Dufferin Aggregates
Teedon Pit Community
Liaison Committee Meeting
Minutes

Date:	Thursday, Nov. 1	6:30pm – 8:30pm
Location:	Wyebridge Community Centre, 8340 County Rd 93, Tiny, ON	
Chair:	John Matheson	StrategyCorp
Participants:	Cindy Hastings	Tiny Township City Councillor
	Peter Anderson	Local Neighbour
	Jessica Campitelli	Local Neighbour
	Christopher Williams	Local Neighbour
	David Barkey	Local Neighbour
	Erin Archer	Local Neighbour
	Judith Grant	Federation of Tiny Township Shoreline Associations
	Kevin Mitchell	CRH Canada Group, Inc.
	Jessica Ferri	CRH Canada Group, Inc.
Minutes:	Alicia Sinclair	StrategyCorp
Regrets:	Mohamed Mousa	Dufferin Aggregates
Guests:	Jenny Anderson	Local Neighbour
	Jaymie Brown	Local Neighbour
	Cindy Brown	Local Neighbour
	Anne Ritchie-Nahuis	Local Neighbour
	Steffan Walma	Deputy Mayor, Tiny Township
	Gary Lagos	GHD

Facilitator's Introduction

- The facilitator welcomed new members and guests to the Committee and congratulated Councillor Hastings on her recent municipal election victory. It was noted to new members and guests that the facilitators maintain a running list of the questions and issues raised at CLC meetings and that tonight's discussion is a continuation from the last meeting on the questions concerning water.

Approval of the Minutes

- The facilitator noted that no changes to the minutes from the September 13 CLC meeting were received, and the CLC proposed no further changes to the minutes during the meeting. The minutes were approved.

Notice of Pre-hearing Conference – Teedon Pit Extension (formally called Sibthorpe License Application)

- Dufferin representatives noted that a pre-hearing conference date has been set for their license application for the Teedon Pit extension. The purpose of the application is to extend the gravel pit northward onto the subject property, which requires a zoning by-law amendment. However, Dufferin noted that the proposed extension has been reduced in size from the original application. The details of the pre-hearing are:
    - Wednesday, December 5, 2018 at 10:30am at the Township Municipal Building, Council Chambers
- The purpose of the pre-hearing conference is to:
    - **Identify of parties**, who will have the right to participate by giving evidence, questioning witnesses and making opening and final arguments;
    - **Identify participants**, who can participate and make a statement to the Tribunal;
    - **Identify case issues**; and
    - **Set date for hearing, duration of hearing, direction for prefiling of witness lists, statements and evidence**.
- Dufferin explained that no decisions regarding the application will be made on December 5 at the pre-hearing.
- Dufferin explained that the public hearing will likely be in early February and that they will host a public information session in the last week of January for the CLC.

Hydrogeological Questions from the CLC

Dufferin and GHD began to respond to the running list of water-related questions at CLC Meeting #4 on September 13, 2018. Because time only permitted for a handful of questions at the September meeting, tonight's discussion focused on the remaining questions.

Question 2: Does the washing of aggregates impact water levels?

In answering Question 2 "Does the washing of aggregates impact water levels" on Slide 20 of the presentation, the following topics were raised:

- **Re: Abnormal Water Levels in Domestic Wells**
    - Dufferin representatives explained that they have installed 7 additional wells on the site since they have acquired it, which has allowed them to collect a significant amount of data. The hydrographs at the site show that no changes in water levels have occurred due to washing; changes in water levels occur due to natural seasonal fluctuations.
    - One participant noted that in July, there was a dry spell in the area, yet the water level in their well was two feet above historical norms. The participant explained that water is normally 24.6 ft below surface level, yet in July, it was 22 ft below surface level. They checked it again in September, at which point the water

levels in the well were back to the normal level. Because this observation, the participant raised skepticism that Dufferin was not impacting water levels. Because of this observation, the participant hypothesized that the Teedon Pit settling ponds were leaking water.

