish and fish habitat from treated wood used in aquatic environments in the Pacific Region
- Land Development Guidelines for the Protection of Aquatic Habitat
- Shoreline Structures Environmental Design: A Guide for Structures along Estuaries and Large Rivers

2. Pacific Region Operational Statements (ROS) help to streamline the Habitat Management Program (HMP) regulatory review of low risk works and activities http://www-heb.pac.dfo-mpo.gc.ca/decisionsupport/os/operational_statements_e.htm,

- Aquatic Vegetation Removal
- Bridge Maintenance
- Clear Span Bridges
- Culvert Maintenance
- Directional Drilling
- Dock Construction (Note: the Regional MOE Small Boat Moorage BMP is considered the higher standard)
- Ice Bridges
- Isolated Pond Construction
- Overhead Line Construction
- Routine Maintenance Dredging
- Underwater Cables

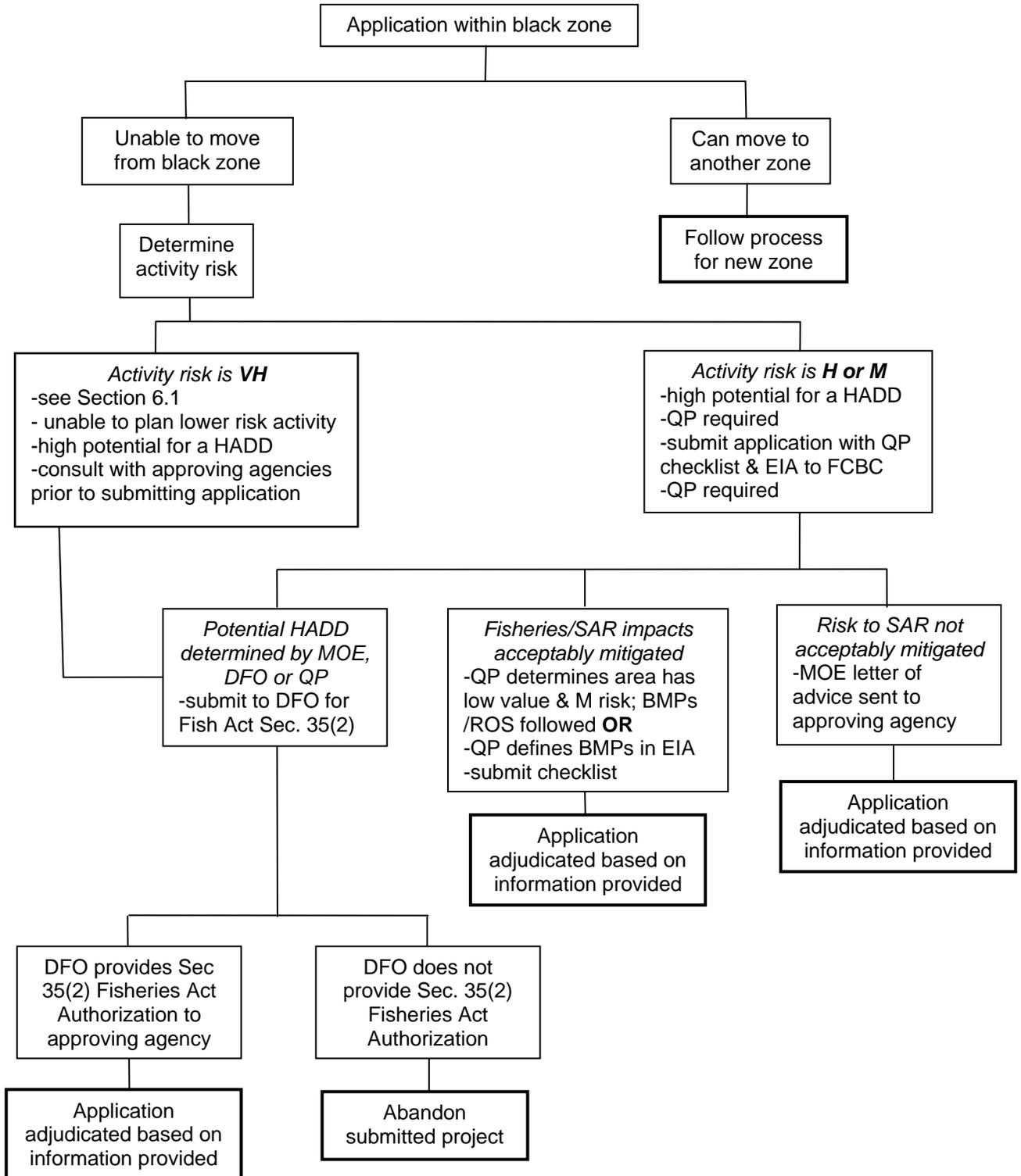
3. The *Species at Risk Act* and Critical Habitat for Aquatic Species

