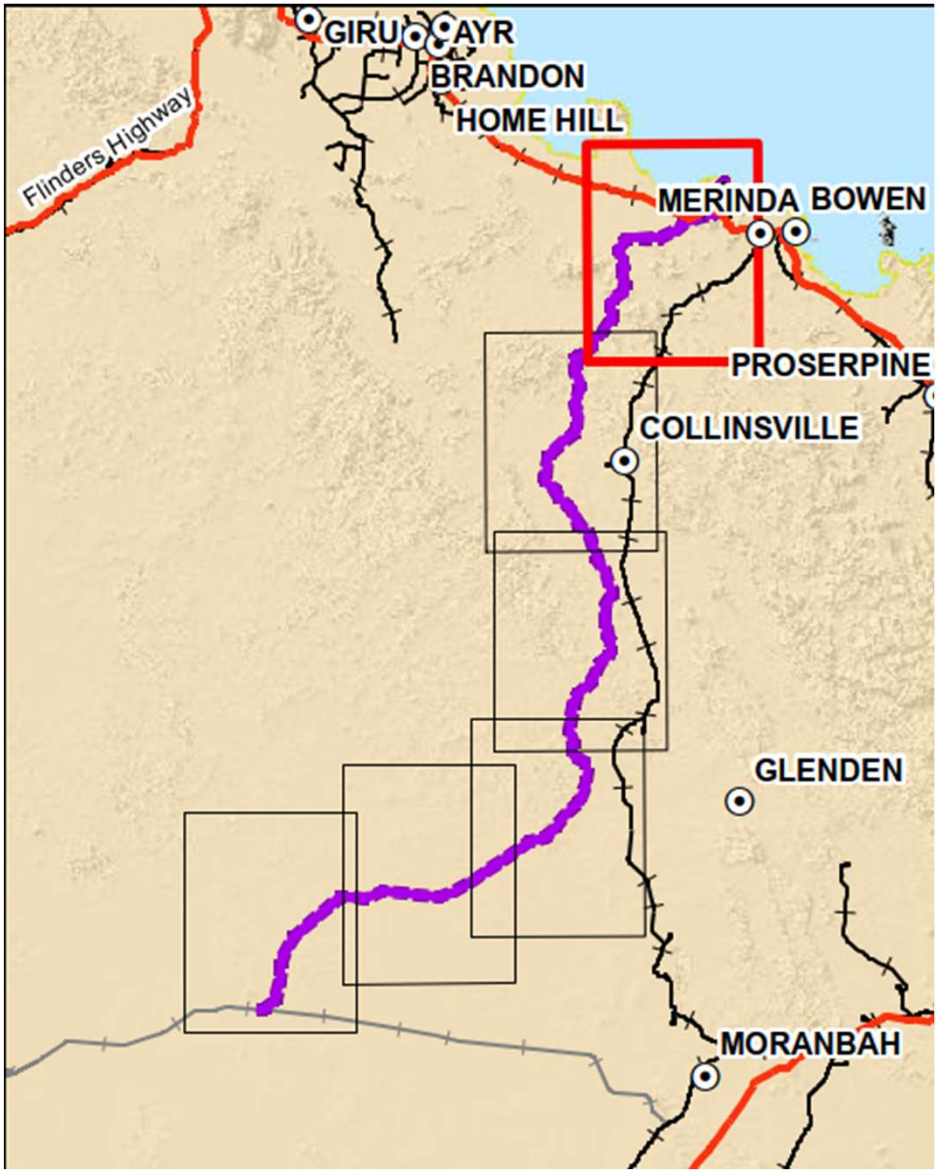
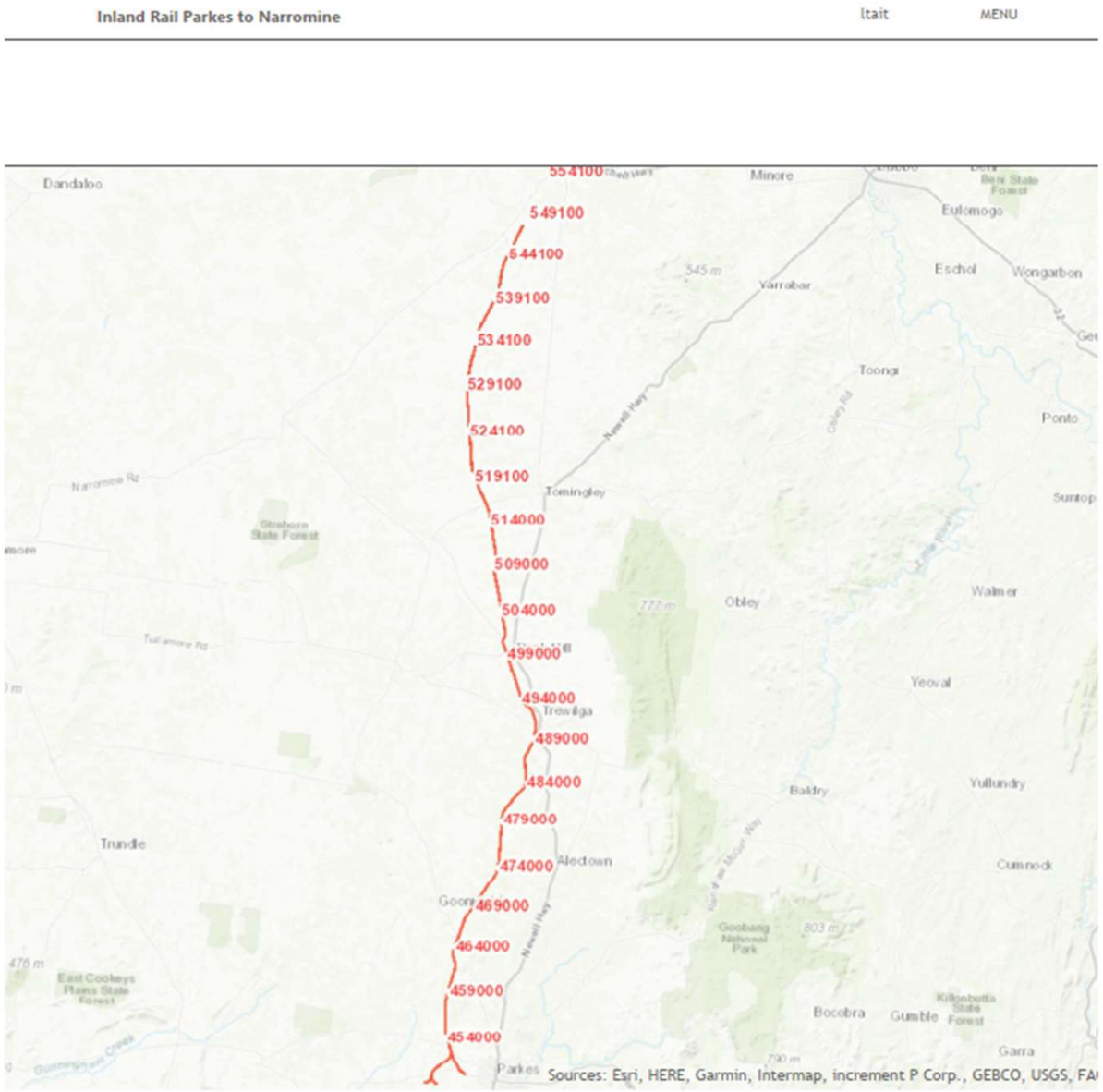
Stabilising and Vegetating Railway Line Construction Sites in Australia and India

