



THE
FIVE DRIVERS
OF
RESILIENT DEVELOPMENT

Sandford Fleming Forum + BOMA Toronto

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OUTLINE

Motivation, definitions

Drivers of Resilient Development:

1. Site selection
2. Planning envelope
3. Incident sequencing
4. Security requirements
5. Integrated design

Assurance through commissioning

WHY A GUIDELINE?



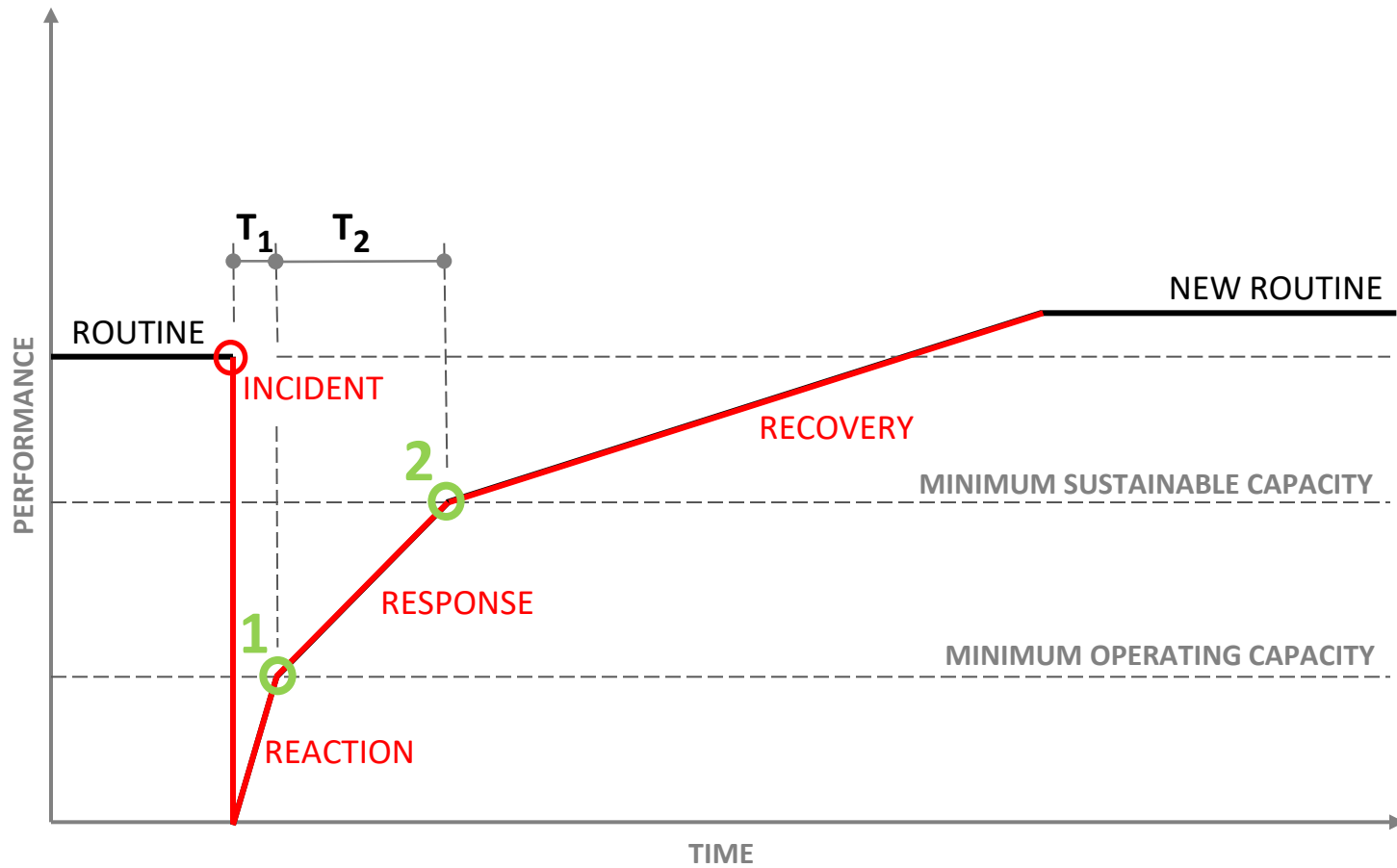
OPERATIONAL RESILIENCE

...is the ability to respond to, and absorb the effects of, shocks and stresses, and to recover as rapidly as possible to normal operating capacity.

