

Combined Sewage Storage Tunnel (CSST) Site 5 Projected Construction Sequencing Summary

November 23, 2017

This table should be considered a living document and presents a best estimate based on the Contractor's submitted construction schedule and the project team's general experience with similar activities. Contractually, the Contractor is NOT required to adhere to this detailed schedule. The Contractor will be submitting detailed schedules and management plans prior to undertaking each main component of this work.

Task *(1)	Work Location	Start Date	End Date	Duration	Details of Work	Truck and Noise *(2)
November 2016						
IOS Locating & Phase 2 Archaeological Investigation	Site 5a (Stanley Park – Main Chamber and Odour Control Building Area)	Mid November 2016	Early December 2016	2-3 weeks (COMPLETE)	Drill rig will be setup in Stanley Park to core down and find exact location of existing 15m-deep trunk sewer (IOS). Drill rigs used to core down are not excessively noisy. Daytime drilling expected. Little to no material trucking - just drilling crew. Access along pathway. During roughly same period, a Stage 2 archaeological investigation will take place.	Modest noise. Negligible trucking.
December 2016						
IOS Locating & Phase 2 Archaeological Investigation	Site 5a (Stanley Park – Main Chamber and Odour Control Building Area)	Mid November 2016	Early December 2016	2-3 weeks (COMPLETE)	Drill rig will be setup in Stanley Park to core down and find exact location of existing 15m-deep trunk sewer (IOS). Drill rigs used to core down are not excessively noisy. Daytime drilling expected. Little to no material trucking - just drilling crew. Access along pathway. During roughly same period, a Stage 2 archaeological investigation will take place.	Modest noise. Negligible trucking.
March 2017						
Tree Clearing	Site 5a (Stanley Park – Main Chamber and Odour Control Building Area)	Early March 2017	Late March 2017	2-3 weeks (COMPLETE)	Activities would be limited to clearing of larger trees outside of the bird nesting season. Stumps and smaller brushes would be left on site for later removal. Tree grabbers, chainsaws, tub grinders and grinders for branches will be used at the site. There will be some noise due to grinding and from the engine of the tub grinder. Daytime work only. Trucking will include hauling felled trees and mulch off site.	Some noise from tree cutting. Modest trucking.
Traffic Control, Hoarding/Fencing, Site Setup, Tree Protection	Site 5a (Stanley Park – Main Chamber and Odour Control Building Area)	Early March 2017	Mid May 2017	7-8 weeks (COMPLETE)	Site setup activities, including installation of the hoarding/fencing and tree protection measures. Modest trucking (fence delivery, etc) and noise.	Modest noise. Negligible trucking.
April 2017						
Traffic Control, Hoarding/Fencing, Site Setup, Tree Protection	Site 5a (Stanley Park – Main Chamber and Odour Control Building Area)	Early March 2017	Mid May 2017	7-8 weeks (COMPLETE)	Site setup activities, including installation of the hoarding/fencing and tree protection measures. Modest trucking (fence delivery, etc) and noise.	Modest noise. Negligible trucking.
Build and Grade Temporary Access Roads & Pathways	Site 5a (Stanley Park – Main Chamber and Odour Control Building Area)	Early April 2017	Late April 2017	3-4 weeks (COMPLETE)	Converting the pathway to truck access route (making it more robust), and constructing pathway detours for park users. Will include hauling granular material (3-4 trucks per hour for about a week) and spreading the granular material (bulldozer/grader). Additionally, there would be 3-4 empty trucks per hour leaving the site. Some multi-use temporary pathways also require paving (small pathway paving equipment - one day).	Modest noise. Heavier trucking.
Traffic Control, Hoarding/Fencing, Site Setup, Utility Relocation and Temporary Sewer Bypass	Site 5c (Rideau River Collector - Overflow Diversion Chamber - At intersection of River Lane & Queen Victoria (4))	Early April 2017	Mid to late June 2017	12 weeks (COMPLETE)	Site setup activities, including installation of the fencing and relocation of utilities and sewers as required. Some noise during hoarding installation and modest trucking (delivery of fences/piping, hauling away of some material excavated for these relocations, etc).	Modest noise. Modest trucking.
May 2017						
Traffic Control, Hoarding/Fencing, Site Setup, Tree Protection	Site 5a (Stanley Park – Main Chamber and Odour Control Building Area)	Early March 2017	Mid May 2017	7-8 weeks (COMPLETE)	Site setup activities, including installation of the hoarding/fencing and tree protection measures. Modest trucking (fence delivery, etc) and noise.	Modest noise. Negligible trucking.

Task *(1)	Work Location	Start Date	End Date	Duration	Details of Work	Truck and Noise *(2)
Traffic Control, Hoarding/Fencing, Site Setup, Utility Relocation and Temporary Sewer Bypass	Site 5c (Rideau River Collector - Overflow Diversion Chamber - At intersection of River Lane & Queen Victoria (4))	Early April 2017	Mid to late June 2017	12 weeks (COMPLETE)	Site setup activities, including installation of the fencing and relocation of utilities and sewers as required. Some noise during hoarding installation and modest trucking (delivery of fences/piping, hauling away of some material excavated for these relocations, etc).	Modest noise. Modest trucking.
Construction of Secant Wall	Site 5a (Stanley Park – Main Chamber and Odour Control Building Area)	Early May 2017	Mid June 2017	4-6 weeks (COMPLETE)	Secant wall is a circular watertight enclosure around a deep excavation area (e.g. for a chamber). It is installed before removing the earth in order to mitigate affecting the groundwater table around the excavation. Activities consists of drilling vertically into soil, installing secant piles in a large circle and grouting the circumference to make the chamber area watertight. Handling of the seccant piles could generate some noise. Noise Bylaw limits apply to any nighttime work. Marginal trucking for materials and some soils. A small amount of potentially contaminated soil may require disposal off-site during this phase.	Some loud noise associated with driving sheet piles. Modest trucking.
Construction of Odour Control Building	Site 5a (Stanley Park – Main Chamber and Odour Control Building Area)	Mid May 2017	Mid July 2018	50-55 weeks (13 months)	Typical building construction with material and equipment being delivered to site as required.	Modest noise. Modest trucking.
Utility Relocation	Site 5c (Rideau River Collector - Overflow Diversion Chamber - At intersection of River Lane & Queen Victoria (4))	Mid May 2017	Early October 2017	12-13 weeks (COMPLETE)*	Relocation of communication lines by the utility companies from above-ground to underground.	Some noise due to rock excavation. Modest trucking. Short Periods of loud noises to install poles.

June 2017

Traffic Control, Hoarding/Fencing, Site Setup, Utility Relocation and Temporary Sewer Bypass	Site 5c (Rideau River Collector - Overflow Diversion Chamber - At intersection of River Lane & Queen Victoria (4))	Early April 2017	Mid to late June 2017	12 weeks (COMPLETE)	Site setup activities, including installation of the fencing and relocation of utilities and sewers as required. Some noise during hoarding installation and modest trucking (delivery of fences/piping, hauling away of some material excavated for these relocations, etc).	Modest noise. Modest trucking.
Construction of Secant Wall	Site 5a (Stanley Park – Main Chamber and Odour Control Building Area)	Early May 2017	Mid June 2017	4-6 weeks (COMPLETE)	Secant wall is a circular watertight enclosure around a deep excavation area (e.g. for a chamber). It is installed before removing the earth in order to mitigate affecting the groundwater table around the excavation. Activities consists of drilling vertically into soil, installing secant piles in a large circle and grouting the circumference to make the chamber area watertight. Handling of the seccant piles could generate some noise. Noise Bylaw limits apply to any nighttime work. Marginal trucking for materials and some soils. A small amount of potentially contaminated soil may require disposal off-site during this phase.	Some loud noise associated with driving sheet piles. Modest trucking.
Construction of Odour Control Building	Site 5a (Stanley Park – Main Chamber and Odour Control Building Area)	Mid May 2017	Mid July 2018	50-55 weeks (13 months)	Typical building construction with material and equipment being delivered to site as required.	Modest noise. Modest trucking.
Utility Relocation	Site 5c (Rideau River Collector - Overflow Diversion Chamber - At intersection of River Lane & Queen Victoria (4))	Mid May 2017	Early October 2017	12-13 weeks (COMPLETE)*	Relocation of communication lines by the utility companies from above-ground to underground.	Some noise due to rock excavation. Modest trucking. Short Periods of loud noises to install poles.

