EXHIBIT E PROJECT

1. INTRODUCTION

1. This section describes the proposed Project construction methods, engineering design specifications and testing methodology and procedures. The proposed Project schedule, including key milestone dates, are also included as evidence to this Application. Refer to Exhibit C, Tab 1, Schedule 1 for a description of the proposed Project.

2. PROJECT CONSTRUCTION METHODS

2. The new pipeline will be constructed using the following general methods:
    - Trenched; and
    - Trenchless, using drilling or boring.
3. Trench construction will be used for approximately 41 km of the Project. The trenched construction activities and sequence will be as follows (see Figure 2-1):
    a. *Survey*: The construction site is prepared in advance with survey, signage, lighting, fences, and traffic management where needed to protect public safety. Targeted pre-construction environmental surveys may also be conducted.
    b. *Clearing:* Vegetation in the ROW and workspace will be cleared to permit safe construction activities. Vegetation will be managed in accordance with landowner requirements if applicable, or in the case of trees, according to municipal tree removal permit conditions.
    c. *Topsoil Clearing:* Construction equipment, including bulldozers and graders, will arrive at the site. Topsoil will be separated from subsoil where appropriate and stockpiled to one side of the workspace for restoration.
    d. *Trenching:* A trench will be excavated to an appropriate width and depth.
    e. *Stringing, Bending, Welding, and Coating:* The pipe is delivered to site, off-loaded, and placed on wooden skids (end-to-end) on the right-of-way. Some pipe will require bending to accommodate changes in direction and elevation of the trench. The joints of pipe are welded together into sections. The welds are inspected using non-destructive testing such as radiography, magnetic particle inspection, and liquid dye penetrant. The weld areas are then cleaned and coated with a corrosion protection coating.
    f. *Lowering and Backfilling:* The pipe sections will be lowered into the trench. The pipe sections will be welded together in the trench (tie-in welds). The trench will be backfilled using the excavated soil, and topsoil will be replaced over the workspace and re-contoured to approximate pre-existing conditions.
    g. *Hydrostatic Testing, Tie-in, and Commissioning:* The pipeline interior will be cleaned using specialized equipment to remove dirt or debris. The capacity for the pipeline to withstand maximum operational pressures is then tested using water, then dewatered and dried. The constructed pipeline will be connected to existing facilities at Waterdown Station and Finch Terminal; the pipeline is commissioned and begins operations.
    h. *Clean-up and Reclamation:* The ROW and temporary workspace (“TWS”) will be reclaimed or restored to natural or pre-construction contours, and the native topsoil will be replaced. In natural areas, restoration will include re-seeding the disturbed areas. In developed areas, restoration will involve leaving the site in a condition suitable to resume agricultural activity or urban landscaping.
4. Trenchless construction will be used for approximately 22 km of the Project to reduce disturbance to environmentally or socially sensitive features and other infrastructure and land uses. Trenchless construction requires an entry and exit site on either side of the feature or infrastructure to be crossed, from which equipment will install the pipeline under the feature without surface disturbance. The two trenchless methods that will be used are:
    a. Bore drilling, including horizontal directional bore, which involves installing pipe using specialized auger drilling equipment, typically used for short segments of trenchless construction, such as

beneath single crossings of provincial and municipal roads and railroads. For this type of installation, excavations are required at the entry and exit points. These excavations are required to setup the boring machine and install the pipeline. Please see Figure 2-2 for depicting a typical trenchless construction method.

b. HDD, which involves installing pipe using a drilling rig to drill a tunnel below the surface to pull the pipeline through. HDD will typically be used for longer segments of trenchless construction, such as beneath large watercourses, or multiple adjacent sensitive features.

5. Project description and project construction details are provided in Exhibit D, Tab 1, Schedule 2 Environmental Report. For typical construction drawings depicting trench and trenchless methods, see Environmental Report Appendix A.

6. A link to Imperial's video demonstrating a typical HDD construction method is provided in Exhibit H, Tab 3, Schedule 8.