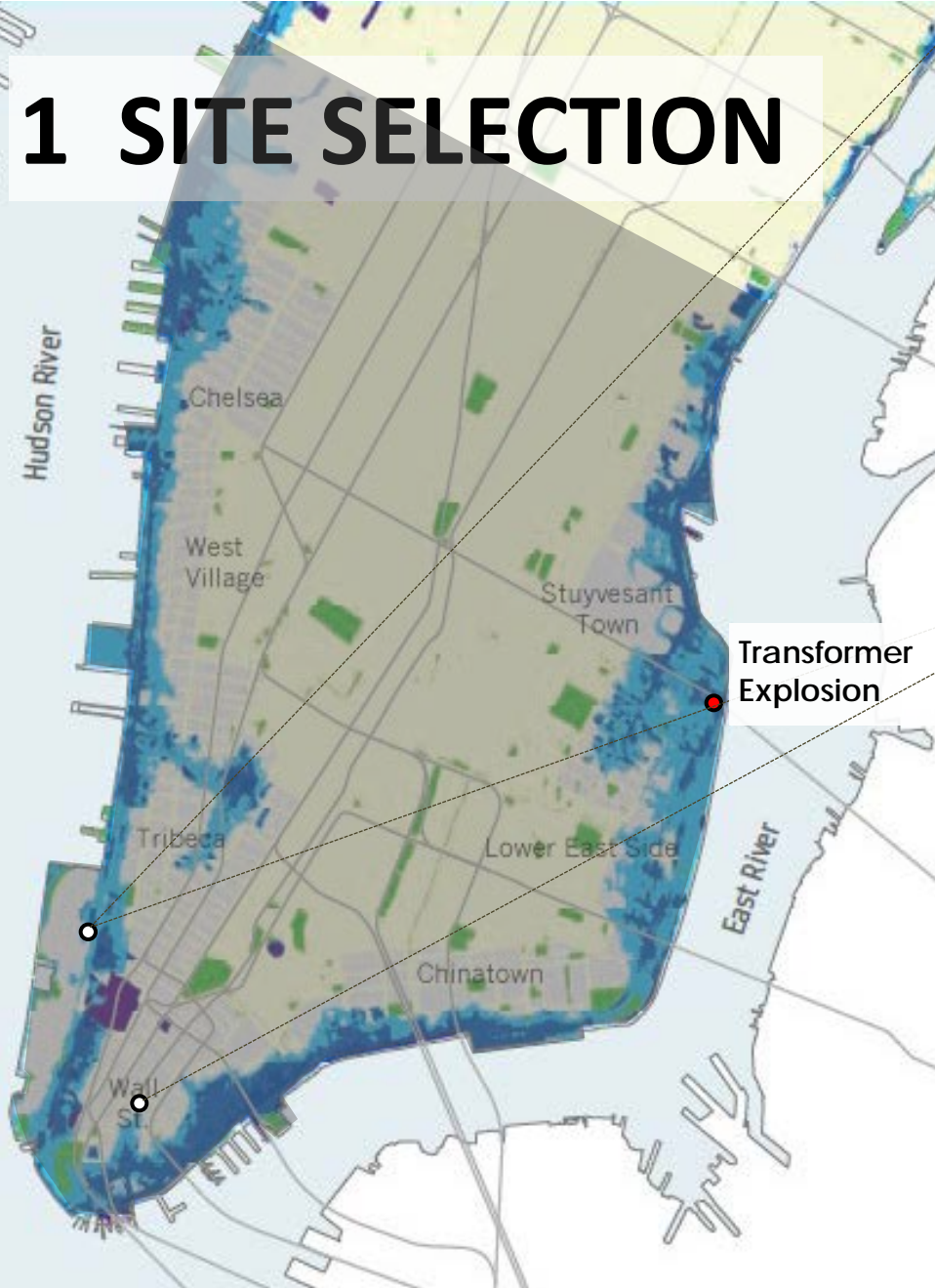
- CRCI, University of Toronto



OPERATIONAL RESILIENCE



