

**Contents**

Order of Appearances .....	1
Northern Gateway Panel 1 .....	1
Examination by Ms. Cheryl Brown for Douglas Channel Watch (continued).....	2
Community advisory groups.....	2
Tankers passing protected areas.....	2
No estuaries in marine studies .....	3
Risk management framework for terminal and vessel operation.....	3
Kitimat Naturalists .....	3
Examination by Mr. Dave Shannon for Douglas Channel Watch .....	4
Conservancies .....	4
Loss of fishing gear wazzat.....	4
Fisheries Liaison Committee is the mitigation .....	4
Extreme values are lost in the averages .....	5
Examination by Ms. Brown (continued).....	5
Wake study.....	5
The S-turn in Lewis Passage.....	5
Examination by Mr. Robert Janes for Gitxaala Nation.....	5
The meaning of FSC fishery .....	5
From Chief Moody’s statement .....	6
Mitigation.....	7
Noxnox and Smgigyet: examples of effects not in CEAA .....	7
The perception effect is an effect.....	8
Fisheries Liaison Committee and First Nations accommodation .....	8
The east coast experience: not the same thing .....	8
Perception of risk: Queen of the North.....	9
Examination by Mr. Mike Ridsdale & Mr. David De Wit - Wet'suwet'en.....	10
Examination by Ms. Joy Thorkelson for United Fishermen & Allied Workers' Union	10
Community Advisory Boards .....	10
Risk Management Framework .....	10
Plotting the matrix, clear as mud .....	11
Better to have an impacts to fish, not just to habitat.....	11
Types of fisheries .....	12
Chum and pink salmon returns into Area 6 .....	12
Noise and blasting.....	13
Salmon fishery: 4 effects of project assessed .....	14
Restriction of access to fishing grounds .....	14

**Order of Appearances**

**Northern Gateway Panel 1**

**Marine, Environmental & Socio-Economic Assessment**

Mr. John Carruthers  
Mr. Jeffrey Green  
Dr. Tom Watson  
Mr. Malcolm Stephenson

Ms. Andrea Ahrens  
Mr. David Hannay  
Mr. Paul Anderson

Mr. David Fissel  
Mr. John Thompson  
Mr. Peter Reid

Examination by Ms. Cheryl Brown - Douglas Channel Watch (continued) 14215  
Examination by Mr. Dave Shannon for Douglas Channel Watch 14524  
Examination by Ms. Brown (continued) 14672  
Examination by Mr. Robert Janes for Gitxaala Nation 14715  
Examination by Mr. Mike Ridsdale & Mr. David De Wit - Wet'suwet'en 15245  
Examination by Ms. Joy Thorkelson for United Fishermen and Allied Workers' Union 15341

## **Examination by Ms. Cheryl Brown for Douglas Channel Watch (continued) 14215**

### **Community advisory groups**

[Exhibit B3-18](#) states on page 81 that conflicts related to visual & aesthetic disturbances to parks etc. can be managed through community advisory groups (CAGs) and Fisheries Liaison Committee (FLC). Ms. Brown asked what are these CABs? Mr. Carruthers said that five of them have been established, from Kitimat & Terrace to Bruderheim. For the FLC, he said it would be very much fishing based. 14215

Ms. Brown asked for a list of parks and conservancies and a breakdown of values that these parks are managed for. Mr. Thompson suggested Exhibit B12-40, and for more detail, Table A-24. He cautioned that for the environmental assessment they are looking at impact pathways and if there are none, if there are going to be no effects, there's no need for the detailed understanding. 14244

### **Tankers passing protected areas**

Ms. Brown was also directed to Figure 5-17, a map of "Conservancies, Marine Parks, Parks and Protected Areas in and Near the CCAA" in [Exhibit B3-18](#). She expressed concern about the predominance of them within the area that the marine transportation is going to take place. Mr. Green said that the shipping is transitory, that a tanker is not going to be more than 15-30 minutes moving past a park or recreation area, that their slowed speeds will have a number of benefits. 14256

Mr. Thompson said, "We couldn't see an effects pathway that we would ... physically affect the environment in these parks through routine operations of the tankers." Perhaps aesthetics, he said, but "it's a value judgment depending on the person's perspective." 14279

Ms. Brown puts up Table 4-3 Valued Environmental Components (VECs) and Key Indicators (KIs) Selected for the Marine Environment from [Exhibit B3-26](#). She asked why some VECs have no associated KI? Mr. Green said, "Key indicators are only selected if we feel that there are relatively unique effects. ... For marine vegetation, ...

