

6. Project Description

As previously noted, the Project will supply electricity from the 500 kV system to the 230 kV system in order to replace the loss of the Pickering NGS (see **Section 1.1** for the need for the Project). The Project will occupy approximately an area of 300m x 410m and will be built on Hydro One property, northeast of Concession Road 7 and the unopened Townline Road North, in the Municipality of Clarington (see **Figure 1-3** for the Conceptual Layout).

The Project will be undertaken in two stages.

Initial Stage will include:

- An all-weather permanent access road with controlled access
- Erection of bypass circuits
- Two (2) permanent and one (1) temporary watercourse crossings
- Erection of new 230 kV and 500 kV structures plus associated lines to connect the station
- Installation of the fence, station drainage system, grounding system, and containment for the transformers including an oil/water separator
- Installation of two 750 mega volt-ampere (MVA) 500/230 kV autotransformers
- Installation of associated outdoor 500 kV and 230 kV switchyards with SF6 circuit breakers, disconnect switches, interconnecting buswork as well as equipment such as current and voltage transformers and lightening arrestors
- Installation of two (2) relay buildings and one electrical panel building (i.e., automatic transfer scheme)
- Appropriate vegetative screening, environmental controls, station service and communication equipment

Future Stage will include:

- Two (2) additional 750 MVA 500/230 kV autotransformers and associated 500 kV and 230 kV equipment and facilities
- Additional 500 kV and 230 kV tapping structures to connect the existing circuits to the station

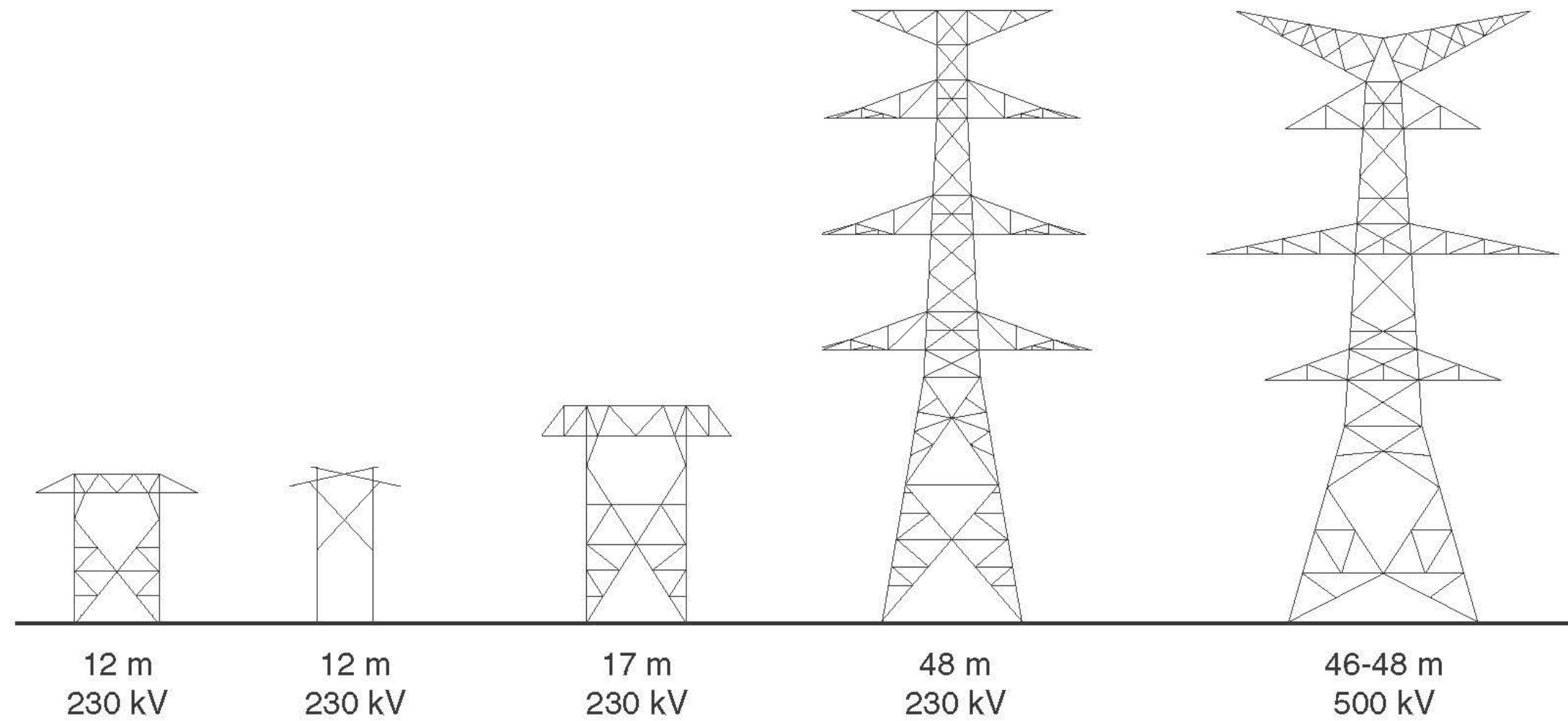
- Extension of the fenced gravel yard with underground drainage and grounding system, and drainage around perimeter of the fenced area

The timing of the second stage will be determined by the electricity demand in the area. Enfield TS will be constructed when required. Enfield TS was previously approved in 2008 as noted in **Section 1.1**.