Col Schiller (CPESC)
Principal Soil Scientist (Engeny Pty Ltd)


GIRU
AYR
BRANDON
HOME HILL
Flinders Highway
MERINDA
BOWEN
PROSERPINE
COLLINSVILLE
GLENDEN
MORANBAH


Inland Rail Parkes to Narromine
ltait
MENU
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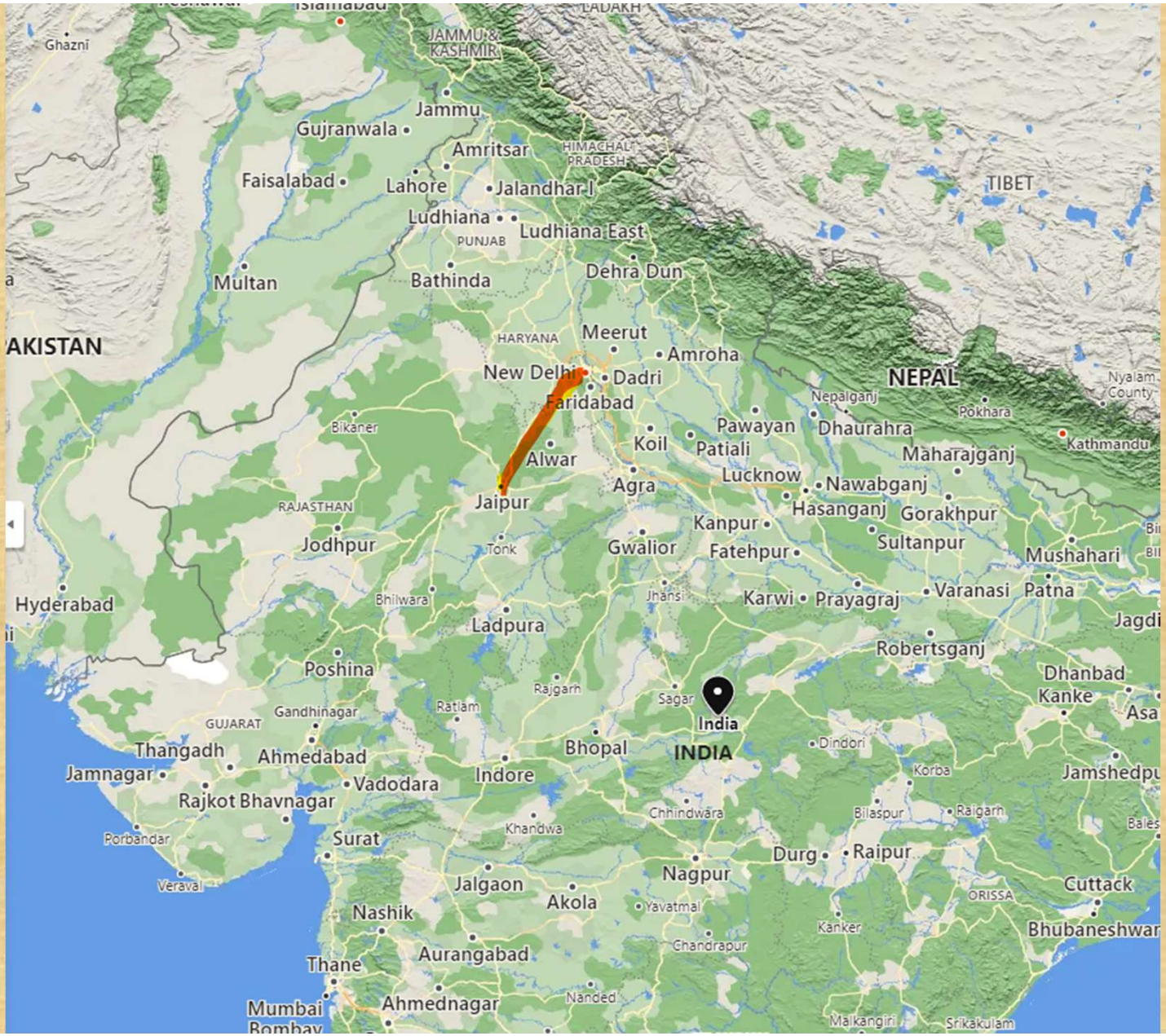
Wongarbon
Yarrabar
Toongi
Ponto
Tomingley
Obley
Walmer
Yeoval
Trewilga
Baldry
Yullundry
Trundle
Aledown
Cumnock
Bocobra
Gumble
Garra
Parkes
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FA


Ghazni
JAMMU & KASHMIR
LADAKH
Jammu
Gujranwala
Amritsar
HIMACHAL PRADESH
Faisalabad
Lahore
Jalandhar
TIBET
Ludhiana
Ludhiana East
PUNJAB
Multan
Bathinda
Dehra Dun
AKISTAN
HARYANA
Meerut
Amroha
New Delhi
Dadri
NEPAL
Faridabad
Nepalganj
Pokhara
Nyalam County
Bikaner
Pawayan
Dhaurahra
Koil
Patiali
Kathmandu
Alwar
Maharajganj
Lucknow
Nawabganj
Agra
Jaipur
Hasanganj
Gorakhpur
RAJASTHAN
Kanpur
Sultanpur
Jodhpur
Tonk
Gwalior
Fatehpur
Mushahari
Hyderabad
Bhilwara
Jhansi
Karwi
Prayagraj
Varanasi
Patna
Ladpura
Jagdi
Robertsganj
Poshina
Rajgarh
Dhanbad
Kanke
Sagar
India
Ratlam
Gandhinagar
GUJARAT
INDIA
Dindori
Thangadh
Ahmedabad
Bhopal
Jamnagar
Indore
Korba
Jamshedpu
Vadodara
Rajkot
Bhavnagar
Chhindwara
Bilaspur
Raigarh
Khandwa
Porbandar
Surat
Durg
Raipur
Nagpur
Veraval
Jalgaon
Akola
ORISSA
Cuttack
Nashik
Yavatmal
Kanker
Bhubaneshwar
Ghandrapur
Aurangabad
Thane
Nanded
Mumbai
Bombay
Ahmednagar
Malkangiri
Srikakulam