the primary effect mechanism for shipping would be wake generation. All marine vegetation is going to be affected in a similar fashion.” 14282

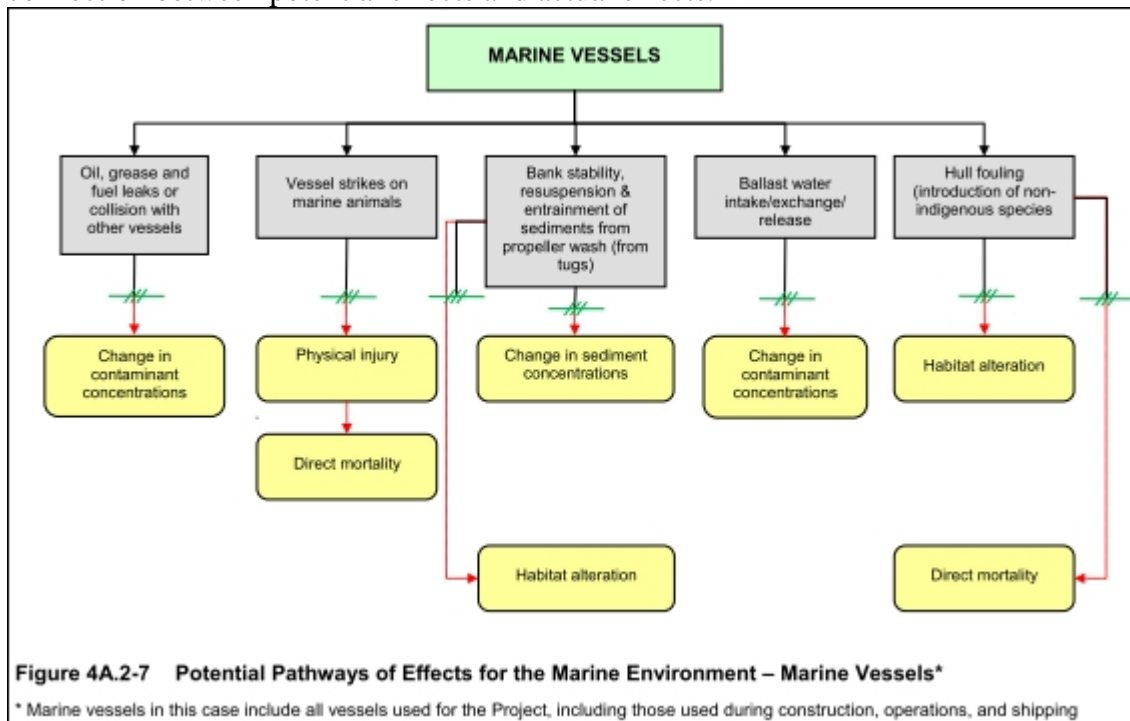
**No estuaries in marine studies**

Ms. Brown said “I can’t find a lot of information about the estuaries that are in the confined channel.” Mr. Green said, “One only surveys where you see there is an effect mechanism. Just because an estuary exists we don’t necessarily go study it specifically. We have not exerted a great effort looking at the Kitimat estuary because there are really no effect mechanisms. Our terminal is 8 kilometres south of the Kitimat estuary. Vessels are not transiting up close to the estuary.” 14308

**Risk management framework for terminal and vessel operation**

Mr. Anderson introduced the risk management framework for the marine aspects of the project. “It included a consideration for the project development area and also the marine vessel operations as well - for the transportation of the vessels through Canadian waters.” It is Appendix 4A in [Exhibit B3-12](#). Mr. Anderson said it had been developed by DFO for freshwater fisheries, and though NGP is unaware of any other marine application of it they used it on this project at the request of DFO. 14377

Figure 4A-2.7 illustrates the pathways of effects from vessel operation. Mr. Anderson said the lines that have hash marks on them represent mitigations which break the connection between potential effects and actual effects.



**Kitimat Naturalists**

Ms. Brown read some questions on behalf of the Kitimat Naturalists. The questions were not formed on the basis of a very careful reading of the evidence, and elicited no useful

information, other than to point at the evidence on birds ([Exhibits B9-15](#) to B9-18) and that bird nesting and population information was from an aerial survey. 14431

## **Examination by Mr. Dave Shannon for Douglas Channel Watch 14524**

### **Conservancies**

Mr. Shannon asked questions about information apparently missing in the evidence relating to conservancy areas. Mr. Green and other panel members told him that the missing information was related to timing of the evidence and the date it drew on, and that it preceded creation of the conservancies.

