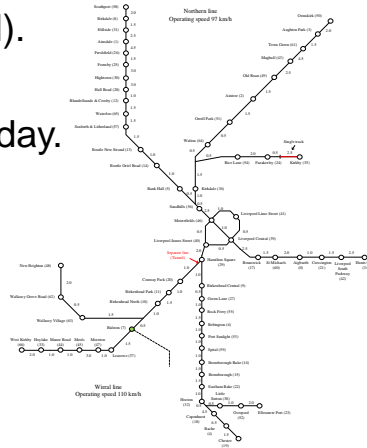


The Liverpool Network Resilience Model

Background

- (i) Electrified network (DC-third rail).
- (ii) 67 stations and 75 miles-track.
- (iii) About 105,000 passengers per day.



Objective

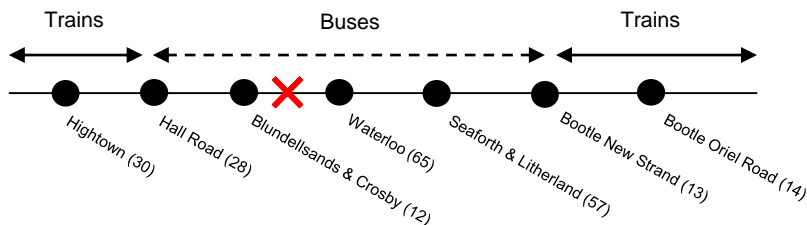
To demonstrate the application of the railway resilience model.

Example

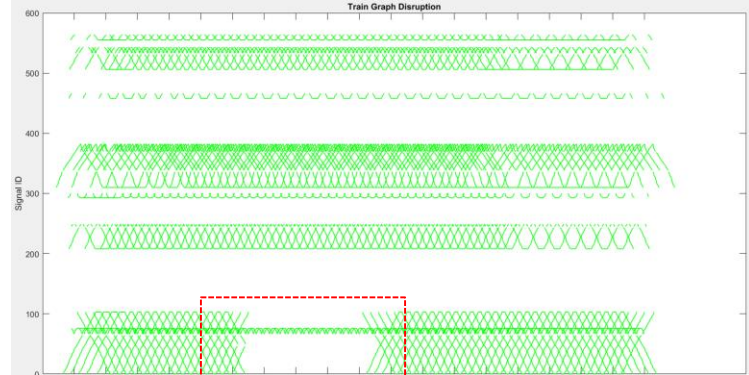
Disruption: 4 hours-disruption between Blundellsands & Crosby and Waterloo station at 11:00.

Mitigation strategy (30 mins after the disruption):

- (i) Bus replacement services between Hall road and Bootle New Strand station.
- (ii) Provide train services to the bus connecting points with a normal frequency (15 mins).

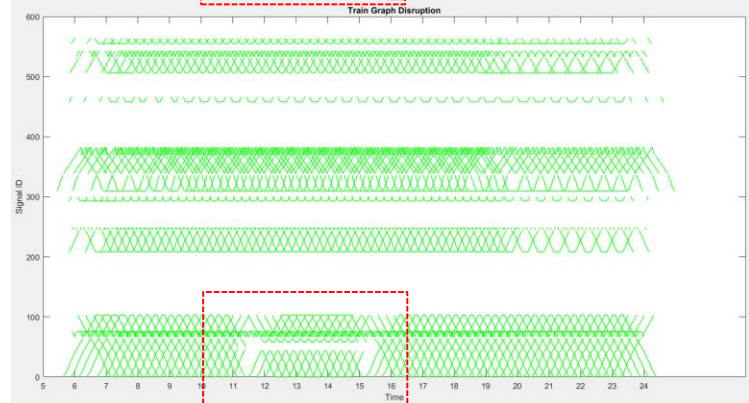


Without mitigation strategy



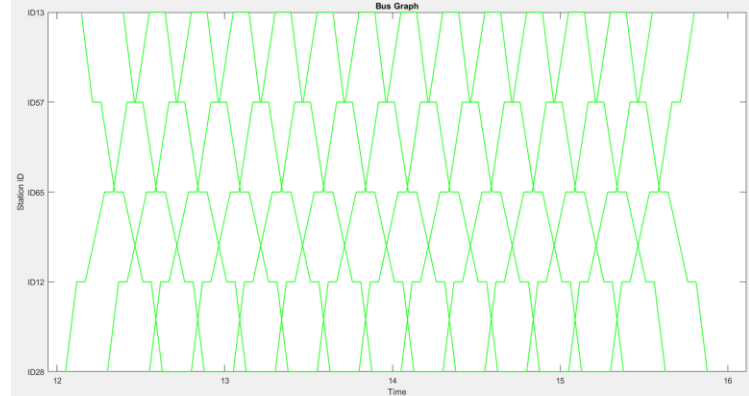
Passenger delays = 10340 mins
Passenger cancellations = 7456 people
Service cancellations = 41 services

With mitigation strategy



Passenger delays = 74627 mins
Passenger cancellations = 4556 people

Bus replacement services



The number of buses = 5 buses
Bus services = 28 services