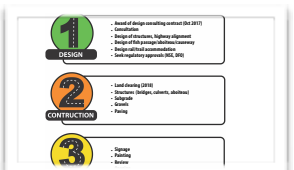
ABOUT THE CLC
WHO WE ARE AND WHAT WE DO



NEXT STEPS
TWINNING WORK PLAN

MONITORING STUDY
ESTUARY HEALTH RESEARCH

OPEN HOUSE
OCTOBER 10, 2018

HWY 101 TWINNING

TWINNEWS

Highway 101 Twinning - Three Mile Plains to Falmouth

About This Newsletter

This newsletter is published by the Highway 101 Twinning Community Liaison Committee (CLC) to inform residents about the Highway 101 Twinning - Three Mile Plains to Falmouth Project.

Stay Up-To-Date

Here are some links to help you keep up-to-date on the project.

CLC WEBSITE
http://hwy101windsor.ca/

NEWSLETTER SUBSCRIPTION
http://hwy101windsor.ca/?page_id=86

NSTIR WEBSITE:
https://novascotia.ca/tran/highways/hwy101twinningwindsor.asp

FACEBOOK
https://www.facebook.com/hwy101clc/

TWITTER
https://twitter.com/hwy101windsorns

Information Open House Scheduled For October 10, 2018

Nova Scotia Transportation and Infrastructure Renewal (NSTIR) will be holding an Open House at the Windsor Legion on October 10, 2018 to update residents on the findings of the study on the aboiteau and fish passage.

NSTIR staff and representatives of CBCL, the consulting group that undertook the study, will be on hand to provide information and answer questions. There will be maps, diagrams and other imaterial to assist in providing information and facilitating discussion.

The Open House will have two sessions, one from 2:30 PM to 4:30 PM and a second from 6:30 PM to 8:30 PM. People can drop in at any time during the sessions.

We look forward to seeing you there!

Our Highway 101 TWINS

The Highway 101 TWINS represent two important elements of the highway twinning project: the construction project, and the safety the twinned highway will bring.

Monitoring the Health of the Avon River Estuary

The Avon River estuary is a place of many changes. Some remember it before the Causeway was built in 1968-70 as a river wide and clear, with expansive mud and sand flats and few salt marshes. After the causeway was built, in a matter of a few decades, this dynamic system evolved into what it currently is: one of the most productive salt marshes in Nova Scotia. The massive amount of sediment deposition since 1970 and the subsequent establishment of salt marsh vegetation, in a relatively short amount of time (since 2002), is a very dramatic reminder of the enormous power and adaptive potential contained in this system.

With the future comes the potential for more changes to this system. As part of the Highway 101 Twinning Project, the Nova Scotia Department of Transportation and Infrastructure Renewal (NSTIR) and the Nova Scotia Department of Agriculture (NSDA) are exploring the options for the crossing of the Avon River.

As part of this process it is important that we understand, to the best of our ability, the condition of the downstream estuarine habitats and the potential impacts that changes to the tide gate structure and causeway could have on the system. This need has resulted in the Avon River Estuary Study which has been funded by NSTIR and NSDA. The first year of the study looked at the current (2017) physical and biological components of the marshes & mudflats, as well as sought to verify the predictions of the Environmental Assessment report that was done on

FAQ

WHEN WILL THE TWINNED HIGHWAY BE OPEN?

Construction began in 2018 and will take about 5-6 years to complete.

WILL THERE BE DETOURS?

The plan is to keep one side of the highway open as work is done on the other, so major detours are not anticipated. More detailed plans will be developed as the project progresses.

WILL THERE BE A TOLL FOR USE OF THE HIGHWAY?

After consulting with the public on funding, the Province did not hear overwhelming support from Nova Scotians about paying a toll for twinned highways. There will not be a toll for the use of this highway.