He asked about wake studies and the types of shorelines used. Mr Fissel said they had used two bathymetries: steep cliffs, and a shallower, more gradual sloping profile. 14550

From section 7.3.1 of [Exhibit B3-26](#), Mr. Shannon quoted, “Because of the relatively deep and open channel, primary wave heights resulting from VLCCs and escort tug traffic are minimal (0.025m) and are not expected to be measurable at the shoreline.” He said that sounds like “a broad brush statement” and it is used as justification for the only reason to be concerned with a passing tanker, is the visual effects of it going by.” 14571

Mr. Shannon was concerned about the Kitkatla Conservancy and a grey whale rubbing beach within it. In the discussion, Ms. Ahrens said, “[NGP] has committed to expanding the vessel strike analysis to do a sub-analysis explicitly looking at grey whales and potential effects.” 14619

### **Loss of fishing gear wazzat**

Mr. Shannon quoted from section 12.7.4 Prediction Confidence: Loss or Damage to Fishing Gear in [Exhibit B3-34](#): “There is a low level of certainty for the prediction of not significant for residual effects and cumulative effects from marine transportation on the loss or damage to fishing gear.” He said, “I must have read that sentence about 12 times and I don’t know what it says. Can you tell me what it means?” 14630

Dr. Watson said that certainty increases with more information, and that they have very little information about lost and damaged gear. They are expecting to increase the information and hence the level of certainty with the Fisheries Liaison Committee.

### **Fisheries Liaison Committee is the mitigation**

Mr. Shannon quoted: "It is reasonable to conclude that the cumulative effects on marine fisheries can be limited and will not be significant." He said, “That's again, prejudging before the facts are in. Do you have any comment on that?” Dr. Watson replied, “When we identify a potential pathway for effect, [we] then consider the mitigation that could be applied to minimize or avoid that potential effect, and in this case, it's the FLC.” 14643

### **Extreme values are lost in the averages**

Mr. Shannon expressed concern about the use of averages – average of maximum winds, significant wave heights, which lowers the perceived effect. Comment? Mr. Fissell said they followed international standards and best practices. 14651

### **Examination by Ms. Brown (continued) 14672**

#### **Wake study**

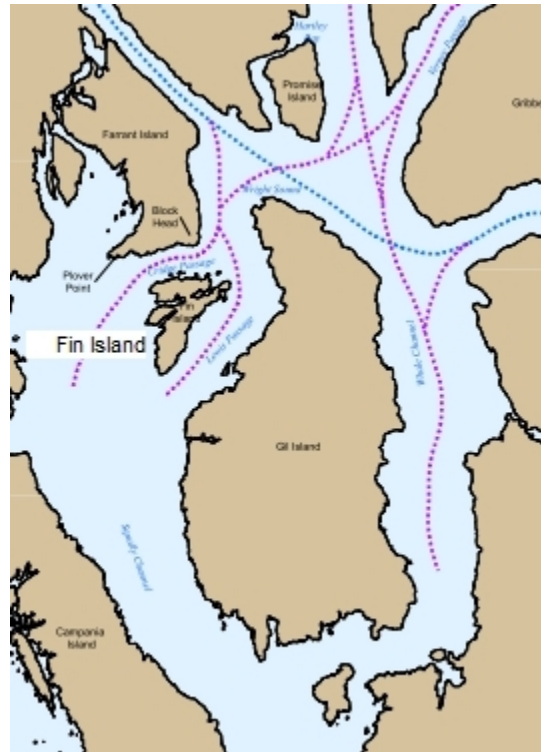
Ms. Brown asked why the wake study did not include berthing. Mr Fissell replied that berthing is at considerably reduced vessel speed and “as we discussed, the vessel speed is of over-arching importance in terms of the size of the wakes.” 14672

Mr. Fissell said that neither vessel speed nor prop wash would result in a significant effect when berthing. 14688

#### **The S-turn in Lewis Passage**

She asked about the S-turn in Lewis Passage around Fin Island. Mr. Fissell said it was not modelled for the wake wave study, but will be looked at in the Shipping and Navigation Panel.

Ms. Brown asked if prop-wash was going to be an affect within this particular S-turn. Mr. Fissell replied that “prop-wash is an effect very close to shore in shallow water. In these areas the water is very deep. Vessel wake is an issue. But in these areas ... the vessel speeds are low, much lower than other vessels that are using.” 14692



### **Examination by Mr. Robert Janes for Gitxaala Nation 14715**

Mr. Janes said “My questions today will mainly be directed towards issues related to methodology and how Aboriginal issues are integrated into it.” 14721

He asked if the term “design” phase or stage of this process refers to the period after the issuance of the certificate. Mr. Carruthers: “Yes.”