The conceptual layout includes both initial stage and future stage of the Project, it also includes the access road via the unopened Townline Road North (**Figure 1-3**).

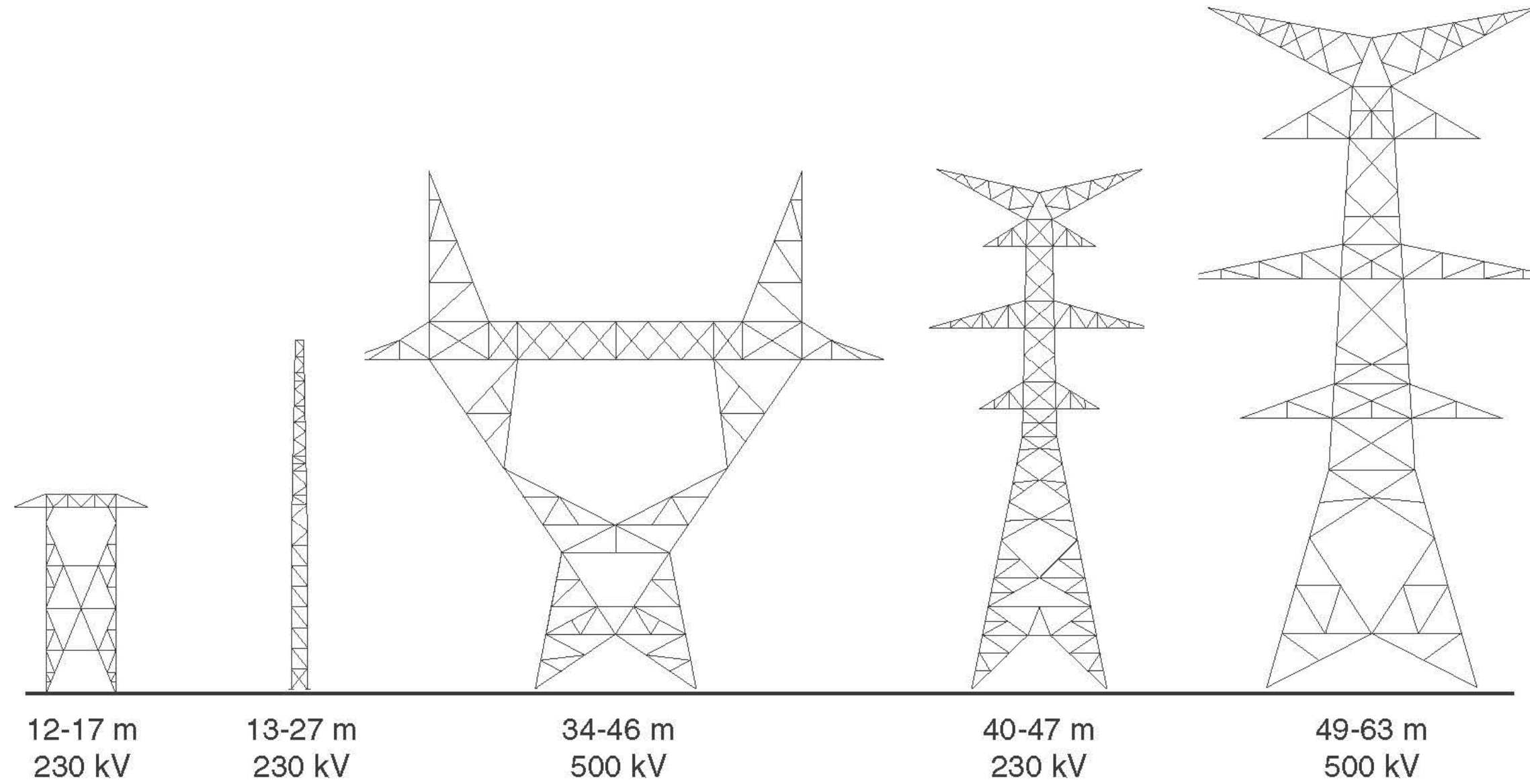
Figure 6-1 illustrates the existing 500 kV and 230 kV typical structure types and **Figure 6-2** illustrates the proposed typical structure types to be installed as part of the initial stage.

Figure 6-1: Existing Typical Structure Types



*Note: pictures are not drawn to scale and heights are approximate

Figure 6-2: Proposed Typical Structure Types for Initial Stage



*Note: pictures are not drawn to scale and heights are approximate

6.1 Design Phase

Given the scheduled in-service date, detailed engineering design for the Project has been initiated. These plans will identify the final design plans for the station, locations of structures, access road, construction staging areas and any screening work that will be performed at the site. The plans will be based on necessary surveys and consultation, including a geotechnical survey, and consultation with government agencies and the municipality.

