



Durham Nuclear Emergency Response Plan

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1.0 Durham Nuclear Emergency Response Plan

1.1 Introduction

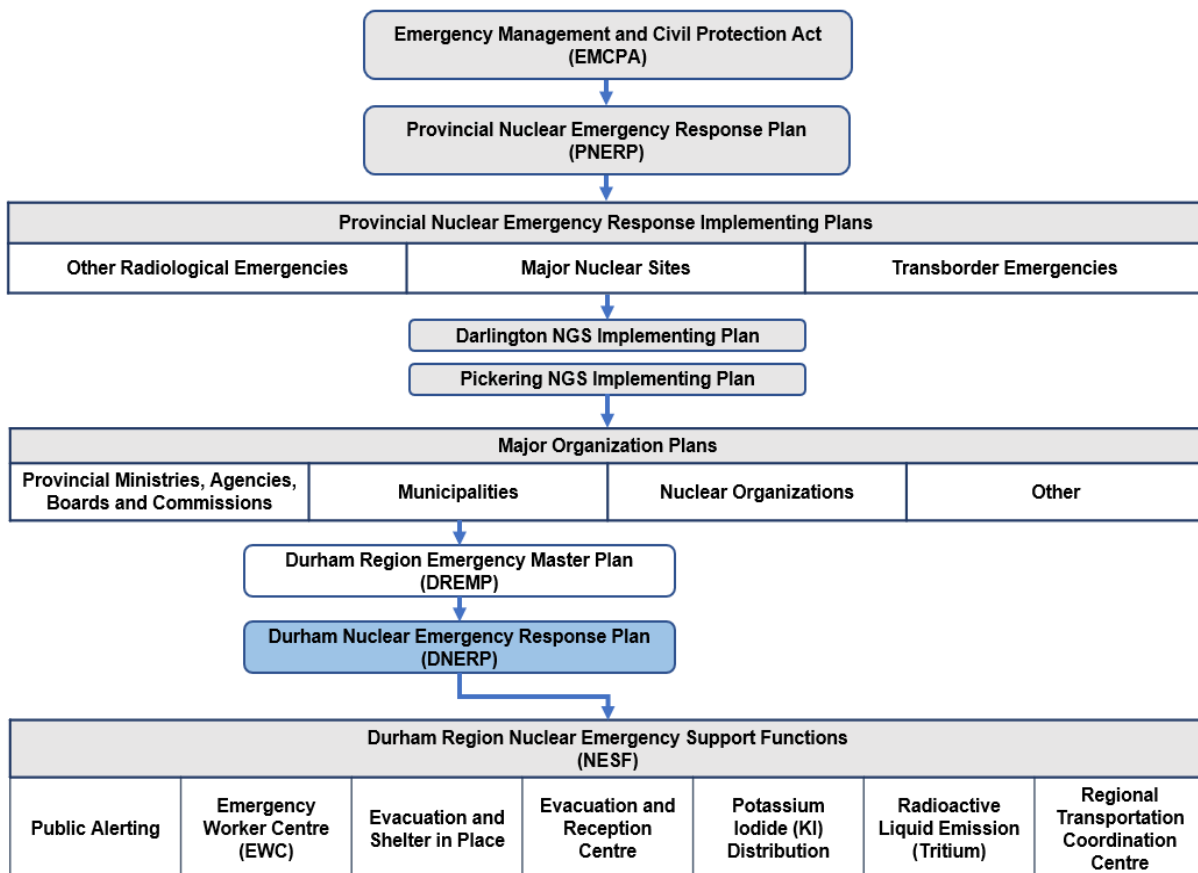
As per Section 8 of the *Emergency Management and Civil Protection Act (EMCPA)* and the Provincial Nuclear Emergency Response Plan (PNERP), Durham Region is tasked with specific offsite nuclear emergency planning responsibilities.

Under the PNERP (December 2017), Durham Region is responsible for the development and maintenance of the Durham Nuclear Emergency Response Plan (DNERP) that conforms to the PNERP and its Implementing Plans, in the event of an emergency at the Darlington or Pickering Nuclear Generating Station (NGS).

1.2 Plan Overview

The DNERP is a risk specific plan under the Durham Region Emergency Master Plan (DREMP).

Figure 1.0 - Provincial Nuclear and Radiological Emergency Response Plan Structure



The DNERP describes the regional response framework for the management of nuclear emergencies and is supported by the Nuclear Emergency Support Functions (NESFs) which are separate procedural documents to outline the processes to activate, coordinate, and manage specific emergency response functions. The NESFs consist of the following:

- **Public Alerting:** Detailed instructions for conducting regional public alerting using the sirens and the auto-dialer system for the 0-10km zones.
- **Emergency Worker Centre:** Detailed instructions for activating and operating Emergency Worker Centres.
- **Evacuation and Shelter in Place:** Detailed instructions for mass evacuation and shelter-in-place orders in the affected zones.
- **Evacuation and Reception Centre:** Detailed instructions for the conduct of Emergency Social Services at a designated centres to accommodate, monitor, and decontaminate evacuated residents which may include overnight lodging services.
- **Potassium Iodide (KI) Distribution:** Detailed instructions for the pre-distribution of Potassium Iodide (KI) pills to the 10km zone and anyone requesting it in the 50km zone. It does not address KI distribution during a response.
- **Radioactive Liquid Emission (Tritium):** Detailed instruction on the overall management of a Tritium response including water management and public health measures.
- **Regional Transportation Coordination Centre:** Detailed instructions on the activation and operation of the Regional Transportation Coordination Centre and the overall traffic management strategy.

1.3 Purpose

The DNERP outlines the nuclear emergency response framework and describes regional responsibilities and emergency functions to ensure effective and coordinated response in the event of a nuclear emergency within Durham Region.

1.4 Scope

- The DNERP will address the Region's response to a nuclear emergency involving an atmospheric release occurring either at Pickering or Darlington Nuclear Generating Stations (NGS) that could result in offsite consequences such as radiation exposure and contamination of people and/or the environment.
- The DNERP is applicable to the designated emergency planning zones surrounding a reactor facility extending out to a radius from 0-50km. Refer to **Appendix A – Emergency Planning Zones (Darlington)** and **Appendix B – Emergency Planning Zones (Pickering)** for more information.
- The DNERP may be used to respond to a radiological emergency as plans, procedures, alerting and protective actions will likely be very similar.

- A radioactive liquid emission (Tritium) response is not an atmospheric release and is outside the scope of this document. Refer to the **Radioactive Liquid Emission (Tritium) NESF** for Tritium emergencies.

1.5 Objectives

- Ensure regional compliance and conformity with the PNERP and supporting Implementing Plans.
- Establish regional roles, responsibilities, and key activities during an offsite nuclear emergency.
- Provide a detailed overview of specific regional nuclear emergency response procedures and nuclear response terminology.

2.0 Planning Basis

2.1 Planning Assumptions

The response framework in the DNERP is developed based on the following planning assumptions:

- A nuclear emergency in the Region with little or no warning, which may escalate rapidly to a point that is beyond the capacity of the Region to manage, has a low probability of occurring.
- A nuclear emergency may cause injuries, fatalities, property loss, and disruption of normal support systems.
- Regional and emergency services (Police, Fire, Paramedic Services) staff are available and ready in effective numbers to respond to and manage the nuclear emergency.
- Municipalities will work collaboratively with Durham Region on such issues as emergency declarations and terminations, action plans, situation reports, emergency news releases/media advisories/public service announcements and the issuance of public information during an emergency.
- When the Region's resources are strained, additional resources may be requested through mutual assistance agreements with neighbouring municipalities and/or through requests to the provincial and federal government.

2.2 Regional Planning Considerations

The designated nuclear planning zones are areas beyond the reactor facility where protective actions may be required during a nuclear emergency and include the following:

- Automatic Action Zone (AAZ) – **0-3km from NGS**
- Detailed Planning Zone (DPZ) – **3-10km from NGS**

- Contingency Planning Zone (CPZ) – **10-20km from NGS**
- Ingestion Planning Zone (IPZ) – **20-50km from NGS**
- The DNERP plans for Design Basis Accidents (DBA) and Beyond Design Basis Accidents (BDBA).
- The DNERP utilizes containment hold-up times and the Evacuation Time Estimates (ETE) data provided by Ontario Power Generation (OPG) as the baseline for protective action planning including traffic coordination and evacuation measures.

2.3 Design Basis Accidents

A Design Basis Accident (DBA) is distinguished by one or more of the following:

- Station containment systems function normally allowing radiation to decay prior to a controlled release.
- Sufficient time would be available to alert the public and implement protective measures prior to a release.
- The main radiological hazard to people would be external exposure to, and inhalation of, radionuclides.
- Filter systems within the NGS will remove almost all the radioiodine therefore the plume will dissipate and not pose a contamination hazard.
- Environmental contamination would be limited to very low levels of radioactivity.
- Low level radioactive releases to the environment could occur on and off for some time (i.e., days or weeks).

2.4 Beyond Design Basis Accidents

A Beyond Design Basis Accident (BDBA) can result in more severe offsite effects and is distinguished by one or more of the following:

- Station containment systems may be impaired leading to significantly reduced hold up time and decreased potential for decay of radioactive materials.
- A forced early release of radioactivity with limited advanced warning time.
- An uncontrolled release of radioactivity with limited advanced warning time.
- The plume could be unfiltered.
- Radiation doses could potentially be high.
- Environmental contamination could be significant in both extent and duration.
- The area affected could extend beyond the 10km Detailed Planning Zone (DPZ).
- A multi-unit accident (i.e., an accident involving more than one reactor).