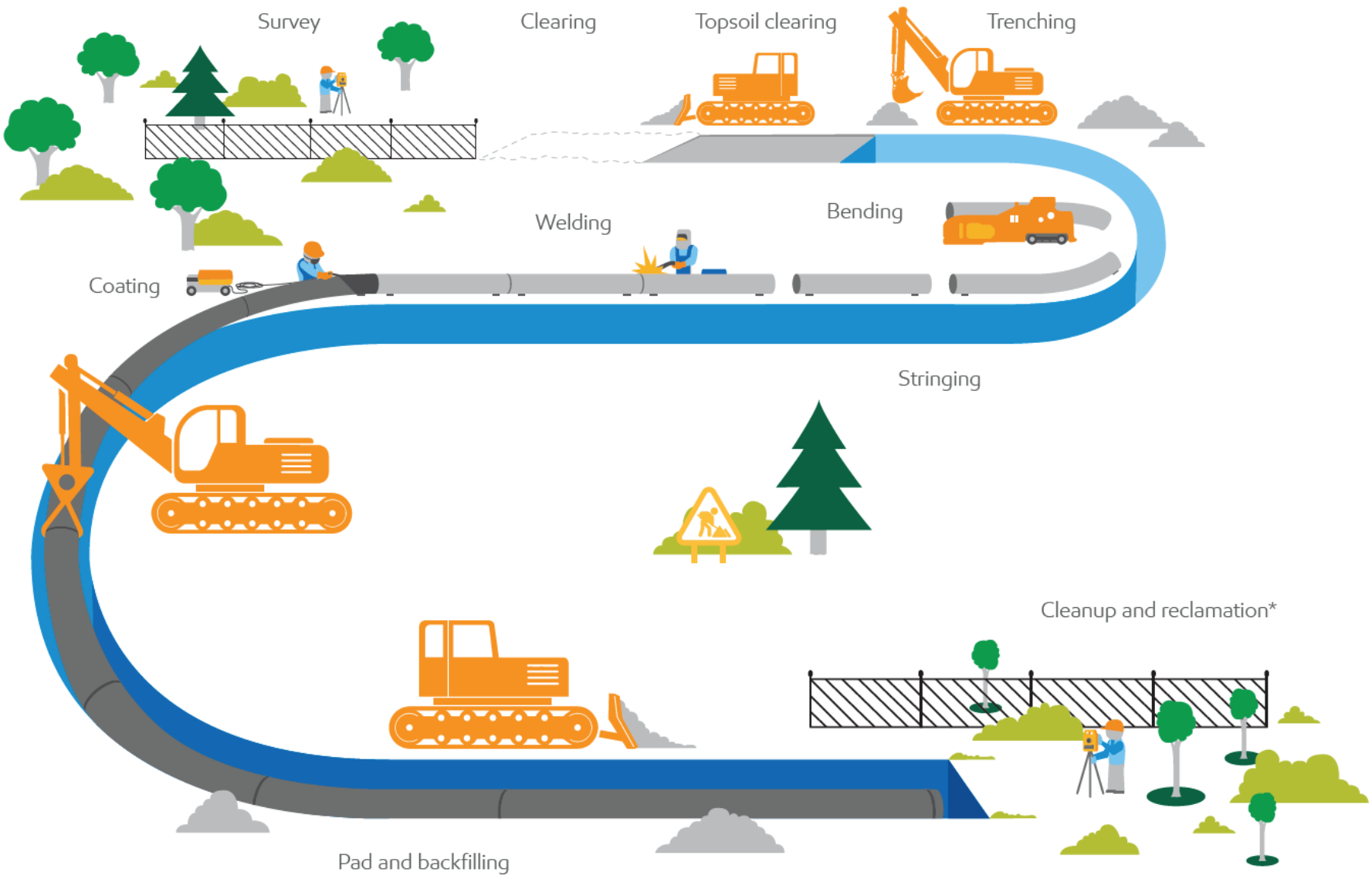
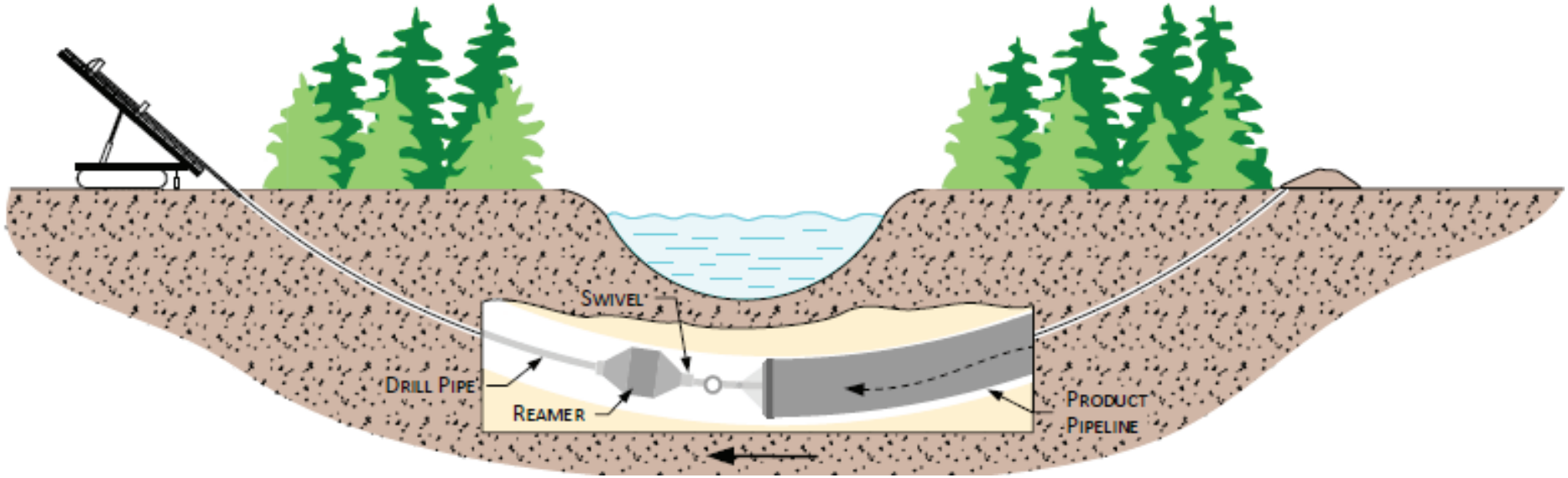

