



Climate Hazards Affecting TransLink

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Our services



Bus Services

More than 215 bus routes with a fleet of more than 1,500 vehicles



Ferry Services

SeaBus, three passenger-only ferries linking downtown Vancouver and North Vancouver



Cycling

Contributions to new bike paths and locker facilities



Bridges

Owens the Pattullo, Knight Street, Golden Ears, Westham Island bridges, and Canada Line bike and pedestrian bridges



Transit Police

Dedicated Transit Police service



Commuter Rail

West Coast Express



SkyTrain

Expo, Millennium and Canada SkyTrain lines



Roads

Funds operation and maintenance of the 2,300 km Major Road Network



Custom Transit

A Custom Transit service for people with disabilities

Climate Hazards - Overview

- **Emergency Planning**
- **Climate hazards affecting TransLink**
 - High Winds
 - Flooding (intense rain and freshet)
 - Intense Heat
 - Drought and Interface Fires
- **Specific actions in place to adapt**
 - ‘Day of’ Operations
 - Infrastructure Adaptation
- **Priority actions to prepare for future climate hazards**
 - Rising Ocean Levels

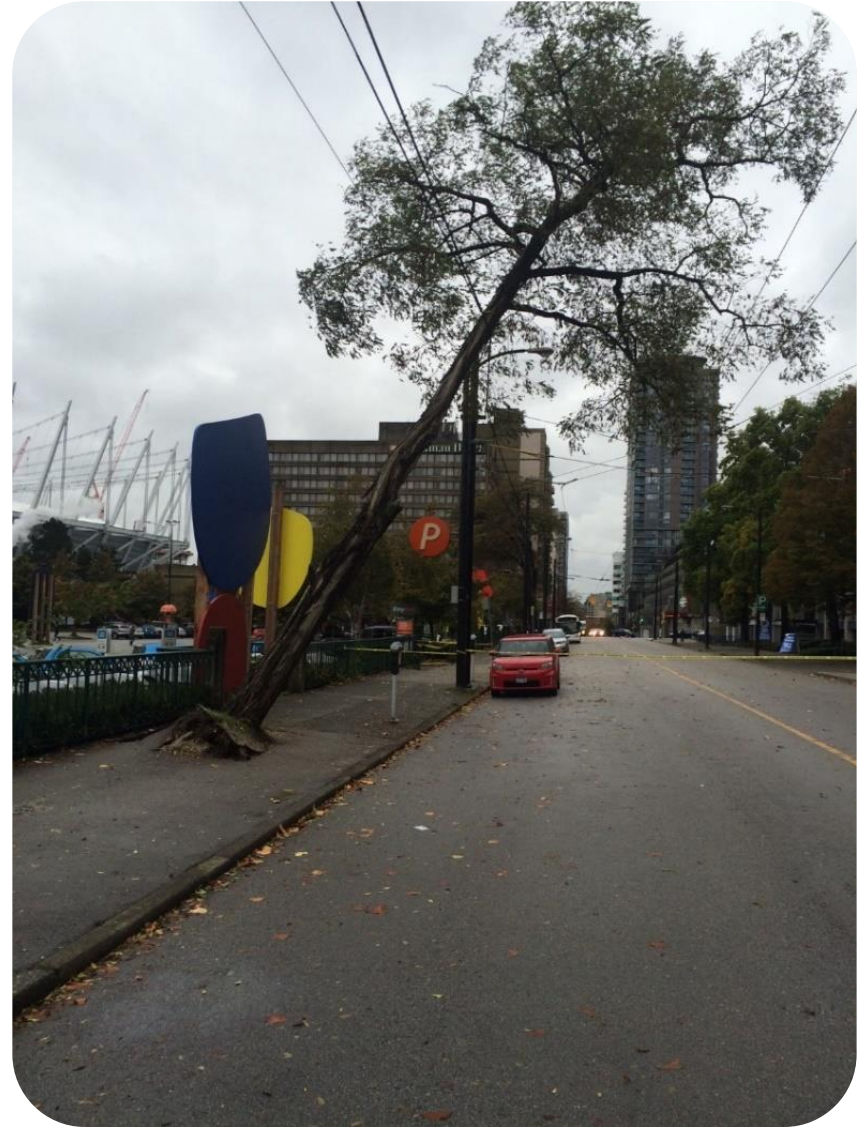
Emergency Planning

- **Working with multiple stakeholders:**
 - Internal, municipal, regional, provincial
- **Prevention and Mitigation of:**
 - top hazards, risks, and vulnerabilities
- **Preparedness:**
 - integrated plans, concepts of operations, trained and exercised staff
- **Emergency response:**
 - In a timely and efficient manner to minimize negative impacts
- **Recovery:**
 - business continuity plans, considers short, medium and long term recovery needs



