Government of Nunavut Marine Infrastructure Projects (Pond Inlet, Iqaluit)

A Novel Approach to Fish Habitat Compensation in Marine Arctic Environments

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Nunavut

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WorleyParsons Group

Presentation Outline

1. Project Team and Project Overview
2. Consultation
3. Territorial and Federal Permitting Summary
4. *Fisheries Act* (Sec.35) FA
5. Offsetting and Compensation Metrics

Project Team

Government of Nunavut (GN)

Community and Government Services (CGS)

- Managing Design and Construction

Economic Development and Transport (EDT)

- Owners for Operations

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- Engineering Design
- Consultation
- Permitting

Project Location

Project Overview

Iqaluit

Pond Inlet

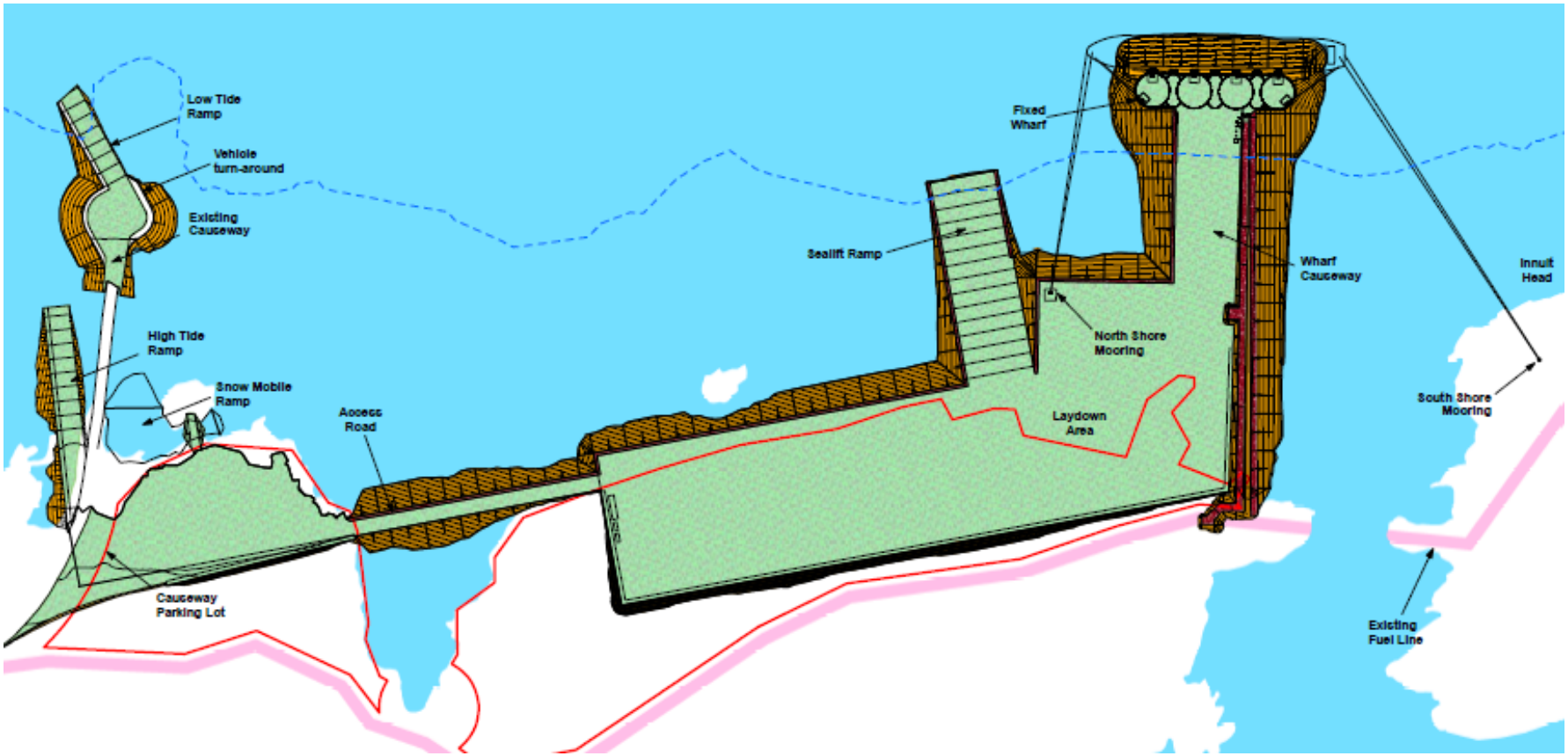
Project Phases

Year	Phase
2015/2016	Design
2015 to present	Consultation
2015 to 2018	Permitting
2018 to 2020/21	Construction
2020/21	Operations