M I B
494

07.05.2019 17:27

07.05.2019 20:25

ESSAR
Diesel
Petrol
Lubes
29.04.2019 19:19

07.05.2019 17:08

29.04.2019 18:34

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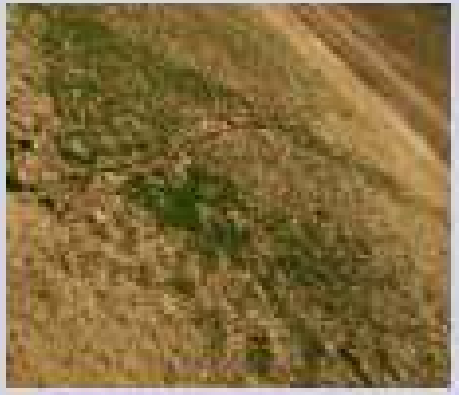
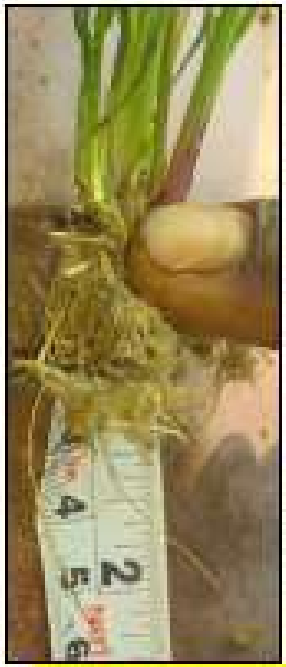
Performance of Trials

Trial	After 7 days	After 14 days	After 28 days	After 60 days
3				
4				

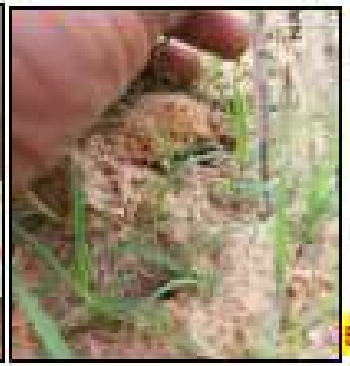
Grass Varieties and Growth 1 month after germination period in different trials



Rhodes Grass: Depth of root & Height of grass

Bermuda Triangle: length of root & height of grass after 1 month of germination

Perennial Rye Grass: Root Depth & Height of grass



Bahama

BL14
4CX80
BL14
10.10.2019 09:33

Notes:

1	Gypsum to be agricultural grade, minimum of 80% gypsum, >20% Calcium, >15% Sulphur and 100% passing through a 6mm sieve		Rates vary between 3 and 20 t/ha, depending on location and timing	
2	Fertilisers are:	A	Nitrophoska or similar	250 kg/ha
		B	DAP	250 kg/ha
		C	Gran Amm (Sulfate of Ammonia)	150 kg/ha
3	Organic Matter- generally composted feedlot manure or compost. Beneficial bacterias may be considered (requires a separate rate calculation)			0 t/ha
				10 t/ha
				20 t/ha

Parameter Characterisation

4	pH		between 6.0 and 8.0	
			between 5.0 and 6.0 or 8.0 and 9.0	
			<5.0 or > 9.0	
5	Emerson Test		>4	
			3	
			<3	
6	Sediment Characterisation		<30% total clays and 50% of silt	Type 3 Sediment controls
			>30%	Type 2 Sediment controls
7	Calcium / Magnesium ratios	>1:1	Calcium to Magnesium	
		1 to 1		
		<1:1	possibly hydrophobic	
8	EC/ salinity ratings		< 800 µS/cm	
			> 800 µS/cm	
			> 1200 µS/cm	
9	Exchangeable Sodium Percentage		<5 percent	
			5 - 15 percent	
			>15 percent	
10	Chloride		<500 mg/kg	
			500-1000 mg/kg	
			>1000 mg/kg	
11	Organic Matter		<1.0 percent	
			1.0 - 2.0 percent	
			> 2.0 percent	

08.09.2020 07:26

16.03.2020 09:37

Latitude: -21.816034
Longitude: 147.023811
Elevation: 205.13 m
Accuracy: 2.5 m
Time: 17-12-2020 11:52
Note: Disney East
Unnamed 309050 North
Powered by NoteCam

07.04.2020 15:13

Latitude: -21.925012
Longitude: 146.652315
Elevation: 198.06m
Accuracy: 3.0m
Time: 05-06-2020 13:56
Note: Weekly inspection
10
Powered by NoteCam

08.09.2020 06:51

14.06.2020 11:13

03.12.2020 12:01

23 06 2021 08:23

Gypsum treatment 1t/ha to Haul Road only

Natural Turbidity

Natural tannins

Gypsum treated

Untreated

Untreated

Rainfall activated coagulant dosing

CLEARPRO
8
9
maxibor

Wood Fibre
Rehab Stimulator Hydromulch
08.04.2021 11:51

Field:

Location: GPS:

	Parameter	Analogue			Rehabilitated area						
		Q1	Q2	Average	Q1	Q2	Q3	Q4	Q5	Q6	Average
Sediment Loss- Polluting	Y/N										
Erosion/ Rilling - Stable	Y/N										
Surface drainage lines re-established	Y/N										
Ground cover is growing	Y/N										
Percent groundcover (includes rock, debris, litter & vegetation)	Y/N										

08.04.2021 07:52