- Because this participant was not present at the last meeting during which the geological make-up of the aquitard was briefly addressed, GHD briefly explained why the settling ponds are not leaking water. Pointing to Figure 3, "Geologic/Hydrogeologic Cross-Section A-A'," GHD explained that they dig wells to learn about the site's geology. They extract core samples from the ground surface to the bottom of the well and measure grain size distribution, and, in addition, they collect soil samples to determine the amount of clay and gravel. The Ministry of Environment, Conservation, and Parks (MECP) observed this testing. GHD concluded that the local aquitard upon which the ponds are sitting is made of silt and clay and does not leak water.
- This conclusion is bolstered by data from pressure transducers in shallow wells near the source pond. If the pit operations impacted the water levels during the dry spell, it would have been visible from data from these monitoring wells.

- **Re: Impact on Upper Aquifer**
  - In response, the participant noted that they are concerned about the Upper Aquifer being impacted by settling and washing ponds and want to know about water moving in the Upper Aquifer.
    - GHD stated that data from two wells--Monitoring Well 7 and an adjacent shallow well—demonstrate that they are not impacting the Upper Aquifer. If they were, data from those wells confirm such movement, and they do not. They noted, however, that they do not measure the wetlands offsite.
  - During this discussion, another participant noted that Stamp Road used to have water surrounding it for years, which resulted in local flora in the area. However, the area no longer has standing water, which the participant noted is anecdotal evidence that something is changing the environment. As such, they hypothesize that Dufferin's activities are causing the wetlands to dry out, since the operation is the only new variable in the area. The participant asked GHD and Dufferin why the wetlands had dried out.
    - GHD noted that these are two conflicting observations: On the one hand, there are higher water levels for one neighbour, yet on the other hand, the wetlands area has dried out.
      - One participant reiterated that they want to know why their water levels in their well increased.
    - Pointing to Figure 2 "Geologic/Hydrogeologic Cross-Section Locations," and Figure 3 "Geologic/Hydrogeologic Cross-Section A-A'," Dufferin representatives noted that the participant who experienced higher water levels is located on one end of the pit where there are higher water levels

compared to the other side of the pit. However, GHD noted that they are not observing the same phenomenon in their hydrographs that the participant is observing. The participant reiterated that they have a high recharge rate, and Dufferin representatives agreed to put a data logger in the participant's well if the participant agreed.

- Returning to the issue of why the wetland area surrounding Stamp Pond has dried out, another participant noted that their friend also has a pond that has dried out. Participants were previously told they were in recharge areas, which conflicts with the observation of ponds drying out. Overall, participants emphasized that they are observing changes to their natural environment in a short period of time and that they want to know GHD's explanation for these changes.
    - GHD responded that changes in water levels are due to natural, seasonal fluctuations. Though the changes in water levels GHD has observed in the area of the Pit are due to seasonal fluctuations, they do not believe this would be different from the surrounding areas. Furthermore, GHD noted that they had observed flowing water in the wetland areas surrounding the Pit in October.
    - Dufferin representatives agreed to collect more data to understand the phenomenon.

- **Re: Groundwater Connectivity**
    - Participants questioned if groundwater pathways 30-50 ft below the surface were connected.
        - Dufferin representatives explained that connectivity between source water and ground water is complicated. They explained that the topography of the area changes rapidly and that Stamp Road has an escarpment. They also explained that they know that the ground water flow is perpendicular to the escarpment. Dufferin representatives noted that they would take more data on groundwater and surface water flow.
    - In response, one participant asked if water can move in multiple directions. They noted that the previous owners told them that the water flows West, but GHD noted in the last meeting that water flows East; however, GHD is measuring deep ground water only, not surface water, but they do not believe the surface water would be flowing a different way from the ground water. Pointing to Figure 2 "Geologic/Hydrogeologic Cross-Section Locations," GHD explained they have shallow wells in the eastern and western sides of the Pit, which allows them to determine where the water is moving. They noted that they also have a shallow well and deep well north of pit and that there is not a hydraulic gradient to the north.