Survey
Clearing
Topsoil clearing
Trenching
Welding
Bending
Coating
Stringing
Cleanup and reclamation*
Pad and backfilling

Figure 2-2
Typical Trenchless Pipeline Construction

EXHIBIT E
Project



3. DESIGN SPECIFICATIONS

Table 3-1 provides the design specifications for the pipe, fittings and associated equipment used to construct the Project and are in compliance with CSA Z662-15. Table 3-2 provides the Class Locations along the pipeline alignment. Start and end stations are identified using KP markers as shown on Exhibit C, Figure 2.2-1.

Table 3-1: Design Specifications

Pipe	Pipe – NPS 12
Material	Carbon steel
Diameter Size	323.9 mm (12.750 inches) (NPS 12)
Wall Thickness	Minimum 11.9 mm (0.469 inches)
Grade	Mínimum SMYS 448 MPa (65,000 psi)
Specification	CSA Z245.1 Steel Line Pipe
Material Toughness	CSA Z245.1 Steel Line Pipe
Pipe Coating Specifications	CSA Z245.20 Plant-applied external coatings for steel pipe
Cathodic Protection	TBD
Cathodic Specification	TBD
Fittings	CSA Z245.11 Steel Fittings
Flanges	CSA Z245.12 Steel Flanges
Valves	CSA Z245.15 Steel Valves
Class Location	Varies based on location (see Table 3-2)
Design Pressure	14,893 kPag (2,160 psig)
Hoop Stress at Design Pressure	202,430 kPa (29,360 psi)
Maximum Operating Pressure (MOP)	14,893 kPag (2,160 psig)
Hoop Stress at MOP	202,430 kPa (29,360 psi)
Minimum Cover	1.2 metres (4 feet)
Test Medium	The pipeline will be tested with water.
Test Pressure	The minimum test pressure is 18,616 kPag (2,700 psig)
Hoop Stress at Test Pressure	253,038 kPa (36,700 psi)
Leak Pressure Test	Proposed to be the same as the test pressure.