#### **The meaning of FSC fishery**

Mr. Janes asked about the FSC and “country food.” FSC means food, social, and ceremonial?” Dr. Watson replied, “That’s correct, as it relates to First Nations harvesting of those resources in the marine environment,” and it is a term used by DFO. Mr. Janes: “[It] is intended to be used in the context of Aboriginal harvesting for the most part, but

not entirely?” Dr. Watson: “I would say for the purposes of the assessment that we undertook it was used to represent First Nations Aboriginal activities as part of that fishing activity.” 14728

Mr. Janes explored what is meant by the social and ceremonial aspects of FSC, though Dr. Watson said he focuses on the fisheries aspects. “When we’re talking about FSC fisheries, we are talking about an activity that does, in fact, have cultural and traditional components to it that are about more than just food?” Dr. Watson said that’s true. Mr. Janes suggested that with respect to an FSC activity, who, when, where, and how are all aspects which matter. 14741

Mr. Green said, “When we speak about the effects to the FSC fishery, it’s about the ability to actually harvest those fish. ... It’s just looking at the types of fish that are captured and ... the location they’re captured. The cultural, spiritual values that you’re speaking to are not directly captured in that definition, nor are they assessed in the fisheries assessment.” 14750

Mr. Janes pursued this theme, with an emphasis on whether NGP had assessed the effects of the project on the cultural aspects of fishing activities. It is best followed in the transcript from the beginning at paragraph 14728.

Mr. Anderson said at one point that they had this discussion through the information request process, and put up [Exhibit B46-46](#), the attachment to their response to the Government of Canada’s IR 2.86, “for the record.”

### **From Chief Moody’s statement**

Mr. Janes said “there’s been a couple of sources that you have available for Gitxaala’s information and if nothing else I’ll go back to Chief Moody filing a statement at the pre-hearing stage of this process outlining a number of concerns and issues.” “Let me take one that’s probably in the most non-scientific realm: the Gitxaala’s concern with respect to spiritual beings which they referred to as noxnox?” 14812

Mr. Janes steered the discussion, or followed the discussion through the notions of perception and spiritual which are, both parties appear to agree, outside the scientific method, and beyond your ability to grade their effect on the communities or the individuals in any scientific way. “If a person perceives a food source to be no longer clean or suitable ... that may well affect their behaviour, even if from a pure hardnosed scientific point of view you can’t quantify the change?” Mr. Anderson agreed. 14834

Mr. Anderson said, “Doing an assessment under the Canadian Environmental Assessment Act, we’re not required to assess perceptual effects. We’re there to try to predict real effects.” Mr. Janes asked, “So your understanding is that you’re not supposed to assess perceptual effects?” 14848

Mr. Anderson: “Sir, I don’t think we’re communicating very well.” Mr. Janes: “I agree with that, I agree with that 100 percent.” 14868

Mr. Janes quoted from [Exhibit B38-9](#), NGP response to Gitxaala IR 1.12.2.4: “It is not appropriate for Northern Gateway to comment on whether these changes would affect aesthetic, cultural and spiritual aspects of harvesting and land use of importance to Aboriginal people.” 14870

### **Mitigation**

Mr. Anderson replied, that “It doesn’t mean that we don’t incorporate those concerns into our Environmental Assessment and into our mitigation.”

Mr. Janes said, “So when we talk about mitigation -- so for example, you mentioned educating them that there’s nothing to be concerned about. That would be, for example, giving them better education about the scientific aspects of this. That’s one example of mitigation. Is that fair? Essentially to allay their fears?” Mr. Anderson; “Yes.” 14880

Mr. Janes said, “If you are unable to allay the concerns, then that mitigation will fail.” Mr. Anderson replied, “We would have a low certainty around any predictions in that respect. So that’s why you then have follow-up programs and monitoring. To determine if your predictions were on mark or not.” 14890

Mr. Janes: “So to the extent that your assessment depends upon that particular example of mitigation being effective, this Board would not have the information, obviously, to be able to assess it now?” 14893

### **Noxnox and Smgigyet: examples of effects not in CEAA**

He continued, “If we go back to my earlier example, the Noxnox, which was chosen very specifically, the concern is ... that there will be spiritual beings offended by the operations. That’s not one of trying to correct a misunderstanding of the scientific knowledge, but it’s actually reflective of a true cultural or spiritual value that’s independent of scientific knowledge.” 14895

Let’s use another example: “Another concern that’s been expressed [is] that having this vessel traffic and these operations occur through the house territories of the various Smgigyet or heads of these houses, will -- without their agreement -- will have the effect of ... diminishing their status in the community.” 14905

Mr. Anderson said, “Yes, we’ve heard that concern. And it’s not under the Canadian Environmental Assessment Act. That particular effects pathway we didn’t assess and we do not believe we were required to assess it.