- **Re: Collapsed Well Onsite**
    - In the September meeting, Dufferin representatives explained that they had been experiencing unusually high water table reporting from a particular well that went

through the aquitard. They believed the well had collapsed. They reported that they now understand that the well itself collapsed because the bentonite, which surrounds the well casing and acts as a sanitary seal, was getting into the well itself, likely due to a loose joint. The bentonite filled the well 20 meters, which was still well below the water table. However, water continued to accumulate inside the well and could not move up or down, creating the illusion that the water table was higher than it actually was.

        - Participants asked if an independent party could validate this set of facts. Dufferin representatives explained that Vincent Bsulman from MECP was given this information and that the MECP observed the re-drilling of the well. The well is now reporting normal water levels.

- **Re: Concerns About Data**
    - CLC members expressed concerns that the monitoring wells have not been in long enough to have meaningful data and that they were concerned that GHD and Dufferin were making assumptions not supported by data. They explained that a hydrogeologist from Simcoe County suggested that there were not enough wells in the area to collect meaningful data, and another hydrogeologist said that water levels in wells would go up if the Upper Aquifer was impacted, which was the phenomenon that one participant experienced.
        - Dufferin representatives responded that the comment about the lack of monitoring wells was related to the Sibthorpe extension site, not the Permit to Take Water license.
    - The participants noted that to their knowledge, prior to aggregate operations, the local wells were not being impacted. Furthermore, they noted that Dufferin should not pursue expansion without sufficient data from the wells.
        - Dufferin representatives noted that their current data taking methods are comprehensive, and they believe their data is sufficient to make decisions regarding expansion.

- **Re: Turbidity and Impact on Water Quality**
    - The participants requested that silt monitors be placed in the wells for measuring turbidity.
        - GHD responded that there is fine to coarse sand that has silt in it naturally. The Ruland report said that there is a silt plume that may be traveling in ground water. GHD responded that this is not possible.
    - However, a participant noted that GHD and Dufferin should look at the pumping wells and its impact on turbidity. They explained that the water table is moving up and down quickly in the pumping well, going from 231M to 238M. Because there is a reasonable amount of activity on a daily basis, they hypothesized that turbidity may be seen in the pumping well. They wanted to know if the operations were pumping silty water from the pumping well and if GHD and Dufferin could put turbidity monitors in the pumping well.

        - GHD did not think this was the case because pumping well comes out the pipe and into source pond and it's not silty water. There's not a silt plume. You would see discoloration if it existed. CRH said that the sump pond is clear. And if there was silt, it would be brown.
    - Overall, the participants noted that when there are no operations, the water is clear, but when operations begin, there are water problems. When there's no operations, the water is clear. When they start to operate, that is when water problems occur.

- **Re: Silt in Domestic Wells**
    - Another participant noted that he also has silt in their wells during the months that Dufferin operating the pit. He has had his well screen pulled and cleaned, but during operations, there is grey water or orange water. Furthermore, this participant's neighbour cannot use their well water for the same reason. They have lived there for 14 years and did not experience these types of water issues until there were operations in the pit in 2008. Furthermore, during the winter, the issues cease, which leads the participant to believe that the pit operations cause the grey and orange water.
    - One participant agreed that silt does not move through silt, but they noted that they have experiences of natural recharge plumes arising from springs that are milky. They questioned if this was silty water traveling through silt. This participant also noted that they do not think the existing pit is the source of the problems.

- **Re: The Possibility of "Water Hammer"**
    - One participant raised the hypothesis that perhaps the pit operations are creating "water hammer," which may be the cause of the silt in the water. The participant explained that all city water is regulated to below 90 PSI because when residents turn water taps on and quick shut them off at a certain velocity, they can blow the pipes. In effect, it causes a wave of pressure that can damage pipes. Applying this theory to the pit operations, perhaps turning the pumping well on and off are creating pressure waves that are agitating natural silts offsite. Or, if not pressure waves from the pumping well, perhaps vibrations from the machines are causing agitation near the domestic wells. The participant noted that after the vibrations ceased, the silt in their water stopped.
        - GHD responded that the geology around the pumping well has 30% porosity, so the comparison to a pipe of water with only air in it is not a fair comparison.
    - The participant clarified that their hypothesis was not that the pressure wave was causing silty water to travel to the domestic wells—they noted that silt cannot travel through silt. They explained that their hypothesis was that a pressure wave was agitating the area surrounding the domestic wells, which may be causing silt near the domestic wells to be present in domestic water. The participant noted