2.5 Containment and Release of Radioactivity

The timing of any release of radioactivity following an accident at a NGS depends on the characteristics of the accident as well as the containment system. For planning purposes, the hold-up times for containment at the NGSs are as follows:

- **Darlington NGS: 7 days**
- **Pickering NGS: 2 days**

2.6 Evacuation Time Estimates

Evacuation time estimate studies are prepared by OPG to support planning and the management of transportation out of the affected zones during a response.

Darlington NGS worst case evacuation time estimates are:

- **Automatic Action Zone (AAZ)** – 5 hours and 15 minutes
- **Detailed Planning Zone (DPZ)** – 5 hours and 25 minutes
- **All Other Planning Zones (up to 20 km)** – 11 hours and 55 minutes

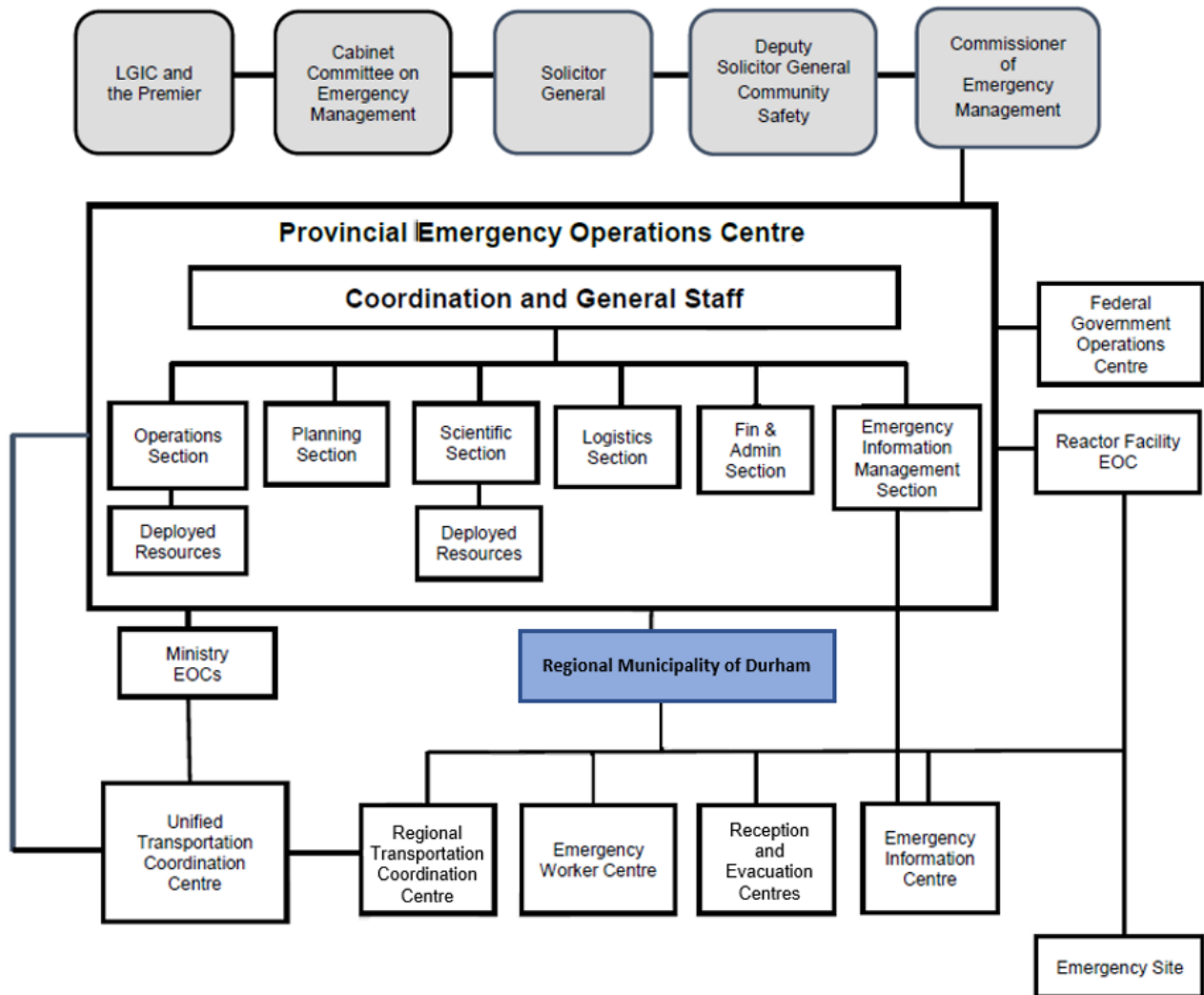
Pickering NGS worst case evacuation time estimates are:

- **Automatic Action Zone (AAZ)** – 5 hours and 50 minutes
- **Detailed Planning Zone (DPZ)** – 7 hours
- **All Other Planning Zones (up to 20 km)** – 14 hours and 40 minutes

3.0 Roles and Responsibilities

The provincial Emergency Response Organization for managing a nuclear emergency is shown in **Figure 3.0**.

Figure 3.0 – Provincial Nuclear and Radiological Emergency Response Organizational Structure.



3.1 Province of Ontario

The Province assumes the lead role during a nuclear emergency and is responsible for management of the emergency by supporting, coordinating, and directing the offsite response through the Provincial Emergency Operations Centre (PEOC). Provincial response actions are covered in **sections 3.2 – 3.4**.

3.2 Provincial Emergency Operations Centre (PEOC)

- Provides overall management and coordination of the provincial response.
- Issues directives, orders, Provincial Notification of Offsite Response Forms (PNOORF) and incident reports (e.g., IMS201, IMS209, etc.) regarding response actions and precautionary and protective measures.
- Issues emergency information and bulletins and activates the provincial Alert Ready System.
- May deploy a Liaison Officer (LO) to the Regional Emergency Operations Centre (REOC) to ensure effective coordination between the province and responding municipalities.

3.3 Protective Actions

Protective actions lessen the effects of radiological exposure from a nuclear emergency and are issued by the PEOC for the Region to implement through an operational directive or order. Protective actions include the following:

3.3.1 Precautionary Measures

These directions are issued by the PEOC in advance of, or in combination with protective measures and include:

- Closing of regional beaches
- Closing of regional recreation areas
- Closing of regional schools and workplaces
- Entry control to affected areas
- Suspension of non-critical patient admissions in regional hospitals

3.3.2 Protective Measures

These directions are issued by the PEOC to control the exposure to radiation and include:

- Sheltering-in-place
- Evacuation
- Iodine thyroid blocking (Potassium Iodide (KI) pills)

The PEOC may also recommend respiratory protection, personal protective equipment (PPE) and self-decontamination.

3.3.3. Protective Measures - Sheltering-In-Place

Sheltering-in-place directs people in the affected zones to remain indoors and take actions to minimize their exposure to radioactive hazards in the environment. It can be an appropriate interim measure in areas where a radioactive release is either expected or is ongoing.

- Sheltering-in-place orders are issued by the PEOC and shall be communicated through emergency bulletins and provincial and regional public alerting.
- Sheltering-in-place is considered a very temporary measure, normally limited to a maximum of **2 days**.
- Sheltering-in-place may be a preferred alternative to evacuation in situations that prevent a safe and efficient evacuation such as:
 - Severe weather or environmental hazards
 - Uncertain contamination levels in the environment
 - Vulnerable populations (i.e., hospitals, long-term care homes, etc.) for whom evacuation poses greater risk than that of the hazard itself
 - Essential services staffing requirements
 - Transportation impediments
- Sheltering-in-place orders may be issued in combination with Iodine Thyroid Blocking to provide maximum protection.

3.3.4 Protective Measures - Evacuation

Evacuation is the mandatory movement of people away from their homes for a period of approximately **1 week** to avoid or reduce short-term exposure to the plume or deposited radiation.

- Evacuation orders are issued by the PEOC and are communicated through emergency bulletins and provincial and regional public alerting.
- In the offsite area immediately adjacent to the source of radiation, evacuation may be the best protective action unless:
 - Persons are unable to safely evacuate (i.e., vulnerable persons due to health issues).
 - Conditions exist which make the evacuation hazardous (i.e., inclement weather, road or transportation issues, consequences resulting from a natural hazard).

3.3.5 Protective Measures – Iodine Thyroid Blocking

- Iodine thyroid blocking involves the ingestion of potassium iodide (KI) pills to prevent the uptake of radioactive iodine by the thyroid gland during a radioactive release.
- The order to ingest KI pills is issued by the Chief Medical Officer of Health for Ontario. Instructions to consume KI pills shall be communicated through emergency bulletins.

3.3.6 Ingestion Control Measures

Measures taken to avoid or reduce the risk from consuming contaminated food and water. These include steps taken to:

- Protect the food chain
- Protect drinking water supplies
- Restrict consumption and distribution of potentially contaminated produce, wild-grown products, milk from grazing animals, rainwater, animal feed (Note: Wild-grown products can include mushrooms and game).
- Restrict distribution of non-food commodities until further assessments are performed.

3.3.7 Public Alerting

Public alerting by the province is to ensure rapid notification to the public in the affected zones of a nuclear incident.

- The PEOC will initiate public alerting using the provincial Alert Ready System to cellular devices in the affected zone(s) and broadcast through radio and television. This is separate from the Region's public alerting responsibilities
- The PEOC will direct the Region to conduct public alerting through an established network of sirens within the 0-3km zones and through an auto-dialer to all listed landlines within the 0-10km zones surrounding the NGS (**see section 3.6.2**).
- The PEOC will also provide the appropriate emergency bulletins to the public. Emergency bulletins are released through broadcast and social media providing direction and guidance to the affected population regarding protective measures.