Discussion continued “on the scope of the perception issues and the way it could work as an effects pathway.” Mr. Janes said, “In fact, in terms of the assessment of impact, they haven’t even been assessed in a qualitative way, except to say that, potentially, they can be mitigated.” 14913

Mr. Janes said in terms of the way perception can affect behaviour, he said that even though it’s outside the scope of what has to be assessed for CEAA, it can affect the behaviour of the people who suffer from the effect -- from the perception. “If people

perceive an area to be no longer suitable or as suitable for harvesting, won't you agree that there is at least some reasonable possibility they will avoid that area and move their efforts elsewhere?" Mr. Anderson agreed there could be avoidance. 14923

As a "downstream effect," Mr. Janes said, "If, for example, a Gitxaala fisherman moves their effort from the Principe Channel area to the other side of Banks Island there's an additional effect, which is now we see increased harvesting in other areas that were previously not harvested from or, excuse me, may have been harvested by other people or smaller groups of people?" Mr. Anderson called this "a dynamic thing," and provided some examples of his own. 14938

### **The perception effect is an effect**

Mr. Janes said, "I'm going to suggest to you that a perception effect which leads a person to not harvest or to be reluctant to harvest in their own house territory is an effect. We can have a legal debate about whether it's one that has to be assessed under CEAA, but that is an effect. Mr. Green asked, "What is the threshold? ... The Act asks us to identify significant adverse environmental effects. It doesn't say -- just looks at effects." 14952

He gave an example of areas with substantial vessel traffic, and said, "We can't make a determination of when there's a switching behaviour in relation to traffic." Mr. Janes replied, "You did not engage in a study to try to determine, for example, how has past vessel traffic caused Gitxaala people to change their behaviour." Mr. Anderson said, "Our approach with communities in their Aboriginal traditional use studies is for them to identify the issues that are relevant to them." 14957

Coming back to his earlier question, Mr. Janes said, "This Panel will not be in a position when making its report to the Governor General in Council to say we've assessed this proposed mitigation measure and ... it can actually achieve the target stated, where it's a measure to be designed in the future?" Discussion continued on this question. 15007

### **Fisheries Liaison Committee and First Nations accommodation**

Mr. Janes provided a hypothetical example of an issue that might arise in the FLC – that fisheries and NGP vessel traffic are in conflict. To resolve the issue, one party will have to accommodate the other. Mr. Janes said, "One of the big questions is going to be what does this cooperation or accommodation mean to us?" 15052

### **The east coast experience: not the same thing**

Mr. Carruthers said, "Based on our conversations with people on the east coast of Canada, they've found it's working very well. So whatever it is, it's better than it is today." Mr. Janes said, "Let's just talk for a moment about the east coast experience. 15080

He said that most of the potential conflicts are on the open ocean. The One Ocean Committee deals with the oil and gas industry in Newfoundland, and the issues are related to oil and gas exploration activities, seismic activities, which have been planned for up to years in advance. Mr. Green said that the situation is more complex than "we're



dealing with here” because of all the fixed underwater infrastructure – platforms and pipelines. 15091

Mr. Janes said, “What you’re really talking about is they are dealing with different types of problems.” With One Ocean, there is a union which represents fishers, and “we’re not talking about Aboriginal fisheries.”

Back to the Northern Gateway FLC, Mr. Janes said there are potential costs for Gitxaala associated with participating in the FLC. He expanded on the costs of participation and how that would work, since it would be an individual fisherman, for example, who might lose a net or a day of fishing, but it might be the Gitxaala community which sits on the FLC. How do these costs get worked out? “I’m asking these questions is to highlight the fact that there’s a lot to be figured out here, okay?” 15129

“FSC fishermen are not making money from their fisheries; they’re prohibited from selling their fish. So they don’t have an offsetting stream of income to deal with any costs associated with participation in this committee.” “That’s a potential barrier to participation.” Mr. Carruthers said, “we envision ... that funding, for that specific situation, would not be a barrier to participation. So we’re prepared to pay the administration costs and we’ll prepare to address that issue.” 15141

Mr. Janes again: “This panel is actually not going to have the benefit of knowing what the outcome of the future discussions are or even if there’s an agreement reached.”