Community Engagement

- 2016 to present → engage hunters, fishers, outfitters in design and determination of environmental existing conditions
- Amaruq (HTO, Iqaluit) and Mittimatalik (HTA, Pond Inlet) Hunters and Trappers Association(s)
- City of Iqaluit, Hamlet of Pond Inlet, Qikiqtani Inuit Association (QIA), residents, Boaters Working Group (BWG) (created for Project, likely to be involved in operations plan).
- Inuit Qaujimajatuqangit (IQ) studies → Existing Conditions/Offsetting/Complementary Measures

Deep Sea Port (DSP) and Causeway - Design



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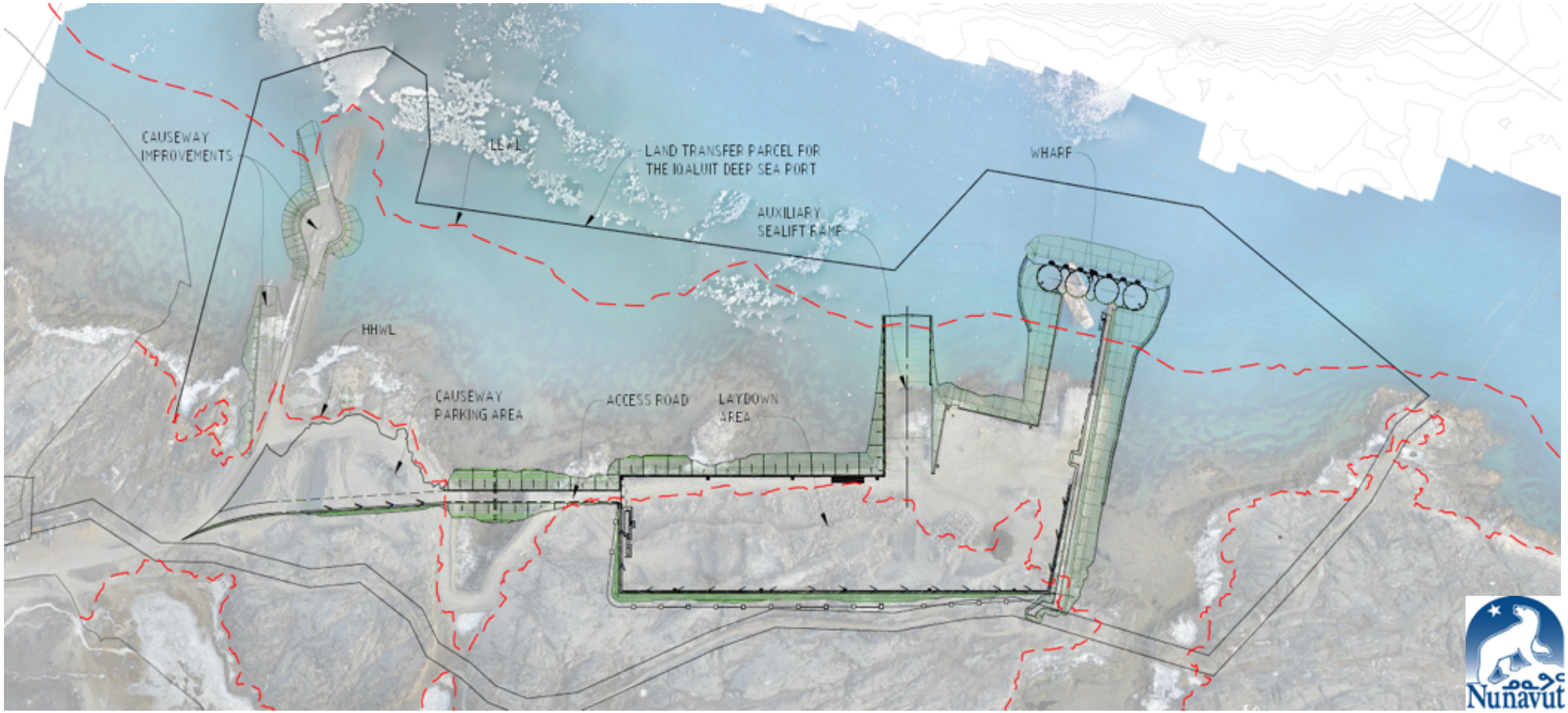
Deep Sea Port (DSP) and Causeway