http://www.dfo-mpo.gc.ca/species-especies/actMeans/actMeans_criticalHabit_e.asp

Other Best Management Practices/Guidelines

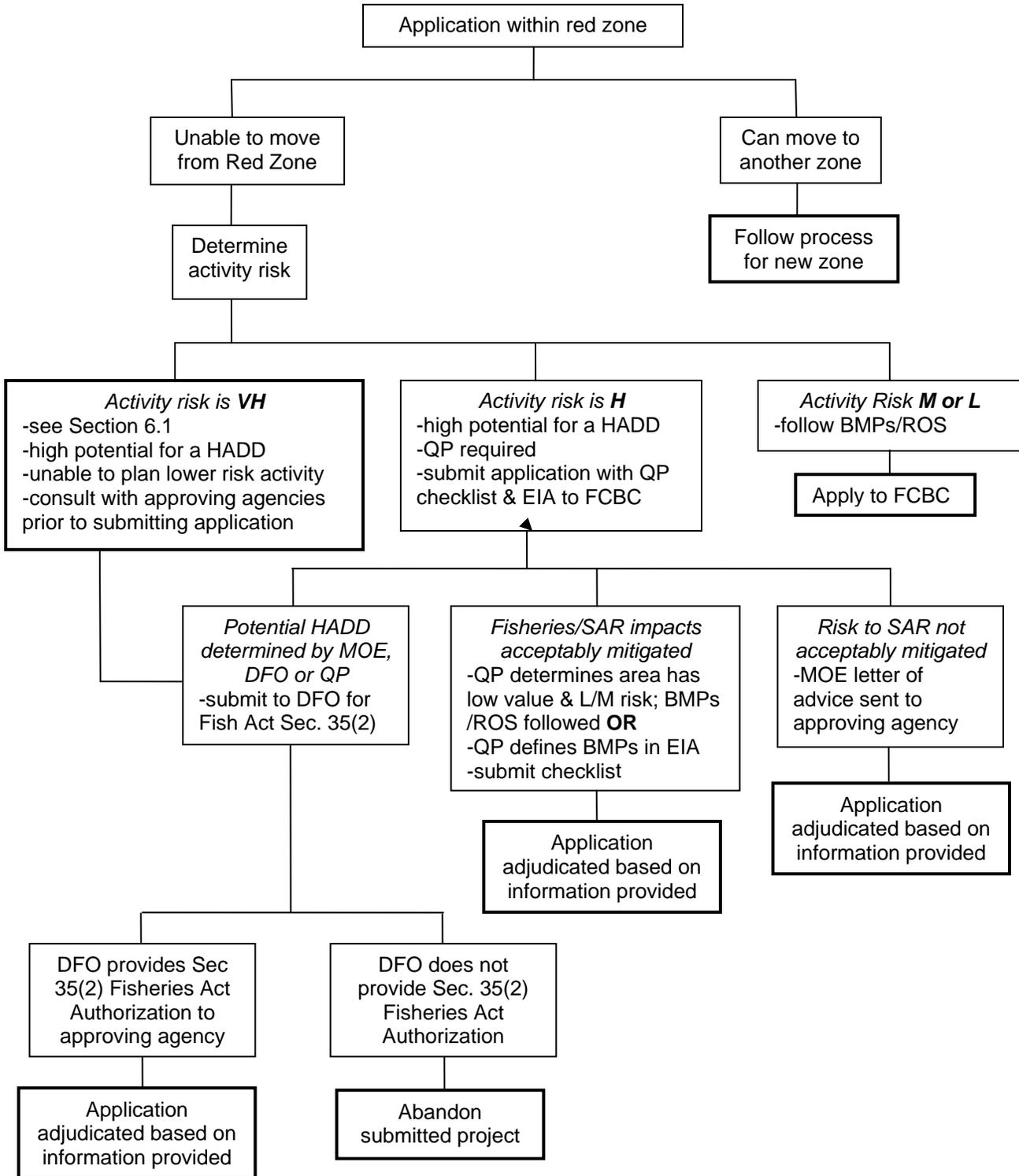
1. The Stewardship Centre for British Columbia; The Stewardship Series:-
http://dev.stewardshipcanada.ca/sc_bc/stew_series/NSCbc_stewseries.asp?sProv=bc&siteLoc=scnBC&lang=en
2. **Proponents' Guide for Environmental Assessment** - Pursuant to the Canadian Environmental Assessment Act
<http://www.tc.gc.ca/programs/environment/environmentalassessment/guide/menu.htm>