1 SITE SELECTION



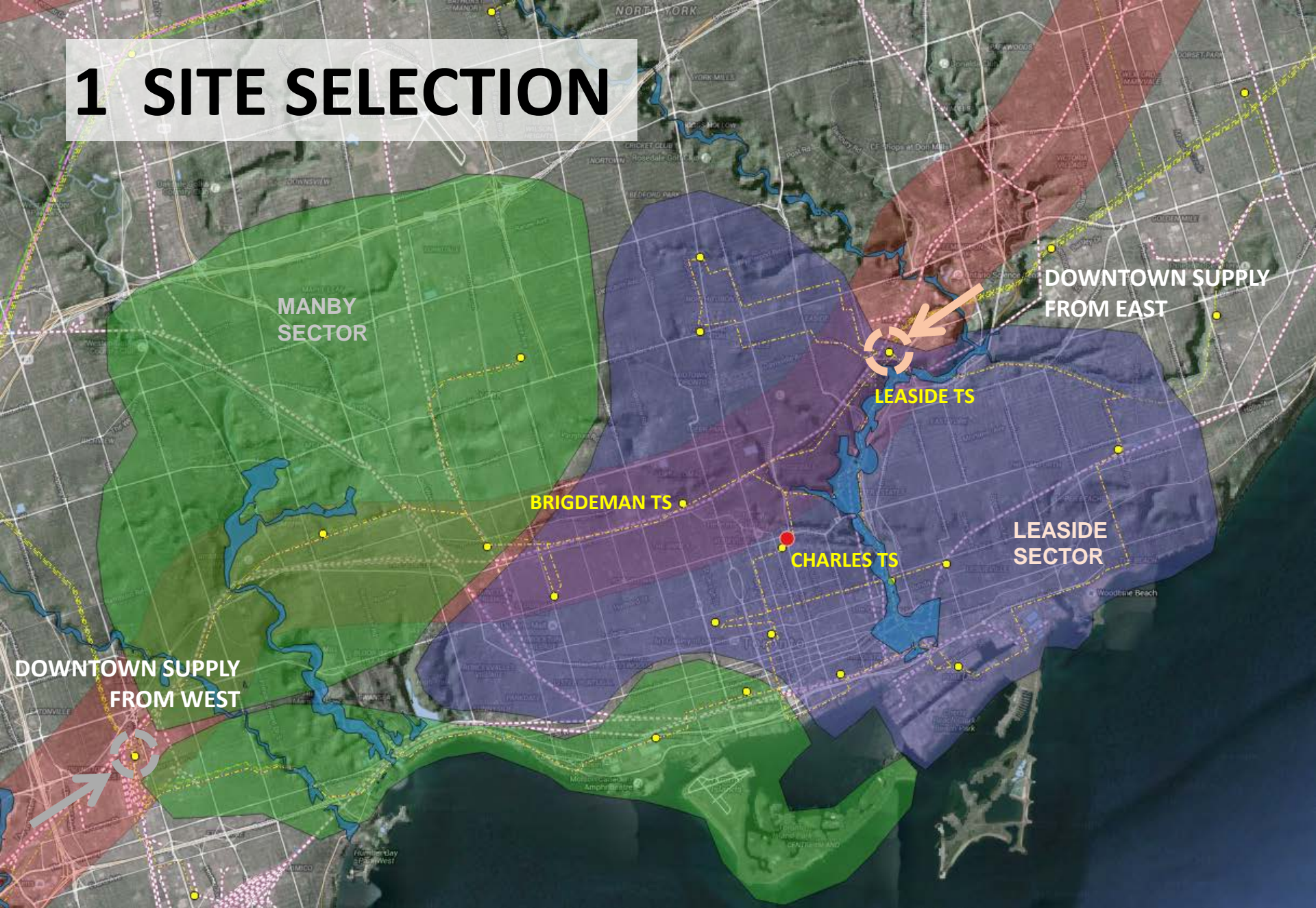
Goldman Sachs Global HQ



