



The Iter Institute
1 Yonge Street, Suite 2001
Toronto, Canada M5E 1E5

ITER Institute Letter of Intent to the CNSC

Attachment 2

Proposed Site Location and Description of the Environmental Characteristics

Contents:

2.1 Site Location

2.2 Site Integration and Modification

2.2.1 Site Access

2.2.2 Connection to the Electrical Grid

2.2.3 Interfaces with Ontario Power Generation Darlington NGS

2.2.4 Land Use

2.3 Description of Environmental Characteristics

2.1 Site Location

The proposed site for the Iter Institute is located approximately 60 km east of Toronto, on the north shore of Lake Ontario (see Figure 2.2-2). It is bounded by Lake Ontario to the south, by industrial land use to the east (Blue Circle Cement Plant), by highway 401 and private agricultural land to the north, and by the Darlington Nuclear Generating Station (NGS) operated by Ontario Power Generation (OPG) to the west.

The site is served by the MacDonald-Cartier Freeway (highway 401) and by the Canadian National Railway (CNR). The rail line passes through the site, and a rail siding area has been provided at the eastern boundary limit of the property. The site can also be reached directly by barge or by ocean-going ship via the St. Lawrence Seaway. Current docking and offloading facilities include those located at the western edge of the Darlington NGS, and those owned by Blue Circle Cement. Both docking facilities are available to the Iter Institute and could accommodate the largest components, which are the poloidal field (PF) coils, without any modification of the current docking facilities.

2.2 Site Integration and Modification

2.2.1 Site Access

The Clarington site is accessible by road transport, railroad and barge. The highway access is via a multi-lane freeway (highway 401), which connects to all major highways in the greater Toronto area. Objects greater than 4 m in height or width will require oversize permits, and special precautions will be required for objects taller than 5 m. A railroad passes through the Darlington site, and a dedicated siding area already exists. Objects transported by rail can arrive at the site within about 800 m of the tokamak building.

Very large objects can be shipped directly to the site without any modifications required to the shoreline. A barge slip exists in the forebay area of the Darlington Generating Station. Alternate dockage facilities are also available from the neighbouring Blue Circle Cement Plant. These facilities were used extensively during construction of the Darlington station for off-loading of large components. Objects shipped to the site by deep-water ocean will arrive via the St. Lawrence Seaway. The Seaway limits the draft and width of ships to 7.5 m and 24 m respectively, but even the largest objects could still pass through the Seaway.

The following modifications to the existing Clarington site are anticipated:

- addition of dedicated access road
- addition of new bridge over railway
- modifications to existing roads
- addition of heavy haul roads
- temporary buildings for ITER construction
- addition of permanent roads and parking facilities
- piped utilities

- refurbishment of barge dock and rail siding
- electrical system tie-ins.

2.2.2 Connection to the Electrical Grid

The proposed site is adjacent to a major node on the Ontario electric grid. The primary grid voltage at Clarington is 500 kV. Two parallel, single-circuit 500 kV lines are proposed to meet the Iter pulsed power needs (magnet power and plasma heating systems) and steady state electrical requirements. This choice is based on system study results, where the frequency and voltage variations due to Iter load swings are within limits imposed by The Independent Market Operator (IMO) that regulates the Ontario Power System. The existing 500kV switching station at the site will require expansion. The length of the new overhead transmission lines will be about 660 m.

2.2.3 Interfaces with Ontario Power Generation Darlington NGS

To provide the greatest operational flexibility for Iter, and to minimize the impact of Iter operations on electricity production at the neighbouring OPG site, the area designated for the Iter site facilitates an almost total separation between Iter and OPG operations. This also minimizes tie-ins to the existing OPG infrastructure where possible.

During construction, an area for heavy equipment laydown (2.7 ha) may be “borrowed” from the neighbouring Darlington NGS. As well, it is anticipated that the Darlington NGS barge dock and the access to it will be shared with Iter during the construction period.

2.2.4 Land Use

The layout of the Iter facility, considering the specific aspects of the Clarington site is shown in Figures 2.2-1.

The total site area is approximately 184 ha, and the area usage is summarized in Table 2.1, below. This table does not include approximately 3 ha that may be “borrowed” from the Darlington NGS land during construction

Table 2.1 Site Land Use

Use	Area (ha)
Secured Area (inside Security Access Control Fences)	15
Switchyards	7
Cooling towers and basins	3
Rail Siding	7
Concrete Batch Plant	2
Permanent Parking and Lab Office Building	2
Construction Parking	6
Contractor 1 Laydown	5
Temporary Buildings & Pipe Warehouse	6

Spoils Areas	10
Roads and Unassigned	113
Total	184

2.3 Description of Environmental Characteristics

Topologically, the Clarington site slopes from north to south with some minor surface unevenness on the eastern edge. The level of Lake Ontario is about +97 m and the highway entrance point and the rail line are approximately 25 m above the lake level.

