

August 24, 2017

HRM Planning & Development  
Eastern Region, Alderney Gate  
40 Alderney Drive, 2<sup>nd</sup> Floor  
Dartmouth, NS

To Whom It May Concern,

**RE: Proposed 6030 Pepperell Road Shadow Study Write-up**

This write-up accompanies the shadow study findings submitted earlier.

A shadow Study was undertaken to assess the impacts of the proposed Pepperell 14-storey building form on surrounding properties. A 3D computer model was placed in real-world space and assessed on an hourly basis for the winter solstice (Dec 21), Summer Solstice (June 21) and Equinox (Sept 21 and March 21) periods. These simulations provide a good overview of the best case conditions (summer solstice where the sun is high and shadows are short) and worst case scenario (winter solstice where days are short, sun angles are low and shadows are long) for shading.

**Winter Solstice (Dec 21):** In the winter sunrise is at 7:48 am and sundown is at 4:37 pm giving only about 8 hours of sunlight. At 8am and 4pm the shadows are so long (sun angle so low) that even a tree can project shade for very long distances up to 10x the height of the object. The shade diagram shows at sun-up, shade from the new building will be cast onto Windsor street but existing surrounding tall buildings are already shading this part of the street. In fact, the building produces no new shade until about 2pm when the southern corner of the common is in shade for about an hour from 2-3pm. The new building has no shade impacts on any surrounding residential properties at this period however the building does put the east end of Peperell street in shade for most of the day and it causes about an extra hour of shade on west side of Robie Street from 3-4pm to the north east of the new building. Surprisingly, this building produces very little new shade in the winter due to its situation amongst surrounding residential buildings to the west and taller buildings to the north.

**Summer Solstice (Jun 21):** In the summer, sunrise is at 5:29 am and sundown is at 9:04 pm giving about 15.5 hours of sunlight. From sun-up to about 8am, the new building will cast shade on the properties directly to the west of the building, Then, from 9am to noon the building only casts shadows on the south side of the Pepperell Street sidewalk, but the north side of the street stays in full sunlight. From 1 till sundown the new building casts shade on the west side of Robie Street but

by around 8pm the Atlantica hotel's shadows align with the new building so there is no new shade produced.

**Equinox (Sept 21 and Mar 21):** In the equinox sunrise is at 7:00 am and sundown is at 7:22 pm giving only about 12 hours of sunlight. At sunrise, the new buildings shadows will spread across about half the block between Pepperell and Quinpool, but by 9am only a few properties north west of the building will be in shade. By 10am just the east end of Pepperell Street will be in shade until about 2pm. From 2pm till sundown, a small portion of Robie Street will be in shade.

The shade simulations show very little impact of shade on surrounding properties with the exception of the first hour of sunlight during equinox, and about 1-2 hours of new shade on properties during the summer solstice. These early morning shade periods are probably already impacted by the large street trees surrounding the site so is expected that the building will have very little shade impacts.

Please contact me with any questions.

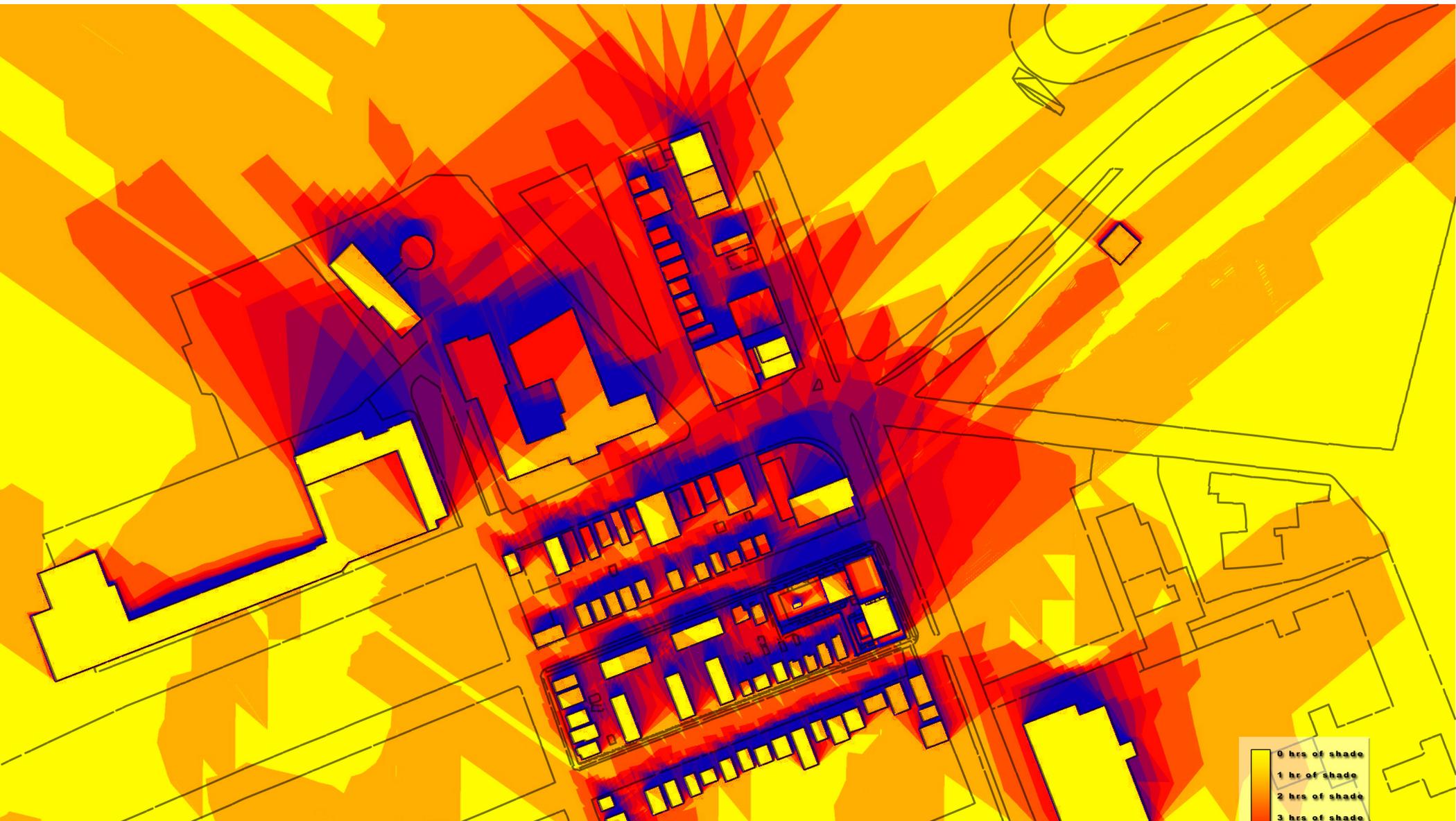
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# Pepperell & Robie Street