High Winds

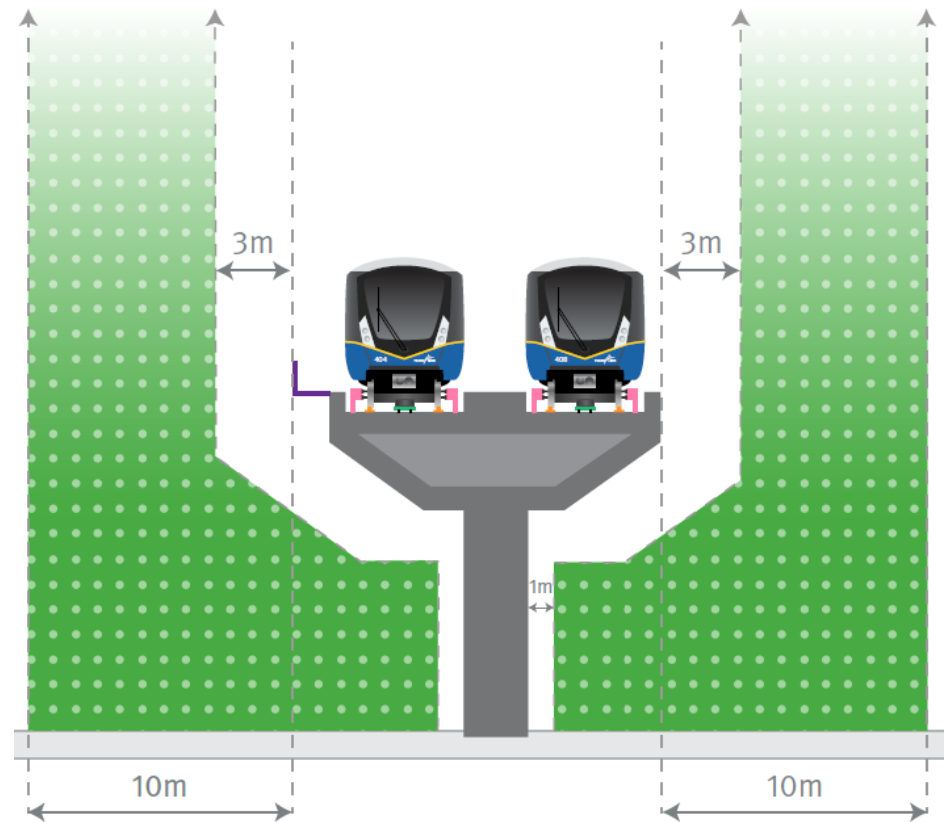
- **Impacts**
 - Power outages
 - Blocked roads
 - Facility/Asset damage
 - Fleet damaged
 - Communication loss
 - Worker safety concerns



High Winds

- **Operations Adaptation**

- Tree trimming
- Receive alerts
- Bus bridge for rail
- Bus re-routes
- Customer alerts
- Backup power



High Winds

- **Infrastructure Adaptation**
 - Building design
 - Warning systems
 - Backup power
 - Power line location



Flooding (Rain and Freshet)

- **Impacts**
 - Facilities flooded
 - Roads flooded
 - Rail and bridge damage
 - Customer impacts
 - Power disruptions
 - Driving safety reduced



Photo Credit – City of Calgary

Flooding (Rain and Freshet)

- **Operations Adaptation**
 - Weather/freshet alerts
 - Flood mapping
 - Identifying vulnerable assets
 - Flood plan development
 - Customer communications
 - Service re-routes
 - ICS/EOC



Hamilton Transit Centre Dike
Construction

Flooding (Rain and Freshet)