2018 Construction Status

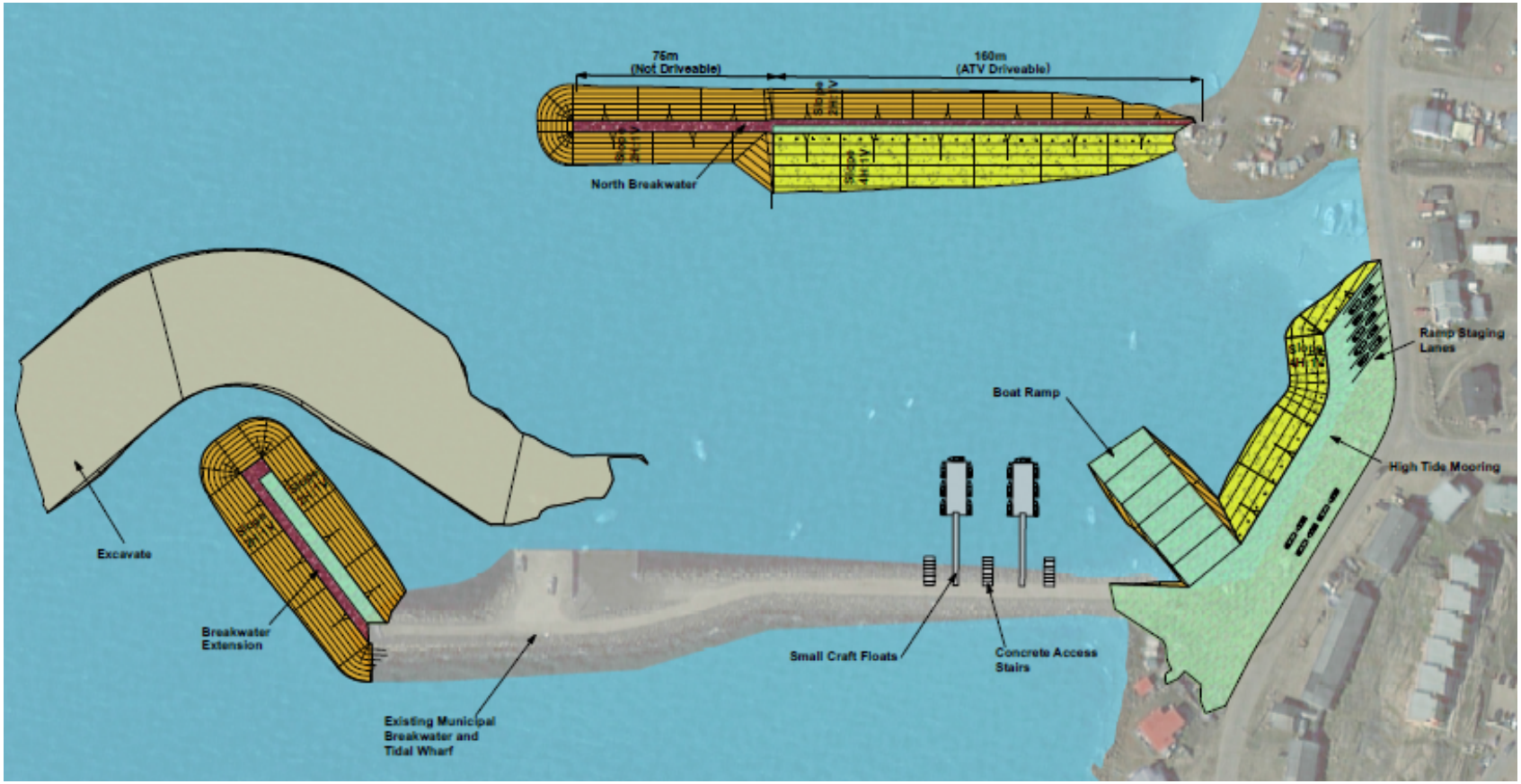


Deep Sea Port (DSP) and Causeway