3.3.8 Emergency Information

- Emergency information is provided in addition to emergency bulletins and aims to provide the public and the media timely and accurate information on the emergency, the measures being taken, and any protective actions to be taken by the public.
- The PEOC will activate the Provincial Emergency Information Section to issue news releases, coordinate news conferences, monitor media and the public's perception of and reaction to the situation, as well as provide key messages, bulletins, and information to activated call centres.
- The PEOC may deploy Provincial Emergency Public Information Liaison Officers (PEPILO) to municipal emergency information centre(s) as soon as the need for assistance arises to ensure an appropriate level of coordination and provision of emergency public information.

3.3.9 Traffic Coordination

Traffic monitoring and coordination are managed through the Unified Transportation Coordination Centre (UTCC) which reports into the PEOC and is supported by the Regional Transportation Coordination Centre (RTCC) when activated.

- Traffic coordination measures shall be directed by the PEOC when evacuations become necessary, **or** if spontaneous evacuations begin.
- The PEOC will issue operational directives to local police services and coast guard to clear boat traffic from Lake Sectors of the affected nuclear station. Access control will be imposed by the Canadian Coast Guard and assisted by the Durham Regional Police Services (DRPS) and Toronto Police Service (TPS) marine units.

3.4 Unified Transportation Coordination Centre (UTCC)

- The Ontario Ministry of Transportation (MTO) is the overall authority for the operations, maintenance, and management of the UTCC.
- The UTCC is responsible for implementing the Unified Transportation Management Plans (UTMPs), which are developed and maintained by MTO, and the evacuation of individuals from affected areas, return to affected areas, and transportation impacts beyond the affected areas.
- The UTCC is composed of representatives from MTO, Ontario Provincial Police (OPP), designated municipalities, designated host municipalities, local police, local and provincial road and transit authorities, and others as required.

3.5 Ontario Power Generation (OPG)

OPG is responsible for the onsite response at the reactor facility and provides initial incident notification to the PEOC and the Durham Emergency Management Duty Officer. Throughout the emergency, OPG will provide regular updates and technical briefings to the PEOC and designated municipalities.

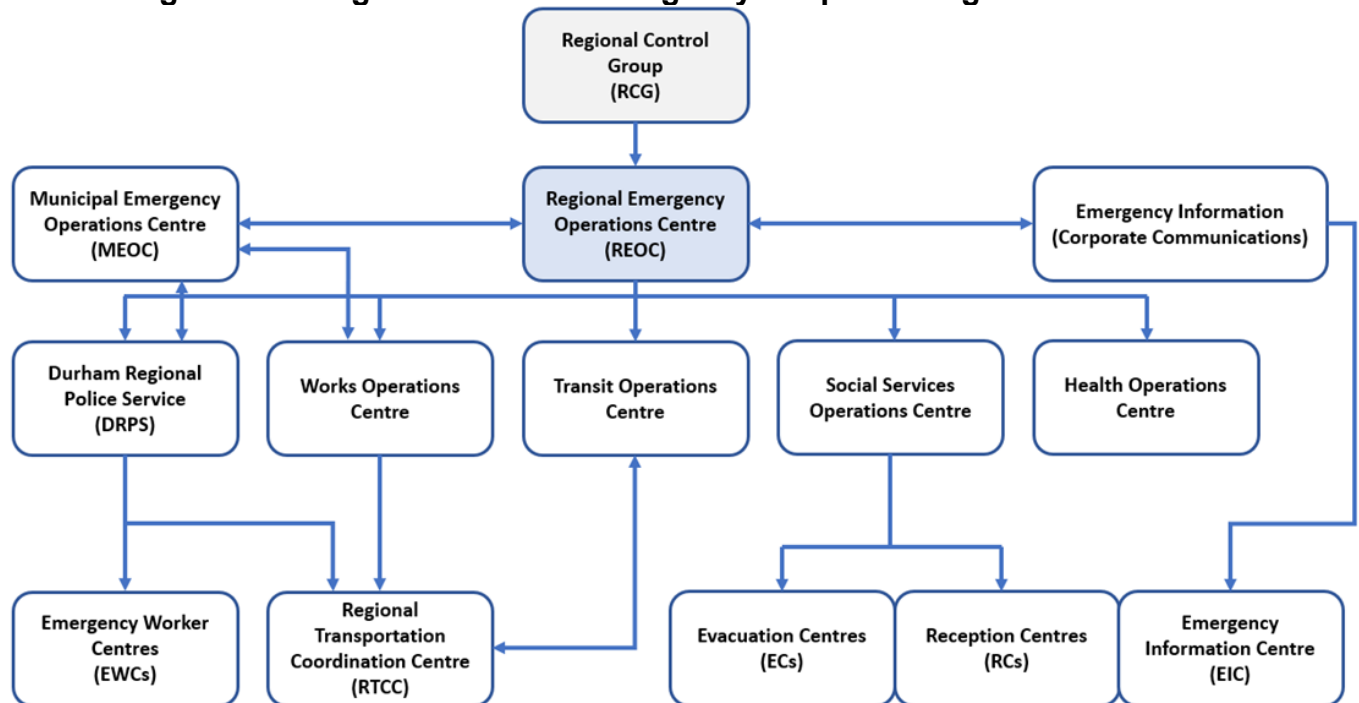
OPG may also deploy a Liaison Officer (LO) to the REOC to act as a link to the station in respect of the following:

- Providing resources and support at Reception Centres (RC) and Emergency Worker Centres (EWC), including monitoring and decontamination of people and vehicles.
- Requests for mutual assistance (i.e., for additional personal monitoring resources, KI pills, fire or paramedic services, etc.).
- Facilitating the work of the offsite field monitoring teams.

3.6 Region of Durham

The Regional Emergency Response Organization for managing a nuclear emergency is shown in **Figure 3.1**.

Figure 3.1 - Regional Nuclear Emergency Response Organization



The Region of Durham is responsible for the implementation of emergency measures within its jurisdiction as directed by the province. Region of Durham response actions are covered in **sections 3.6.1 – 3.12.1 and the Response Action Tables in Appendix C**. The main responsibilities of the Region during a nuclear emergency are:

- Public alerting within the 10km zone of the affected NGS.
- Implementing orders and directives from the PEOC and carrying out protective actions which may include the closure of regional facilities, roads, parks, recreation areas, and other public areas.
- Communicate the suspension of work in industrial and commercial establishments in the affected zones.
- Emergency transportation and traffic management of residents when an evacuation order is issued.
- Establish and operate Reception, Evacuation, and Emergency Worker Centres.
- Provide emergency information and public inquiry services.
- Continuity of essential regional government services and functions.

3.6.1 Declaration of Emergency

Pursuant to Section 4 (1) of the EMCPA, the Regional Chair may declare that an emergency exists in the Region before the province declares an emergency. This allows the Region to activate additional staff and resources to ensure a timely and effective response. The Solicitor General of Ontario will be notified immediately following the declaration of an emergency.

3.6.2 Public Alerting

In a nuclear emergency the Region will activate public alerting when directed by the PEOC or when an ongoing or imminent emission of radioactivity takes place.

Outdoor Public Alerting:

- The Region is required to activate the sirens located within 3km from the affected NGS when directed by the PEOC.
- The outdoor sirens will sound constantly for 3 minutes to alert people to return indoors and to turn on the radio or television for emergency information and instructions.

Indoor Public Alerting:

- The Region is required initiate the auto-dialer for all listed landlines in the 0-10km affected zones when directed by the PEOC.
- Once the auto-dialer is activated, automated phone calls deliver a pre-scripted message to all listed residential and business landlines in this zone describing measures to be taken.

3.6.3 Emergency Information

- In Durham Region, the Director, Corporate Communications, will act as the Emergency Information Officer (EIO) in the event of a nuclear emergency.
- The EIO will receive direction from the Regional Control Group (RCG) and oversee the emergency communications functions, including the Emergency Information Centre, Public Inquiry Centre, and Media Centre. These centres can also be activated virtually.
- The EIO will also ensure official emergency information is accurately communicated to the public, media, and other key stakeholders through liaising with the PEOC and OPG communications teams.
- Corporate Communications may also activate its Department Operations Centre (DOC) to support the EIO function within the REOC.

3.6.4 Evacuation and Transportation Management

- The Region shall support the evacuation process by activating the RTCC to coordinate with Durham Region Transit and DRPS to arrange transport services for individuals who are unable to evacuate.
- Traffic monitoring and coordination measures will be implemented in the region through the RTCC and are designed to be implemented when the DNERP is activated.

3.6.5 Thyroid Blocking – Potassium Iodide (KI) Pills

- KI pills are pre-distributed to Durham residents, organizations, and businesses within the 10km zone of the nuclear facilities. Supplies are also maintained at Reception Centres, Evacuation Centres and Emergency Workers Centres. In the event of an emergency, additional KI distribution centres within the Region may be activated for the public to obtain KI pills.

3.7 Regional Emergency Operations Centre (REOC)

The REOC coordinates with the PEOC to manage emergencies within Durham Region. The REOC shall be activated at the **Enhanced Monitoring** level to prepare the region for the possible escalation of response. The REOC is responsible for the following:

- Providing overall coordination of the regional response, based on strategic direction from the PEOC.
- Providing regional departments with incident notification, situational awareness, operational coordination, and strategic direction through their Department Operations Centres (DOCs).
- Maintaining and supporting operations at offsite emergency centres (i.e., RCs, EWCs).
- Providing local area municipalities with incident notification, situational awareness, response coordination support, and emergency information support through the appropriate Municipal Emergency Operation Centre (MEOC).
- Resource management to support the emergency sites.
- Providing information to the public and the news media.
- Maintaining and supporting business continuity for the Region.

