

MEMORANDUM

To: Doug Hyde, BC MOTI

February 22, 2023

From: Serkan Ulgen

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cc:

File: 0489-21B-R1

Re: Lions Gate Bridge Remedial Deck Work – Predicted Construction Noise Levels

BKL Consultants Ltd. (BKL) has been retained by the BC Ministry of Transportation and Infrastructure (BC MOTI) to conduct a construction noise impact assessment for the Lions Gate Bridge North Approach Viaduct Remedial Deck Work Project (the Project).

The Project involves the removal of the wearing surface, removal of existing plates, installation of new splice plates and wearing surface locally at a total of twenty fixed deck joints. The scope of the Project involves work on the North Approach Viaduct only. There will be no construction work on the main span of the bridge.

This memo provides noise level predictions based on anticipated construction activities and assesses the potential impacts of the planned construction work by comparing predicted levels against industry standard criteria.

Figure 1 shows the locations of the noise-sensitive receptors around the Project site. The nearest dwellings are on Squamish Nation lands (Capilano Indian Reserve No. 5) along the north approach viaduct (areas 1 and 2) and the Capilano River RV Park (area 3) is also a noise-sensitive land use.



Figure 1: Noise-sensitive Receptors Around the Project Site

Predicted Construction Noise Levels

COWI provided the information related to potential construction activities that need to occur and equipment likely to be used during the Project. Based on the information provided, asphalt grinding, plate removal, surface preparation and plate installation will be the noisiest activities.

The noise levels at the receptors depend on the locations of the works on the deck joint, which are to be determined by the future contractor's construction planning and scheduling. In order to predict the representative noise level during the construction, we assumed that the construction activities were taking place at three adjacent deck joints simultaneously.

Our noise model considers the effects of surrounding buildings, reflections, absorptive surfaces, and shielding due to bridge deck for applicable noise sources.

Predicted Construction Noise Levels without Mitigation

Based on the predictions:

- The loudest noise levels are expected to occur during plate removals due to the jackhammering. During plate removals, hourly averaged noise levels at the first row of residential properties may reach 80 dBA without any noise mitigation.
- Noise levels at the second and third rows of dwellings are expected to be similar as the first row of dwellings due to reduced acoustical shielding provided by the bridge deck.
- Noise impacts due to plate installation, grinding, and surface preparation works can be reduced by attainable mitigation measures, limiting the anticipated impacts during these activities to the first and second rows of residential properties.
- Compliance with the noise limits in the tender documents requires significant physical noise mitigation, planning and management efforts.