2018 Construction Status

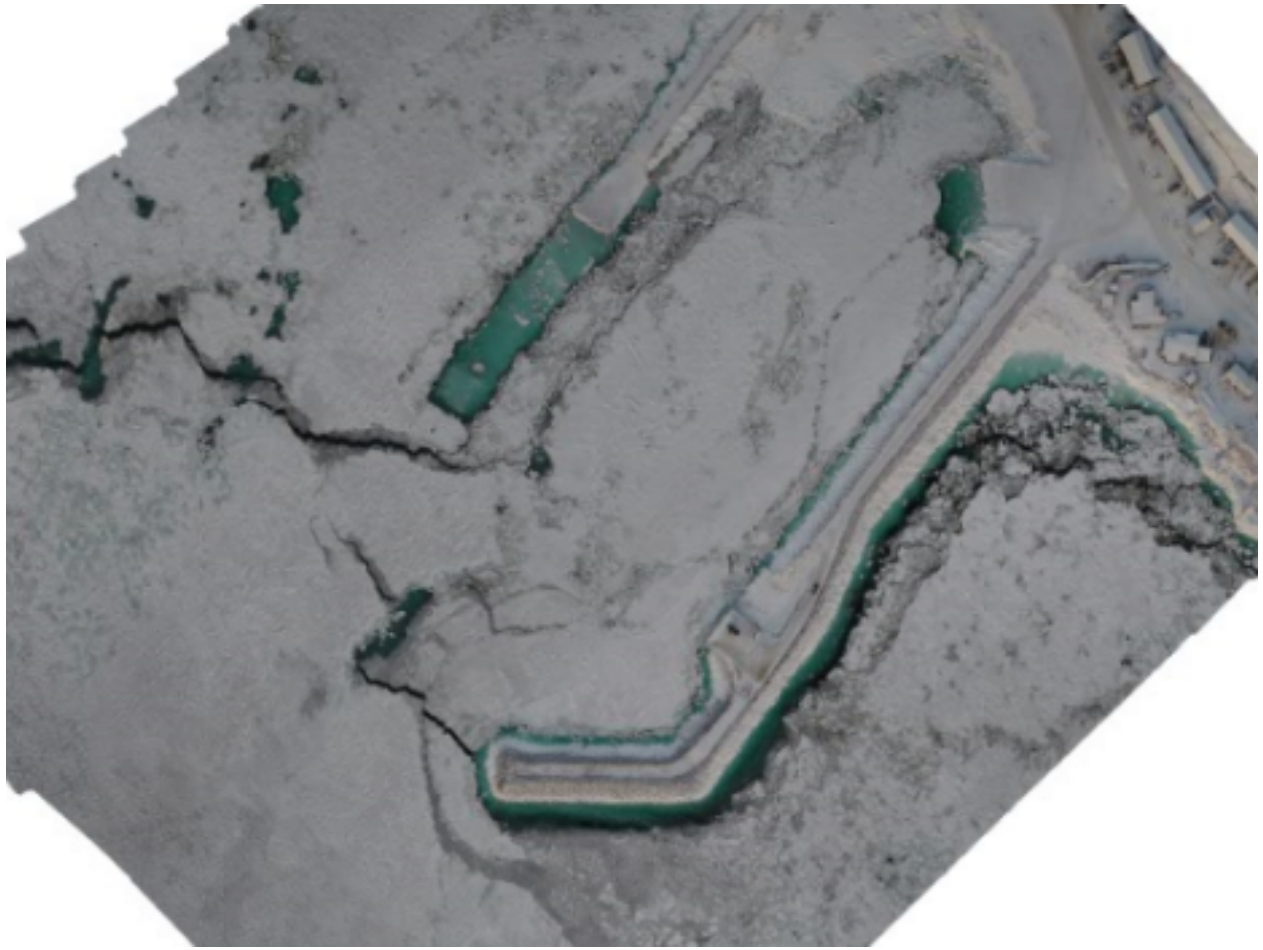
Small Craft Harbour (SCH)