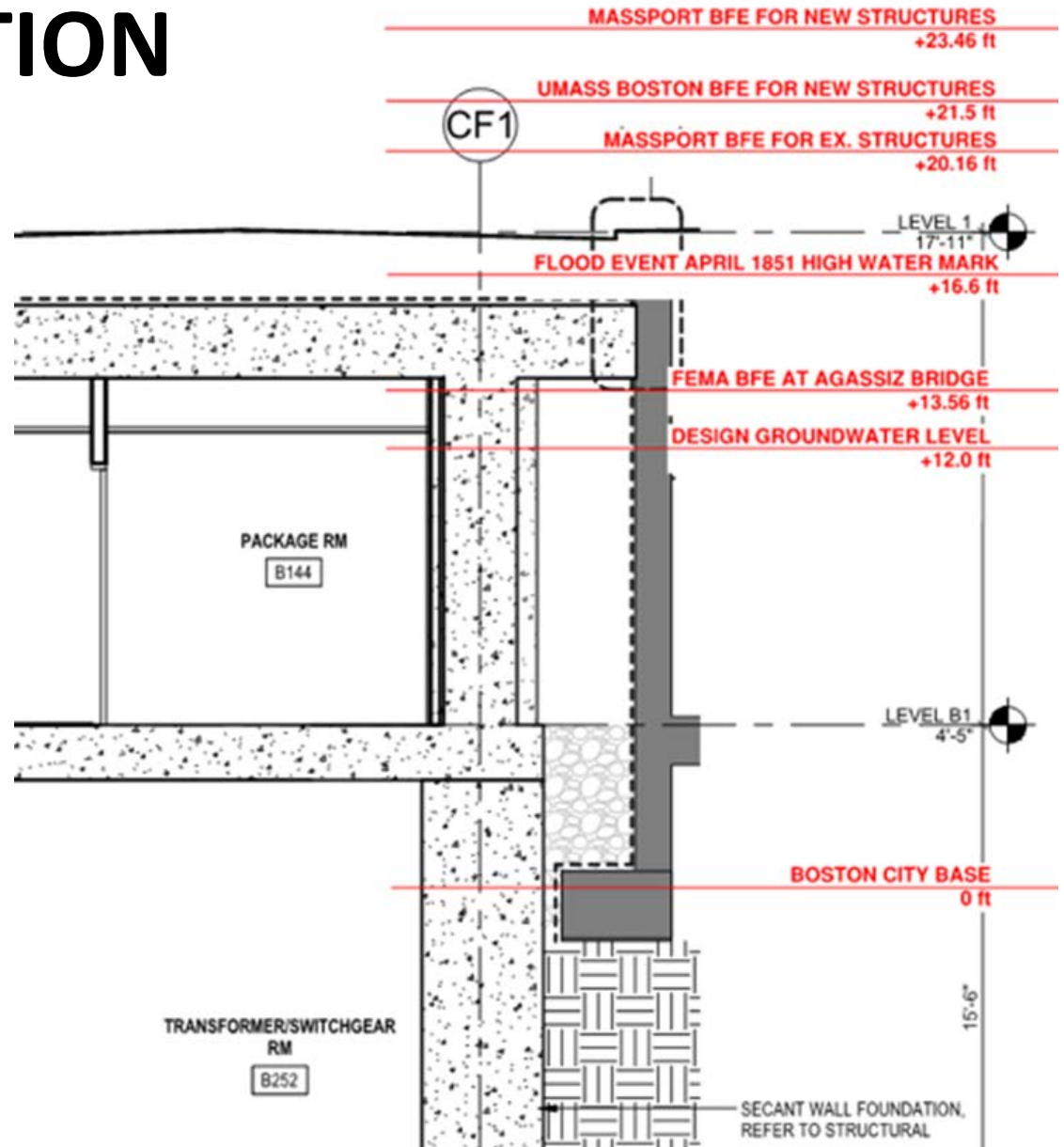
New York Stock Exchange



1 SITE SELECTION