July 2017

Task *(1)	Work Location	Start Date	End Date	Duration	Details of Work	Truck and Noise *(2)
Construction of Odour Control Building	Site 5a (Stanley Park – Main Chamber and Odour Control Building Area)	Mid May 2017	Mid July 2018	50-55 weeks (13 months)	Typical building construction with material and equipment being delivered to site as required.	Modest noise. Modest trucking.
Utility Relocation	Site 5c (Rideau River Collector - Overflow Diversion Chamber - At intersection of River Lane & Queen Victoria (4))	Mid May 2017	Early October 2017	12-13 weeks (COMPLETE)*	Relocation of communication lines by the utility companies from above-ground to underground.	Some noise due to rock excavation. Modest trucking. Short Periods of loud noises to install poles.
Earth Excavation	Site 5a (Stanley Park – Main Chamber and Odour Control Building Area)	Early July 2017	Late July 2017	4 weeks (COMPLETE)	Once secant walls are built, the earth inside will be removed in order to build the chambers and will be trucked off-site. Some potentially contaminated material could be encountered during the earth excavation for trucking and disposal off-site. Applies to 2 chamber locations at Site 5a (main area). Expect to generate 3-4 trucks per hour hauling excavated earth off-site. Trucks must pass through wash bay prior to exiting the site. There will also be another 3-4 empty trucks returning to the site each hour during this period.	Modest noise. Heavier trucking.
Installation of Collar Beam	Site 5a (Stanley Park – Main Chamber and Odour Control Building Area)	Late July 2017	Mid August 2017	2-3 weeks (COMPLETE)	Shoring for deep excavations. No trucking other than bringing some material in.	Modest Noise. Negligible trucking.
Rock Excavation	Site 5a (Stanley Park – Main Chamber and Odour Control Building Area)	Late July 2017	Mid December 2017	20 weeks	Includes preparations (small amount of hoe ramming) for future rock excavation using drilling and blasting methods. Will also involve shotcrete and rockbolt installation. Trucking frequency will be low as rock removal is a slow operation compared to earth removal.	Some loud noise from breaking rock. Modest trucking.
Earth Excavation	Site 5b (Stanley Park – Closer to Queen Victoria Access)	Mid July 2017	Late July 2017	1 week (COMPLETE)	Once shoring is installed, the earth material will be excavated and trucked away (maybe 3 trucks per hour for 3-4 days – small volume). The same frequency of empty trucks would also return to the site. Note that some potentially contaminated material could be encountered during the earth excavation for trucking and disposal off-site.	Modest Noise. Heavier trucking (very short duration) when moving soil.
August 2017						
Construction of Odour Control Building	Site 5a (Stanley Park – Main Chamber and Odour Control Building Area)	Mid May 2017	Mid July 2018	50-55 weeks (13 months)	Typical building construction with material and equipment being delivered to site as required.	Modest noise. Modest trucking.
Utility Relocation	Site 5c (Rideau River Collector - Overflow Diversion Chamber - At intersection of River Lane & Queen Victoria (4))	Mid May 2017	Early October 2017	12-13 weeks (COMPLETE)*	Relocation of communication lines by the utility companies from above-ground to underground.	Some noise due to rock excavation. Modest trucking. Short Periods of loud noises to install poles.
Installation of Collar Beam	Site 5a (Stanley Park – Main Chamber and Odour Control Building Area)	Late July 2017	Mid August 2017	2-3 weeks (COMPLETE)	Shoring for deep excavations. No trucking other than bringing some material in.	Modest Noise. Negligible trucking.
Rock Excavation	Site 5a (Stanley Park – Main Chamber and Odour Control Building Area)	Late July 2017	Mid December 2017	20 weeks	Includes preparations (small amount of hoe ramming) for future rock excavation using drilling and blasting methods. Will also involve shotcrete and rockbolt installation. Trucking frequency will be low as rock removal is a slow operation compared to earth removal.	Some loud noise from breaking rock. Modest trucking.

Task *(1)	Work Location	Start Date	End Date	Duration	Details of Work	Truck and Noise *(2)
Noise Barrier Construction	Site 5b (Stanley Park – Closer to Queen Victoria Access)	Mid August 2017	Early October 2017	6-7 Weeks (COMPLETE)	Erection of noise barrier system on both sides of the 5b construction access gate. Work activities will include installation of fence posts, and construction of wood sound barrier materials.	Modest noise. Modest trucking.
September 2017						
Construction of Odour Control Building	Site 5a (Stanley Park – Main Chamber and Odour Control Building Area)	Mid May 2017	Mid July 2018	50-55 weeks (13 months)	Typical building construction with material and equipment being delivered to site as required.	Modest noise. Modest trucking.
Utility Relocation	Site 5c (Rideau River Collector - Overflow Diversion Chamber - At intersection of River Lane & Queen Victoria (4))	Mid May 2017	Early October 2017	12-13 weeks (COMPLETE)*	Relocation of communication lines by the utility companies from above-ground to underground.	Some noise due to rock excavation. Modest trucking. Short Periods of loud noises to install poles.
Rock Excavation	Site 5a (Stanley Park – Main Chamber and Odour Control Building Area)	Late July 2017	Mid December 2017	20 weeks	Includes preparations (small amount of hoe ramming) for future rock excavation using drilling and blasting methods. Will also involve shotcrete and rockbolt installation. Trucking frequency will be low as rock removal is a slow operation compared to earth removal.	Some loud noise from breaking rock. Modest trucking.
Noise Barrier Construction	Site 5b (Stanley Park – Closer to Queen Victoria Access)	Mid August 2017	Early October 2017	6-7 Weeks (COMPLETE)	Erection of noise barrier system on both sides of the 5b construction access gate. Work activities will include installation of fence posts, and construction of wood sound barrier materials.	Modest noise. Modest trucking.
Rock Excavation	Site 5b (Stanley Park - Closer to Queen Victoria Access)	Early September 2017	Early October 2017	3-4 weeks (COMPLETE)	Rock excavation will involve hoe ramming, drilling, blasting, shotcrete and bolt installation, as well as trucking away excavated rock. Trucking frequency will be low as rock removal is a slow operation compared to earth removal.	Some loud noise associated with drilling
October 2017						
Construction of Odour Control Building	Site 5a (Stanley Park – Main Chamber and Odour Control Building Area)	Mid May 2017	Mid July 2018	50-55 weeks (13 months)	Typical building construction with material and equipment being delivered to site as required.	Modest noise. Modest trucking.
Utility Relocation	Site 5c (Rideau River Collector - Overflow Diversion Chamber - At intersection of River Lane & Queen Victoria (4))	Mid May 2017	Early October 2017	12-13 weeks (COMPLETE)*	Relocation of communication lines by the utility companies from above-ground to underground.	Some noise due to rock excavation. Modest trucking. Short Periods of loud noises to install poles.
Rock Excavation	Site 5a (Stanley Park – Main Chamber and Odour Control Building Area)	Late July 2017	Mid December 2017	20 weeks	Includes preparations (small amount of hoe ramming) for future rock excavation using drilling and blasting methods. Will also involve shotcrete and rockbolt installation. Trucking frequency will be low as rock removal is a slow operation compared to earth removal.	Some loud noise from breaking rock. Modest trucking.
Noise Barrier Construction	Site 5b (Stanley Park – Closer to Queen Victoria Access)	Mid August 2017	Early October 2017	6-7 Weeks (COMPLETE)	Erection of noise barrier system on both sides of the 5b construction access gate. Work activities will include installation of fence posts, and construction of wood sound barrier materials.	Modest noise. Modest trucking.
Rock Excavation	Site 5b (Stanley Park - Closer to Queen Victoria Access)	Early September 2017	Early October 2017	3-4 weeks (COMPLETE)	Rock excavation will involve hoe ramming, drilling, blasting, shotcrete and bolt installation, as well as trucking away excavated rock. Trucking frequency will be low as rock removal is a slow operation compared to earth removal.	Some loud noise associated with drilling
Rock Excavation	Site 5A (Stanley Park - IOS Shaft)	Early October 2017	Late January 2018	16 weeks	Includes preparations (small amount of hoe ramming) for future rock excavation using drilling and blasting methods. Will also involve shotcrete and rockbolt installation. Trucking frequency will be low as rock removal is a slow operation compared to earth removal	Some loud noise from breaking rock. Modest trucking.
November 2017						