Concurrent with finalization of the station design, further permits or approvals may be required under federal and other provincial legislation (see **Section 1.5.2**).

A project-specific Environmental Specification will be prepared following the filing of the final ESR with the MOE. The Environmental Specification will provide specific directions to construction personnel, summarizing legislated requirements, terms and conditions of approval, environmental construction practices appropriate to this Project, and environmental commitments set out in the ESR. The Environmental Specification is developed based on the “Environmental Guidelines for Construction and Maintenance of Transmission Facilities” (Hydro One, 2009).

6.2 Construction Phase

Construction and maintenance activities will be guided by generic and project-specific documents. The Hydro One (2009) “Environmental Guidelines for Construction and Maintenance of Transmission Facilities” is a companion document to the “Class EA for Minor Transmission Facilities” (Ontario Hydro, 1992). The guidelines were prepared for the use of Hydro One design, construction and maintenance personnel. The guidelines provide general information about the type of construction and maintenance activities needed for the Project. The guidelines also include a summary of potential environmental effects, mitigation, restoration and compensation measures.

Throughout the construction phase, an Environmental Specialist will provide crew briefings to inform staff about potential effects and mitigation requirements. The Environmental Specialist will monitor activities to ensure that they are in conformance with the requirements set out in the Environmental Specification. This may include environmental sampling, testing and reporting requirements. At the completion of construction, operation and maintenance staff will be provided with a briefing and “as constructed” documentation covering any ongoing commitments, including monitoring and notification requirements.

Should any archaeological finds be uncovered during construction, work will stop immediately pending assessment by the project archaeologist and further consultation with the MTCS, as well as First Nations and Métis communities.

Transmission Lines

Construction of transmission lines typically involves the following activities:

- Mobilization and setting up of construction yard
- Removal of vegetation within woodland giving consideration to the Clean Equipment Protocol for Industry, which relates to invasive species
- Removal of three (3) retainable Butternut trees
- Construction of temporary access roads and working pads for foundations, installation and stringing
- Installation of two (2) permanent and one (1) temporary creek crossings in conformance with MNR in-water works timing windows (July 1 – 15)
- Delivering pre-fabricated rebar cages for foundation to each tower site
- Augering foundations, drop rebar cages and pour concrete
- Delivering bundled tower steel to each tower site
- Assembling lattice towers in sections
- Erecting towers
- Mobilizing stringing equipment
- Pulling in conductor, sagging and clamping in conductor
- Connecting circuits using implosive method
- Providing connections at line terminations
- Energizing new circuit

- Removing of temporary access roads
- Clean up and ROW restoration

Transformer Station

Construction of transformer stations typically involves the following activities:

- Site preparation including clearing and grading
- Installation of station fencing and security systems
- Delivery and installation of transformer and switching equipment
- Delivery and installation of equipment for protection, control and telecommunications
- Installation of station underground services and drainage facilities
- Installation of station foundations and steel support structure
- Installation of ground grid and lightning protection masts
- Construction of a brick building for static protection control
- Construction of station roads
- Clean-up and site restoration
- Implementation of Habitat Creation and Enhancement Plan (see **Section 7.2**)

6.3 Maintenance and Operation Phase

The station will be operated remotely from Hydro One's grid control centre. An operator will make periodic inspections and will be dispatched to the station in case of emergency. Whenever preventative or emergency maintenance is required, a crew will be dispatched to the site. The station will be fully equipped with spill containment and oil/water separation facilities. In the event of equipment failure, oily water will not escape from the site. An Emergency Preparedness and Response Plan will govern spill response. Spill cleanup and response equipment will be located on site.

Throughout the operating life of the station, preventative and emergency maintenance will be carried out to ensure that equipment operates according to design parameters and to ensure compliance with Hydro One standards of safety, reliability, citizenship and cost. Newly vegetated areas will be maintained compatible with the surrounding community. Snow will be cleared to allow site access.

Within the ROWs, scheduled vegetation maintenance will be conducted on 7-8 year cycles to remove vegetation that may interfere with the safe operation of the transmission line.

6.4 Decommissioning Phase

When transmission facilities become obsolete or unserviceable, the equipment is retired from service. The facility may be removed and the site made suitable for other Hydro One purposes. When transmission structures are removed, the foundations are generally cut back 0.5 metres BGS.

Any land which is surplus to the needs of Hydro One may be disposed of by sale. Hydro One offers such land to former owners, adjacent owners, public utilities, government and government agencies prior to offering it to the general public.

6.5 Project Schedule

The anticipated Project schedule for the initial stage of the Project is provided below in **Table 6-1**. This schedule shows key remaining steps and subsequent anticipated timing for the start of construction and commissioning of the proposed facilities. Construction of the Project is expected to begin in May 2014 and the TS is expected to be in service by late 2017.

Table 6-1: Anticipated Project Schedule

Activity	Period
Filing of final ESR with the MOE	January 2014
Pre-construction PIC	April 2014
Construction start	May 2014
Planned in-service date	Late 2017