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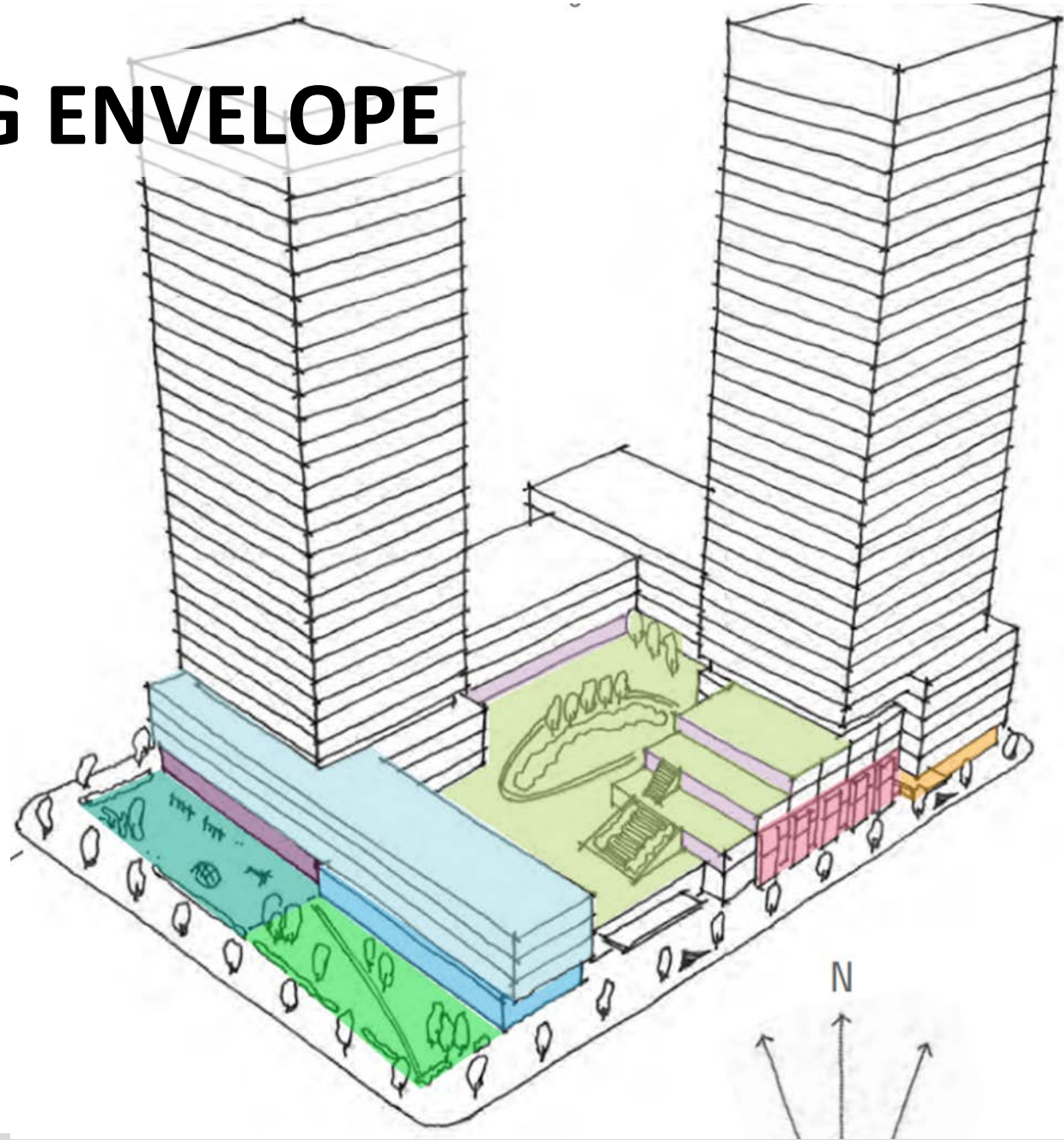


