

# One Aspect of Asset Management at KiwiRail



18 / April / 2024



# Introductions



#### **Introducing Myself**

- NZDE from Otago Polytech 2019-2020
- 2.5 Years at Beca in Dunedin 2021-2023
- BEngTech in Infrastructure AM 2021-Present
- KiwiRail 2023-Present

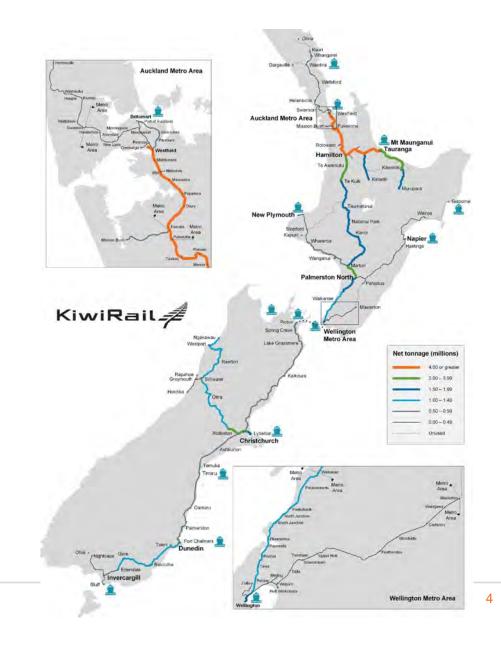


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#### Introducing KiwiRail

- 4000 Km of Track
- 1500 Level Crossing
- 1300 Bridges
- 100 Tunnels









• Formation



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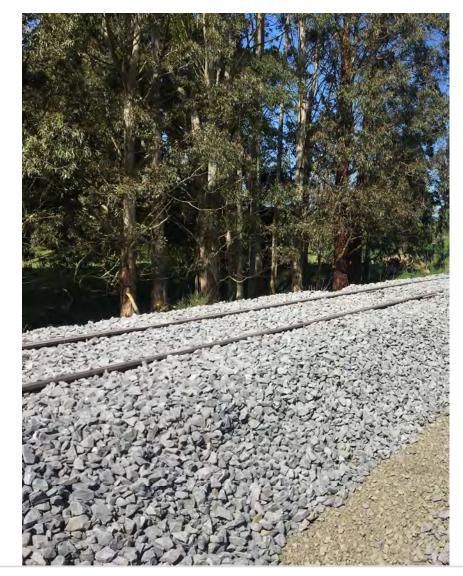
- Formation
- Drainage



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- Formation
- Drainage
- Ballast



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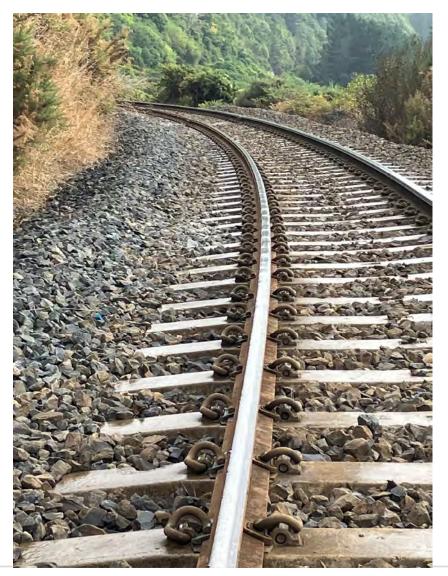
- Formation
- Drainage
- Ballast
- Sleepers