Task *(1)	Work Location	Start Date	End Date	Duration	Details of Work	Truck and Noise *(2)
Construction of Odour Control Building	Site 5a (Stanley Park – Main Chamber and Odour Control Building Area)	Mid May 2017	Mid July 2018	50-55 weeks (13 months)	Typical building construction with material and equipment being delivered to site as required.	Modest noise. Modest trucking.
Rock Excavation	Site 5a (Stanley Park – Main Chamber and Odour Control Building Area)	Late July 2017	Mid December 2017	20 weeks	Includes preparations (small amount of hoe ramming) for future rock excavation using drilling and blasting methods. Will also involve shotcrete and rockbolt installation. Trucking frequency will be low as rock removal is a slow operation compared to earth removal.	Some loud noise from breaking rock. Modest trucking.
Rock Excavation	Site 5A (Stanley Park - IOS Shaft)	Early October 2017	Late January 2018	16 weeks	Includes preparations (small amount of hoe ramming) for future rock excavation using drilling and blasting methods. Will also involve shotcrete and rockbolt installation. Trucking frequency will be low as rock removal is a slow operation compared to earth removal	Some loud noise from breaking rock. Modest trucking.
MicroTunnel Launch Shaft Setup	Site 5b (Stanley Park - Closer to Queen Victoria Access)	Early November 2017	Late December 2017	5-6 weeks	Activities for this phase include the setup of the shaft for the purposes of microtunneling. This will involve the pouring of concrete and setting rails for the equipment, as well as drilling the pilot hole.	Some modest noise within the shaft. Modest trucking
Noise Barrier Construction	Site 5c (Rideau River Collection – Overflow Diversion Chamber – At Intersection of River Lane & Queen Victoria (4)	Mid November 2017	Late December 2017	5-6 weeks	Erection of noise barrier system around the perimeter of Site 5c. Work activities will include installation of concrete blocks for foundations, construction of metal framing, and hanging of sound barrier material.	Some loud noise associated with excavation for gates. Modest Trucking.
December 2017						
Construction of Odour Control Building	Site 5a (Stanley Park – Main Chamber and Odour Control Building Area)	Mid May 2017	Mid July 2018	50-55 weeks (13 months)	Typical building construction with material and equipment being delivered to site as required.	Modest noise. Modest trucking.
Rock Excavation	Site 5a (Stanley Park – Main Chamber and Odour Control Building Area)	Late July 2017	Mid December 2017	20 weeks	Includes preparations (small amount of hoe ramming) for future rock excavation using drilling and blasting methods. Will also involve shotcrete and rockbolt installation. Trucking frequency will be low as rock removal is a slow operation compared to earth removal.	Some loud noise from breaking rock. Modest trucking.
Rock Excavation	Site 5A (Stanley Park - IOS Shaft)	Early October 2017	Late January 2018	16 weeks	Includes preparations (small amount of hoe ramming) for future rock excavation using drilling and blasting methods. Will also involve shotcrete and rockbolt installation. Trucking frequency will be low as rock removal is a slow operation compared to earth removal	Some loud noise from breaking rock. Modest trucking.
MicroTunnel Launch Shaft Setup	Site 5b (Stanley Park - Closer to Queen Victoria Access)	Early November 2017	Late December 2017	5-6 weeks	Activities for this phase include the setup of the shaft for the purposes of microtunneling. This will involve the pouring of concrete and setting rails for the equipment, as well as drilling the pilot hole.	Some modest noise within the shaft. Modest trucking
Noise Barrier Construction	Site 5c (Rideau River Collection – Overflow Diversion Chamber – At Intersection of River Lane & Queen Victoria (4)	Mid November 2017	Late December 2017	5-6 weeks	Erection of noise barrier system around the perimeter of Site 5c. Work activities will include installation of concrete blocks for foundations, construction of metal framing, and hanging of sound barrier material.	Some loud noise associated with excavation for gates. Modest Trucking.
January 2018						
Construction of Odour Control Building	Site 5a (Stanley Park – Main Chamber and Odour Control Building Area)	Mid May 2017	Mid July 2018	50-55 weeks (13 months)	Typical building construction with material and equipment being delivered to site as required.	Modest noise. Modest trucking.
Rock Excavation	Site 5A (Stanley Park - IOS Shaft)	Early October 2017	Late January 2018	16 weeks	Includes preparations (small amount of hoe ramming) for future rock excavation using drilling and blasting methods. Will also involve shotcrete and rockbolt installation. Trucking frequency will be low as rock removal is a slow operation compared to earth removal	Some loud noise from breaking rock. Modest trucking.