2 PLANNING ENVELOPE

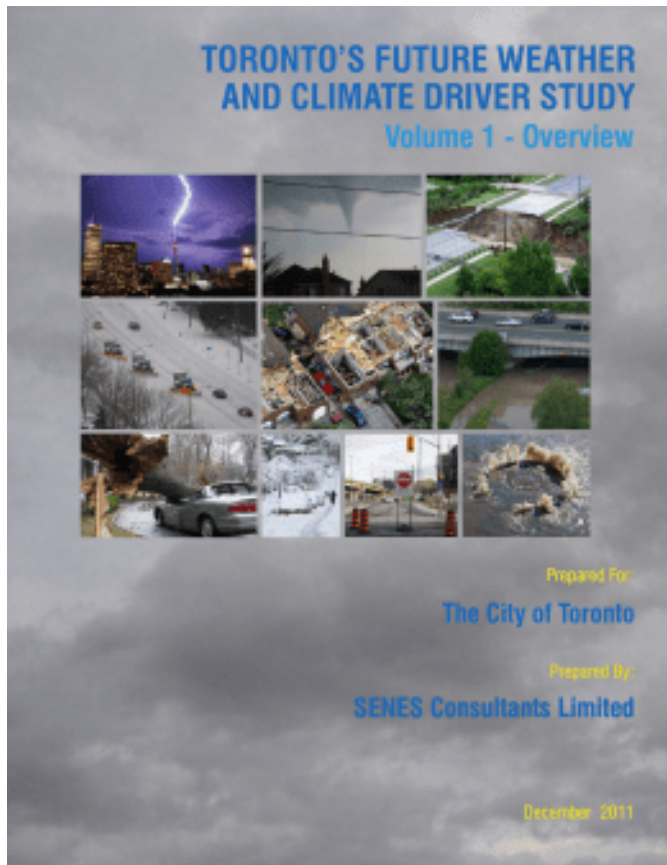
CALL CENTRE?

LAW FIRM?

ARCHITECT?



