



Adapting to Climate Change

APPLICATIONS FOR SLAB TRACK

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Today's Presentation

- Overview of slab track
- Applications for extreme weather/flood
- Sustainability

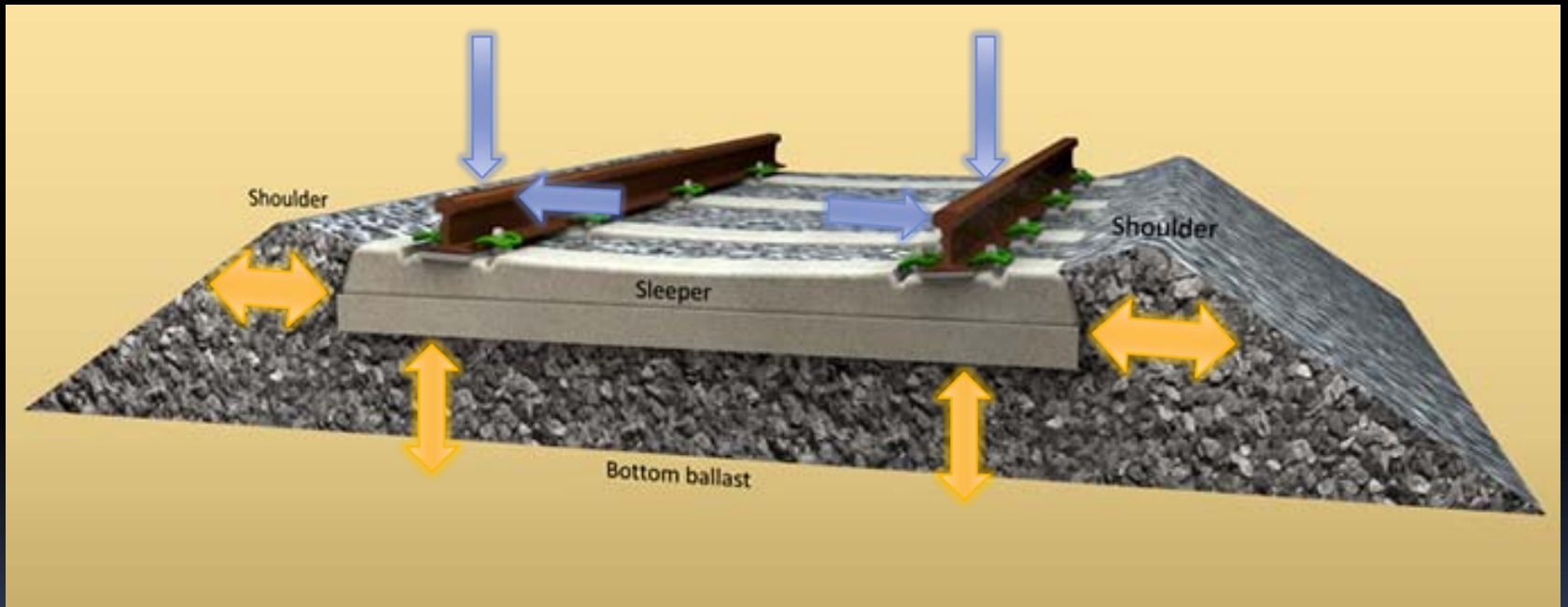


What is slab track?

