

April 17, 2020

Tony Stikeman, Past President
Rockcliffe Lawn Tennis Club
465 Lansdowne Rd N,
Rockcliffe Park ON, K1M 0Y1

Re: Reducing Light Pollution via Light Design

Dear Tony,

Following your request, I will try to best describe and put in context what the Light Design Report (provided on February 23rd, 2020) predicts regarding the light spillage to the closest neighbors.

Please let me mention that this light design was done with two objectives in mind, both at the same priority level:

1. Illuminate the courts 2 and 3 with the highest possible recreational levels within an affordable budget.
2. Avoid as much as possible the light pollution to the RLTC neighbors.

Measures that would increase the project cost, but that would have a direct impact on reducing light pollution, were adopted. These included increasing the pole height to be able to point further down the fixtures, selecting upgraded fixtures in order to have the softer 4000K colour temperature and a narrower distribution beam angle that would allow us to better direct the light distribution. After several design iterations of pointing the fixtures, evaluating different positions of the poles and even different numbers of poles, we arrived at the proposed fixture and pole arrangement.

This light design is done with a specialized software program, and incorporates real measurements of light intensity and distribution of the fixtures to be used. With it, we can model how the light will illuminate, reflect and refract from the different surfaces around the area to be lit. The numbers we see on the houses' surfaces on the report's pages 6,7,10 and 11, are the illuminance levels the houses' surfaces will get, on the position where the number is located. The illuminance is the amount of light reaching this surface (pretty much what humans perceive as light intensity) and it is measured in Footcandles or Lux, two different units, like Celsius and Fahrenheit. In the report we used Lux.

Public Lighting regulations ask to have a minimum of 3 lux on small streets like Lansdowne Rd or Lakehurst Rd. Vertical light measurements were taken on the edge of the Lakehurst Rd and the residential property located on the corner of Lakehurst and Lansdowne, showing current values between 4 and 6 lux, depending on how close we were to the current streetlight pole.

Certainly, going from the no-lighting current situation to lighting courts 2 and 3, the light levels on neighbors' houses are predicted to increase, but to less than double for the nearest house located on Lansdowne Rd and four times for the house on Lakehurst Rd.

To give lux figures to try to provide reference points to what the predicted illuminance values mean, we can mention some levels required by the Ontario Building Code:

- Minimum required level to light a hallway in a building (hotel, office space, etc) is 50 lux.
- Levels in theatre or cinema aisles during projection is 2 lux.
- Minimum levels in areas where food is processed is 500 lx
- Tennis courts at recreational level is 300 lx
- Average lux generated by a bulb in a dining room of 280 sq.ft. is 70 lx

Please also note the usage of the tennis courts will be done during the time of the year where playing outdoor sports is possible, which coincide with when trees have most of their foliage, acting as screens to the light spilling towards the neighbors. This condition was not considered in the light design since we wanted to arrive at the worst case scenario created by the new fixtures, meaning without any obstacle between the fixtures and the building walls and/or windows, which in reality won't be the case as there will be obstructions.

Please don't hesitate to let me know if you need anything else, we are happy to help.

Sincerely,

A handwritten signature in blue ink, enclosed in a thin black rectangular border. The signature is stylized and appears to read 'Ray del Cojo'.

Ray del Cojo, P.Eng, M.Sc. Engineering
Lightenco