Commercial in Confidence 9



- Formation
- Drainage
- Ballast
- Sleepers
- Rail





- Formation
- Drainage
- Ballast
- Sleepers
- Rail
- Fastenings



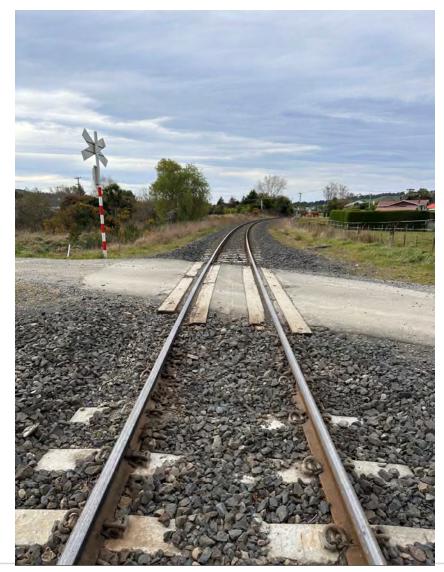


- Formation
- Drainage
- Ballast
- Sleepers
- Rail
- Fastenings
- Joints





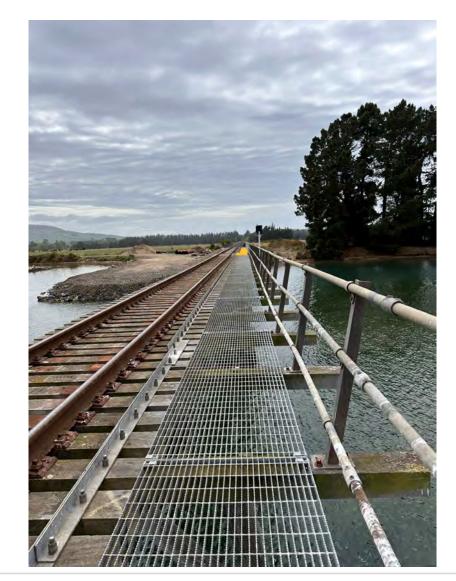
- Formation
- Drainage
- Ballast
- Sleepers
- Rail
- Fastenings
- Joints
- Level Crossings



Commercial in Confidence 13

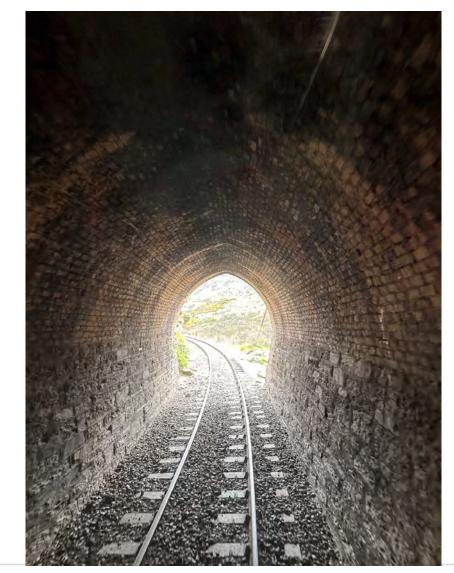


- Formation
- Drainage
- Ballast
- Sleepers
- Rail
- Fastenings
- Joints
- Level Crossings
- Bridges and Culverts





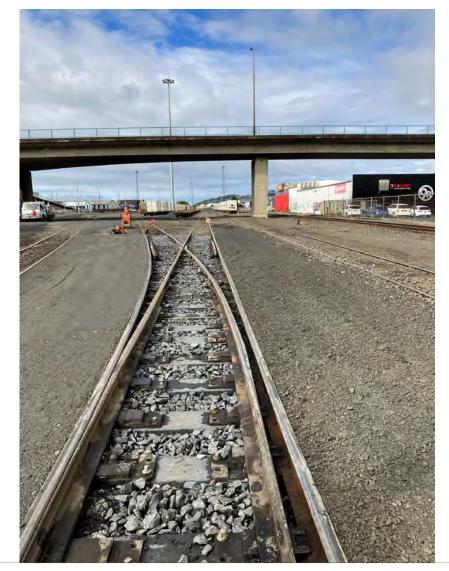
- Formation
- Drainage
- Ballast
- Sleepers
- Rail
- Fastenings
- Joints
- Level Crossings
- Bridges and Culverts
- Tunnels