3.8 Regional Department Operations Centres (DOC)

For a nuclear emergency, regional departments shall activate their Department Operations Centres (DOC) to ensure effective management of departmental response activities. The DOCs will report into the REOC to achieve regional objectives. The following DOCs shall be activated to support response efforts in the region and their responsibilities are outlined below:

Durham Regional Police Services

- Ensures public safety, law enforcement within the region, where required.
- Supports traffic coordination operations at the designated roadways.
- Coordinates evacuation operations with the RTCC and provides representation at the UTCC, where required.
- Coordinates and manages EWCs.
- Provides business continuity of critical processes and services related to policing

Works Department

- Ensures communication links with water treatment and wastewater facilities.
- Maintains communication with the RTCC regarding traffic flow and conditions.
- Supports the development of a waste management plan as directed by the PEOC.
- Liaises with other agencies and enforcement/conservation authorities to support response.
- Monitors and assesses critical infrastructure.
- Provides business continuity of critical processes and services related to their divisions.

Transit Department

- Coordinates the operation of buses for emergency response including evacuation and temporary sheltering.
- Communicates transit service information and evacuation progress to the REOC.
- Maintains communication with the RTCC regarding traffic flow and conditions.
- Liaises with other transit agencies to support response
- Provides business continuity of critical processes and transit services.

Social Services Department

- Coordinates the operation of reception and/or evacuation centres and maintains communication with centre managers.
- Liaises with community partners to ensure the coordination of Emergency Social Services (ESS) at the centres.
- Liaises with other agencies to support response.
- Provides business continuity of critical processes and social services.

Health Department

- Addresses KI questions, inspect for food safety, water quality, and infection control at evacuation and reception centres.
- Liaises with other health agencies to support response.
- Provides business continuity of critical processes and health services.

Corporate Communications

- Conducts media and social media monitoring and responds to inquiries.
- Distributes media materials and coordinates media conferences.
- Updates regional website and social media information.
- Coordinates information and messaging with the Provincial Emergency Information Section.

3.9 Regional Transportation Coordination Centre (RTCC)

- The Regional Transportation Coordination Centre (RTCC) is activated during a nuclear emergency to manage traffic control and transportation operations.
- The RTCC reports directly to the REOC and coordinates with the provincial Unified Transportation Coordination Centre (UTCC), as well as the regional Departmental Operations Centre (DOC) for police, Works, and Transit departments.
- The regional Traffic Management Centre (TMC) will be converted to the RTCC which will be staffed by the **Works department, Transit department, and DRPS** to monitor and manage the evacuation process through transportation coordination measures directed by the UTCC.

3.10 Reception Centres (RC)

- Reception Centres (RC) are pre-determined centres within the region to monitor and decontaminate affected population, vehicles and pets when required.
- In the event of an ongoing radioactive emission, evacuees may be exposed to contamination. Monitoring and decontamination will be accomplished by the establishment of Monitoring and Decontamination Units (MDU) from OPG at RCs.
- RCs are operated and managed by the **Social Services Department** in partnership with the local area municipality and OPG to provide the following functions:
 - Registration and inquiry

- First-aid
- Monitoring and decontamination
- Accommodation allocation to evacuation centres
- Details of which reception centres are operational to receive evacuees will be provided through emergency bulletins from the PEOC. The number of RCs activated is dependent on the requirements of the emergency response and will be determined by the REOC.
- If required, additional RCs may be established in host municipalities such as Toronto and Peterborough as designated in the PNERP.
- If the pre-determined RCs cannot be used, the PEOC will identify, acquire, and communicate the location of the appropriate facilities to the REOC.

Table 3.1 – Designated / Host Municipality and Reception Centres

Emergency At Pickering and Darlington NGS	
Designated/Host Municipality	Reception Centre Location
Region of Durham	Delpark Homes Centre 1661 Harmony Rd N, Oshawa, ON L1H 7K5
Region of Durham	Durham College 2000 Simcoe St N, Oshawa, ON L1G 0C5
City of Toronto	York University 4700 Keele St, Toronto, ON M3J 1P3
City of Peterborough	Sir Sanford Fleming College 599 Brealey Dr, Peterborough, ON K9J 7B1

3.11 Evacuation Centres

- Evacuation Centres (EC) are facilities where Emergency Social Services (ESS) such as food, shelter, clothing and family reunification services are provided to those that have been evacuated from the affected zones.
- The REOC may direct the activation of ECs which are managed by the **Social Services department**.
- The location and number of ECs activated depends on the emergency progression and are determined in consultation with the local area municipality receiving the evacuees.
- ECs will likely be established in host municipalities such as Toronto and Peterborough, or in other support municipalities, as designated in the PNERP.
- If the pre-determined ECs cannot be used, the PEOC will identify, source, and communicate the location of the appropriate facilities to the REOC.

3.12 Emergency Worker Centres

- EWCs are facilities set up to monitor, control exposure to and decontaminate emergency workers to radiation.
- The number of EWCs are determined by the REOC and are activated as required to meet operational demands.
- **DRPS has operational responsibility** of the two EWCs in Durham Region and **OPG** staff will provide monitoring and decontamination services for workers entering and exiting the affected areas.
- Emergency workers are those who perform emergency services in support of an emergency response and include:
 - Staff required to remain in, or to enter, areas affected or likely to be affected by radiation from a nuclear emergency, and for whom special safety arrangements are required.
 - Staff who are required to provide response outside the affected areas.
 - Police, firefighters, paramedic services, emergency social services workers, and other essential services.
 - Helpers who are registered with an authorized responding organization.
 - Nuclear energy workers are not included in the definition of emergency workers.

- All workers (including police, fire, paramedic services, transit, utilities, provincial and federal survey teams, etc.) will be required to report to an EWC before entry into the affected zones.
- If the pre-determined EWCs cannot be used, the PEOC will identify, source, and communicate the location of the appropriate facilities to the REOC.

Table 3.2 - Emergency Worker Centre Location

Emergency Worker Centre Location		
Emergency Site	EWC Location	Responsibility
Pickering NGS	Iroquois Park Sports Centre 500 Victoria St W, Whitby, ON L1N 9G4	Durham Region
	Centennial College 941 Progress Ave, Scarborough, ON M1G 3T8	City of Toronto
Darlington NGS	Orono Arena 2 Princess St, Orono, ON L0B 1M0	Durham Region
	Iroquois Park Sports Centre 500 Victoria St W, Whitby, ON L1N 9G4	Durham Region

3.12.1 Emergency Worker Safety

- All emergency workers shall report to an EWC prior to entry into a potentially contaminated zone.
- The exception to reporting to an EWC before entry are DRPS officers who are trained and equipped with personal monitoring equipment and may be required to enter a zone before an EWC is operational. DRPS officers must follow

departmental guidelines for obtaining dosimetry **prior** to responding in the affected zones and must report to the EWC after completing their assignment.

- Emergency workers will be provided with personal radiation monitoring devices and briefed by OPG staff on safety precautions and the maximum time limit in the sector.
- After completing their assigned tasks, the emergency workers will report back to the EWC for monitoring, debriefing, and decontamination if required.

3.13 Local Area Municipalities

- During a nuclear emergency, the Region will provide incident notification and response direction from the PEOC such as precautionary and protective actions and emergency bulletins to local area municipalities.
- The municipalities of Ajax, Clarington, Oshawa, Pickering and Whitby may activate their Municipal Emergency Operations Centres (MEOCs) to coordinate the implementation of protective measures in their communities and to support the overall regional response to the emergency.
- The municipalities of Uxbridge, Brock and Scugog may also be required to assist when response levels escalate. The level of support is dependent on the progression of the nuclear emergency.
- Additional responsibilities of the local municipalities include:
 - Closure of municipal facilities, roads, parks, recreation areas, and other public areas.
 - Provide municipal facilities to support the activation of Reception, Evacuation, and Emergency Worker Centres.
 - Provide animal services support in RCs and ECs.
 - Continuity of essential municipal government services and functions.

3.14 Designated Host Municipalities

Designated Host Municipalities shall be responsible for the reception, care and shelter of people and animals evacuated from their homes. If evacuees may be exposed to radioactive contamination, these municipalities' plans must also include provisions for monitoring and decontamination.

The PNERP designates the City of Toronto and the City of Peterborough as host municipalities to accommodate evacuees from Durham Region. The City of Toronto and the City of Peterborough are responsible for the following:

- Receive and accommodate evacuees from Durham Region.
- Coordination of reception centre plans and procedures with the reactor facility's monitoring & decontamination arrangements.
- Establishment of a municipal contact point, which can receive and act upon an initial notification from the PEOC on a 24/7 basis.
- Liaison arrangements with the REOC and the PEOC to ensure appropriate communication during an emergency.
- Arrange for regional staff who may be deployed into City of Toronto and City of Peterborough ECs and RCs, including staff from social services, police, fire and paramedic services.
- Provision of emergency information regarding reception and evacuation centre issues.

3.15 School Boards

School boards are responsible for implementing emergency measures for schools in the DPZ. The direction for the school boards will come from the PEOC. The main responsibilities of school boards include:

- Closing schools as directed by the PEOC.
- Arranging for transportation to move evacuated staff and students to temporary holding centres.
- Ensuring the safety and supervision of students until they are transferred to their parents or legal guardians.