Municipal Breakwater - Design



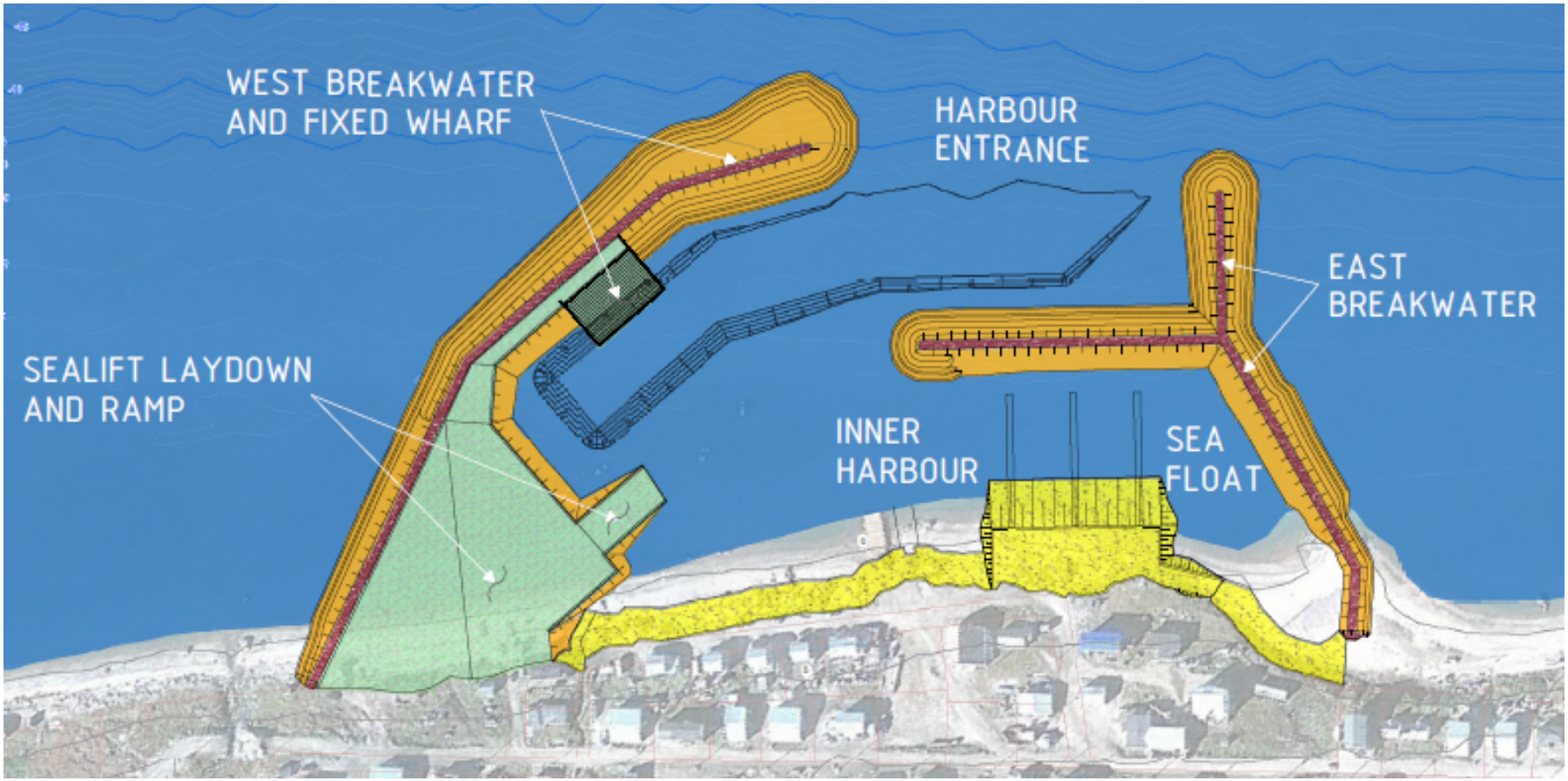
Small Craft Harbour (SCH)

Municipal Breakwater - 2018 Construction Status



Pond Inlet

Small Craft Harbour - Design



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Small Craft Harbour

2018 Construction Status

Environmental Permit Strategy

Successful Permitting Recommendations

- Field work and IQ → existing conditions
- Early Engagement with Regulatory Authorities
- Communication with engineering team

Construction Activities Considered

- Earthworks (Infill)
- Pile driving
- Dredging
- Disposal at Sea (not for Pond)
- Blasting near water (not for Pond)
- Light – Site illumination
- Construction vessel traffic and marine equipment
- Fuel storage, refuelling, accidental spills