that he wanted GHD and Dufferin to have an open mind about exploring this hypothesis.
    - GHD questioned how large of a pressure wave the turning on and off of water in the pumping well could create because water level in the pumping wells are moving only 8M up and down. In the monitoring wells 200M away from the pit operations, the change in the water level of the wells is only 50 cm. Furthermore, the representative from GHD has worked on 100 wells and has never experienced such a phenomenon. In other words, GHD did concede that water hammers can happen in wells, but they were not convinced that the type of water hammer in a well would create a pressure wave through the aquitard.
  - The participant responded that perhaps GHD and Dufferin could pump less water each day to see if that solves the problem. Additionally, they proposed installing a pressure reader.
    - GHD responded that if there was a pressure wave traveling through the ground, then the water level would rise. They would see a "tsunami" effect in the water level, but this has not been the case. Furthermore, they collect barometric pressure data, but they have not seen anything unusual.
  - The participant again requested that GHD have an open mind to exploring this hypothesis of pressure waves agitating silts near domestic wells. They asked if there were ways to test this hypothesis.
    - GHD explained again that changes in water level would be a sign of a pressure wave. Though they have not seen signs to suggest this hypothesis is correct, they agreed to collecting data to test this theory. They also noted that because the geology that surrounds the wells are not homogenous along the length of the well, pressure waves may act differently at different spots near the well.

Question 3: The existing Teedon Pit is approved to extract to 1.5 m above the highwater table. Is this sufficient to protect the water table?

In answering Question 3 "The existing Teedon Pit is approved to extract to 1.5 m above the highwater table. Is this sufficient to protect the water table?" on Slide 21 of the presentation, the following topics were raised:

- **Re: Impact on Water Safety**
  - One participant noted that domestic wells cannot put placed within 100M of an outhouse, septic tank, etc., otherwise the water would not be considered safe. This distance is up from the 30M that was previously considered standard. The participant conceded that Dufferin does not create the standards, but they questioned whether or not 1.5M is truly safe for extraction.
    - Pointing to Figure 11 "MW1-09 Hydrograph," GHD explained that they measure the highest water table and add 1.5M to the highest level. Because the West side of the pit has a higher water table, they used this water table. Dufferin said their maximum extraction depth is 40M, though

they needed to confirm this number to be certain. Furthermore, they explained that while the pit is industrial, they are not using chemicals.
        - Participants noted that though Dufferin is not using chemicals, the machinery could leak and cause contamination, so why not provide at least a 10M buffer?
            - GHD responded that the Ministry sets the standards for operation.
    - Participants then asked if the 1.5M buffer is sufficient if there are recycled materials coming into the site?
        - GHD explained the 1.5M buffer is sufficient because if they were to store a material like recycled asphalt on the site, it would be in the construction area. However, because they recently acquired the license, there is not room to store asphalt currently. The area is restricted, and they are following the site plan. They would notify the CLC if they planned to bring recycled asphalt into the site.
        - Participants asked if Dufferin sells blended products, and Dufferin explained that they sell what their clients want and that their clients know what they are receiving when they request blended products.
    - One participant asked again whether or not GHD believed that the 1.5M buffer was truly sufficient to protect the water.
        - GHD responded that in his professional experience, he had never seen aggregate operations as the source of contamination in any studies. In this case, “contamination” means a “chemical contamination.” There has not been a case where the source of contamination affected water supplies nearby. There has been no contamination in domestic or commercial water supplies locally; no contamination in private water supplies.

- **Re: Impact on Aquitard**
    - Dufferin explained that if they were excavating and hit the aquitard, they would need to see how thick the aquitard was. Right now, they know the minimum thickness of the aquitard.

Question 4: Does removing aggregate take away the natural filter?