Task *(1)	Work Location	Start Date	End Date	Duration	Details of Work	Truck and Noise *(2)
Setup Tunnel Launch Shaft	Site 5a (Stanley Park – Main Chamber and Odour Control Building Area)	Early January 2018	Early May 2018	10-12 weeks	Includes pouring mud slab, hand-mining tail and starter tunnels. Will include trucking, but low frequency due to slow progress of hand-mining 35m long tail tunnel and 30m starter tunnel to prepare for the Tunnel Boring Machine (TBM) insertion. Modest noise would include handling of excavated rock (loading trucks).	Modest noise. Modest trucking.
Shoring, Earth Excavation, and Rock Excavation	Site 5c (Rideau River Collector - Overflow Diversion Chamber - At intersection of River Lane & Queen Victoria (4))	Mid January 2018	Early April 2018	10 weeks	Installation of shoring will generate some noise - limited to daytime. Modest trucking - limited to hauling shoring material and perhaps some volumes of rock and earth may be hauled away. Earth excavation will require an excavator; soil will be hauled away in trucks (2-3 per hour). Rock excavation will involve drilling, hoe- ramming, shotcrete and bolt installation, as well as trucking away excavated rock. Trucking frequency will be low as rock removal is a slow operation compared to earth removal.	Loud noise resulting from hoe-ramming and rock handling. Modest trucking.
February 2018						
Construction of Odour Control Building	Site 5a (Stanley Park – Main Chamber and Odour Control Building Area)	Mid May 2017	Mid July 2018	50-55 weeks (13 months)	Typical building construction with material and equipment being delivered to site as required.	Modest noise. Modest trucking.
Setup Tunnel Launch Shaft	Site 5a (Stanley Park – Main Chamber and Odour Control Building Area)	Early January 2018	Early May 2018	10-12 weeks	Includes pouring mud slab, hand-mining tail and starter tunnels. Will include trucking, but low frequency due to slow progress of hand-mining 35m long tail tunnel and 30m starter tunnel to prepare for the Tunnel Boring Machine (TBM) insertion. Modest noise would include handling of excavated rock (loading trucks).	Modest noise. Modest trucking.
Shoring, Earth Excavation, and Rock Excavation	Site 5c (Rideau River Collector - Overflow Diversion Chamber - At intersection of River Lane & Queen Victoria (4))	Mid January 2018	Early April 2018	10 weeks	Installation of shoring will generate some noise - limited to daytime. Modest trucking - limited to hauling shoring material and perhaps some volumes of rock and earth may be hauled away. Earth excavation will require an excavator; soil will be hauled away in trucks (2-3 per hour). Rock excavation will involve drilling, hoe- ramming, shotcrete and bolt installation, as well as trucking away excavated rock. Trucking frequency will be low as rock removal is a slow operation compared to earth removal.	Loud noise resulting from hoe-ramming and rock handling. Modest trucking.
Construction of Large Chambers	Site 5A (Stanley Park - IOS Shaft)	Late February 2018	Early October 2018	32 weeks (8 months)	Construction of chambers includes the following components: micro piles installation, structure floor, walls and roof construction, ventilation duct, installation of gates, ladders and steps, and backfill. Materials and concrete being delivered to site as required.	Modest noise. Modest trucking.
Micro-Tunneling of Diversion Sewer (5b to EWT Outlet Chamber - main shaft)	Site 5b & 5a (Stanley Park - Closer to Queen Victoria Access)	Early February 2018	Mid March 2018	6-7 weeks	Includes installation of tunneling equipment, 5-6 weeks of back reaming along that pilot hole, and finishing the grouting. The reaming operation (which consists of enlarging the smaller pilot hole to the size required for the sewer) is expected to produce the most trucking as it generates spoils (crushed rock) to be hauled away. Could fill one or two trucks per hour at its peak for that 5-6 week period.	Modest noise. Modest trucking.
March 2018						
Construction of Odour Control Building	Site 5a (Stanley Park – Main Chamber and Odour Control Building Area)	Mid May 2017	Mid July 2018	50-55 weeks (13 months)	Typical building construction with material and equipment being delivered to site as required.	Modest noise. Modest trucking.
Setup Tunnel Launch Shaft	Site 5a (Stanley Park – Main Chamber and Odour Control Building Area)	Early January 2018	Early May 2018	10-12 weeks	Includes pouring mud slab, hand-mining tail and starter tunnels. Will include trucking, but low frequency due to slow progress of hand-mining 35m long tail tunnel and 30m starter tunnel to prepare for the Tunnel Boring Machine (TBM) insertion. Modest noise would include handling of excavated rock (loading trucks).	Modest noise. Modest trucking.
Shoring, Earth Excavation, and Rock Excavation	Site 5c (Rideau River Collector - Overflow Diversion Chamber - At intersection of River Lane & Queen Victoria (4))	Mid January 2018	Early April 2018	10 weeks	Installation of shoring will generate some noise - limited to daytime. Modest trucking - limited to hauling shoring material and perhaps some volumes of rock and earth may be hauled away. Earth excavation will require an excavator; soil will be hauled away in trucks (2-3 per hour). Rock excavation will involve drilling, hoe- ramming, shotcrete and bolt installation, as well as trucking away excavated rock. Trucking frequency will be low as rock removal is a slow operation compared to earth removal.	Loud noise resulting from hoe-ramming and rock handling. Modest trucking.

Task *(1)	Work Location	Start Date	End Date	Duration	Details of Work	Truck and Noise *(2)
Construction of Large Chambers	Site 5A (Stanley Park - IOS Shaft)	Late February 2018	Early October 2018	32 weeks (8 months)	Construction of chambers includes the following components: micro piles installation, structure floor, walls and roof construction, ventilation duct, installation of gates, ladders and steps, and backfill. Materials and concrete being delivered to site as required.	Modest noise. Modest trucking.
Micro-Tunneling of Diversion Sewer (5b to EWT Outlet Chamber - main shaft)	Site 5b & 5a (Stanley Park - Closer to Queen Victoria Access)	Early February 2018	Mid March 2018	6-7 weeks	Includes installation of tunneling equipment, 5-6 weeks of back reaming along that pilot hole, and finishing the grouting. The reaming operation (which consists of enlarging the smaller pilot hole to the size required for the sewer) is expected to produce the most trucking as it generates spoils (crushed rock) to be hauled away. Could fill one or two trucks per hour at its peak for that 5-6 week period.	Modest noise. Modest trucking.
April 2018						
Construction of Odour Control Building	Site 5a (Stanley Park – Main Chamber and Odour Control Building Area)	Mid May 2017	Mid July 2018	50-55 weeks (13 months)	Typical building construction with material and equipment being delivered to site as required.	Modest noise. Modest trucking.
Setup Tunnel Launch Shaft	Site 5a (Stanley Park – Main Chamber and Odour Control Building Area)	Early January 2018	Early May 2018	10-12 weeks	Includes pouring mud slab, hand-mining tail and starter tunnels. Will include trucking, but low frequency due to slow progress of hand-mining 35m long tail tunnel and 30m starter tunnel to prepare for the Tunnel Boring Machine (TBM) insertion. Modest noise would include handling of excavated rock (loading trucks).	Modest noise. Modest trucking.
Shoring, Earth Excavation, and Rock Excavation	Site 5c (Rideau River Collector - Overflow Diversion Chamber - At intersection of River Lane & Queen Victoria (4))	Mid January 2018	Early April 2018	10 weeks	Installation of shoring will generate some noise - limited to daytime. Modest trucking - limited to hauling shoring material and perhaps some volumes of rock and earth may be hauled away. Earth excavation will require an excavator; soil will be hauled away in trucks (2-3 per hour). Rock excavation will involve drilling, hoe- ramming, shotcrete and bolt installation, as well as trucking away excavated rock. Trucking frequency will be low as rock removal is a slow operation compared to earth removal.	Loud noise resulting from hoe-ramming and rock handling. Modest trucking.
Construction of Large Chambers	Site 5A (Stanley Park - IOS Shaft)	Late February 2018	Early October 2018	32 weeks (8 months)	Construction of chambers includes the following components: micro piles installation, structure floor, walls and roof construction, ventilation duct, installation of gates, ladders and steps, and backfill. Materials and concrete being delivered to site as required.	Modest noise. Modest trucking.
Micro-Tunneling of Diversion Sewer (5b to River Lane)	Site 5B (Rideau River Collector - Overflow Diversion Chamber - At intersection of River Lane & Queen Victoria (4))	Early April 2018	Mid June 2018	8-10 weeks	Commencement of pilot hole tunneling, back reaming along that pilot hole, and finishing the grouting. The back reaming operation (which consists of enlarging the smaller pilot hole to the size required for the sewer) is expected to produce the most trucking as it generates spoils (crushed rock) to be hauled away, and will last approximately 5-6 weeks. For this section of the diversion tunnel, it is proposed by the contractor that these reaming spoils be extracted from the shaft located that the intersection of River Lane / Queen Victoria - to be confirmed. Could fill four trucks per day at its peak.	Some modest noise associated with motor for auger. Modest trucking.
May 2018						
Construction of Odour Control Building	Site 5a (Stanley Park – Main Chamber and Odour Control Building Area)	Mid May 2017	Mid July 2018	50-55 weeks (13 months)	Typical building construction with material and equipment being delivered to site as required.	Modest noise. Modest trucking.
Setup Tunnel Launch Shaft	Site 5a (Stanley Park – Main Chamber and Odour Control Building Area)	Early January 2018	Early May 2018	10-12 weeks	Includes pouring mud slab, hand-mining tail and starter tunnels. Will include trucking, but low frequency due to slow progress of hand-mining 35m long tail tunnel and 30m starter tunnel to prepare for the Tunnel Boring Machine (TBM) insertion. Modest noise would include handling of excavated rock (loading trucks).	Modest noise. Modest trucking.
Construction of Large Chambers	Site 5A (Stanley Park - IOS Shaft)	Late February 2018	Early October 2018	32 weeks (8 months)	Construction of chambers includes the following components: micro piles installation, structure floor, walls and roof construction, ventilation duct, installation of gates, ladders and steps, and backfill. Materials and concrete being delivered to site as required.	Modest noise. Modest trucking.