Appendix 4: Flow chart for planning in the Black Zone



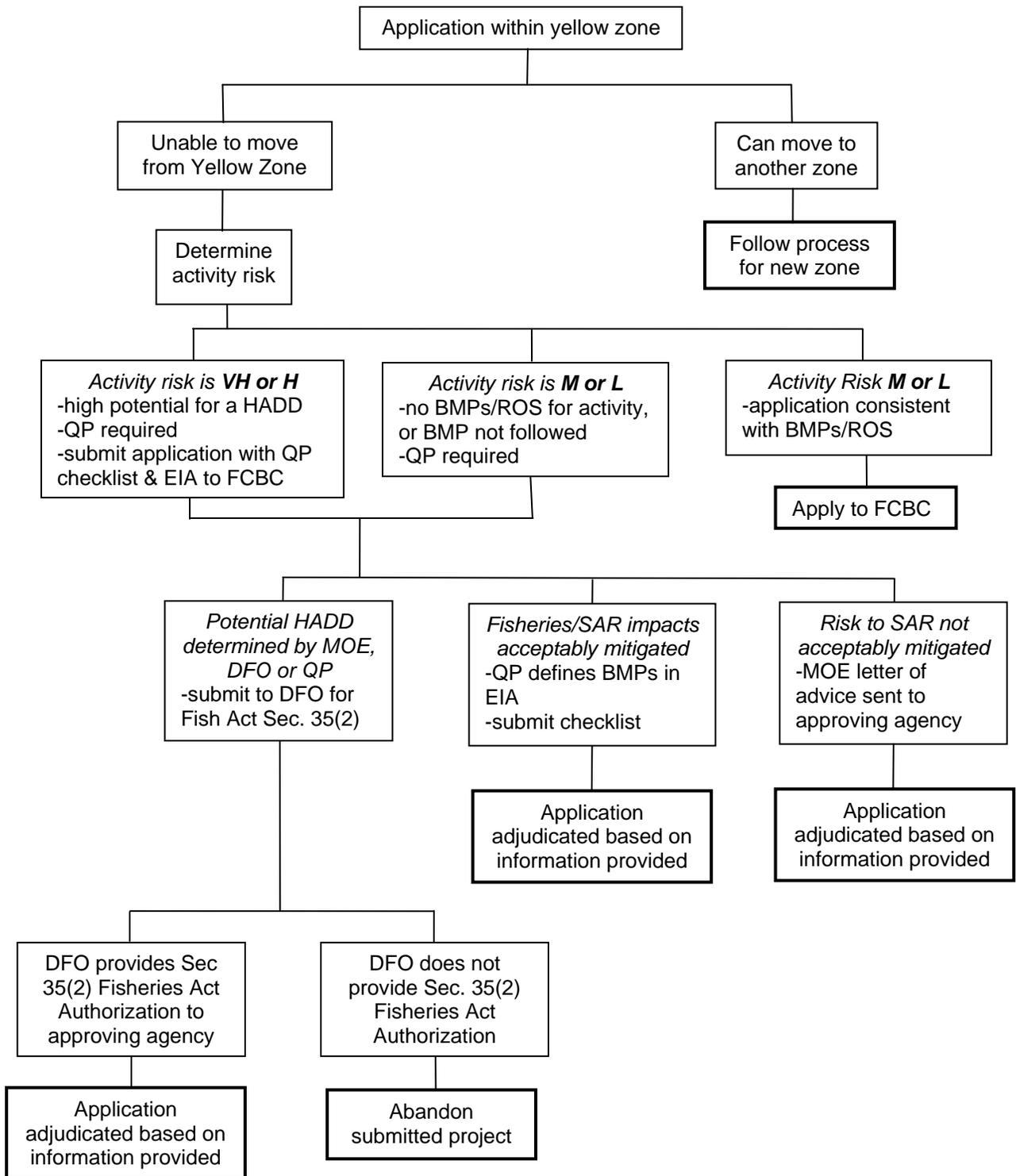
EIA: environmental impact assessment
 FCBC: Frontcounter BC