Commercial in Confidence 15



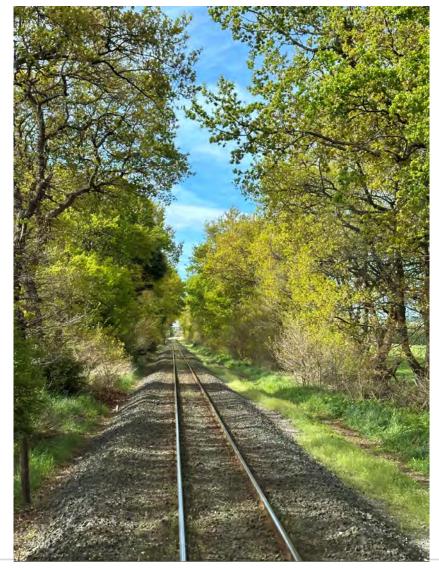
- Formation
- Drainage
- Ballast
- Sleepers
- Rail
- Fastenings
- Joints
- Level Crossings
- Bridges and Culverts
- Tunnels
- Turnouts



Commercial in Confidence 16



- Formation
- Drainage
- Ballast
- Sleepers
- Rail
- Fastenings
- Joints
- Level Crossings
- Bridges and Culverts
- Tunnels
- Turnouts
- Vegetation



Commercial in Confidence 17



#### Maintenance

#### **Major Renewals**

- Resleepers
- Rerails
- Formation upgrades
- Bridge replacements
- Turnout replacement
- Tunnels work

#### **Minor Renewals**

- Mudspot repair
- Short resleepers
- Fastening replacement
- Bridge repair
- Turnout refurbishment
- Resealing public level crossings



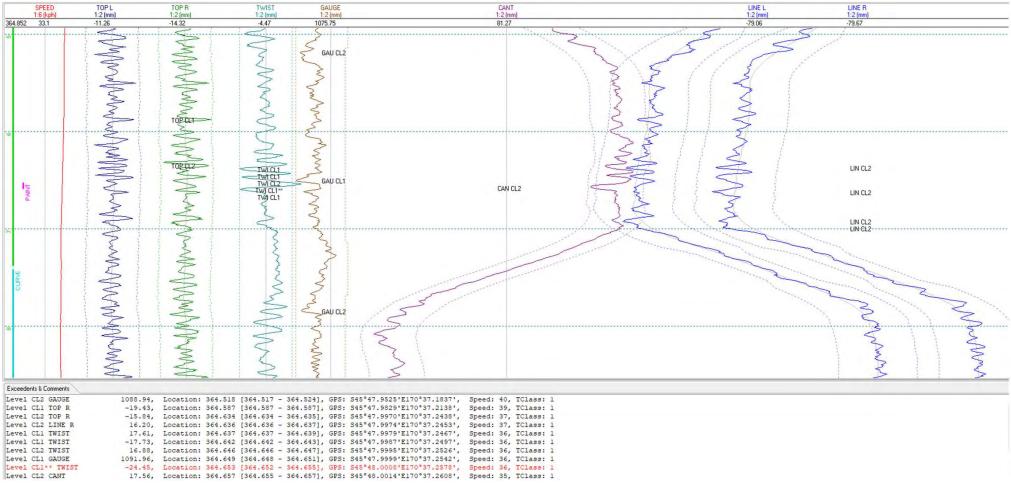
#### EM80



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#### EM80 Trace



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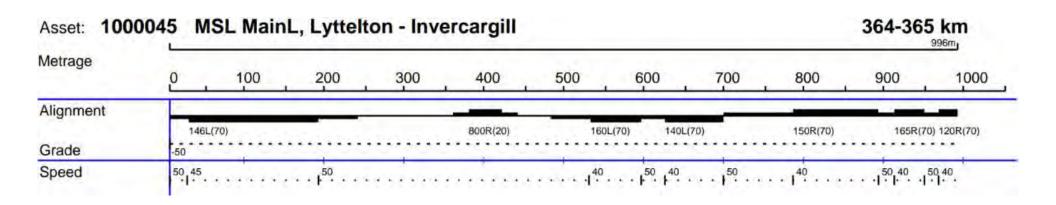