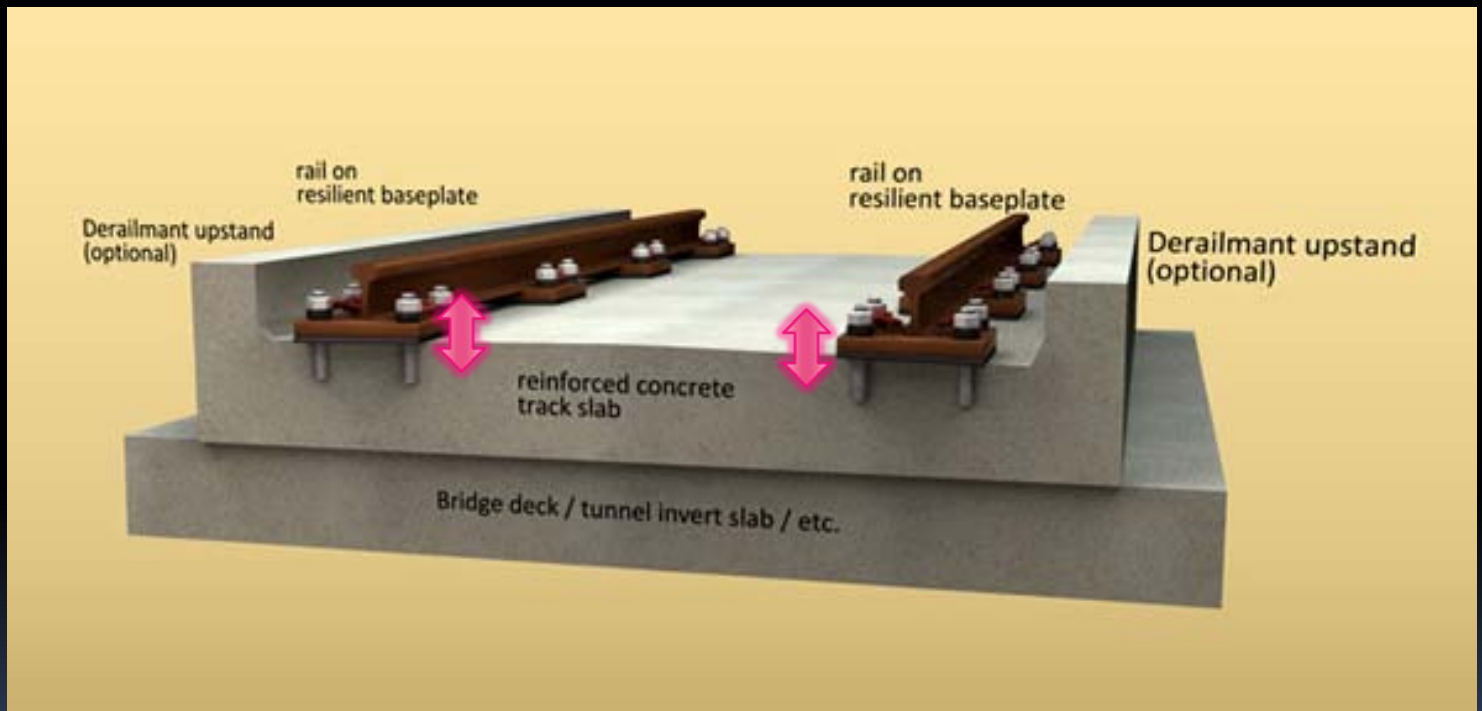
- Modern form of track construction
- Concrete instead of ballast
- High speed lines, heavy rail, light rail and tram systems.