Task *(1)	Work Location	Start Date	End Date	Duration	Details of Work	Truck and Noise *(2)
Micro-Tunneling of Diversion Sewer (5b to River Lane)	Site 5B (Rideau River Collector - Overflow Diversion Chamber - At intersection of River Lane & Queen Victoria (4))	Early April 2018	Mid June 2018	8-10 weeks	Commencement of pilot hole tunneling, back reaming along that pilot hole, and finishing the grouting. The back reaming operation (which consists of enlarging the smaller pilot hole to the size required for the sewer) is expected to produce the most trucking as it generates spoils (crushed rock) to be hauled away, and will last approximately 5-6 weeks. For this section of the diversion tunnel, it is proposed by the contractor that these reaming spoils be extracted from the shaft located that the intersection of River Lane / Queen Victoria - to be confirmed. Could fill four trucks per day at its peak.	Some modest noise associated with motor for auger. Modest trucking.
Inserting and Setting up TBM	Site 5a (Stanley Park – Main Chamber and Odour Control Building Area)	Late May 2018	Late June 2018	5-6 weeks	Delivery of TBM to site (in pieces), inserting into the launch shaft, reassembly, prepare for launch. Other than trucking in the TBM pieces and associated support equipment/materials, limited trucking and limited noise.	Modest noise. Modest trucking.
June 2018						
Construction of Odour Control Building	Site 5a (Stanley Park – Main Chamber and Odour Control Building Area)	Mid May 2017	Mid July 2018	50-55 weeks (13 months)	Typical building construction with material and equipment being delivered to site as required.	Modest noise. Modest trucking.
Construction of Large Chambers	Site 5A (Stanley Park - IOS Shaft)	Late February 2018	Early October 2018	32 weeks (8 months)	Construction of chambers includes the following components: micro piles installation, structure floor, walls and roof construction, ventilation duct, installation of gates, ladders and steps, and backfill. Materials and concrete being delivered to site as required.	Modest noise. Modest trucking.
Micro-Tunneling of Diversion Sewer (5b to River Lane)	Site 5B (Rideau River Collector - Overflow Diversion Chamber - At intersection of River Lane & Queen Victoria (4))	Early April 2018	Mid June 2018	8-10 weeks	Commencement of pilot hole tunneling, back reaming along that pilot hole, and finishing the grouting. The back reaming operation (which consists of enlarging the smaller pilot hole to the size required for the sewer) is expected to produce the most trucking as it generates spoils (crushed rock) to be hauled away, and will last approximately 5-6 weeks. For this section of the diversion tunnel, it is proposed by the contractor that these reaming spoils be extracted from the shaft located that the intersection of River Lane / Queen Victoria - to be confirmed. Could fill four trucks per day at its peak.	Some modest noise associated with motor for auger. Modest trucking.
Inserting and Setting up TBM	Site 5a (Stanley Park – Main Chamber and Odour Control Building Area)	Late May 2018	Late June 2018	5-6 weeks	Delivery of TBM to site (in pieces), inserting into the launch shaft, reassembly, prepare for launch. Other than trucking in the TBM pieces and associated support equipment/materials, limited trucking and limited noise.	Modest noise. Modest trucking.
Construction of Chambers (once micro-tunneling complete)	Site 5c (Rideau River Collector - Overflow Diversion Chamber - At intersection of River Lane & Queen Victoria (4))	Mid June 2018	Late September 2018	16-18 weeks (4 months)	Construction of chambers includes the following components: structure floor, walls and roof construction, installation of weir, ladders and steps, demolition of section of existing overflow sewer, new connections, backfill and removal of shoring. Materials and concrete being delivered to site as required. This phase includes backfill around the chamber, estimated to generate 3-4 trucks per hour hauling backfill material to the site and the same frequency of empty trucks leaving the site. Other trucking would include concrete trucks during the pours	Modest noise. Heavier trucking during backfill (1-2 weeks), modest otherwise.
July 2018						
Construction of Odour Control Building	Site 5a (Stanley Park – Main Chamber and Odour Control Building Area)	Mid May 2017	Mid July 2018	50-55 weeks (13 months)	Typical building construction with material and equipment being delivered to site as required.	Modest noise. Modest trucking.
Construction of Large Chambers	Site 5A (Stanley Park - IOS Shaft)	Late February 2018	Early October 2018	32 weeks (8 months)	Construction of chambers includes the following components: micro piles installation, structure floor, walls and roof construction, ventilation duct, installation of gates, ladders and steps, and backfill. Materials and concrete being delivered to site as required.	Modest noise. Modest trucking.

