

# FAST TRACK

THE NEWSLETTER OF THE HORIZONS PROGRAM | SEPTEMBER 2019

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# Electronic Track Worker – Paperless, Accurate, Verified Track Protection

## What is ETW (Electronic track worker)?

ETW is an app-based process for the request, issue and acceptance of 3 types of corridor access and safe work protection for Protection Officers (PO) and Network Controllers (NC):

- Track Occupancy Authority (TOA)
- Look Out Working (LOW)
- Work In Corridor (WIC)

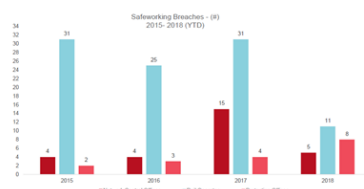
## ETW History

- ETW was a joint initiative in 2016 between:



- Version 1.0 commissioned in September 2017 in the NSW Country Rail Network (CRN)
  - Track Occupancy Authorities (TOA) only
  - Significant reduction in Safe Work Breaches resulted

Yearly Safeworking Incident Trends...



- Version 2.0 commissioned by JHR in the CRN in October 2018 to include:
  - Look Out Working (LOW)
  - Work in Corridor (WIC)

#### How does it work – TOA's?

1. PO's use the app to select the limits and time of a protection request
2. PO's lodges the protection request
3. NC reviews and approves the protection request
4. PO receives a message that the protection is request is approved and work can commence
5. Once work complete, the PO selects fulfill and completes the fulfillment form
6. The protection is released, and track goes back to normal operation
7. Records are electronically stored at both NC and on the PO's device for transparency and auditing.

## TOA/ WIC/LOW Creation from ETW



More info: <https://www.youtube.com/watch?v=RkVSweHxGvg>

#### Why is ETW being taken up by rail networks?

- ONRSR requested that the existing practice of TOA's without a form (commonly referred to as Verbal TOA's and determined by ONRSR to be an unsafe practice) be removed from practice which removes a fast, easy way to obtain multiple TOA's across a short timeframe.
- Faster, more accurate process = efficiency
  - Reduced paperwork (PO's) and voice confirmation (NC & PO) to obtain a TOA's
    - ARTC Trial saw an average of a 50% reduction in time to request, issue and accept a TOA
  - Less distractions for NC's (lower phone call volumes)
  - Less frustration for PO's (advice/notifications sent electronically, not waiting on NCO to answer call)
- It has a proven track record regarding safety improvements
  - JHR reduction in Safe Working Breaches (SWB) by 52% 2017 v 2018
  - ARTC Trial (May – Aug 2018) = 0 SWB
- ONRSR endorsed solution

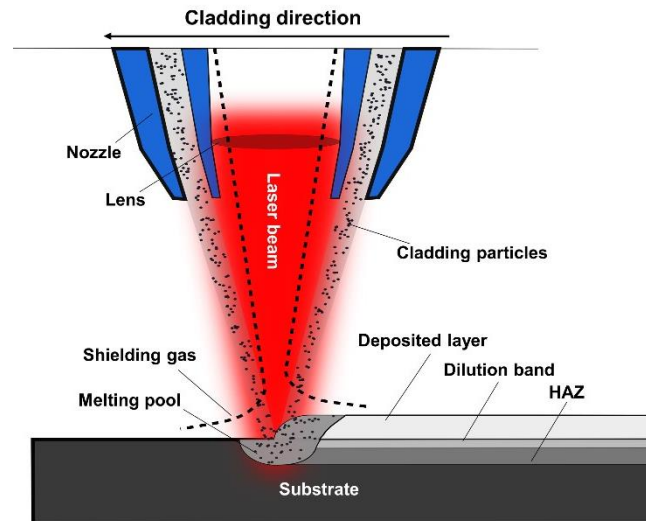
#### More info:

- John Holland and 4Tel Protecting Track Workers through a Control System's Integrated Mobile App called ETW  
<http://www.4tel.com.au/index.php/en/news-2017/150-john-holland-and-4tel-protecting-track-workers-through-a-control-system-s-integrated-mobile-app-called-etw.html>
- John Holland Rail CRN - ETW Application  
<http://www.jhrcrn.com.au/what-we-do/network-operations-access/etw-application/>

# Application of Laser Cladding in Rail Maintenance

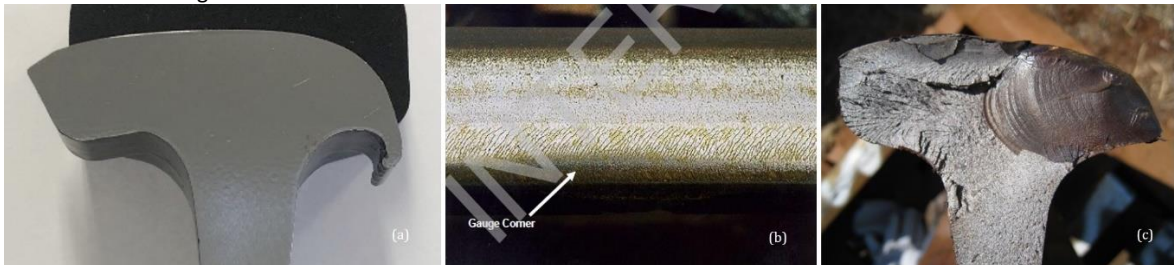
## The concept

Technically, laser cladding is a melting process in which laser beam is used to fuse the desired material addition onto a substrate.



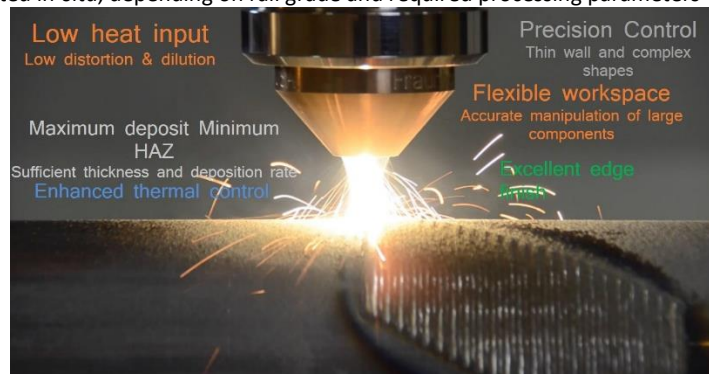
## Motivation

- Minimising maintenance costs for rails and special trackwork through:
  - Reducing rates of component degradation
  - Extending service lives and maintenance intervals



## Benefit

- Surface properties can be tailored to resist the damage mechanisms caused by wheel rail contact.
  - Wear
  - Rolling contact fatigue
- Potential reduction in wheel squeal during vehicle curving
- Rails can be treated in-situ, depending on rail grade and required processing parameters