4.0 Incident Notification and Activation

4.1 Initial Notification

In a nuclear emergency, OPG will send a Provincial Nuclear Emergency Response Plan Notification (N-FORM-10080-R010) by fax to the PEOC Duty Desk, DRPS 911 Communications, and the DEM DO within **15 minutes** of categorizing an event that requires immediate response under the PNERP.

There are four categories for initial notification which relate to the severity of the event at the Nuclear Generating Station (NGS). The notification categories are:

- **Reportable Event:** Any event affecting the NGS which would be of concern to offsite authorities including any event that could reduce the NGS capability to deal with an emergency onsite.

- **Abnormal Incident:** An abnormal occurrence at the NGS which may have a significant cause or may lead to more serious consequences.
- **Onsite Emergency:** A serious malfunction which results or may result in an atmospheric emission of radioactive material or is likely to result in an emission at a later time of more than 12 hours.
- **General Emergency:** An on-going atmospheric emission of radioactive material, or one likely within 12 hours, as a result of a more severe accident.

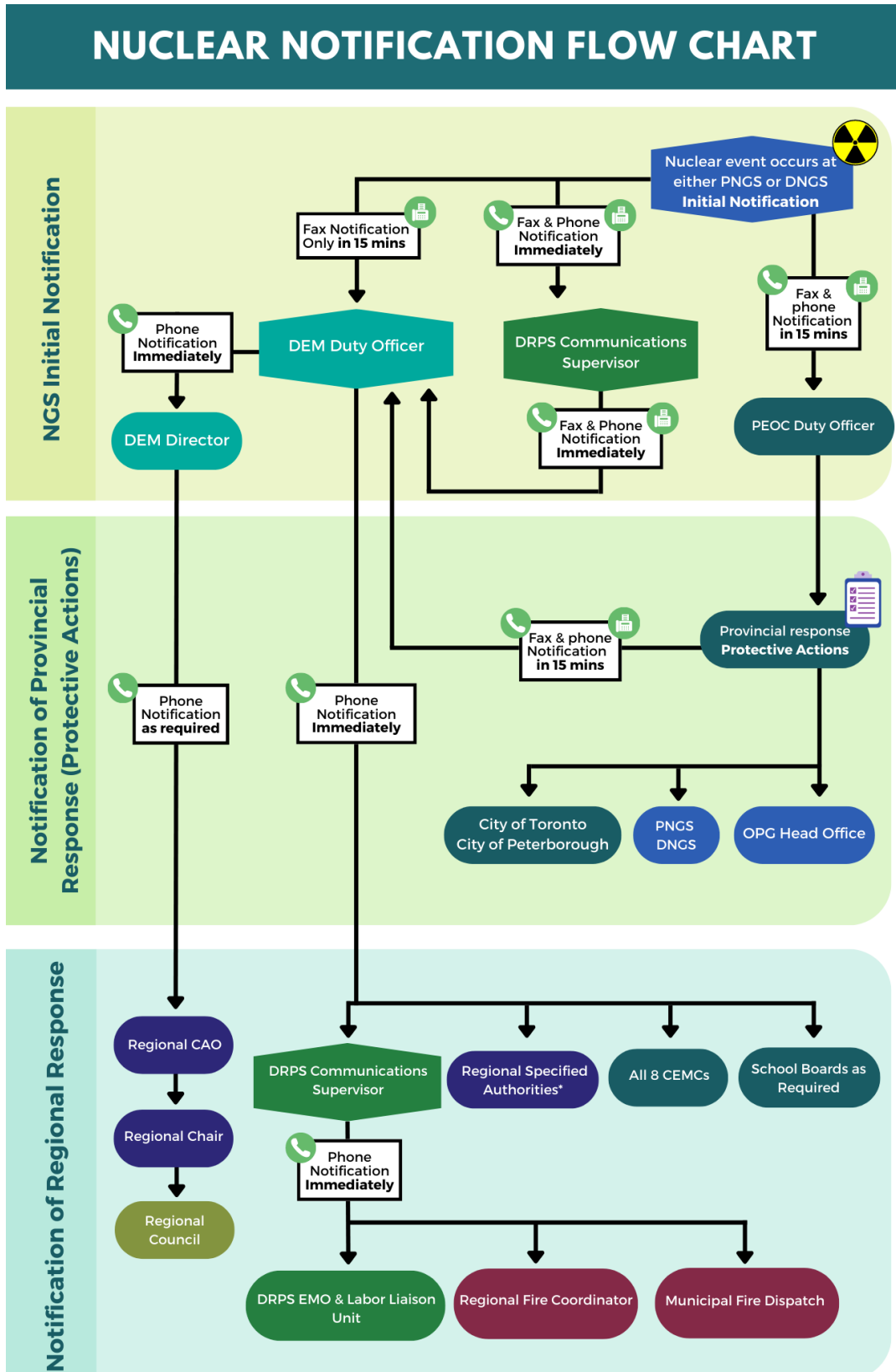
4.2 Incident Escalation

Once the initial notification from OPG is received by the PEOC, the PEOC has **15 minutes** to determine the Provincial Response Level and any municipal protective actions that are required.

- The Provincial Response Levels to the four initial notification categories by the NGS are as follows:
 - Routine Monitoring
 - Enhanced Monitoring
 - Partial Activation
 - Full Activation
- The PEOC faxes a Province of Ontario Notification of Offsite Response Form (PNOORF) to DRPS 911 Communications who will inform and confirm receipt of the fax with the DEM DO.
- The DEM DO reviews the PNOORF and confirms with the PEOC DO the details of the Provincial Response Level, which includes any specific municipal protective actions.
- The DEM DO will contact DRPS 911 Communications Supervisor to relay the Provincial Response Level and any specific municipal protective actions and initiate the regional response protocols including notifying affected municipalities, the RCG, and activation of the REOC.
- Upon activation of the REOC, all subsequent notification and updates will be coordinated and communicated through the REOC, not the DEM DO.

See **Figure 4.0** for an overview of the communications pathways during the notification process.

Figure 4.0 - Overview of Notification Process



4.3 Plan Activation

The DNERP will be activated for **all** offsite nuclear emergencies when the provincial response level is **Enhanced Monitoring**. The activation of the REOC will occur at the same time with DEM initiating the process through the authority of the **Director, Emergency Management** and in consultation with the RCG.

4.4 Regional Actions & Response Levels

- The Regional response levels are aligned with Provincial response levels and consists of the option to take actions sooner to ensure the Region is prepared to respond without undue delay.
- At the Routine Monitoring level, the Region shall ensure the REOC is readied to coordinate emerging response activities.
- At the Enhanced Monitoring level, the Region may place staff on standby, prepare emergency centres, and confirm communication pathways between the REOC and other operations centres.

The Regional actions are outlined for each response level below and summarized with the Provincial actions in **Appendix C – Nuclear Response Action Tables**.

Routine Monitoring (NGS Notification Category: Reportable/Unusual Event)

- DEM DO to monitor the situation.
- DEM DO to maintain contact with the PEOC DO.
- Preparations made by DEM to ensure REOC is readied to become operational without undue delay.
- DEM DO to review procedures to notify and recall REOC Staffing Plan members if required.

Enhanced Monitoring (NGS Notification Category: Abnormal Incident/Alert)

- DEM to set up and activate the REOC to Enhanced Monitoring structure and monitor event.
- REOC maintains contact with the PEOC and OPG.
- Preparations made to ensure the following emergency centres are readied to become operational without undue delay:

- Emergency Workers Centre
 - Reception Centres
 - Evacuation Centres
 - Emergency Information Centre
 - Public Inquiry Centre
 - Regional Transportation Coordination Centre
- Confirm communication channels with the above emergency centres and activated DOCs and MEOCs.
 - DEM to review the public alerting system procedures in preparation for activation when directed by the PEOC.

Partial Activation

(NGS Notification Category: Onsite/Site Area Emergency with no ongoing or imminent release)

- REOC is fully staffed at Partial Activation structure (including PEOC and OPG Liaison Officers) and responds to event.
- Activate the public alerting system as directed by the PEOC.
- The following emergency centres are to be activated and staffed:
 - Emergency Workers Centre
 - Reception Centres
 - Evacuation Centres
 - Emergency Information Centre
 - Public Inquiry Centre
 - Regional Transportation Coordination Centre
- Implement operational directives and emergency orders for protective and precautionary measures, as directed by the PEOC.
- Ensure all PEOC directives, orders, protective and precautionary measures are communicated to the local municipalities.

Full Activation

(NGS Notification Category: Onsite/Area Emergency with ongoing or imminent release or a General Emergency)

- REOC is fully staffed at Full Activation structure (including PEOC and OPG Liaison Officers) and responds to event.
- Activate the public alerting system as directed by the PEOC.
- Formally declare a Regional Emergency.
- The following emergency centres are fully staffed and operational:
 - Emergency Workers Centre
 - Reception Centres
 - Evacuation Centres
 - Emergency Information Centre
 - Public Inquiry Centre
 - Regional Transportation Coordination Centre
- Implement operational directives and emergency orders for protective and precautionary measures, as directed by the PEOC.
- Implement transportation coordination and entry measures as directed by the UTCC.
- Ensure all PEOC directives, orders, protective and precautionary measures are communicated to the local municipalities.

5.0 Document Administration

- The development, implementation, and ongoing maintenance of the DNERP, as well as ensuring the compliance of the plan will be the responsibility of DEM.
- The DNERP will be reviewed annually and updated when changes are made to the PNERP. Any amendments to legislation and lessons learned from exercises and emergency responses will be incorporated in subsequent revisions of the DNERP.
- The DNERP shall be made available in an accessible format on the Region of Durham's website under the nuclear emergency preparedness page. Copies of the DNERP may also be requested by contacting DEM.

