



Challenges and lessons learnt from Typhoon Mangkhut

Allan Fung, Infrastructure Maintenance Manger – East Rail Line and Ma On Shan Line

Agenda



Preparation



Challenges



Lessons learnt



Staff appreciation

Preparation – Staff standby



Rolling stock depot



Infrastructure rapid response unit



Station back of house



Control centre war room

Preparation – Gear up



Screen mesh for road vehicle



Tree team and contractor staff



Road – Rail Vehicle for light rail



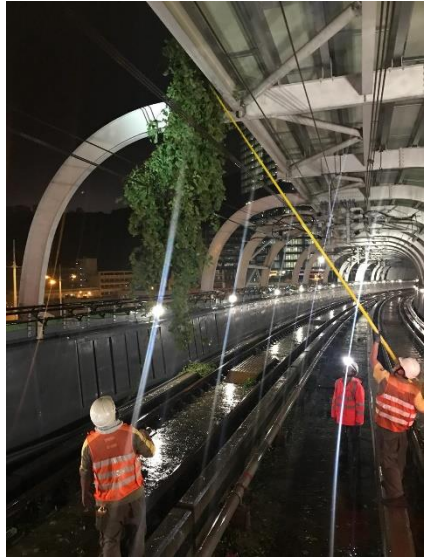
Recovery train for heavy rail

Preparation – while trains were still running

- Inspection from driving cab
- Sand bags at critical locations
- Elevated PPE for staff
- Enhanced customer care



Challenges – Tree falling on tracks



Tree branches entangling the overhead lines



Fallen trees blocking the tracks



Challenges – Roads blocked

- We were basically trapped en route to the incident sites.



Challenges – Upsurge of service demand

- **Crowd management**

- KOT, TAW, SHT, TAP & SHS
- Shuttle bus operation
- Police assistance
- Crossline manpower support
- Over 4,000 station staff have been mobilized throughout Mangkhut's battering



Sheung Shui



Shatin



Tai Wai

Challenges at East Rail Line

Date	Weather condition	Multiple incidents
16-Sep	01:10	Signal no. 8
	07:40	Signal no. 9
	07:43	OHL Section 1 (Between HUH & TAW U) de-energised 2 trains in the affected section
	07:47	OHL Section 1 (Between HUH & TAW U) re-energised
	07:54	OHL Section 1 (Between HUH & TAW U) de-energised again 2 trains in the affected section
	07:55	OHL Section 1 (Between HUH & TAW U) re-energised
	08:40	Last train arrived at LMC
	08:41	Last train arrived at LOW
	08:44	Last train arrived at HUH
	08:45	EAL train service was suspended
	09:40	Signal no. 10
	10:02 & 10:24	Voltage dip occurred due to CLPP 400kV OHL fault
	10:26 & 10:27	OHL Section 6 (Between FAN & UNI D) and Section 4 (UNI & TAW D) de-energised respectively
10:30	Voltage dip occurred due to CLPP 400kV OHL fault	
10:35	OHL Section 8 (Between LOW/LMC and FAN D) tripped	
10:55	Fallen tree at UNI P2 and SHS P2	
11:11	OHL Section 5 (Between UNI D and FAN U) tripped	
11:28	OHL Section 2 (Between HUH and TAW D) tripped	
13:12	Fallen tree at SHT P4 H/W & T/W and SHS P1 T/W	
13:14	OHL Section 3 (Between TAW and UNI D) tripped	
14:18	OHL Section 7 (Between FAN and LOW/LMC U) tripped	
19:40	Signal no. 8	
17-Sep	05:20	Signal no. 3
	05:52	Train Service pattern: TAP <-> SHS suspended EAL sectional loop train service started
	06:15	
	14:40	Signal no. 1
	15:00	Train Service pattern: FAN <-> SHS suspended with free MTR shuttle bus working (Between FAN and SHS)
	16:45	OHL Section 2 (Between HUH and TAW D) re-energised
	18:03	Train Service pattern: HUH <-> LOW/LMC with free MTR shuttle bus working (Between FAN and SHS) until 18:30
18:56	EAL Full line train service was resumed	