Appendix 5: Flow chart for planning in the Red Zone



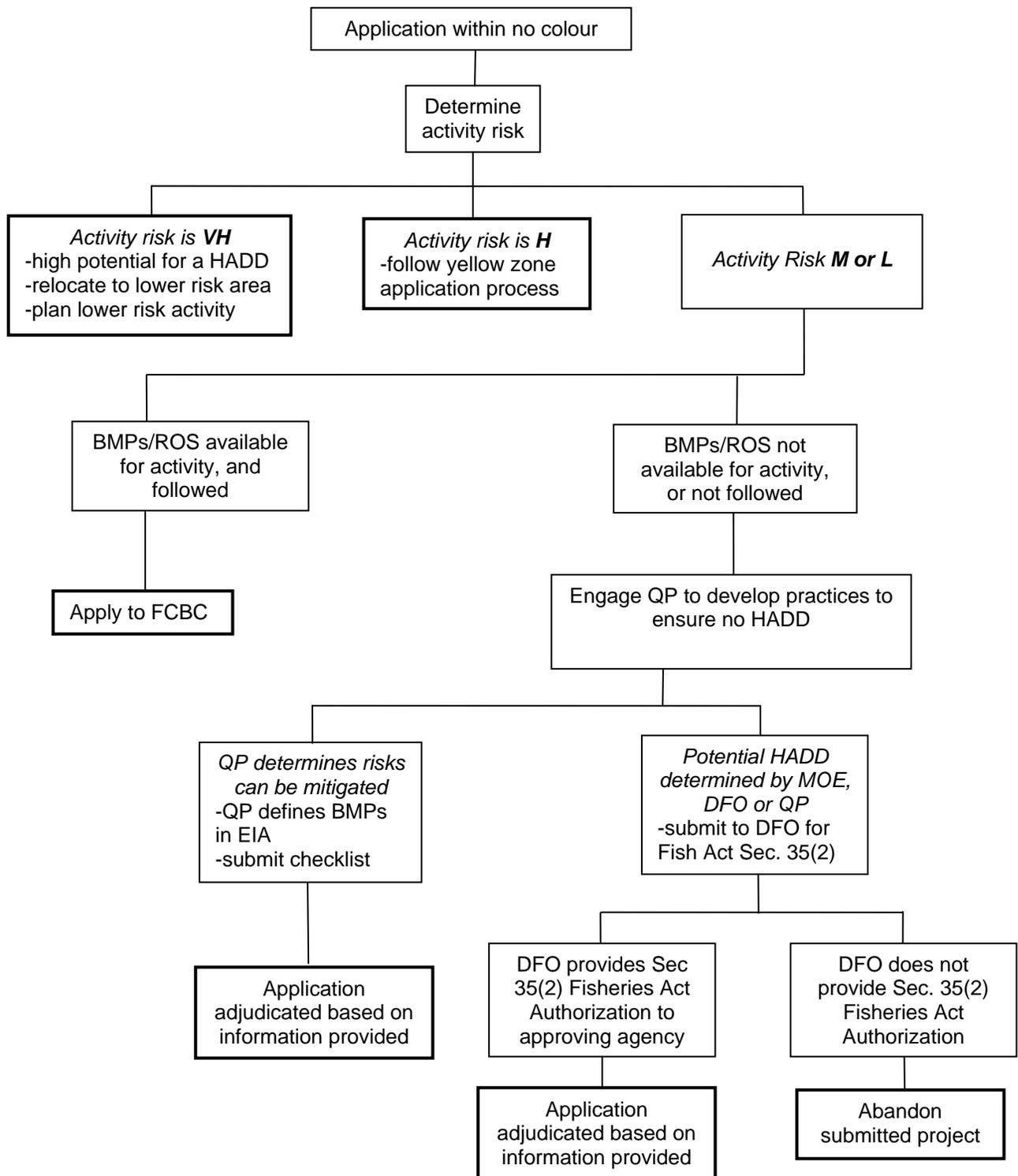
EIA: environmental impact assessment
 FCBC: Frontcounter BC

Appendix 6: Flow chart for planning in the Yellow Zone



EIA: environmental impact assessment
 FCBC: Frontcounter BC

Appendix 7: Flow chart for planning in the No Colour Zone



EIA: environmental impact assessment
FCBC: Frontcounter BC

Appendix 8: Qualified Professional Checklist for Foreshore Works

NOTE: The items in this checklist apply to the site of works and the surrounding area.