Appendix A – Emergency Planning Zones (Darlington)

Emergency Response Sectors- Darlington NGS

The DPZ is divided into 16 response sectors around the Darlington NGS:

Automatic Action Zone

- D1 and Lake Sector D14.

Detailed Planning Zone Inner Ring Sectors

- D2, D3, D4, D5, and Lake Sector D15.

Detailed Planning Zone Outer Ring Sectors

- D6A, D6B, D7, D8A, D8B, D9, D10, D11, D12, D13, and Lake Sector D16.

The DPZ (10km) for the Darlington NGS is shown in **Figure 1**. The boundaries are described in **Table 2**. Estimates of the population by sector are shown in **Table 3**.

The Contingency and Ingestion Planning Zones for the Darlington NGS encompasses parts of Durham Region and neighbouring municipalities. The Ingestion Planning Zones with its sub-zones are shown in **Figure 2**.

Figure 1 - Darlington Detailed Planning and Contingency Planning Zones Map

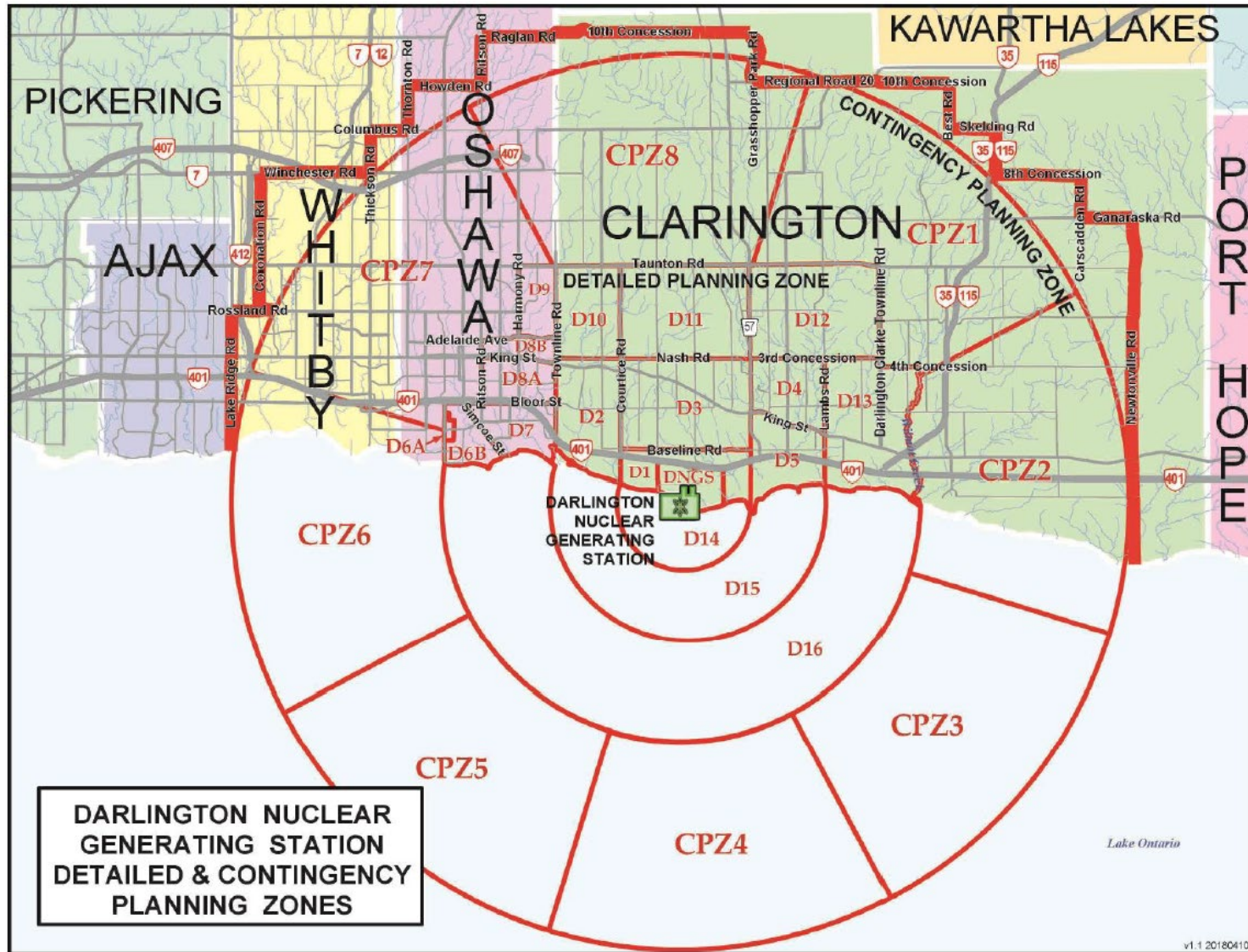


Table 2 - Darlington Response Sector Boundaries

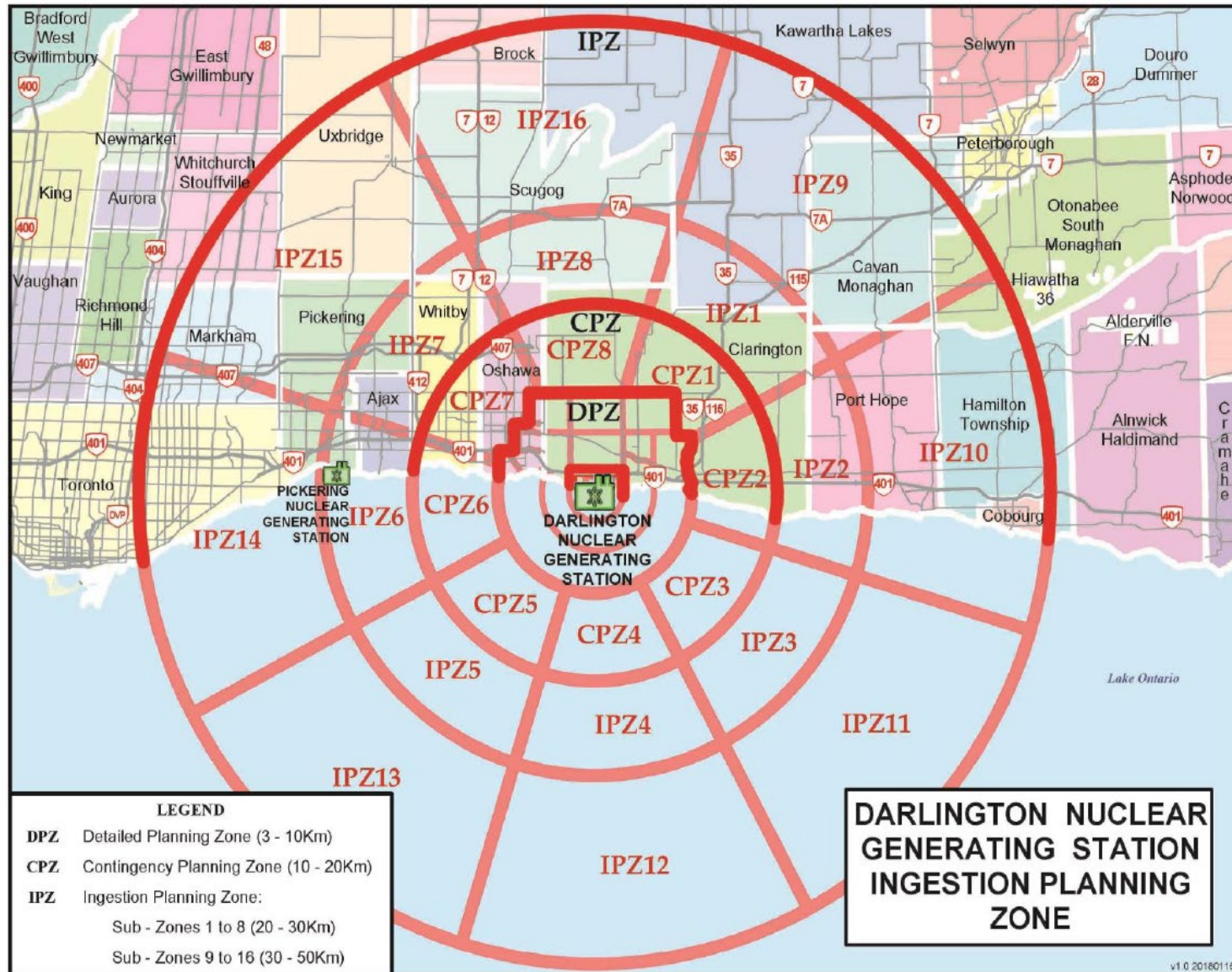
Sector	Sector Boundary (North; East; South; West)
D1	Baseline Road; or Bowmanville Ave; Lake Ontario; Courtice Road
D2	Nash Road; Courtice Road/RR 34; Lake Ontario; Townline Road/RR 55
D3	Nash Road; or Bowmanville Ave /RR 57; Baseline Road; Courtice Road/RR 34
D4	Concession Rd #3; Lamb's Road; Highway 2; or Bowmanville Ave /RR 57
D5	Highway 2; Lambs Road; Lake Ontario; or Bowmanville Ave RR 57
D6A	General Motors Parking Lot
D6B	Bloor Street/RR 22; Simcoe Street/RR 2; Lake Ontario; Park Road/RR 54
D7	Bloor Street/RR 22; Townline Road/RR 55; Lake Ontario; Simcoe St/RR 2
D8A	King St; Townline Rd/RR 55; Bloor St/RR 22; Ritson Rd/RR 16
D8B	Adelaide Ave/RR 58; Townline Road/RR 55; King St; Ritson Road/RR 16
D9	Taunton Rd/RR 4; Townline Rd/RR 55; Adelaide Ave/RR 58; Harmony Rd/RR 33
D10	Taunton Road/RR 4; Courtice Road/RR 34; Nash Road; Townline Road/RR 55
D11	Taunton Road/RR 4; Martin Road/RR 57; Nash Road; Courtice Road/RR 34
D12	Taunton Rd/RR 4; Darlington-Clarke Townline/RR 42; Concession #3; Martin Road/RR 57
D13	Concession Rd #3 and #4; Wilmot Creek; Lake Ontario; Lambs Road
D14 - D 16	Lake Ontario Sectors

Table 3 - Population* Estimate for Darlington Sectors

Sector	Population (Maximum)
D1	90
D2	18,450
D3	9,840
D4	22,130
D5	8,390
D6A	General Motors Parking Lot
D6B	13,180
D7	4,510
D8	22,220
D9	13,180
D10	7,560
D11	1,830
D12	1,360
D13	2,240
DNGS	1,400
Total	126,580

* Population estimates based on the 2016 Canada Census data.