Along the south side of the rail line, an earthen embankment has been constructed as a physical barrier between Darlington NGS and the railroad.

Vegetation on the site is characteristic of regenerating post-agricultural landscapes. Woodland communities contain a distinct sub-population of trees. There are a limited number of native species and a larger number of non-native species in the area. This has resulted in woodlands that are not ‘natural’ plant communities in southern Ontario since they lack biological diversity.

The site wetlands support herbaceous vegetation and are responsible for a large part of the site species biodiversity. There are fewer non-native species adapted to the specialized conditions of a wetland environment, since they have greater variability in seasonality and over time. The facility does not encroach on existing wetlands.

The number and species of vascular plants found on the site depends on several factors, including the extent of forest types with which they are associated and the presence of competing species. A number of uncommon plant and shrub species are also found along the shoreline of Lake Ontario.

A botanical survey revealed over 300 species, much of which was derived from planted communities and species introduced to the site flora.

Monitoring of the local deer population at the site revealed an increase over four years during the period from 1990-1996. Surveys performed in 1999 revealed 26 species of mammals that have been observed at the site such as grey squirrels and raccoons. They are typical of the rural landscape of southern Ontario. The site is also home to small mammals including moles and deer mice.

Amphibian and reptile species are not abundant. Few species of turtles and the garter snake have been observed on the property.

There are four types of wildlife habitats within the 50km regional radius of Darlington: wetland areas, winter deer concentration areas, river valleys and tableland habitat areas. The closest wetland habitat is about 1 km to the east, just west of the Bowmanville Creek estuary.