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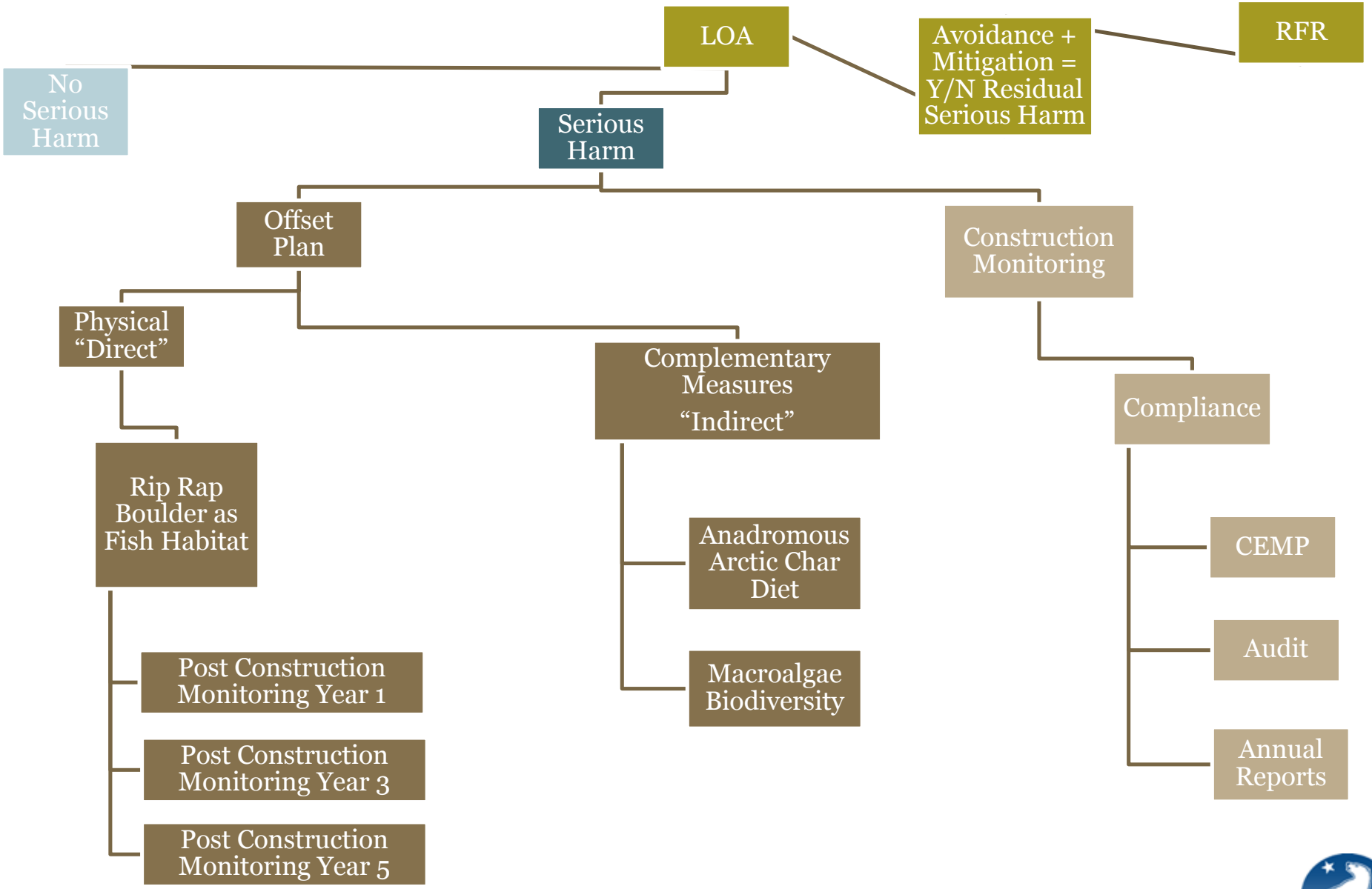
Regulators Engaged / Permits Required

- Fisheries and Oceans Canada (DFO)
- Environment and Climate Change Canada (ECCC)
- Transport Canada
- Natural Resources Canada (NRCan)

- Nunavut Planning Commission (NPC)
- Nunavut Impact Review Board (NIRB)
- Nunavut Water Board (NWB)


LOA
No Serious Harm
Serious Harm
Avoidance + Mitigation = Y/N Residual Serious Harm
RFR
Offset Plan
Construction Monitoring
Physical "Direct"
Complementary Measures "Indirect"
Compliance
Rip Rap Boulder as Fish Habitat
Anadromous Arctic Char Diet
Macroalgae Biodiversity
CEMP
Audit
Annual Reports
Post Construction Monitoring Year 1
Post Construction Monitoring Year 3
Post Construction Monitoring Year 5