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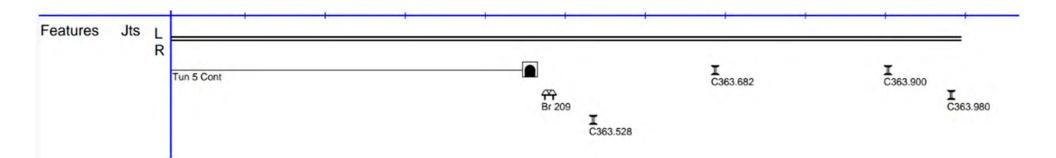


#### Corridor Log – Alignment, Grade, and Speed





#### **Corridor Log - Features**





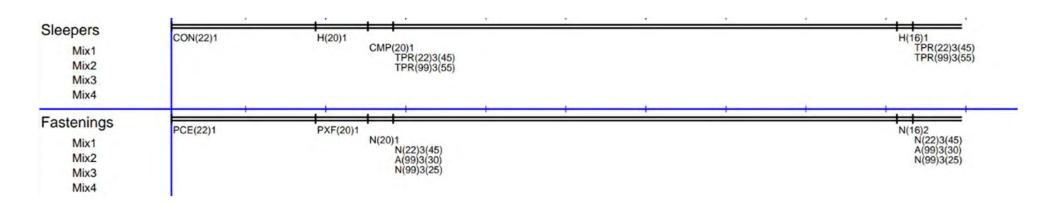
### **Corridor Log – Rail, Wear, Stress, and Faults**

Rail									
	L 50(8	1)C3		50(81)C2		50(09)M2	50(0	03)L2	50(04)L
	R 50(1	1)C2		50(81)C2		50(09)M2	50(0	03)L2	50(04)L
Rail Wear HT(LT) HS(LS HF(LF	)	2(8) 2(1)(22) 0(3)	1(8) 1(0)(22) 0(3)	1(8) 1(0)(22) 0(3)	2(2) 1(0)(21) 0(1)		1(2) 2(1)(22) 0(0)	1(2) 3(1)(22) 0(0)	1(1) 2(1)(22) 0(0)
SFT									
Rail Stress	L R								
Buckle/PullApart/Fail				B(18), B(B294P(18)		,P(21) P(95)	,B(18)		B(21)
NDT Faults	L	(6)BHC(22)							· · · ·
	R								

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#### **Corridor Log – Sleepers and Fastenings**





# **Corridor Log - Tamping**





#### **Corridor Log – EM80 Exceedances**

EM80 2023-10-	2023-10-10		G		0				т	SECEE				
	2023-06-08													
	2023-06-07		G	G						G				
	2022-10-14													
	2022-06-28			LT	т			TS	т			т		
	2021-10-19		т							G			GL	
	2021-07-15												LT	
	2021-07-07	т	т			Т								
	2020-09-29	1.0								G	L			
	2020-05-13	Т							GG.	G	. L	ĢG	G	G