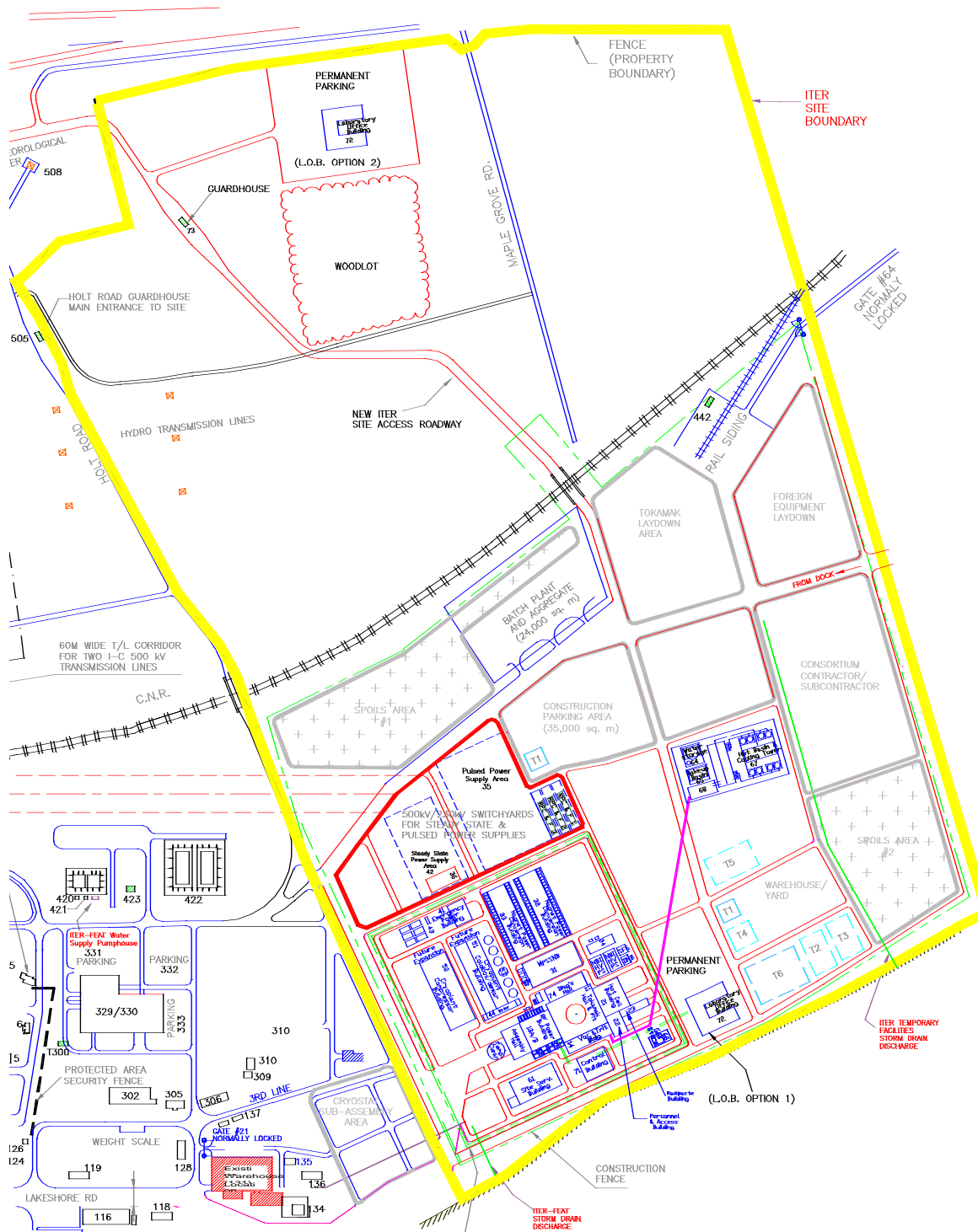


Figure 2.2-1 Iter Facility Building Layout at the Clarington Site

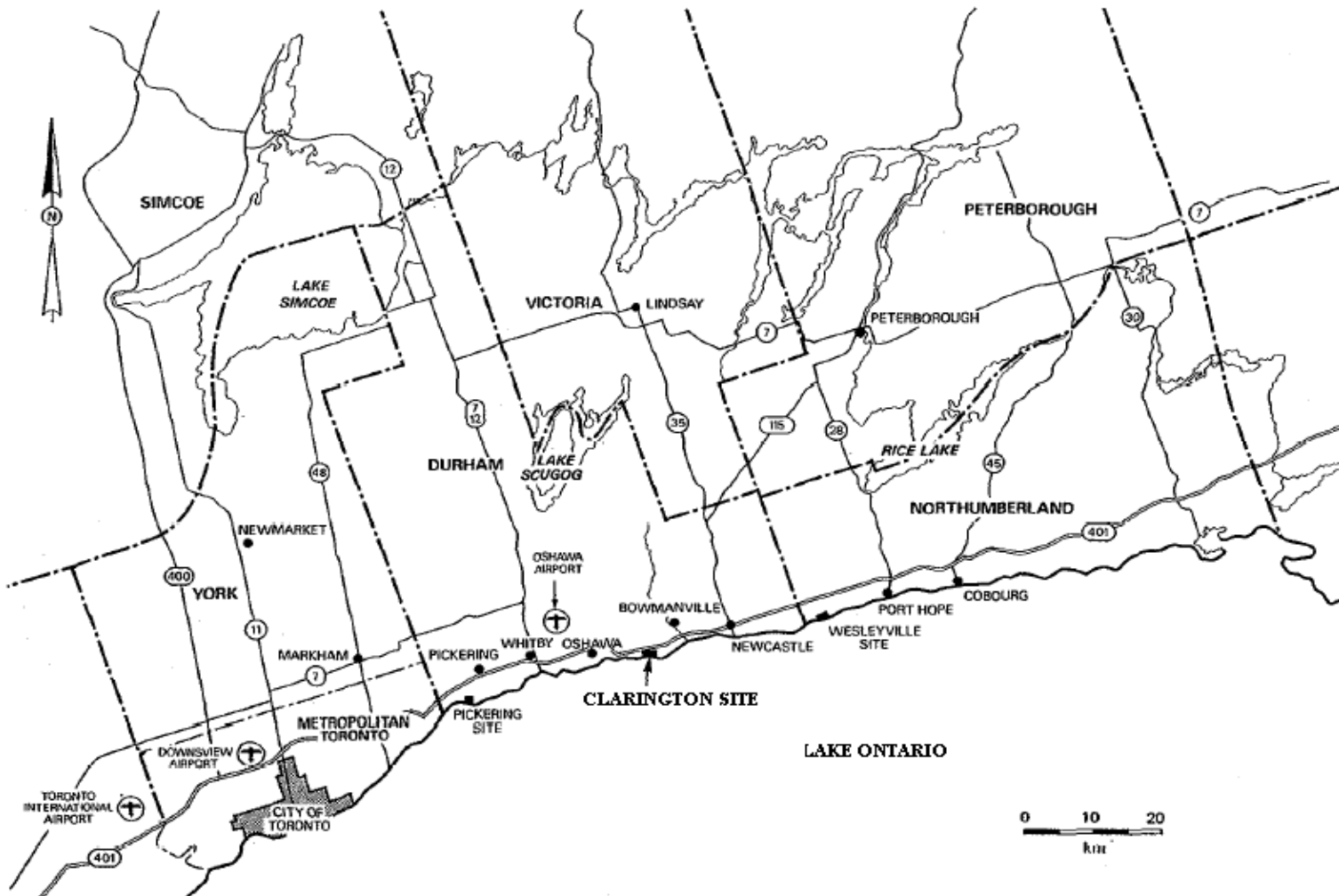


Figure 2.2-2 Site Location