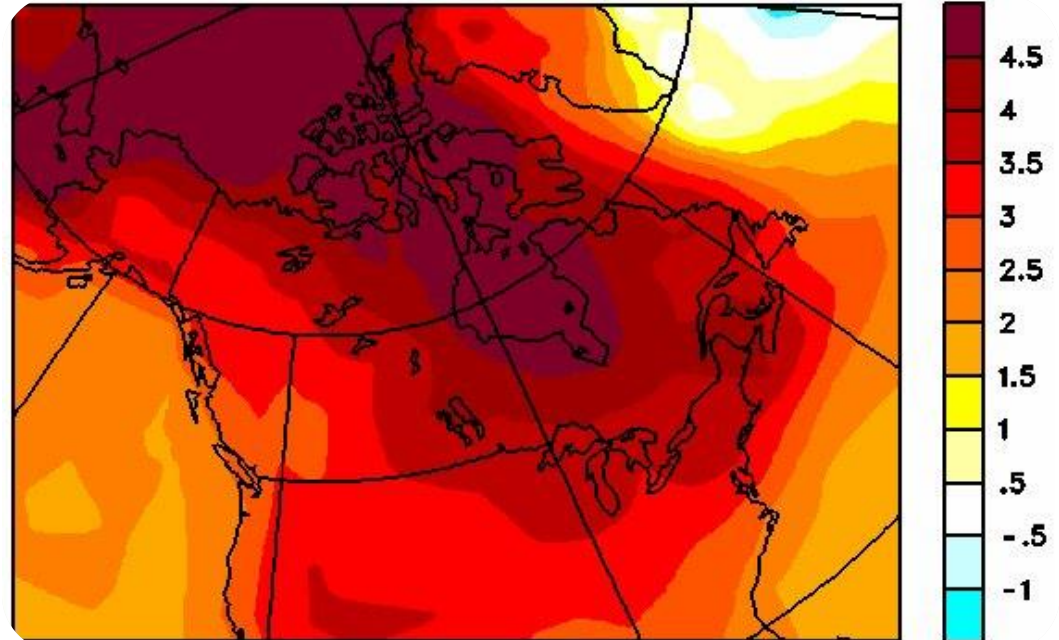
- **Infrastructure Adaptation**
 - Facility locations
 - Dikes and berms
 - Storm drainage specs
 - Elevate assets
 - Sump pumps
 - Elevate key routes



Storm Drainage upgrades with high-flow bypass

Intense Heat

- **Impacts**
 - Worker safety
 - Passenger comfort
 - Road damage
 - Rail damage
 - Energy costs



Projected temp change by 2100. Environment Canada

Intense Heat

- **Operations Adaptation**
 - Heat Stress communications
 - Ensure water availability
 - Uniform materials
 - Air conditioning

2017-07-31

SB 17-06-



Safety Bulletin

REMINDER: Heat Stress (Hot Weather Conditions and Heat-Related Illness)

With the expected high temperatures forecasted for this week, we would like to remind you to take all possible precautions to protect against heat stress.

During hot weather or when working in hot conditions heat-related illnesses may occur, and if not recognized and treated early can lead to serious medical issues (see below). There are some occupations more susceptible to heat related illnesses than others, such as fire fighters with heavy clothing or roofers doing physically heavy work in hot environments. Personal risk factors may increase susceptibility in some individuals, so reports of heat stress must not be overlooked.

Since people respond differently to heat, it is important for managers, supervisors and workers to be aware of how to prevent heat-related illness and recognize the early signs and symptoms of illness.

RECOGNIZING THE SYMPTOMS

Intense Heat

- **Infrastructure Adaptation**
 - White or green roof to reflect or absorb heat
 - Large overhangs
 - Deciduous tree shade
 - North facing clerestory



TransLink's Hamilton Transit Centre

Drought and Interface Fires

- **Impacts**

- Air quality concerns
- Staff booking off
- Asset damage or loss
- Evacuation of service area
- Water usage limitations



August 2, 2017 - www.nasa.gov

Drought and Interface Fires

- **Operations Adaptation**
 - Communication with staff
 - Monitoring air quality
 - Evacuation plans
 - Reduced vehicle washing
 - Reduce flammable materials buildup



2016 Fort McMurray, Alberta Fire www.cbc.ca

Drought and Interface Fires

- **Infrastructure Adaptation**
 - Air intake filtration
 - Asset location
 - Landscaping choices
 - Buffers between assets and forest
 - Fire resistant materials



2016 Fort McMurray, Alberta Fire www.cbc.ca

Priority actions to prepare for future climate hazards

- **Better coordination with all stakeholders**
- **Ocean Level Increase**
 - Understanding timelines
 - Determining roles and responsibilities
 - Determination of flood prone areas
 - Hardening of shorelines and rails
 - Elevating roads and bridges
 - Elevating storm drainage
 - Updating building codes and OCPs
 - Adapting to king tides and storm surges