Ballast

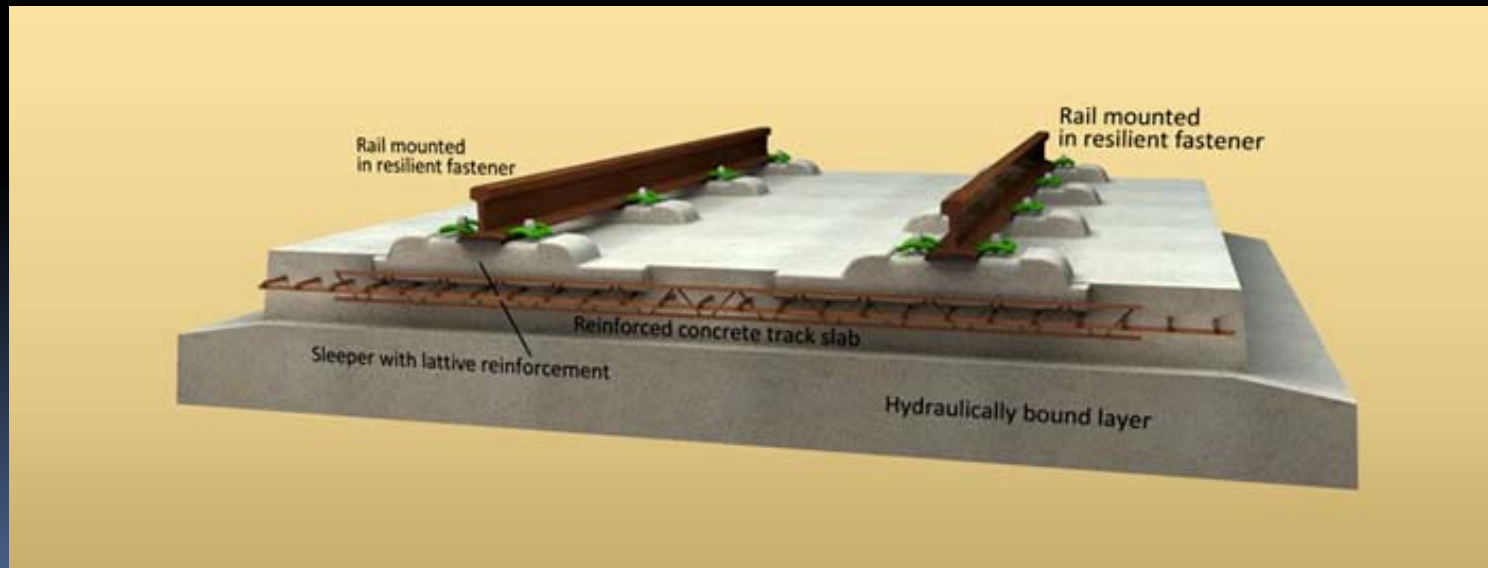


Slab Track



Why build slab track?

Proven higher performance and a longer life than traditional ballasted track.



Dawlish to Teignmouth





2006/07 North East Scotland

- • 1 in 180 year weather event
- • 97 sites over c. 150 miles
 - 72 minor flooding/washout
 - 23 severe ballast washout/bridge scour
 - 2 significant bridge incidents


Dalguise (River Tay)



14.12.2006

Towiemore





Ballast washout – some solutions

- Glued ballast
- Concrete slab track
- Flood defences

Make the track more resilient to flood and extreme weather

Kingussie



Slab Track

- St Martin d'Estréaux tunnel
- HSL-Zuid
- Docklands

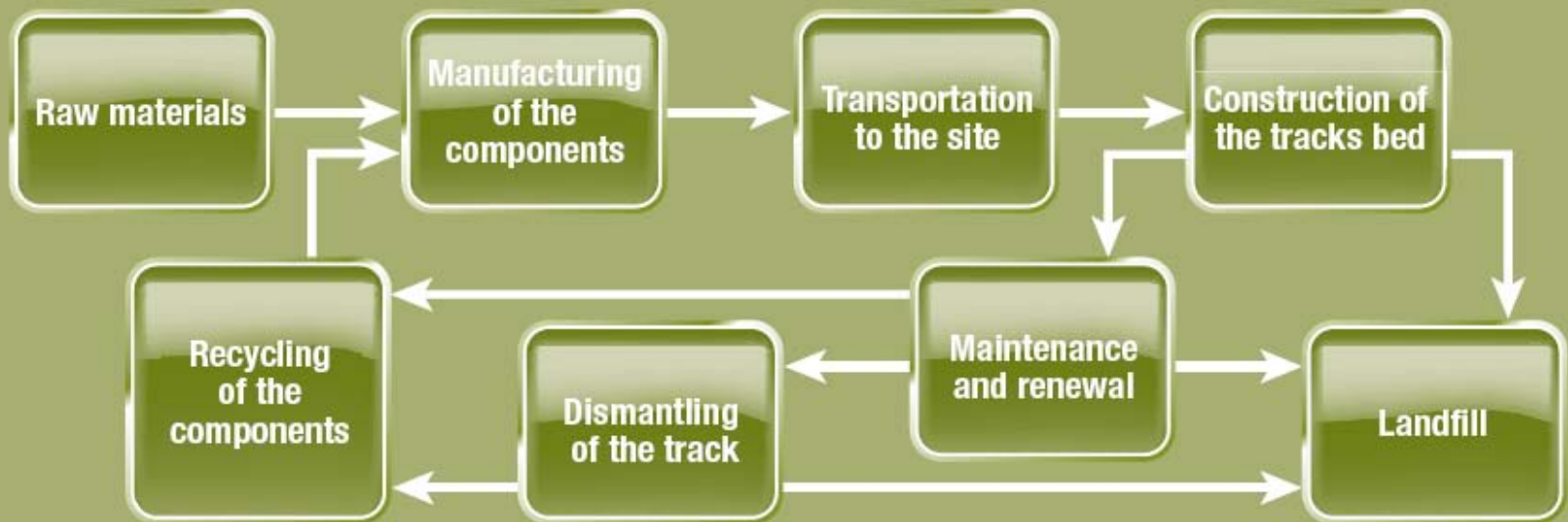


Shinkansen – earthquake



Sustainability

- Life-cycle energy analysis of ballasted, and concrete track
- To show that life-cycle analysis can be applied to infrastructure
- To see if high embodied energy can be balanced by extended life