Shade Study

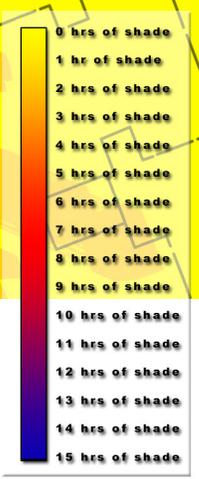
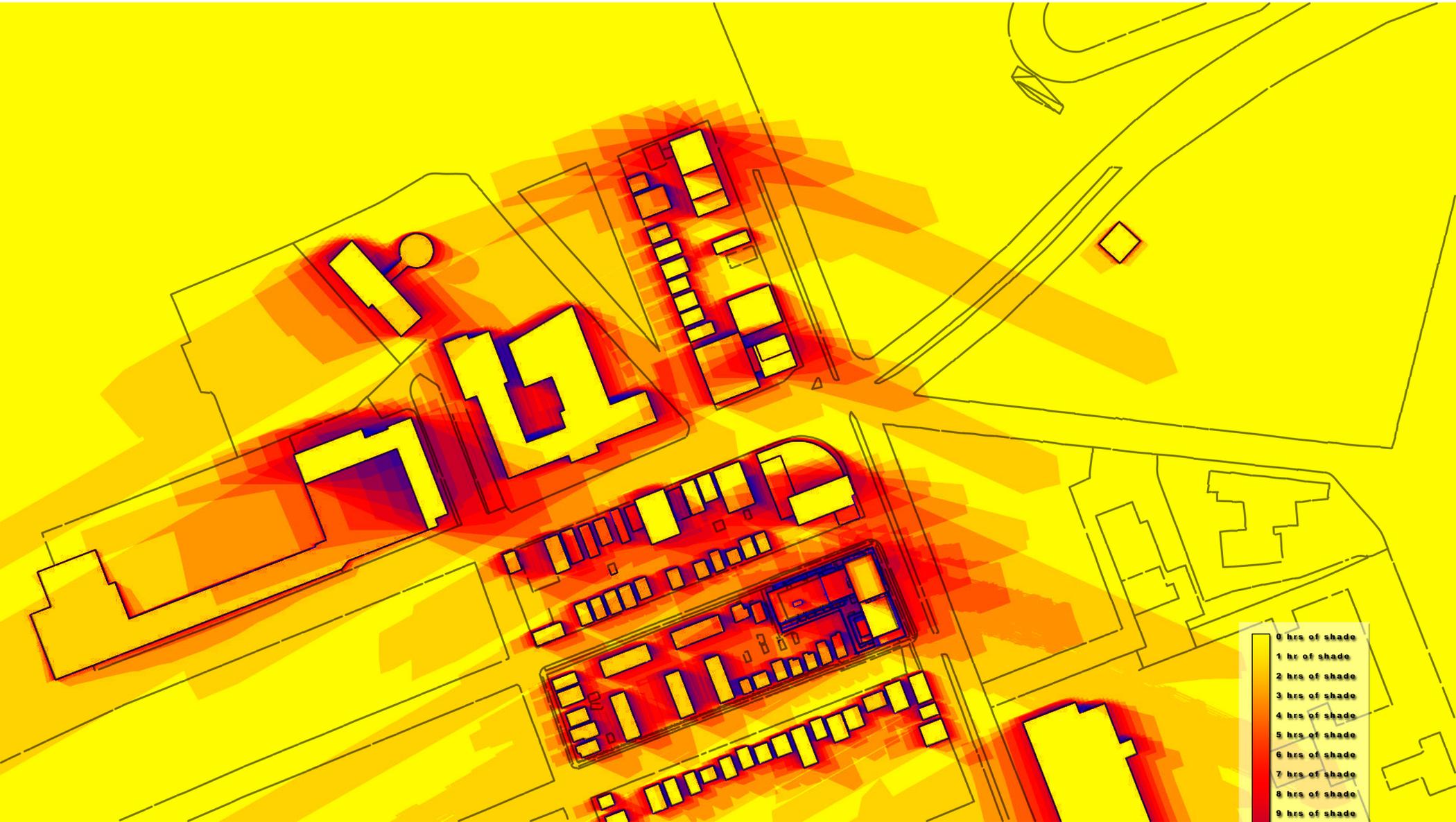
December 21



# Pepperell & Robie Street

Shade Study

June 21



# Pepperell & Robie Street

Shade Study

March & September