EAL resumed train service at 18:56



Challenges at Light Rail

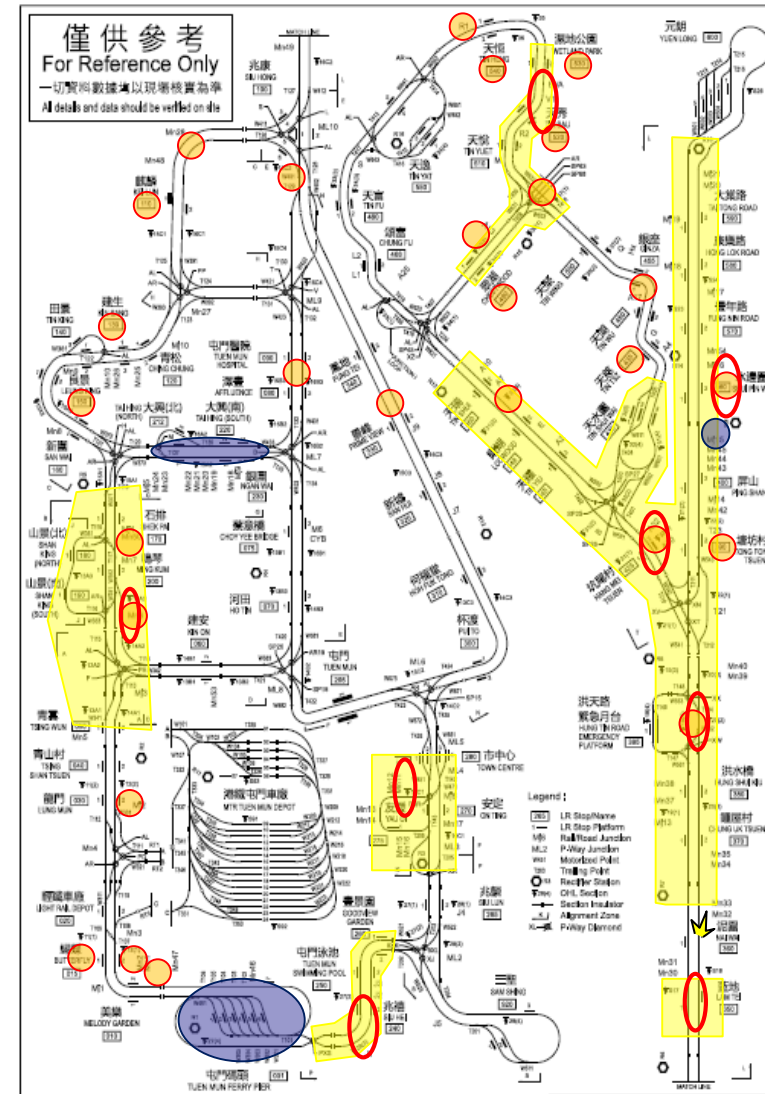
40 Fallen tree reports

- Tin Shui Wai District : 15 locations
- Tuen Mun District: 21 locations
- Yuen Long District: 1 location
- Corridor: 3 locations

8 Locations where OHL equipment was damaged

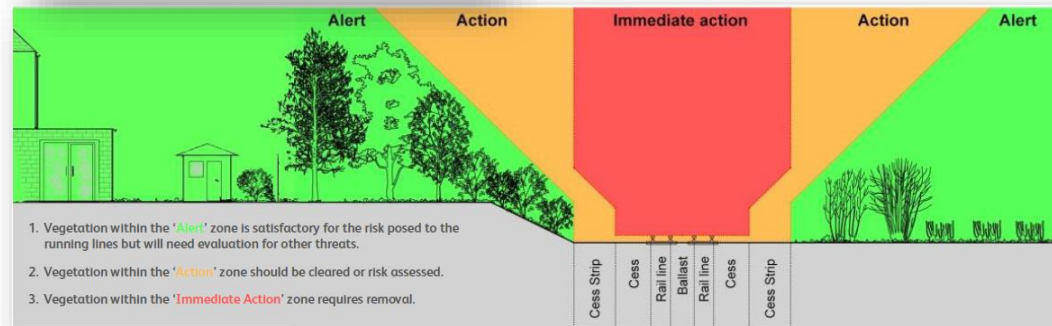
- Stop Siu Hei
- Yau Oi Loop
- Stop Ming Kum
- Stop Lam Tei
- Stop between Hung Shui Kiu and Tong Fong Tsuen
- Stop Wetland park
- Stop Hang Mei Tsuen
- Stop Shui Pin Wai

3 Flooding Area



Lessons Learnt

- More efficient tools, faster tree cutting.
- Unmanned track vehicles, strategic CCTV coverage etc, avoid being kept in the dark during typhoon no.9 and 10.
- Better coordination on partial resumption of train service.
- Even better customer communication, Traffic News.
- Feasibility study for “no tree zone”.



Staff Appreciation

Typhoon staff deployment

Dept	Engineering	Station and others	Total
No. of Staff	1,300	4,800	6,100

- Over 6,000 staff deployed.
- Various appreciation functions conducted.
- A video clip on MTR's Facebook to recognized their effort.

MTR
2 November 2018 · 🌐

相信大家對 #超強颱風 #山竹 嘅威力仲記憶猶新。我哋一眾同事當日努力清理同維修多個露天路段，希望盡快恢復正常服務，一齊聽下佢哋當時嘅感受啦。

#風雨同路 #背後嘅辛勞 #樹周圍都係樹
Remember how Super Typhoon #Mangkhut hit Hong Kong hard? Let's hear from MTR... See more



真的要讓他們在那段時間休息

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