In answering Question 4: “Does removing aggregate take away the natural filter?” on Slide 22 of the presentation, the following topics were raised:

- **Re: Impact on Filtering Capacity**
    - GHD explained that their work is not affecting the filtering capacity of the geology by removing the sand and gravel and that their work is not degrading the water. They explained that most water degradation process happen below the water table.

Question 5: Can the settling ponds be lined?

In answering Question 5 “Can the settling ponds be lined?” on Slide 23 of the presentation,

Dufferin and GHD explained that the settling ponds are lined naturally by the fine-grained material removed by aggregate washing and that this is a common practice in the aggregate industry; Dufferin is not doing anything different. Dufferin is aware that some operators line sump ponds because the ponds cannot hold water in sand and gravel, but this is not the case for Teedon Pit. They intend to keep the pond where it is currently located.

Question 6: Is more monitoring needed? Is there an impact on the Alliston Aquifer?

In answering Question 6 "Is more monitoring needed? Is there an impact on the Alliston Aquifer?" on Slide 24 of the presentation, Dufferin explained that they conduct significant monitoring on the site and that the monitoring they conduct is standard practice.

Question 10: It has been said "it is the world's cleanest water", should the precautionary principle be used?

In answering Question 10 "It has been said 'it is the world's cleanest water', should the precautionary principle be used?" on Slide 28 of the presentation, the following topics were discussed:

- **Re: Differing Assumptions in Research**
    - GHD explained that they were not disputing the findings of the paper, but they were disputing different assumptions being made in the paper. They explained that are two different hydrogeological characteristics between the location that the Shotyk paper examined and the location of the pit. GHD explained that the area referred to in the paper was a discharge zone in the Simcoe Lowlands, not a recharge zone in the Simcoe Uplands, which is what the area of the pit is.
        - Participants questioned whether this distinction would make a difference, but GHD explained that the discharge zone would have different geological features than a recharge zone.
    - Participants noted that Shotyk had been testing one of the local neighbour's wells, who is near the area of the pit.
    - Participants noted that this is worthy of further study and worthy of protection. They noted that scientists across Canada have called this water "the world's purest water." They explained that they are concerned that Dufferin is removing a filter cloth that has produced this clean water.
        - GHD emphasized that they are not saying the water is dirty; they are noting that the study is not applied to the area that the pit sits on. There was a disagreement among GHD and the participants as to what samples Shotyk used. GHD believed that the study was taken from the lowlands, but the participants believe it was also taken from the top of the hill, which would include the area of the pit.

<u>The LPAT Process and Site Expansion Application</u>

- Dufferin representatives reminded the group that there is a pre-hearing conference on Wednesday December 5 at 10:30am. Dufferin will then hold a public information session in January, and hearing process will go on for a year.
- Dufferin reminded the group that the pre-hearing is just the beginning of the formal process.

- Dufferin explained that proposing a smaller area for the site they are acquiring due to ecological concerns.

Status of PTTW

- Dufferin representatives explained that the Status of the PTTW will show up on the ERB portal and that it will explain how many days participants have to appeal the decision.
- Participants expressed concern that First Nations groups have not been sufficiently consulted on the matter. Dufferin explained that the Ministry is reaching out to the First Nations groups and that Dufferin also reached out to First Nations groups. Though several groups declined, the Metis agreed to meet. The other groups took the information and did not want to meet, but the Ministry will continue to try to engage with them.
    - It was also noted that there was a First Nations member at Meeting #4, but that this person was a guest at the meeting for information.

Reclamation on Site

- Dufferin explained that they are working southward on the site and that they will conduct reclamation activities as they complete operations. They explained they do not remove trees during bird mating seasons.
    - One participant noted that they would like to see more reclamation activities near their property near the pit.

MW1-09 Hydrograph and Pump Well

- One participant asked why Dufferin stated that there was a .5M difference in water level variation in one well but then the hydrograph showed a 7M variation? Dufferin explained that the .5M difference was in a monitoring well, while the 7M variation was in the pump well. The confusion occurred due to a misinterpretation of the well labels, and the participant was satisfied with the clarification.

Next Meeting

- The tentative date for the next CLC meeting is Tuesday, January 29, 2018.