* The explanation column is mandatory.

Have you ...		Yes	No	N/A	Explain
1.0 SITE SURVEY					
1.1 reviewed existing fish, emergent vegetation, SAR & habitat mapping data, including:	a) Conservation Data Centre (CDC)?				
	b) local MOE (Ecosystem Staff)?				
	c) Foreshore Inventory Mapping?				
	d) Sensitive Ecosystem Inventory?				
1.2	conducted any inventories to confirm presence/absence of fish, emergent vegetation and SAR or their habitats on site?				
1.3	confirmed environmentally sensitive features or ecosystems on the site? <i>(only if the upland is within an environmental development permit area)</i>				
1.4	evaluated and described local soil and foreshore substrate?				
1.5	assessed potential changes to local shoreline and stream mouth accretion/erosion dynamics? <i>(only required for marina, infill and erosion protection works)</i>				
2.0 SITE DESIGN & RECOMMENDATIONS					
2.1 applied DFO's principal of 'no net loss'?	a) Redesign?				
	b) Relocate?				
	c) Mitigation?				
	d) Compensation?				
2.2	followed the Habitat Officer's Terms and Conditions?				
2.3	followed all BMPs? If not, have you described in the EIA alternatives to BMPs that are being used (pg #)				
2.4	included measures to avoid or minimize impacts to aquatic and riparian habitat? <i>(in relation to existing or potential fish and SAR use)</i>				
2.5	included measures to avoid or minimize impacts to any fish, emergent vegetation or SAR identified on the site?				
2.6	applied the least risk timing windows?				
2.7	minimized the footprint of the works?				
2.8	considered one common lakeshore access on multiple lot sites?				
2.9	maintained a 50m lakeshore frontage between moorage structures on single lots?				
2.10	minimized access related disturbance from machinery/equipment?				
2.11	included measures to ensure no erosion or sediment releases result from proposed works?				

Have you ...	Yes	No	N/A	Explain
3.0 MONITORING & REPORTING				
3.1 included provisions to ensure protective measures & BMPs are followed?				
3.2 included provisions for monitoring to ensure the completed works function as expected over time?				
3.3 provided recommendations for any impacts from future maintenance?				
3.4 considered long term water quality issues?				
3.5 reported new SAR occurrences to MOE Ecosystem Staff and CDC using CDC Field Observation Forms				
3.6 reported null data for rare plant species to MOE Ecosystem Staff (Osoyoos Lake Only)				
4.0 LEGISLATIVE REQUIREMENTS				
4.1 avoided a HADD?				
4.2 received a letter of advice or authorization from DFO if the works do cause a HADD?				
4.3 conducted a RAR assessment for upland works? If yes, list RAR assessment # and indicate if the RAR assessment included provisions for foreshore access				

This development activity is in the following zone:
(choose one)

Black Red Yellow No Colour

The development activity risk is
(choose one)

Very High High Moderate Low

I confirm that all information provided in this checklist is to the best of my professional knowledge true and complete.

Original signature of Qualified Professional

Professional Association #

Date

Appendix 9: Additional Information and Data Sites

EcoCat: The Ecological Reports Catalogue

<http://srmapps.gov.bc.ca/apps/acat/>

Sensitive Ecosystem Inventory (SEI) find on EcoCat (ecosystem mapping)

<http://srmapps.gov.bc.ca/apps/acat/>

South Okanagan Similkameen Habitat Atlas

<http://wlapwww.gov.bc.ca/okr/esd/atlas/index.html>

North Okanagan Resource/Habitat Atlas

<http://shim.bc.ca/atlases/nord/index.cfm>

Shuswap Lake System and Adams Lake Char and Sockeye Spawning Atlas (determine fish spawning habitat)

<http://shim.bc.ca/atlases/shuswap/>

Local government Environment Sensitive Area mapping

Contact the applicable local government office

Fish Wizard (fish inventories)

<http://www.fishwizard.com/>

Conservation Data Centre (species sightings)

<http://www.env.gov.bc.ca/atrisk/toolintro.html>

Timing windows for fish and wildlife (windows of least risk to species for works)

<http://www.env.gov.bc.ca/wsd/regions/okr/wateract/workwindows.html>