Table 3-2: Class Locations

Start Station (KP)	End Station (KP)	Class Location per CSA-Z662-15
0.0 – Waterdown Station	7.4	2
7.4	13.2	1
13.2	13.8	2
13.8	20.0	1
20.0	21.3	2
21.3	23.3	1
23.3	24.1	2
24.1	26.6	1
26.6	32.0	3
32.0	32.6	4
32.6	37.6	3
37.6	38.7	4
38.7	52.3	3
52.3	54.2	4
54.2	56.1	3
56.1	57.5	4
57.5	59.0	3
59.0	61.9 – Finch Terminal	4

4. PRESSURE TESTING

1. This section provides an overview of the hydrostatic pressure testing that consists of the strength test, leak test, pressure test plan, and HDD pre-tests.
2. The testing will be completed in accordance to Imperial standards and practices and meet the requirements of CSA-Z662-15 Oil and Gas Pipeline System and Technical Standards and Safety Authority (TSSA) – Oil and Gas Pipeline Systems Code Adoption Document Amendment FS-220-16 – July 19, 2016 (Province of Ontario).
    - Sourcing: The hydrotest water will be re-used as much as practical. Water sourcing is planned to be potable water from municipal supplies.
    - Treatment: The treatment of water prior to or following hydrotest will be evaluated.
    - Re-use of hydrotest water: The feasibility of re-using hydrotest water will be evaluated. This evaluation will consider the need for transporting and possibly storing hydrotest water between hydrotests.
    - Discharge: It is proposed to dispose of the hydrotest water into municipal waste water / sewer system in line with applicable discharge permit requirements.
3. The specifications for the pipeline are as follows:
    - Carbon steel material, Diameter: 323.9 mm (12.750 inch) x Wall Thickness: 11.91 mm (0.469 inch) and Grade: GR 448, CAT II (CSA Z245.1) HFW.
    - The specified minimum yield strength (SMYS) is 448 MPa (65,000 psi) .
4. Strength Test
    - A strength test will be performed where the test section will be held at or above a pressure equal to 125 percent of the maximum operating pressure (MOP) for at least four (4) continuous hours.
5. Leak Test
    - A leak test will be performed in the case of a test section that cannot be or is not visually inspected for leakage during the test (e.g., underground, etc.). The test shall require an additional leak test of at least four (4) continuous hours at a pressure equal to or exceeding 110 percent of the maximum operating pressure (90 percent of the minimum strength test pressure) for a hazardous liquid.
6. Test Segments
    - The pipeline will be pressure tested in multiple segments. The criteria for determining the test sections include and may not be limited to: the maximum pressure differential in a segment (due to elevation change), location of main line valves, location of crossings to be re-used, consideration of sensitive areas, segment length, large natural elevation change in a short distance.
7. HDD crossing pre-tests
    - The pipe for HDDs will be pre-tested. Prior to being pulled into the ground the pipe for each HDD section will welded together on the surface and each weld will be non-destructively examined. The welded section will be pressure tested (pre-test), consisting of a strength test. A leak test will not be required for the HDD test sections since all of the pipe can be visually inspected during the strength test.

5. PROJECT COSTS (SECTION NOT APPLICABLE)

1. Imperial is a non-rate regulated entity, it is a private corporation and the cost of the proposed Project will be borne by the Applicant. As confirmed with OEB staff during the pre-application planning, the Project Cost section is not applicable.