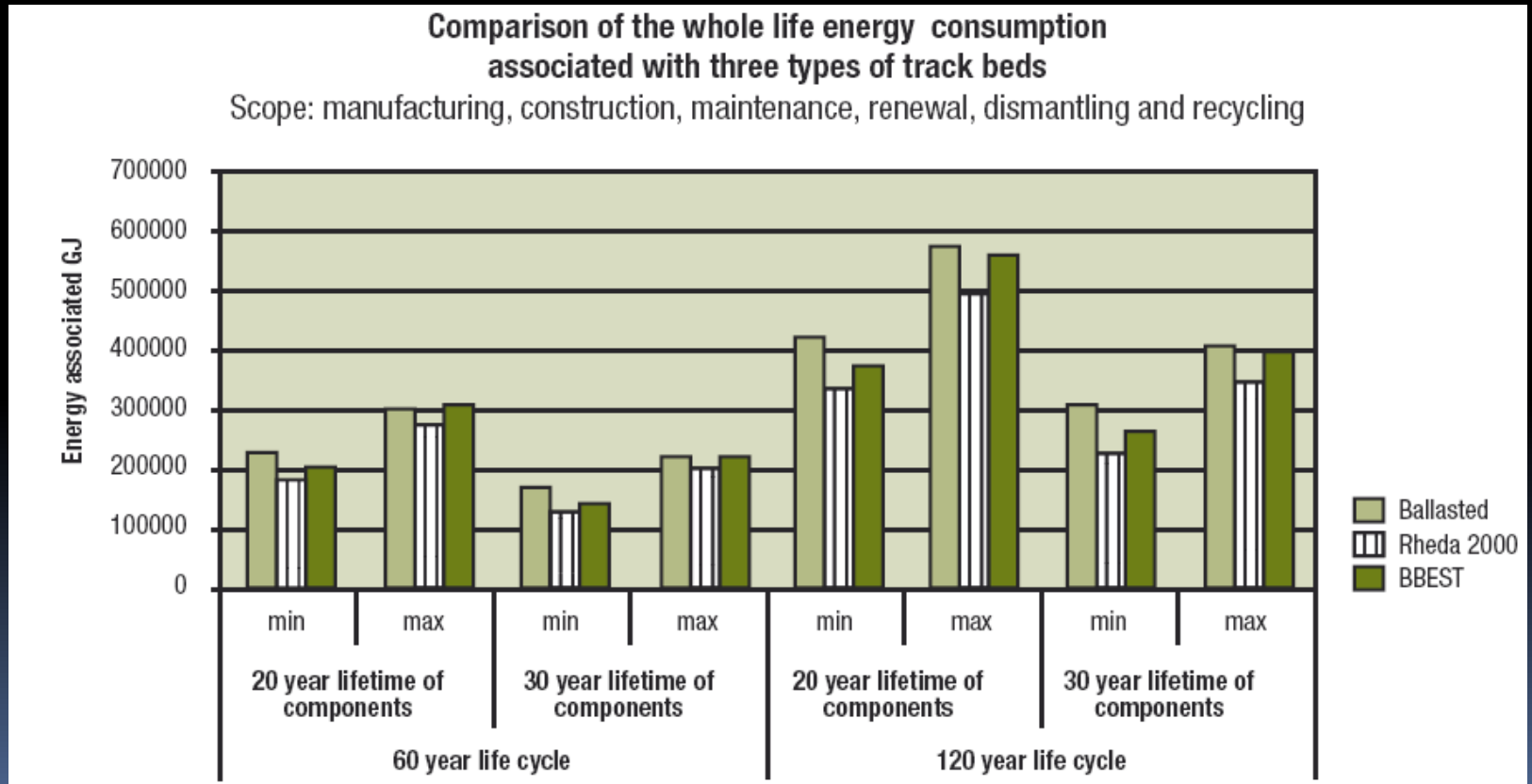


Life expectancy

Components	Life expectancy and maintenance timings (years)	
	Min.	Max.
Concrete slabtrack	60	120
Rails and fastenings	20	30
Concrete sleepers and grout	20	30
Resilient pads, rubber seals, fibreglass shells	20	30
Ballasted track bed	20	30
Washing and cleaning of ballast	10	15
Tamping of ballast	1	1

Results

Long life expectancy of concrete track beds can balance high embodied energy of components.





Conclusions

- Concrete slab track offers increased resilience to flooding & adverse weather.
- Concrete slab track is a sustainable solution over the life time of the product.

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