Task *(1)	Work Location	Start Date	End Date	Duration	Details of Work	Truck and Noise *(2)
Construction of Chambers (once micro-tunneling complete)	Site 5c (Rideau River Collector - Overflow Diversion Chamber - At intersection of River Lane & Queen Victoria (4))	Mid June 2018	Late September 2018	16-18 weeks (4 months)	Construction of chambers includes the following components: structure floor, walls and roof construction, installation of weir, ladders and steps, demolition of section of existing overflow sewer, new connections, backfill and removal of shoring. Materials and concrete being delivered to site as required. This phase includes backfill around the chamber, estimated to generate 3-4 trucks per hour hauling backfill material to the site and the same frequency of empty trucks leaving the site. Other trucking would include concrete trucks during the pours	Modest noise. Heavier trucking during backfill (1-2 weeks), modest otherwise.
East-West Tunnel (EWT) Tunneling	Site 5a (Stanley Park – Main Chamber and Odour Control Building Area)	Early July 2018	Late June 2019	50 weeks (12 months)	TBM progressing along EWT. Spoils (crushed stones - gravel) being extracted from launch shaft and being trucked away. Tunneling 20-22 hours per day, but trucking limited to normal working hours of 12- 14 hours (between 7:00AM and 10:00PM). Noise Bylaw limits apply to afterhours activities. Estimate that tunnel spoils will be hauled away at 3 trucks per hour as the tunnel progresses approximately 20 m per day. Another 3 empty trucks will be arriving to the site each hour to be loaded. Tunneling will also require, on average, 3 trucks per day delivering parts for the tunnel lining.	Modest noise. Heavier trucking.
August 2018						
Construction of Large Chambers	Site 5A (Stanley Park - IOS Shaft)	Late February 2018	Early October 2018	32 weeks (8 months)	Construction of chambers includes the following components: micro piles installation, structure floor, walls and roof construction, ventilation duct, installation of gates, ladders and steps, and backfill. Materials and concrete being delivered to site as required.	Modest noise. Modest trucking.
Construction of Chambers (once micro-tunneling complete)	Site 5c (Rideau River Collector - Overflow Diversion Chamber - At intersection of River Lane & Queen Victoria (4))	Mid June 2018	Late September 2018	16-18 weeks (4 months)	Construction of chambers includes the following components: structure floor, walls and roof construction, installation of weir, ladders and steps, demolition of section of existing overflow sewer, new connections, backfill and removal of shoring. Materials and concrete being delivered to site as required. This phase includes backfill around the chamber, estimated to generate 3-4 trucks per hour hauling backfill material to the site and the same frequency of empty trucks leaving the site. Other trucking would include concrete trucks during the pours	Modest noise. Heavier trucking during backfill (1-2 weeks), modest otherwise.
Installation of 3 m Pre-Cast Shaft	Site 5b (Stanley Park - Closer to Queen Victoria Access)	Early August 2018	Mid October 2018	8-10 weeks	Activities include installing the precast chamber sections, benching and grouting, backfilling, removal of shoring, etc. Small chamber - modest trucking. Similar to installing a big sewer manhole with more parging/grouting and a large gate and related equipment on the inside.	Modest noise. Modest trucking.
East-West Tunnel (EWT) Tunneling	Site 5a (Stanley Park – Main Chamber and Odour Control Building Area)	Early July 2018	Late June 2019	50 weeks (12 months)	TBM progressing along EWT. Spoils (crushed stones - gravel) being extracted from launch shaft and being trucked away. Tunneling 20-22 hours per day, but trucking limited to normal working hours of 12- 14 hours (between 7:00AM and 10:00PM). Noise Bylaw limits apply to afterhours activities. Estimate that tunnel spoils will be hauled away at 3 trucks per hour as the tunnel progresses approximately 20 m per day. Another 3 empty trucks will be arriving to the site each hour to be loaded. Tunneling will also require, on average, 3 trucks per day delivering parts for the tunnel lining.	Modest noise. Heavier trucking.
September 2018						
Construction of Large Chambers	Site 5A (Stanley Park - IOS Shaft)	Late February 2018	Early October 2018	32 weeks (8 months)	Construction of chambers includes the following components: micro piles installation, structure floor, walls and roof construction, ventilation duct, installation of gates, ladders and steps, and backfill. Materials and concrete being delivered to site as required.	Modest noise. Modest trucking.
Construction of Chambers (once micro-tunneling complete)	Site 5c (Rideau River Collector - Overflow Diversion Chamber - At intersection of River Lane & Queen Victoria (4))	Mid June 2018	Late September 2018	16-18 weeks (4 months)	Construction of chambers includes the following components: structure floor, walls and roof construction, installation of weir, ladders and steps, demolition of section of existing overflow sewer, new connections, backfill and removal of shoring. Materials and concrete being delivered to site as required. This phase includes backfill around the chamber, estimated to generate 3-4 trucks per hour hauling backfill material to the site and the same frequency of empty trucks leaving the site. Other trucking would include concrete trucks during the pours	Modest noise. Heavier trucking during backfill (1-2 weeks), modest otherwise.
Installation of 3 m Pre-Cast Shaft	Site 5b (Stanley Park - Closer to Queen Victoria Access)	Early August 2018	Mid October 2018	8-10 weeks	Activities include installing the precast chamber sections, benching and grouting, backfilling, removal of shoring, etc. Small chamber - modest trucking. Similar to installing a big sewer manhole with more parging/grouting and a large gate and related equipment on the inside.	Modest noise. Modest trucking.

Task *(1)	Work Location	Start Date	End Date	Duration	Details of Work	Truck and Noise *(2)
East-West Tunnel (EWT) Tunneling	Site 5a (Stanley Park – Main Chamber and Odour Control Building Area)	Early July 2018	Late June 2019	50 weeks (12 months)	TBM progressing along EWT. Spoils (crushed stones - gravel) being extracted from launch shaft and being trucked away. Tunneling 20-22 hours per day, but trucking limited to normal working hours of 12- 14 hours (between 7:00AM and 10:00PM). Noise Bylaw limits apply to afterhours activities. Estimate that tunnel spoils will be hauled away at 3 trucks per hour as the tunnel progresses approximately 20 m per day. Another 3 empty trucks will be arriving to the site each hour to be loaded. Tunneling will also require, on average, 3 trucks per day delivering parts for the tunnel lining.	Modest noise. Heavier trucking.
October 2018						
Construction of Large Chambers	Site 5A (Stanley Park - IOS Shaft)	Late February 2018	Early October 2018	32 weeks (8 months)	Construction of chambers includes the following components: micro piles installation, structure floor, walls and roof construction, ventilation duct, installation of gates, ladders and steps, and backfill. Materials and concrete being delivered to site as required.	Modest noise. Modest trucking.
Installation of 3 m Pre-Cast Shaft	Site 5b (Stanley Park - Closer to Queen Victoria Access)	Early August 2018	Mid October 2018	8-10 weeks	Activities include installing the precast chamber sections, benching and grouting, backfilling, removal of shoring, etc. Small chamber - modest trucking. Similar to installing a big sewer manhole with more parging/grouting and a large gate and related equipment on the inside.	Modest noise. Modest trucking.
East-West Tunnel (EWT) Tunneling	Site 5a (Stanley Park – Main Chamber and Odour Control Building Area)	Early July 2018	Late June 2019	50 weeks (12 months)	TBM progressing along EWT. Spoils (crushed stones - gravel) being extracted from launch shaft and being trucked away. Tunneling 20-22 hours per day, but trucking limited to normal working hours of 12- 14 hours (between 7:00AM and 10:00PM). Noise Bylaw limits apply to afterhours activities. Estimate that tunnel spoils will be hauled away at 3 trucks per hour as the tunnel progresses approximately 20 m per day. Another 3 empty trucks will be arriving to the site each hour to be loaded. Tunneling will also require, on average, 3 trucks per day delivering parts for the tunnel lining.	Modest noise. Heavier trucking.
Grading around shaft 5b	Site 5b (Stanley Park - Closer to Queen Victoria Access)	Mid October 2018	Late October 2018	2 weeks	Rough grading. Final landscaping is included as part of the landscaping activity described for Site 5a.	Modest noise. Heavier trucking.
Grading and Rough Reinstatement	Site 5c (Rideau River Collector - Overflow Diversion Chamber - At intersection of River Lane & Queen Victoria (4))	Early October 2018	Early November 2018	4 weeks	Grading of the surface, base-coat paving, curbs, sidewalks, rough grading of landscaped areas to prepare for sodding later in the spring (since weather will not permit sodding at this time). Opening of the intersection. Heavier trucking will be during delivery of granular material for road construction (3-4 trucks per hour for a week or so).	Modest noise. Heavier trucking for 1- 2 weeks, otherwise modest.
November 2018						
East-West Tunnel (EWT) Tunneling	Site 5a (Stanley Park – Main Chamber and Odour Control Building Area)	Early July 2018	Late June 2019	50 weeks (12 months)	TBM progressing along EWT. Spoils (crushed stones - gravel) being extracted from launch shaft and being trucked away. Tunneling 20-22 hours per day, but trucking limited to normal working hours of 12- 14 hours (between 7:00AM and 10:00PM). Noise Bylaw limits apply to afterhours activities. Estimate that tunnel spoils will be hauled away at 3 trucks per hour as the tunnel progresses approximately 20 m per day. Another 3 empty trucks will be arriving to the site each hour to be loaded. Tunneling will also require, on average, 3 trucks per day delivering parts for the tunnel lining.	Modest noise. Heavier trucking.
Grading and Rough Reinstatement	Site 5c (Rideau River Collector - Overflow Diversion Chamber - At intersection of River Lane & Queen Victoria (4))	Early October 2018	Early November 2018	4 weeks	Grading of the surface, base-coat paving, curbs, sidewalks, rough grading of landscaped areas to prepare for sodding later in the spring (since weather will not permit sodding at this time). Opening of the intersection. Heavier trucking will be during delivery of granular material for road construction (3-4 trucks per hour for a week or so).	Modest noise. Heavier trucking for 1- 2 weeks, otherwise modest.
December 2018						