MORE FAQ ON OUR WEBSITE at www.hwy101windsor.ca.

the potential expansion options (full report available from the CLC Library http://hwy101windsor.ca/library/). This study will then be repeated following construction, allowing the research team to quantify any loss (or gain) of salt marsh and fish habitat, as well as monitor any changes before, during, and after construction.

Baseline Information Gathered

The first year, or baseline, of this study was carried out in the summer and fall of 2017, and focused on determining what the present habitat conditions are in the estuary. It also sought to deepen the understanding of how the mudflats, tidal creek networks, and salt marsh developed over time, and if, and how, they are continuing to evolve. To determine this, CB Wetlands & Environmental Specialists, in collaboration with researchers at Saint Mary's University (SMU), conducted a review of the historical biophysical information on the system, examined the contemporary mudflat/bar and vegetated marsh surface condition, the location, stability, and capacity of tidal channel networks, as well as the historical condition in order to determine changes over time.

By combining the results of the 2017 baseline study with previous research conducted between 2002 and 2016 (lead by Dr. D. van Proosdij (SMU)), we are able to tease out of the data a comprehensive picture of the key physical and biological components of the marsh and the mudflat system. What we found was that the system has dramatically changed (obviously) since the construction of the original Avon River causeway and tide gate, *and yet* (not obviously) is still moving towards a new equilibrium state or ecological balance. For example, many of the tidal channels within the marsh are infilling as the mudflat-salt marsh shifts from a steeply cliffed to ramped marsh platform, with much of this transition occurring since 2012. In the unvegetated marsh areas the overall net gain of sediment over the past 10 years was found to be on the order of approximately 1.3 million m^3. This tells us that the mudflats are still growing, and as they get higher they create more area where salt marsh plants can grow. When we looked at the vegetation community, we in fact did see an increase in the amount of vegetated area. Between 2003 and 2007 the rate of vegetation expansion was approximately 6 ha/year. Since that time, the salt marsh has continued to grow but at a rate of about 2 ha/year.

Marine Institute of Natural and Academic Science(MINAS)

If you would like to learn more about the fish that are being found in the Avon River, follow the MINAS Facebook page at https://www.facebook.com/MINASscience/.

They frequently post photos and videos of the species they find on both sides of the causeway, and they describe their finds in language that can be understood by scientists and non-scientists alike.

Salt Marsh Continuing to Develop

When we looked at the vegetation community structure of the Avon River estuary salt marsh, we also see strong indicators of a habitat that is continuing to develop and mature. For instance, the dominant plant that was found on the marsh was smooth cordgrass (*Spartina alterniflora*), which in Nova Scotia is the plant that grows in the part of the marsh referred to as the low marsh - the section of a marsh that is flooded on almost every high tide. However, what was not found in any abundance was the plant species that are typically found in the high marsh - the section of a salt marsh that is only flooded on the really big tides. What this means is that the Avon River estuary salt marsh is still a rather young marsh that lacks the complexity of other more mature marshes found in the region. Research on natural and restored salt marshes in the Bay of Fundy, and around the world, have shown that although these systems can respond and recover quite rapidly (1-5 years), reaching ecological balance can take decades.

When the plant community and the continued growth in the sediment formation is considered together, it is clear that the Avon River estuary salt marsh that has formed as a result of the 1970's installation of the Windsor Causeway is a young - albeit productive - salt marsh that is still in the process of maturing into a marsh with higher elevation and the subsequent high marsh (and more diverse) plant communities. Like much of nature, and particularly the systems in the high-energy Bay of Fundy, the Avon Estuary is continuing to evolve and adjust in response to human activities. This study, along with the previous research, provides an excellent foundation against which the continued development of the system and any changes resulting from future human activities, such as the Highway 101 Twinning Project, can be measured.

Next Steps

Monitoring of the Avon Estuary will continue in 2019/2020 and continue until at least 5 years after completion of the aboiteau and causeway upgrades.

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Twinning Work Plan