In his support for the FLC, Mr. Green talked about the 3330 transits which presently take place through Wright Sound annually, added 390 for Kitimat LNG, 440 for Northern Gateway, and said, “in the absence of the FLC, the laws of the sea prevail and people have to adapt. ... What’s being offered here is something contrary to the current situation” 15160

Mr. Janes: “The Board will not be in a position to actually know if that traditional use knowledge is actually built into decision making.” Mr. Anderson: “The Board has at its discretion the ability to assign conditions to its certificate.” 15180

### **Perception of risk: Queen of the North**

Returning to perception of risk, Mr. Janes used the example of concern about electrical transmission on health causing real anxiety in people, and devaluation of property, even when there’s a vast body of scientific evidence that says there is no effect. 15187

Mr. Janes said, “This is going to be the first one that’s going to be carrying large volumes of bitumen up through Principe Channel in large tanker vessels.” Mr. Green replied, “It’s the first tanker system that will carry heavy oil. It’s definitely not the first system that will carry condensate. Condensate has been moving in and out of the Port of Kitimat, I believe, for close to 30 years.” 15201

Mr. Janes asked whether a spill locally might change local perception of the risks, and he made reference to the Queen of the North in Gitxaala. Mr. Carruthers replied, “There’ll certainly be a lot more [anxiety] with respect to the project if it progresses.” 15220

**Examination by Mr. Mike Ridsdale & Mr. David De Wit - Wet'suwet'en**  
15245

Mr. De Wit’s first question was about trails on the pipeline route. The Chairperson advised him that this panel was about marine assessments. The Wet'suwet'en questioners called for a break to review their questions, then obtained some clarity as to what subjects the panel was able to respond to. They decided to withdraw from questioning this panel.

**Examination by Ms. Joy Thorkelson for United Fishermen & Allied Workers' Union** 15341

Ms. Thorkelson was concerned about the division of panels because many of her questions were related to routine operations (this panel) and spills (next panel) or to shipping (fifth and final panel) or to consultation (fourth panel) – all scheduled in 2013.

**Community Advisory Boards**

Referring to [Exhibit B3-12](#), page 65, Ms. Thorkelson asked if there was a CAB for the commercial fishery. Mr. Green said that in 2008 CABs were set up, with the one dealing with marine issues meeting in 2008 and 2009 in Kitimat. Mr. Anderson said her question is best placed to the consultation panel. 15356

**Risk Management Framework**

Ms. Thorkelson quoted from the Risk Management Framework (RMF) (Appendix 4A in [Exhibit B3-12](#)) that “There are no known examples of the RMF approach being applied to the marine environment,” and that it will be developed “through further consultations with DFO.” She asked what further consultation had happened with DFO. 15381

Mr. Anderson said the consultation involved a number of meetings of which there have been three specifically about the RMF as well as materials which have been filed. This process began in 2005. Mr. Green said the RMF supplements the actual effects assessment that’s in Exhibit B3-12.

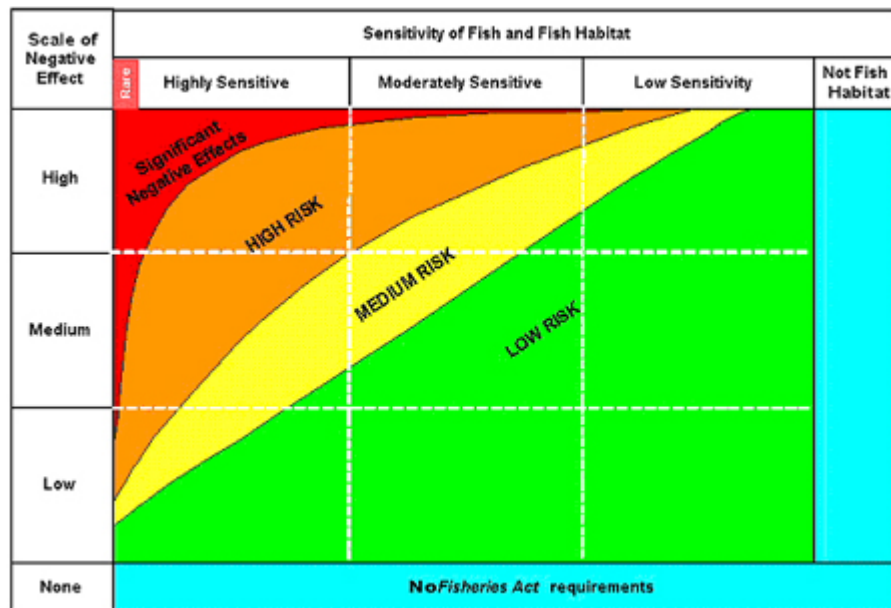
Ms. Thorkelson asked about ratings of sensitivity of fish and fish habitat to given effects as discussed in 4A.2.2.1. “Does the DFO Practitioner’s Guide suggest that sensitivity scale rating should be applied?” Mr. Green said that since this was the first time the RMF had been used for a marine environment, “we tried to follow the guideline as closely as we could.” 15392