Task *(1)	Work Location	Start Date	End Date	Duration	Details of Work	Truck and Noise *(2)
East-West Tunnel (EWT) Tunneling	Site 5a (Stanley Park – Main Chamber and Odour Control Building Area)	Early July 2018	Late June 2019	50 weeks (12 months)	TBM progressing along EWT. Spoils (crushed stones - gravel) being extracted from launch shaft and being trucked away. Tunneling 20-22 hours per day, but trucking limited to normal working hours of 12- 14 hours (between 7:00AM and 10:00PM). Noise Bylaw limits apply to afterhours activities. Estimate that tunnel spoils will be hauled away at 3 trucks per hour as the tunnel progresses approximately 20 m per day. Another 3 empty trucks will be arriving to the site each hour to be loaded. Tunneling will also require, on average, 3 trucks per day delivering parts for the tunnel lining.	Modest noise. Heavier trucking.
January 2019						
East-West Tunnel (EWT) Tunneling	Site 5a (Stanley Park – Main Chamber and Odour Control Building Area)	Early July 2018	Late June 2019	50 weeks (12 months)	TBM progressing along EWT. Spoils (crushed stones - gravel) being extracted from launch shaft and being trucked away. Tunneling 20-22 hours per day, but trucking limited to normal working hours of 12- 14 hours (between 7:00AM and 10:00PM). Noise Bylaw limits apply to afterhours activities. Estimate that tunnel spoils will be hauled away at 3 trucks per hour as the tunnel progresses approximately 20 m per day. Another 3 empty trucks will be arriving to the site each hour to be loaded. Tunneling will also require, on average, 3 trucks per day delivering parts for the tunnel lining.	Modest noise. Heavier trucking.
February 2019						
East-West Tunnel (EWT) Tunneling	Site 5a (Stanley Park – Main Chamber and Odour Control Building Area)	Early July 2018	Late June 2019	50 weeks (12 months)	TBM progressing along EWT. Spoils (crushed stones - gravel) being extracted from launch shaft and being trucked away. Tunneling 20-22 hours per day, but trucking limited to normal working hours of 12- 14 hours (between 7:00AM and 10:00PM). Noise Bylaw limits apply to afterhours activities. Estimate that tunnel spoils will be hauled away at 3 trucks per hour as the tunnel progresses approximately 20 m per day. Another 3 empty trucks will be arriving to the site each hour to be loaded. Tunneling will also require, on average, 3 trucks per day delivering parts for the tunnel lining.	Modest noise. Heavier trucking.
March 2019						
East-West Tunnel (EWT) Tunneling	Site 5a (Stanley Park – Main Chamber and Odour Control Building Area)	Early July 2018	Late June 2019	50 weeks (12 months)	TBM progressing along EWT. Spoils (crushed stones - gravel) being extracted from launch shaft and being trucked away. Tunneling 20-22 hours per day, but trucking limited to normal working hours of 12- 14 hours (between 7:00AM and 10:00PM). Noise Bylaw limits apply to afterhours activities. Estimate that tunnel spoils will be hauled away at 3 trucks per hour as the tunnel progresses approximately 20 m per day. Another 3 empty trucks will be arriving to the site each hour to be loaded. Tunneling will also require, on average, 3 trucks per day delivering parts for the tunnel lining.	Modest noise. Heavier trucking.
April 2019						
East-West Tunnel (EWT) Tunneling	Site 5a (Stanley Park – Main Chamber and Odour Control Building Area)	Early July 2018	Late June 2019	50 weeks (12 months)	TBM progressing along EWT. Spoils (crushed stones - gravel) being extracted from launch shaft and being trucked away. Tunneling 20-22 hours per day, but trucking limited to normal working hours of 12- 14 hours (between 7:00AM and 10:00PM). Noise Bylaw limits apply to afterhours activities. Estimate that tunnel spoils will be hauled away at 3 trucks per hour as the tunnel progresses approximately 20 m per day. Another 3 empty trucks will be arriving to the site each hour to be loaded. Tunneling will also require, on average, 3 trucks per day delivering parts for the tunnel lining.	Modest noise. Heavier trucking.
May 2019						
East-West Tunnel (EWT) Tunneling	Site 5a (Stanley Park – Main Chamber and Odour Control Building Area)	Early July 2018	Late June 2019	50 weeks (12 months)	TBM progressing along EWT. Spoils (crushed stones - gravel) being extracted from launch shaft and being trucked away. Tunneling 20-22 hours per day, but trucking limited to normal working hours of 12- 14 hours (between 7:00AM and 10:00PM). Noise Bylaw limits apply to afterhours activities. Estimate that tunnel spoils will be hauled away at 3 trucks per hour as the tunnel progresses approximately 20 m per day. Another 3 empty trucks will be arriving to the site each hour to be loaded. Tunneling will also require, on average, 3 trucks per day delivering parts for the tunnel lining.	Modest noise. Heavier trucking.
June 2019						