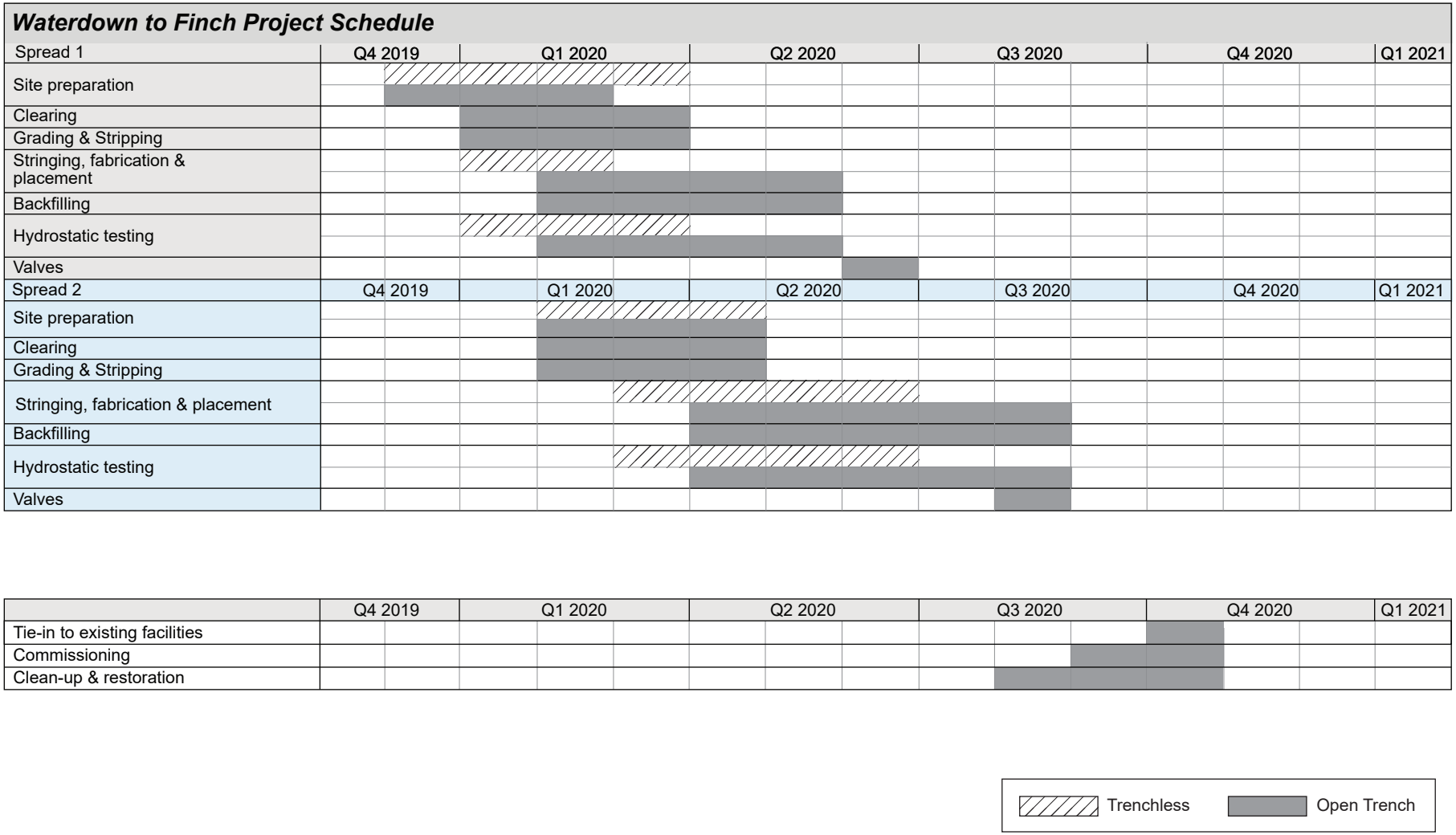
6. SCHEDULE

1. Project construction is planned to occur from December 2019 to November 2020. Construction is anticipated to take 8 to 10 months and commissioning approximately one (1) month. Subject to receipt of all necessary permits and approvals, Imperial anticipates a proposed line in-service date in late Q4 2020.
2. The project milestones are summarized in Table 6-1 and the construction schedule is shown in Figure 6-1. Once operational, the pipeline is expected to operate for over 50 years.

Table 6-1: Project Milestones

Expected LTC approval	Q3 2019
Receipt of permits and approvals	Q3 2019
Commence construction	Q4 2019
Completion of construction	Q3 2020
Complete hydrostatic testing	Q3 2020
Commissioning	Q4 2020
Final inspection	Q4 2020
Line in-service	Q4 2020
Site restoration[1]	Q3 and Q4 2020

[1] This is related to clean-up and reclamation – the ROW and TWS will be reclaimed or restored to natural or pre-construction contours, and the native topsoil will be replaced. In natural areas, restoration will include re-seeding the disturbed areas. In developed areas, restoration will ensure the site is returned to a condition suitable to resume agricultural activity or urban landscaping.


Waterdown to Finch Project Schedule
Spread 1
Q4 2019
Q1 2020
Q2 2020
Q3 2020
Q4 2020
Q1 2021
Site preparation
Clearing
Grading & Stripping
Stringing, fabrication & placement
Backfilling
Hydrostatic testing
Valves
Spread 2
Q4 2019
Q1 2020
Q2 2020
Q3 2020
Q4 2020
Q1 2021
Site preparation
Clearing
Grading & Stripping
Stringing, fabrication & placement
Backfilling
Hydrostatic testing
Valves
Q4 2019
Q1 2020
Q2 2020
Q3 2020
Q4 2020
Q1 2021
Tie-in to existing facilities
Commissioning
Clean-up & restoration
Trenchless
Open Trench