2 PLANNING ENVELOPE



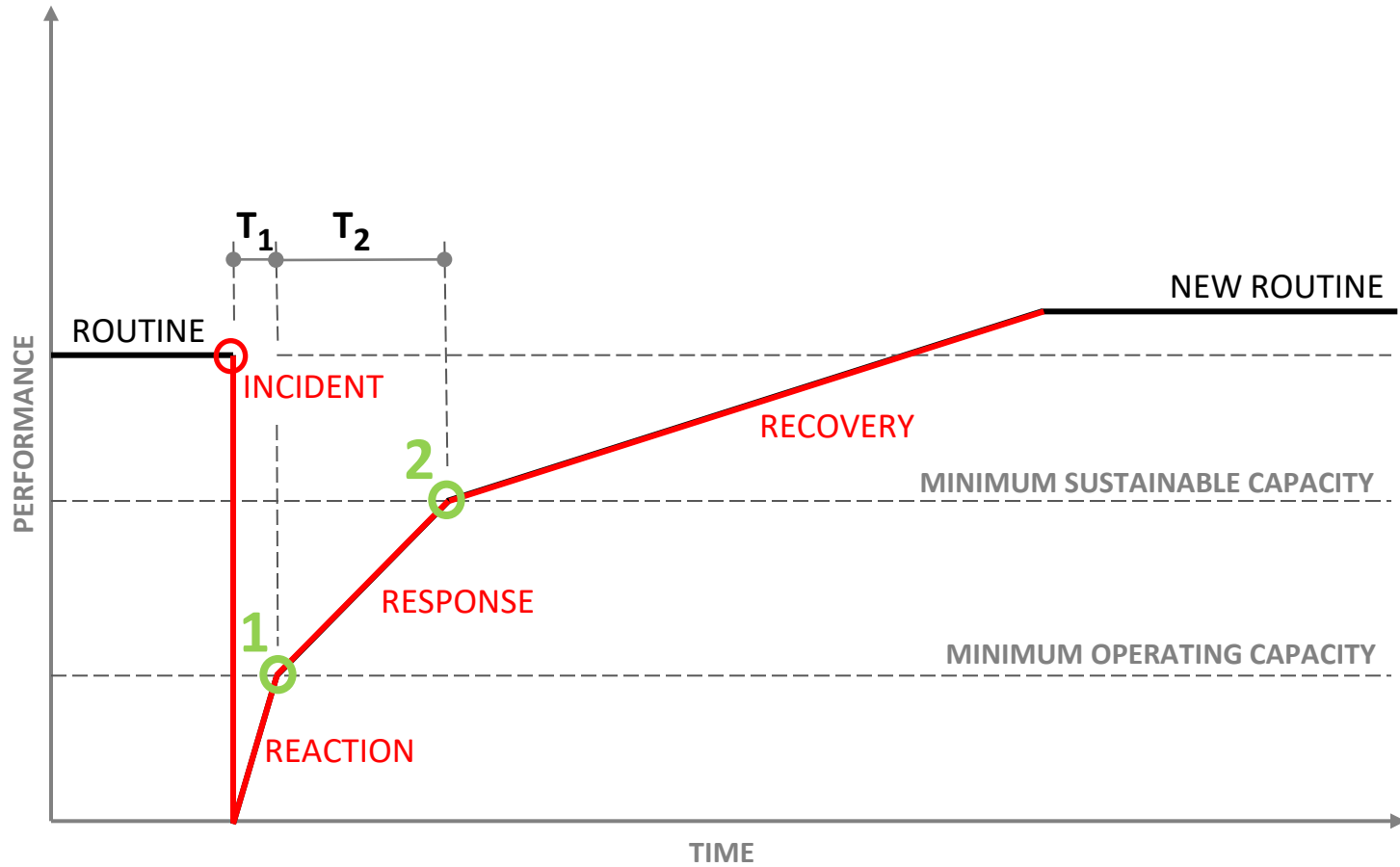
100-YR MAX DAILY RAINFALL, mm



DEGREE DAYS >24°C (AC REQUIRED)



3 INCIDENT SEQUENCING



3 INCIDENT SEQUENCING



4 SECURITY REQUIREMENTS



4 SECURITY REQUIREMENTS



5 INTEGRATED DESIGN

MUHC superhospital still doesn't have cellphone service

Plan to boost signal inside could cost millions of dollars

Leah Hendry · CBC News · Posted: Aug 24, 2015 5:00 AM ET | Last Updated: August 24, 2015