Task *(1)	Work Location	Start Date	End Date	Duration	Details of Work	Truck and Noise *(2)
East-West Tunnel (EWT) Tunneling	Site 5a (Stanley Park – Main Chamber and Odour Control Building Area)	Early July 2018	Late June 2019	50 weeks (12 months)	TBM progressing along EWT. Spoils (crushed stones - gravel) being extracted from launch shaft and being trucked away. Tunneling 20-22 hours per day, but trucking limited to normal working hours of 12- 14 hours (between 7:00AM and 10:00PM). Noise Bylaw limits apply to afterhours activities. Estimate that tunnel spoils will be hauled away at 3 trucks per hour as the tunnel progresses approximately 20 m per day. Another 3 empty trucks will be arriving to the site each hour to be loaded. Tunneling will also require, on average, 3 trucks per day delivering parts for the tunnel lining.	Modest noise. Heavier trucking.
Post-Construction Final Reinstatement	Site 5c (Rideau River Collector - Overflow Diversion Chamber - At intersection of River Lane & Queen Victoria (4)	Early June 2019	Late June 2019	2-3 weeks	Once weather is warmer, application of final layer of pavement and placement of sod and plantings. No long-term roadway impact as top-lift pavement is expected to be completed in a single day.	Modest noise. Heavier trucking for 2 days of paving.
August 2019						
Construction of Large Chamber (once tunneling complete)	Site 5a (Stanley Park – Main Chamber and Odour Control Building Area)	Mid August 2019	Late March 2020	35-40 weeks (8 months)	Construction of chambers includes the following components: micro piles installation, structure floor, walls and roof construction, ventilation duct, installation of gates, ladders and steps, and backfill. Materials and concrete being delivered to site as required.	Modest noise. Modest trucking.
September 2019						
Construction of Large Chamber (once tunneling complete)	Site 5a (Stanley Park – Main Chamber and Odour Control Building Area)	Mid August 2019	Late March 2020	35-40 weeks (8 months)	Construction of chambers includes the following components: micro piles installation, structure floor, walls and roof construction, ventilation duct, installation of gates, ladders and steps, and backfill. Materials and concrete being delivered to site as required.	Modest noise. Modest trucking.
October 2019						
Construction of Large Chamber (once tunneling complete)	Site 5a (Stanley Park – Main Chamber and Odour Control Building Area)	Mid August 2019	Late March 2020	35-40 weeks (8 months)	Construction of chambers includes the following components: micro piles installation, structure floor, walls and roof construction, ventilation duct, installation of gates, ladders and steps, and backfill. Materials and concrete being delivered to site as required.	Modest noise. Modest trucking.
November 2019						
Construction of Large Chamber (once tunneling complete)	Site 5a (Stanley Park – Main Chamber and Odour Control Building Area)	Mid August 2019	Late March 2020	35-40 weeks (8 months)	Construction of chambers includes the following components: micro piles installation, structure floor, walls and roof construction, ventilation duct, installation of gates, ladders and steps, and backfill. Materials and concrete being delivered to site as required.	Modest noise. Modest trucking.
December 2019						
Construction of Large Chamber (once tunneling complete)	Site 5a (Stanley Park – Main Chamber and Odour Control Building Area)	Mid August 2019	Late March 2020	35-40 weeks (8 months)	Construction of chambers includes the following components: micro piles installation, structure floor, walls and roof construction, ventilation duct, installation of gates, ladders and steps, and backfill. Materials and concrete being delivered to site as required.	Modest noise. Modest trucking.
January 2020						
Construction of Large Chamber (once tunneling complete)	Site 5a (Stanley Park – Main Chamber and Odour Control Building Area)	Mid August 2019	Late March 2020	35-40 weeks (8 months)	Construction of chambers includes the following components: micro piles installation, structure floor, walls and roof construction, ventilation duct, installation of gates, ladders and steps, and backfill. Materials and concrete being delivered to site as required.	Modest noise. Modest trucking.
February 2020						
Construction of Large Chamber (once tunneling complete)	Site 5a (Stanley Park – Main Chamber and Odour Control Building Area)	Mid August 2019	Late March 2020	35-40 weeks (8 months)	Construction of chambers includes the following components: micro piles installation, structure floor, walls and roof construction, ventilation duct, installation of gates, ladders and steps, and backfill. Materials and concrete being delivered to site as required.	Modest noise. Modest trucking.
March 2020						

Task *(1)	Work Location	Start Date	End Date	Duration	Details of Work	Truck and Noise *(2)
Construction of Large Chamber (once tunneling complete)	Site 5a (Stanley Park – Main Chamber and Odour Control Building Area)	Mid August 2019	Late March 2020	35-40 weeks (8 months)	Construction of chambers includes the following components: micro piles installation, structure floor, walls and roof construction, ventilation duct, installation of gates, ladders and steps, and backfill. Materials and concrete being delivered to site as required.	Modest noise. Modest trucking.
May 2020						
Grading and Landscaping	Site 5a (Stanley Park – Main Chamber and Odour Control Building Area)	Early May 2020	Late August 2020	16-20 weeks (4 months)	Will include hauling away granular material installed as a base for driving vehicles within the staging area and hauling in new topsoil for landscaping. This will be followed by bringing in and installing numerous trees throughout the park. It's estimated that hauling away the granular material would take approximately 2-3 weeks and result in approximately 2-3 trucks per hour during this two to three week period. It is likely that hauling in new topsoil could generate similar trucking at its peak, but would happen later in this period.	Modest noise. Heavier trucking.
June 2020						
Grading and Landscaping	Site 5a (Stanley Park – Main Chamber and Odour Control Building Area)	Early May 2020	Late August 2020	16-20 weeks (4 months)	Will include hauling away granular material installed as a base for driving vehicles within the staging area and hauling in new topsoil for landscaping. This will be followed by bringing in and installing numerous trees throughout the park. It's estimated that hauling away the granular material would take approximately 2-3 weeks and result in approximately 2-3 trucks per hour during this two to three week period. It is likely that hauling in new topsoil could generate similar trucking at its peak, but would happen later in this period.	Modest noise. Heavier trucking.
July 2020						
Grading and Landscaping	Site 5a (Stanley Park – Main Chamber and Odour Control Building Area)	Early May 2020	Late August 2020	16-20 weeks (4 months)	Will include hauling away granular material installed as a base for driving vehicles within the staging area and hauling in new topsoil for landscaping. This will be followed by bringing in and installing numerous trees throughout the park. It's estimated that hauling away the granular material would take approximately 2-3 weeks and result in approximately 2-3 trucks per hour during this two to three week period. It is likely that hauling in new topsoil could generate similar trucking at its peak, but would happen later in this period.	Modest noise. Heavier trucking.
August 2020						
Grading and Landscaping	Site 5a (Stanley Park – Main Chamber and Odour Control Building Area)	Early May 2020	Late August 2020	16-20 weeks (4 months)	Will include hauling away granular material installed as a base for driving vehicles within the staging area and hauling in new topsoil for landscaping. This will be followed by bringing in and installing numerous trees throughout the park. It's estimated that hauling away the granular material would take approximately 2-3 weeks and result in approximately 2-3 trucks per hour during this two to three week period. It is likely that hauling in new topsoil could generate similar trucking at its peak, but would happen later in this period.	Modest noise. Heavier trucking.

Important Notes:

1. The activities list is not intended to be an exhaustive list. Normal (a.k.a. daytime) working hours as defined in the city's Zoning Bylaw is 7:00AM-10:00PM. Outside of these hours (i.e. 10:00PM-7:00AM) is referred to as 'afterhours'. The Contract Documents stipulate that the following activities will not be permitted afterhours:

- Backing up construction equipment and vehicles (due to backup alarm)
- Deliveries, including loading/unloading material or excavated muck into trucks
- Operation of equipment, motors and power tools without noise dampening
- Handling sheet piling
- Tree removal, cutting or grinding

Task *(1)	Work Location	Start Date	End Date	Duration	Details of Work	Truck and Noise *(2)
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-Significant grading operations requiring earth-moving equipment

The Contract Documents further state that a noise monitoring program will be implemented by the Contractor to assess conformance to the stipulated limits. The noise monitoring program will be approved by the Contract Administrator prior to implementation. Exceedances will be reported to the Contract Administrator within 24 hours with a solution to prevent future exceedances. The City reserves the right to order the Contractor to cease the use of non-conforming equipment or to correct non-conforming procedures or to cease the nighttime construction activities at no cost to the City in the event that noise thresholds are

2. The column for noise trucking is intended to be a high-level relative comparison, A noisy activity is the label used for activities that include breaking rock, banging steel, etc; other activities are considered to generate modest noise (relative to breaking rock and banging steel). Similarly, heavy trucking is the label used for activities generating 3 to 4 trucks per hour on average; other activities are considered to generate modest (considerably less than 3 to 4 trucks per hour).

3. All work at Site 5c (River Lane/Queen Victoria) is limited to daytime activities. No work is currently permitted at this site afterhours (10:00pm to 7:00am). The Contractor may submit a special request for a specific that is impractical to be completed during daytime, but it would need to be submitted for review and approval by the project team and the Councillor as it is not currently permitted.