Figure 2 - Darlington Ingestion Planning Zone Map



Appendix B – Emergency Planning Zones (Pickering)

Pickering NGS - Emergency Planning Zones

The DPZ is divided into 25 response sectors around the Pickering NGS:

Automatic Action Zone

- P1, P2 and Lake Sector P23.

Detailed Planning Zone Inner Ring Sectors

- P3 to P14 and Lake Sector P24.

Detailed Planning Zone Outer Ring Sectors

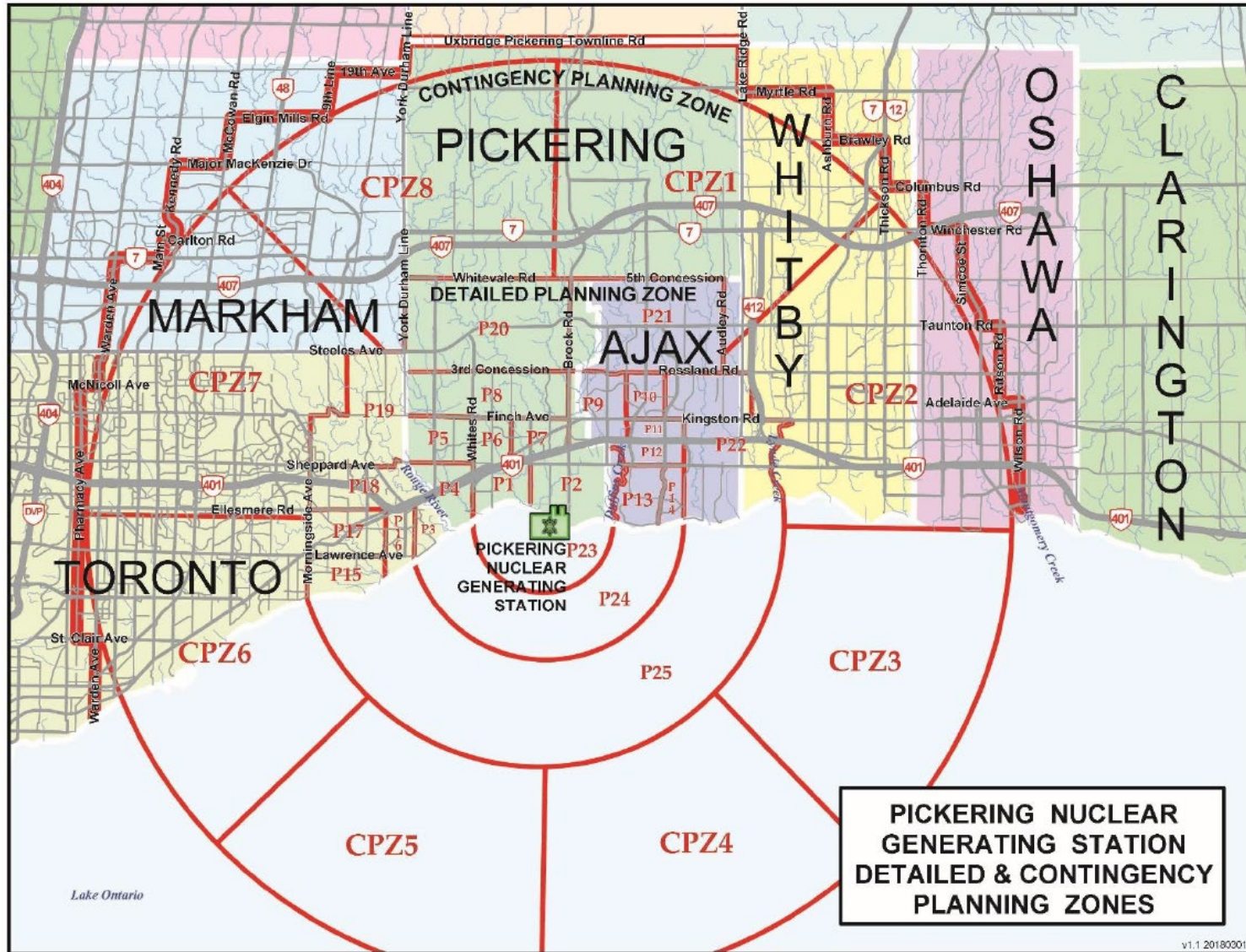
- P15 to P22 and Lake Sector P25.

The DPZ (10km) for the Pickering NGS is shown in **Figure 3**. The boundaries are described in **Table 4**. Estimates of the population by sector are shown in **Table 5**.

The Contingency and Ingestion Planning Zones for the Pickering NGS encompasses parts of Durham Region and neighbouring municipalities. The Contingency and Ingestion Planning Zones are shown in **Figure 4**.

Note – sectors P3, P15, P16, P17, P18 and P19 fall outside the regional boundary and are the responsibility of the City of Toronto, as are Lake Sector P25 and the western portion of Lake Sector P24.

Figure 3 - Pickering Detailed and Contingency Planning Zones Map



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Table 4 - Pickering Response Sector Boundary Description

Sector	Sector Boundary (north; east; south; west)
P1	Highway 401; Liverpool Road; Lake Ontario; Whites Road/RR38
P2	Highway 401; Duffin's Creek; Lake Ontario; Liverpool Road
P3	Highway 401; Rouge River; Lake Ontario; East Avenue
P4	Sheppard Avenue; Whites Road/RR 38; Lake Ontario; Rouge River
P5	Finch Avenue/RR 37; Whites Road/RR 38; Sheppard Avenue; Scarborough-Pickering Townline Road/RR 30
P6	Finch Avenue/RR 37; Dixie Road; Highway 401; Whites Road/RR 38
P7	Finch Avenue/RR 37; Brock Road/RR 1; Highway 401; Dixie Road
P8	3 rd Concession (Rossland); Brock Road/RR 1; Finch Avenue/RR 37; Scarborough-Pickering Townline/RR 30
P9	3 rd Concession (Rossland); Ravenscroft/Rotherglen Roads; Highway 401; Brock Road/RR 1
P10	3 rd Concession (Rossland); Old Harwood Avenue; Kingston Road/Highway 2; Rotherglen/Ravenscroft Roads
P11	Kingston Road/Highway 2; Pickering Beach Road; Highway 401; Rotherglen Road