Ms. Thorkelson said that “DFO testified regarding the freshwater use of the matrix, that DFO uses the RMF for the purposes of communications of risk and don’t apply a quantitative analysis to that.” “You’ve applied a quantitative analysis.” 15399

Mr. Anderson put up Figure 4A-1, DFO’s Risk Assessment Matrix. He said, “We’ve tried to quantify the ranking of sensitivity so we could plot it on this graph in a way that provided consistency between different field crews that might have been out in the field and different practitioners that might be using this.” 15401

**Plotting the matrix, clear as mud**

Ms. Thorkelson referred to Table 4A-2, Biophysical Parameters used to Calculate Habitat Sensitivity, and asked how this would be plotted on the matrix. Mr. Anderson said the X axis. Using the attribute Rarity as an example, she asked, “How would you rate it if the habitat was common, but it was a threatened species? Mr. Green responds at greater length with no greater clarity. Ms. Thorkelson said, “Okay. I’m going to give you a real example. Wild chum are considered rare, there’s no fishery. Fisheries are curtailed and designed so that we do not impact wild chum in the Douglas Channel area, but the habitat they rear in might not be considered rare. How would your matrix reflect this?” Mr. Green’s answer still isn’t clear. He does say that because chum are not rated under COSEWIC that therefore it would be deemed secure. 15406



Ms. Thorkelson suggested change to the matrix so it makes more sense. Mr. Green said, “This isn’t our matrix. It’s the way DFO likes to have it done. Our impact assessment “approaches it in a different way.” 15419

**Better to have an impacts to fish, not just to habitat**

She said it would “be better to have a matrix on impacts to fish so that you have not just impacts of fish habitat.” Mr. Anderson said, “Yes, we understand that.” He did not mention that through the Prince George hearings when asked why NGP was not doing population counts, they answered repeatedly that their focus is on habitat. 15425

Ms. Thorkelson: “Where is there an analysis of possible impacts on fish and then the impacts of fish on our fishery and our ability to make a living?” Mr. Anderson: “Those

pathways of effect to fish and other marine receptors are in the pathways of effects analysis.” 15430

Mr. Green spoke about chum as indicator species and said they look at effects on a species, not specific stocks. The RMF looks at the sensitivity of a species in habitat. 15433, 15444

Ms. Thorkelson asked more detailed questions about the RMF beginning at 15446.

Mr. Green provided an interesting walk-through of the RMF process at 15452.

Ms. Thorkelson explained about the Douglas Channel chum at 15461.

She said, “If there were impacts on wild chum salmon by the project, routine operations of the project or construction, then what will happen is that our fisheries could be further constrained, even though those fish are not SARA’d, they’re not COSEWIC’d, and even though their habitat has not been deleteriously affected, according to the habitat chart. 15465

Mr. Green put up a map, Figure 12-1, “DFO Fisheries Management Areas 5 and 6 and Subareas” from section 12, Marine Fisheries, in [Exhibit B3-24](#). “Dr. Watson is the person that did the actual assessment on fishing.” 15467

### **Types of fisheries**

Dr. Watson describes the different types of fishing: salmon gillnetting, salmon seining, each of which are timed openings. The location for Kitimat Hatchery chum is north of the proposed Kitimat terminal. Trolling takes place on a smaller scale. A longline fishery targets halibut and other groundfish. Invertebrates – prawns and shrimp- are fished with “very, very deep sets,” 200-300 metres. Geoduck is caught by diving. 15472

Other fishing activities are associated with vegetation. First Nations will take vegetation in intertidal areas, in smaller boats and sometimes from shore – from recreation to commercial. Herring roe on kelp is a fishery in shallower water. 15489