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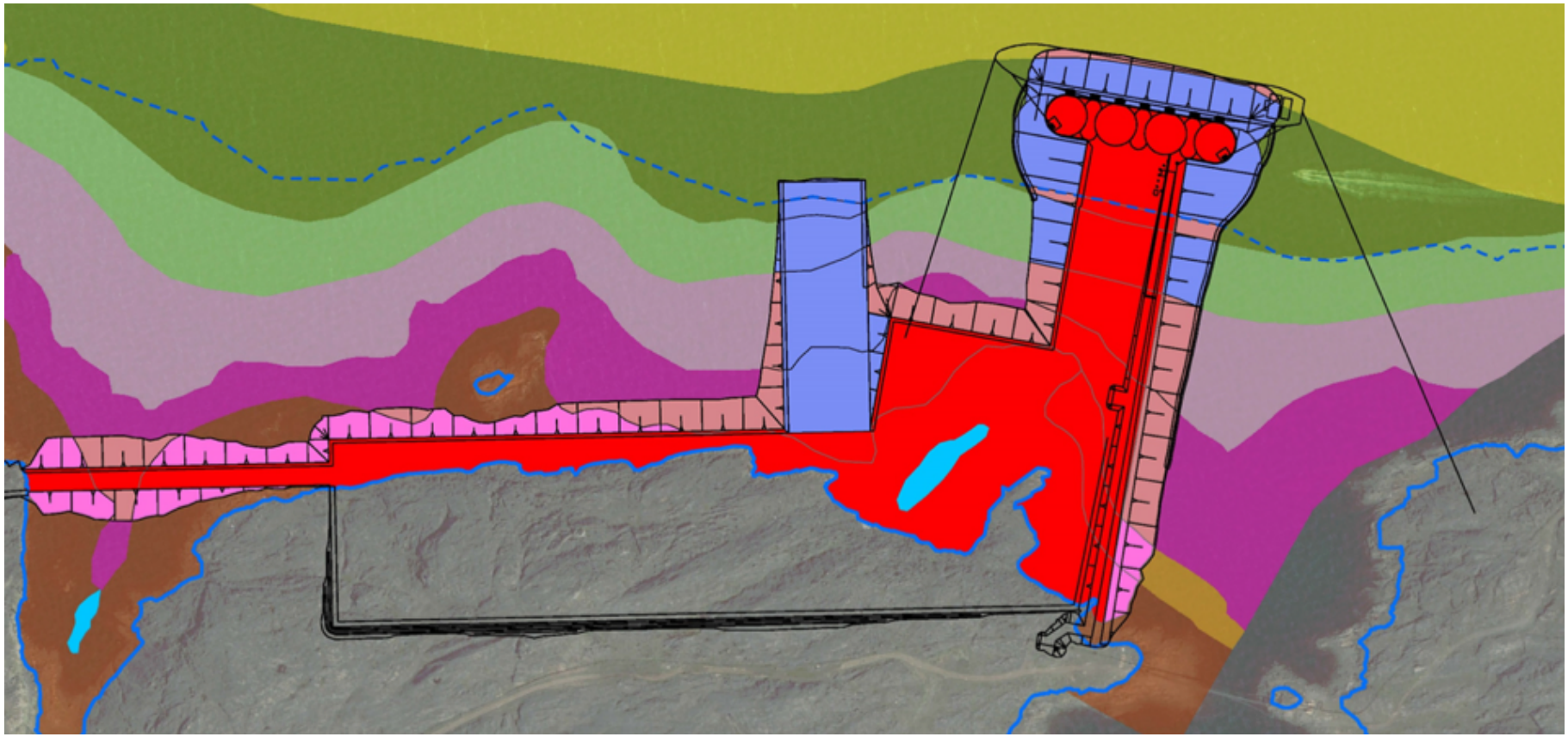
Serious Harm Determination



Physical Monitoring Program

“Direct Offset’ → “like for like”

- ‘Measurable: determine growth of marine vegetation and organism associations over time.
- **Other examples Include:**
- Fish habitat enhancement, restoration, connectivity, creation
- **Provides a permitting solution with clean ‘deliverables’ → determination of Metrics and Equivalency**
- Requires ‘buy in’ from locals
- Dependent on having something to fix / justified to be lacking
- Difficult to justify a ‘physical’ offset that is not in the same area both for DFO and local buy in
- **What to do for pristine, coastal environments?**

- **Use of Project component** → Rip Rap Boulder in a similar way to an artificial reef