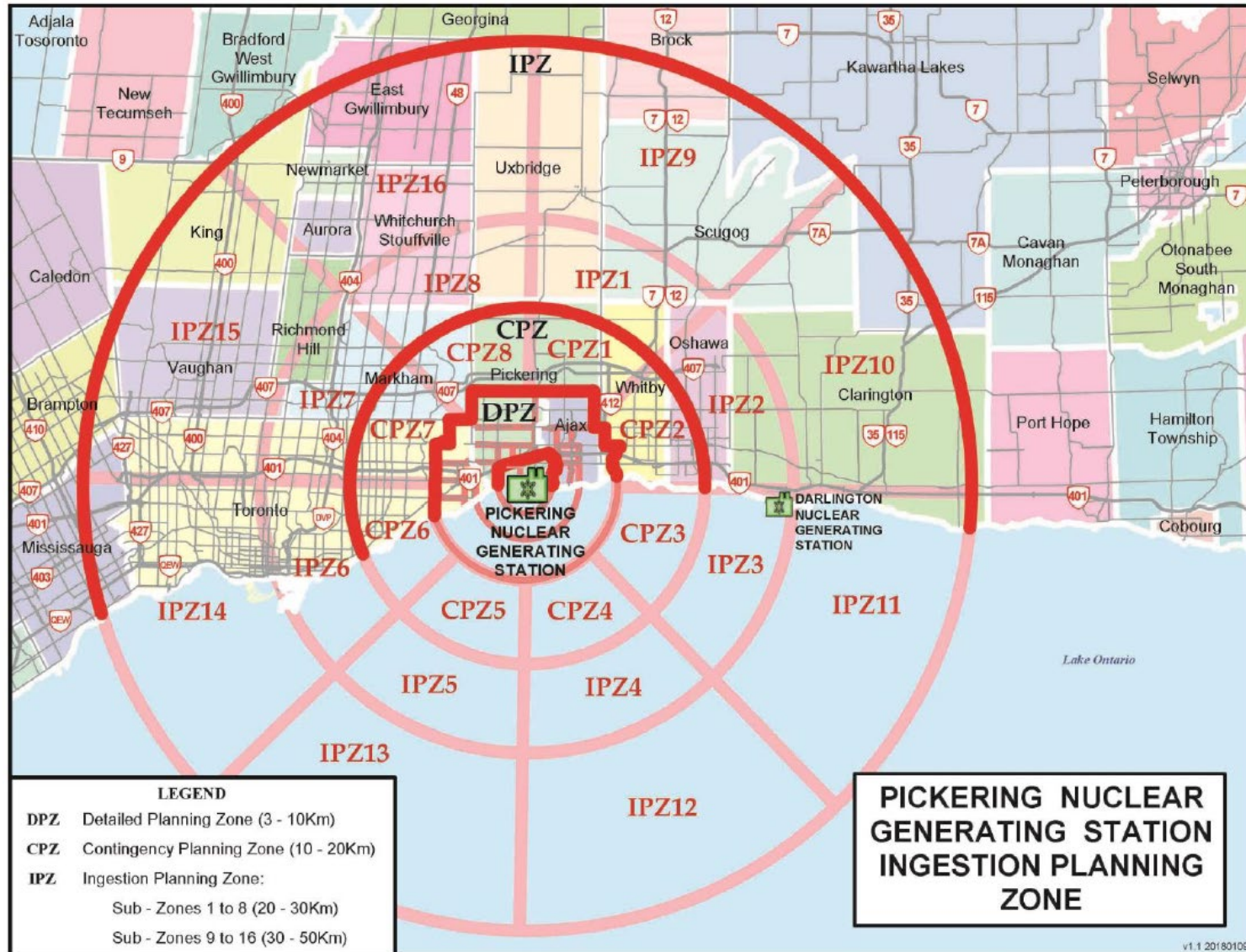
Sector	
P12	Highway 401; Pickering Beach Road; Bayly Street/RR 22; Duffin's Creek
P13	Bayly Street/RR 22; Harwood Avenue/RR 44; Lake Ontario; Duffin's Creek
P14	Bayly Street/RR 22; Pickering Beach Road; Lake Ontario; Harwood Avenue/RR 44
P15	Lawrence Avenue; Centennial Road; Lake Ontario; Morningside Avenue
P16	Highway 401; East Avenue; Lake Ontario; Centennial Road
P17	Ellesmere Road; Centennial Road; Lawrence Avenue; Morningside Avenue
P18	Sheppard Avenue; Little Rouge River; Ellesmere Avenue; Morningside Avenue
P19	Old Finch and Steeles Avenue; Scarborough-Pickering Townline/RR 30; Sheppard Avenue; Morningside Avenue
P20	Whitevale Road; Brock Road/RR 1; 3 rd Concession Rd.); Markham-Pickering Townline/RR 30
P21	Whitevale Road; Audley Road; 3 rd Concession Rd. Brock Road/RR 1
P22	3 rd Concession Rd.; Hall's Road and Lynde Creek; Lake Ontario; Pickering Beach Road and Harwood Avenue

Table 5 - Population* Estimate for Pickering Sectors

Sector	Population (maximum)
P1	8,900
P2	4,740
P3	5,675 (City of Toronto)
P4	8,330
P5	17,190
P6	11,140
P7	15,900
P8	15,620
P9	17,810
P10	16,190
P11	9,150
P12	3,670
P13	8,810
P14	9,420
P15	10,898 (City of Toronto)
P16	7,224 (City of Toronto)
P17	14,604 (City of Toronto)
P18	19,407 (City of Toronto)
P19	9,541 (City of Toronto)
P20	1,830
P21	36,450
P22	25,630

Sector	Population (maximum)
PNGS	4,500
Region of Durham Total	215,280
Total DPZ (incl. Toronto)	282,629

Figure 4 - Pickering Ingestion Planning Zone Map



Appendix C – Nuclear Response Action Tables



Level: Routine Monitoring

Associated Notification Category: Reportable / Unusual Event

Provincial Response	Regional Response	Regional Notifications
<ol style="list-style-type: none"> 1. Provincial Emergency Operations Centre (PEOC) informs the Region of level of response to be adopted. 2. Provincial Emergency Operations Centre (PEOC) monitor event. 3. Scientific staff consulted, if appropriate <p>Note: For further provincial response requirements, refer to the Provincial Nuclear Emergency Response Plan</p>	<ol style="list-style-type: none"> 1. Durham Emergency Management Duty Officer to monitor the situation. 2. Maintain contact with the Provincial Emergency Operations Centre Duty Officer. 3. Preparations made by Durham Emergency Management to ensure Regional Emergency Operations Centre is readied to become operational without undue delay. 4. Durham Emergency Management Duty Officer to review procedures to notify and recall Regional Emergency Operations Centre Staffing Plan members if required. 	<p>Durham Emergency Management may notify the following:</p> <ul style="list-style-type: none"> • Durham Regional Police Services Communications • Regional Chair • Chief Administrative Officer • Corporate Communications • Regional Control Group • Community Emergency Management Coordinators



Level: Enhanced Monitoring

Associated Notification Category: Abnormal Incident / Alert

Provincial Response	Regional Response	Regional Notifications
<ol style="list-style-type: none"> 1. Provincial Emergency Operations Centre informs the Region of level of response to be adopted. 2. Provincial Emergency Operations Centre monitoring event. 3. Scientific staff present in Provincial Emergency Operations Centre (Environmental Radiation and Assurance Monitoring Group on standby) 	<ol style="list-style-type: none"> 1. Durham Emergency Management to set up and activate the Regional Emergency Operations Centre to Enhanced Monitoring structure and monitors event. 2. Maintains contact with the Provincial Emergency Operations Centre and Ontario Power Generation. 3. Preparations made to ensure the following emergency centres are readied to become operational without undue delay: <ul style="list-style-type: none"> • Emergency Workers Centre • Reception Centres • Evacuation Centres • Emergency Information Centre • Public Inquiry Centre • Regional Traffic Management Centre 4. Confirm communication channels with the above emergency centres and activated Departmental Operations Centres and Municipal Emergency Operations Centres. 5. Durham Emergency Management to review the public alerting system procedures in preparation for activation 	<p>Durham Emergency Management may notify the following:</p> <ul style="list-style-type: none"> • Durham Regional Police Services Communications • Regional Chair • Chief Administrative Officer • Corporate Communications • Regional Control Group • Regional Emergency Operations Centre Staffing Plan Members • Community Emergency Management Coordinators



Level: Partial Activation

Associated Notification Category: On-site / Site Area Emergency (with no ongoing or imminent release)

Provincial Response	Regional Response	Regional Notifications
<ol style="list-style-type: none"> 1. Provincial Emergency Operations Centre issues notification informing the Region of level of response. 2. Provincial Emergency Operations Centre is fully staffed and monitoring event. 3. Provincial Emergency Information Section set up and staffed. 4. Ministry Emergency Operations Centres and Unified Transportation Coordination Centre set up and staffed as appropriate. 	<ol style="list-style-type: none"> 1. Regional Emergency Operations Centre is fully staffed at Partial Activation structure (including Provincial Emergency Operations Centre and Ontario Power Generation Liaison Officers) and responds to event. 2. Activate the public alerting system as directed by the Provincial Emergency Operations Centre. 3. The following emergency centres are to be activated and staffed: <ul style="list-style-type: none"> • Emergency Workers Centre • Reception Centres • Evacuation Centres • Emergency Information Centre • Public Inquiry Centre • Regional Traffic Management Centre 4. Implement operational directives, emergency orders for protective and precautionary measures, as directed by the Provincial Emergency Operations Centre. 5. Ensure all Provincial Emergency Operations Centre directives, orders, protective and precautionary measures are communicated to the local municipalities. 	<p>Durham Emergency Management may notify the following:</p> <ul style="list-style-type: none"> • Durham Regional Police Services Communications • Regional Chair • Chief Administrative Officer • Corporate Communications • Regional Control Group • Regional Emergency Operations Centre Staffing Plan Members • Community Emergency Management Coordinators • School Boards • Utilities



Level: Full Activation

Associated Notification Category: On-site / Site Area Emergency (with ongoing or imminent release)

Provincial Response	Regional Response	Regional Notifications
<ol style="list-style-type: none">1. Provincial Emergency Operations Centre issues notification activating nuclear emergency response plans and organization.2. Provincial Emergency Operations Centre is fully staffed and monitoring event.3. Provincial Emergency Information Section set up and fully staffed.4. Ministry Emergency Operations Centres and Unified Transportation Coordination Centre set up and fully staffed.5. Immediate protective measures ordered, as appropriate.	<ol style="list-style-type: none">1. Regional Emergency Operations Centre is fully staffed at Full Activation structure (including Provincial Emergency Operations Centre and Ontario Power Generation Liaison Officers) and responds to event.2. Activate the public alerting system as directed by the Provincial Emergency Operations Centre.3. Formally declare a Regional Emergency.4. The following emergency centres are fully staffed and operational:<ul style="list-style-type: none">• Emergency Workers Centre• Reception Centres• Evacuation Centres• Emergency Information Centre• Public Inquiry Centre• Regional Traffic Management Centre5. Implement operational directives, emergency orders for protective and precautionary measures, as directed by the Provincial Emergency Operations Centre.6. Implement traffic control and entry measures directed by the Unified Transportation Coordination Centre.7. Ensure all Provincial Emergency Operations Centre directives, orders, protective and precautionary measures are communicated to the local municipalities.	<p>Durham Emergency Management may notify the following:</p> <ul style="list-style-type: none">• Durham Regional Police Services Communications• Regional Chair• Chief Administrative Officer• Corporate Communications• Regional Control Group• Regional Emergency Operations Centre Staffing Plan Members• Community Emergency Management Coordinators• School Boards• Utilities