Ms. Thorkelson asked if in the evidence there is a discussion of the possible impacts of the project on fish and down to impacts on fisheries. Mr. Anderson directed her to Table 10-8, Summary of Residual Environmental Effects on Marine Fish, in [Exhibit B3-13](#). Mr. Green described the table; Ms. Thorkelson said, “This is at least a chart where you can have an intelligent conversation about the residual environmental effects on marine fish. [But] that matrix also says it’s about fish when clearly it’s about habitat. 15539

### **Chum and pink salmon returns into Area 6**

Bish Creek is just southwest ... of your terminal. There may be another facility built at that important creek. Do you know if Bish Creek is ... an important producer of pink salmon for the commercial fishery in Fishing Area 6? Mr. Anderson said that in 2010 there were 5,200 pink salmon in Bish Creek, and that the Kitimat LNG terminal is

currently under construction. Ms. Thorkelson said, “We’re well aware and we’re well stressed about the number of activities that are going on.” 15592

Ms. Thorkelson asked about returns of pink salmon. Mr. Anderson said pinks return on a two year cycle, low in the even years, high in the odd years. Ms. Thorkelson said that 2009 was a high year with over 9 million pinks returning, the largest recorded run.

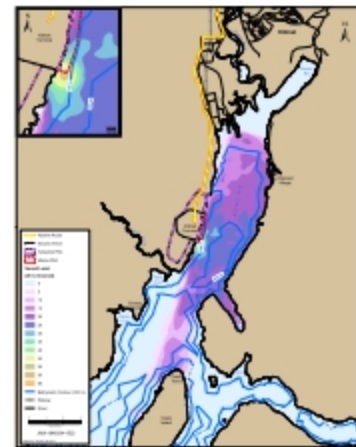
She also spoke about the fry and juvenile releases from the Kitimat hatchery. Have you done surveys for juveniles in the terminal area, she asked. Mr. Green said a net survey was done in summer 2005. 15606

### **Noise and blasting**

Mr. Green mentioned underwater acoustical effects and the types of mitigation that could be used, and “another suite of measures for construction and sedimentation.” Ms. Thorkelson said, “It appeared to me that the timing of work windows is your major mitigation device.” Mr. Green: “It’s not the only mitigation.” Mr. Hannay joined the discussion to talk about noise mitigations. He said that noise is not a pathway for injury, but there are two behavioural effects related to noise – startle responses and avoidance.. 15609

Ms. Thorkelson asked about blasting. Mr. Hannay agreed that fish could be affected by blasting, but “it depends on whether they’re present at the time. ... We would be using the least risk windows that DFO would prescribe for this activity. ... We’ll be developing a blast management program as part of this project that we’ll be submitting to DFO and to others for review.” Discussion continues about the effects of blasting on eggs and juveniles. 15621

Ms. Thorkelson asked a number of questions about herring, specifically resident herring, including the acoustical effects of blasting and dredging. She referred to Figure 10-8, “Herring - Predicted Sound Levels above Hearing Threshold from Clamshell Dredging, Kitimat Terminal,” from [Exhibit B3-13](#), to illustrate . Mr. Hannay said they would not have a similar analysis for blasting until a blast plan is developed. He provided some information about acoustics and herring and concluded that the blasting effect would be very small. 15668



She puts up Section A.3.9, Blasting Management Plan, from [Exhibit B3-19](#). and asked about the list of mitigation measures for blasting. Some are from DFO, and some have been additional to DFO’s guidelines. 15717

Returning to Exhibit B3-13, Section 10.6.4, Prediction Confidence, Ms. Thorkelson quoted, “The level of certainty for the prediction of "not significant" for residual environmental effects on marine fish from sedimentation is rated moderate.” Discussion continued about prediction confidence. 15735

### **Salmon fishery: 4 effects of project assessed**

Ms. Thorkelson turned to Section 13.2, Scope of Assessment for Marine Fisheries in [Exhibit B3-15](#). Four effects of the project are listed: restriction of access to fishing grounds; loss or damage to fishing gear; change in distribution and abundance of harvested species; aesthetics and visual effects. These four effects have been assessed by NGP for all areas, not just the terminal site. Asked if there are other possible effects, Dr. Watson said, “Not that we’ve assessed, we haven’t identified the need to go past these four.” 15759

### **Restriction of access to fishing grounds**

Ms. Thorkelson examined the first effect, restriction of access to fishing grounds. She asked what kind of restrictions could occur, triggering a lengthy conversation..15769

This topic will continue tomorrow.