#### **Corridor Log – Renewals Work in the Work Bank**

	5 E						
	1759578	Rerail-New Rail	MAJR	CREATE	2025	370.880	371.080
	4072335	Resleeper-Face-Concrete-700mm Galv	MAJR	CREATE	2025	369.419	370.265
	5151227	Destress-Pandrol 370.300 370.800	MINR	CREATE	2025	370.300	370.800
	5483222	Destress-Pandrol - Rerail	MINR	CREATE	2025	370.880	371.080
	10198838	Parent - Rerail MSL 370.880-371.080	MAJR	CREATE	2025	370.880	371.080
	1759578	Rerail-New Rail	MAJR	CREATE	2025	370.880	371.080
	5483222	Destress-Pandrol - Rerail	MINR	CREATE	2025	370.880	371.080
	10198967	Parent - Resleeper Face MSL 369.419-370.265	MAJR	CREATE	2025	369.419	370.265
	4072335	Resleeper-Face-Concrete-700mm Galv	MAJR	CREATE	2025	369.419	370.265
	10198971	Ballast - Top-up - Resleeper Face	MINR	CREATE	2025	369.419	370.265
	10628276	Resleeper-Face-Bridge-HW Br. 213	MAJR	CREATE	2027	370.265	370.299
	10659300	Rerail-New Rail	MAJR	FIELDCOMP	2023	369.950	370.310
	10659364	Destress-Pandrol 369.450 370.210	MINR	INPRG	2024	369.600	370.360
	10671041	Parent - Rerail-New Rail	MAJR	LOCKED	2024	369.950	370.310



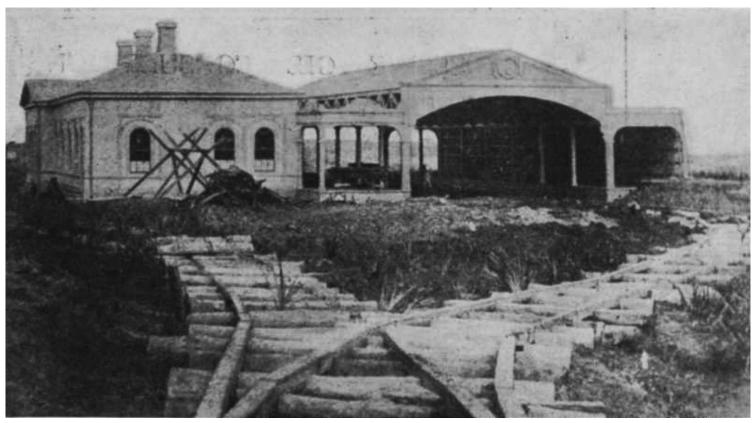
# Sleepers



# **Types of Sleepers**



#### NZ Native sleepers



Invercargill Station c.1860

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### **AUS HW sleepers**



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# **TPR sleepers**



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### **Concrete sleepers**



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# **PDS sleepers**



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#### **HW Azobe sleepers**



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#### **Composite sleepers**



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# **Sleeper Management**



# **Renewals Process**



#### The Renewal Process



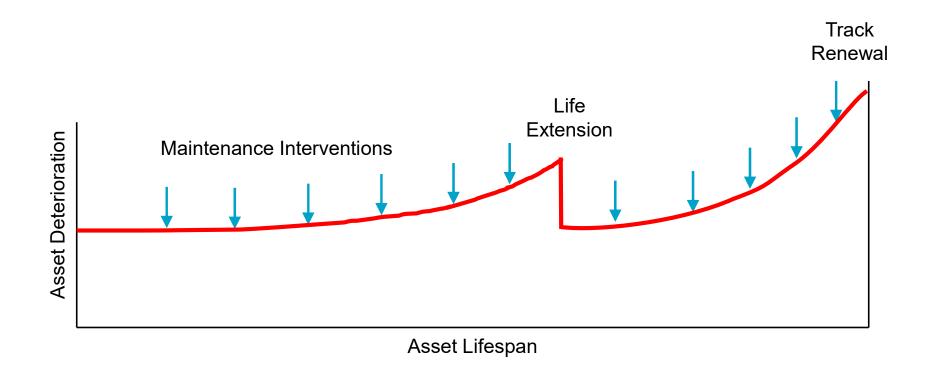
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# Life Extension



#### Photo of the Life Extension Graph





#### Photos of the life extension processes

- Cross Boring then
  Double Fastening
- Vortok Coil Inserts
- Pandrol Plating
- Spot Resleepering





# Thank you