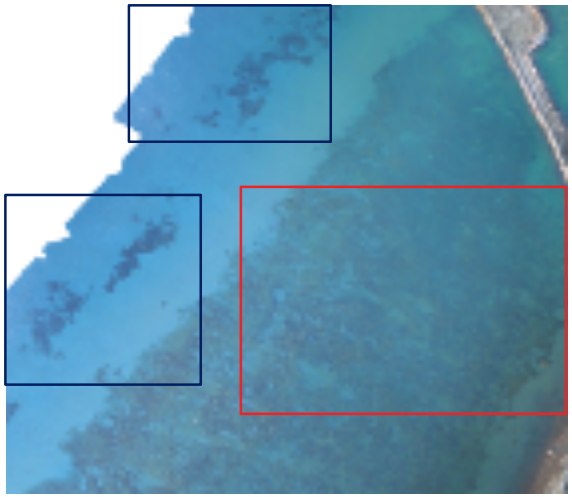
Physical Monitoring Program

Artificial Rocky Areas

Natural Rocky Areas

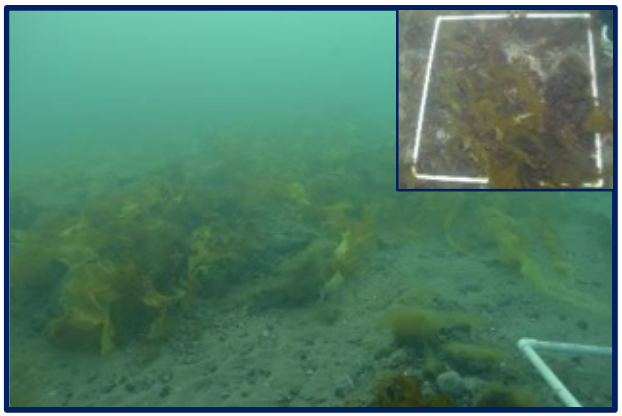
Modern and Traditional Methods

UAV/Drone



ROV

SCUBA



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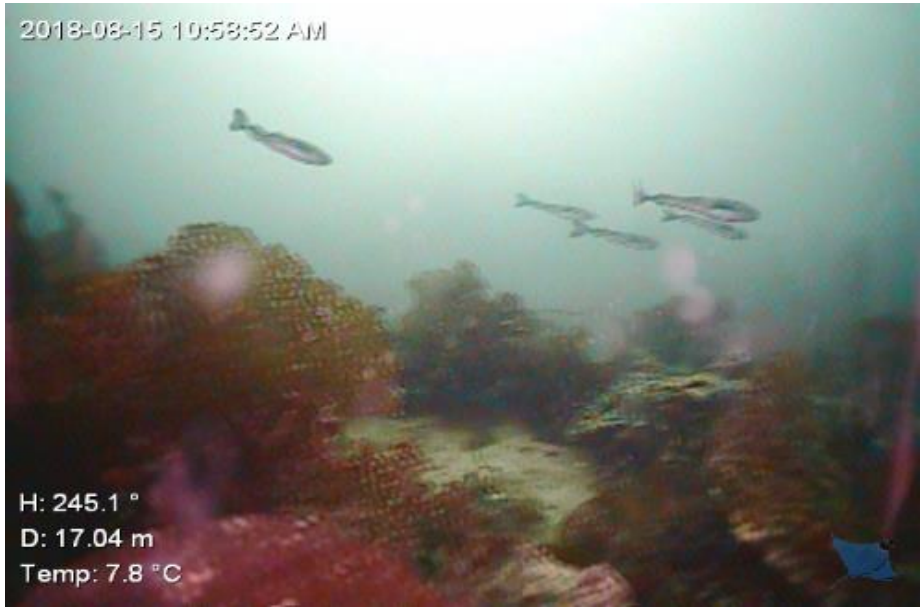
Complementary Measures

- Indirect method, considered a measure of last resort
- Difficult to define ‘metrics’ and measures of ‘equivalency’ → success of combining traditional knowledge and science, white papers, degrees?
- Opportunity to collaborate with universities, fund graduate work, enhance scientific knowledge
- Arctic → climate change will/is causing ecosystem function transitions
- Combine science with traditional knowledge



What's Next?

- A lot of interest in supporting the development of small craft harbours in more northern locations with similarly pristine environments in coming years
- Due to a footprint below HWL and pending *Fisheries Act* changes, these projects will always require an FAA
- IQ will always be conducted to engage the community on possible 'direct' offsetting options
- Solutions from the 'south' such as reef construction / moving seaweed boulders are likely to never be well received. Arctic char/Arctic cod are different than temperate species (e.g. salmon, rockfish), and no one is interest in possible effects to ice conditions for marine access
- Research however, was supported by the communities. There is ongoing engagement in the design/objectives of the research.
- → working with locals to train on field methodologies
- → plans to share results with the communities
- Development of a new Arctic region DFO office

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Questions / Thank you!