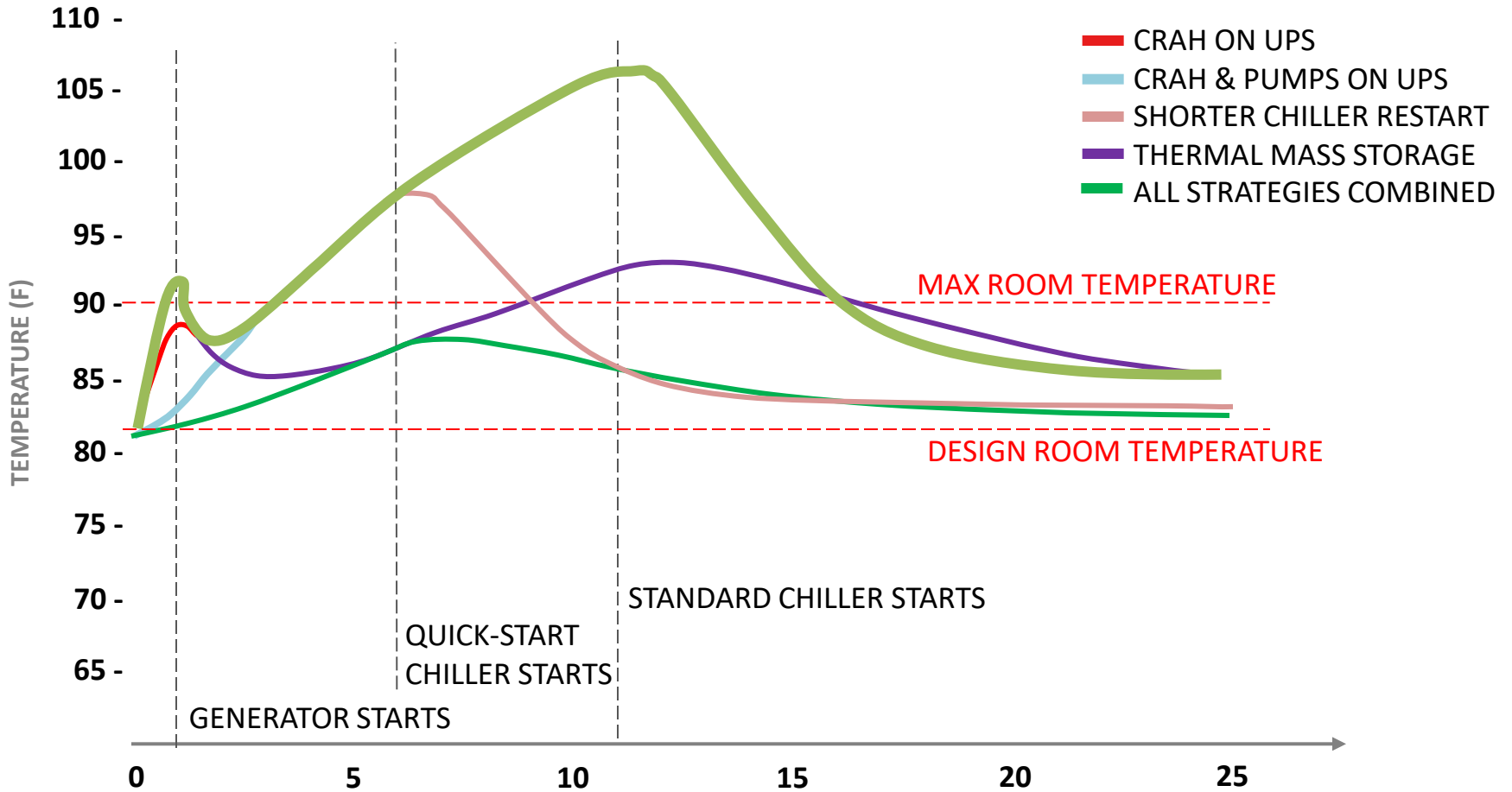


The McGill University Health Centre is a brand new, state-of-the-art superhospital — that still has no cellphone reception.

As CBC News first reported in March, construction materials used to build the hospital are blocking cellphone signals inside the buildings, meaning reception is spotty or non-existent in many places.

5 INTEGRATED DESIGN

ROOM AIR TEMPERATURE IN COMPUTER ROOM FOLLOWING POWER OUTAGE



TRUST, BUT VERIFY: COMMISSIONING



SUGGESTIONS, OBJECTIONS, QUESTIONS:

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Summary

Operational Resilience: focus on the operation, not the assets

Drivers of Resilient Development

1. Site selection
2. Planning envelope
3. Incident sequencing
4. Security requirements
5. Integrated design

Commissioning: provides the assurance that systems will fail as designed