# War on Waste – Railway sleepers made from recycled plastic

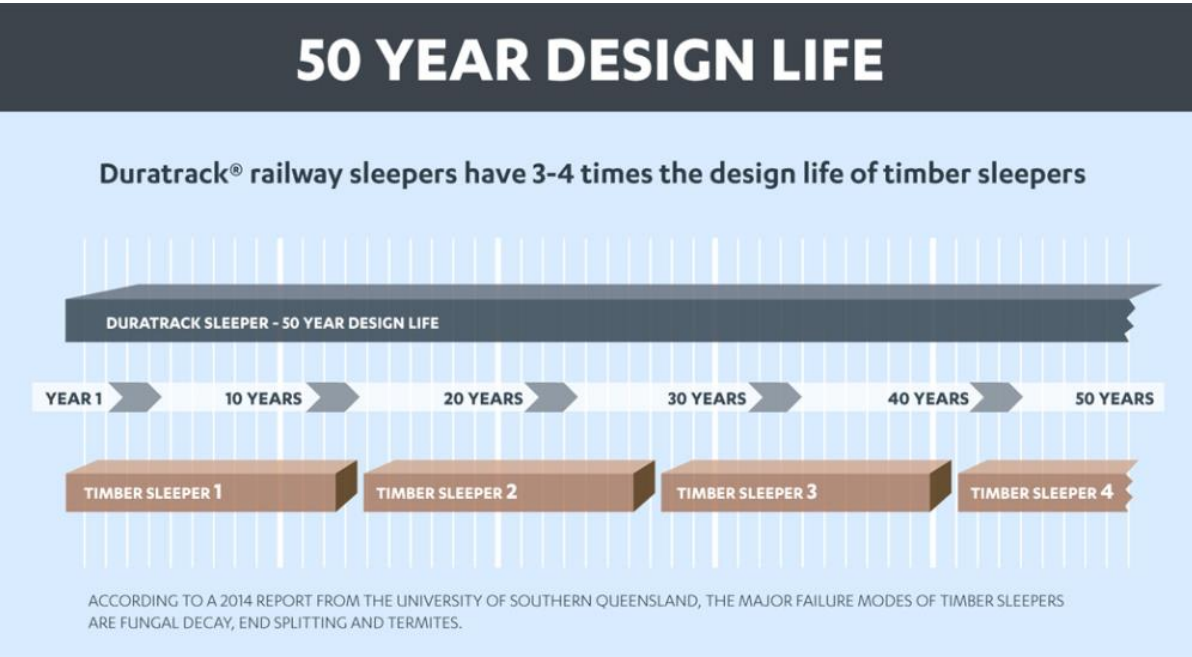
In Queensland and Victoria there are currently several trials on their way testing railway sleepers made from recycled plastic.

The Duratrack composite plastic sleepers, which are produced in Mildura by Integrated Recycling, consist of 85% recycled plastic waste sourced in Australia. The sleepers are made from a specific mix of rigid and flexible plastics and polystyrene products that have served their primary uses as pipes and drums, agricultural films, including cotton bale wrap and vineyard covers, and produce boxes. For every kilometre of sleepers 54 tonnes of waste plastic and 10 tonnes of polystyrene are being recycled that would otherwise go to landfill.



Source: Integrated Recycling, <http://www.integratedrecycling.com.au/>

Having a 50-year design life, the sleepers last three times longer than traditional timber railway sleepers, while having a similar weight and characteristics. The recycled sleepers can also be handles like timber sleepers which allows utilisation of existing railway equipment and fasteners as well as providing the option to be drilled to adapt to different track gauges. In addition to that they are recyclable at the end of their lifespan.



Source: Integrated Recycling, <http://www.integratedrecycling.com.au/>



## MATERIAL PROPERTIES OF THE DURATRACK® SLEEPER

- ✓ Termite resistant
- ✓ Fire tolerant
- ✓ Rot resistant
- ✓ Low water absorption
- ✓ UV resistant
- ✓ Resistant to fungal decay
- ✓ Splinter free
- ✓ Maintenance reduction
- ✓ Fully recyclable after 50 years use
- ✓ Easy to drill & fasten - same as timber
- ✓ Tooling & transporting - same as timber
- ✓ Less energy to produce than concrete or steel sleepers

This new recycled product is the result of nearly four years of research and product development led by Integrated Recycling and Monash University Institute of Railway Technology Laboratory. The sleepers are type approved and undergoing in-track trials for Queensland Rai, MTM and V/Line. In addition to that they are already in use for several Tourist and Heritage railways in Victoria and Western Australia including the iconic Puffing Billy.

### Current Trials:

#### Metro Trains Melbourne - Richmond Station - June 2019

200 sleepers have been installed at one of Melbourne's busiest trains stations, Richmond Train Station, as part of maintenance work done by Metro Trains. The installation at Richmond is part of an 18-month trial being conducted with Metro Trains.



Source: Sustainability Victoria, <https://www.sustainability.vic.gov.au/>

#### Queensland Rail - Mainline Trial #1 - Helidon to Gatton – October 2018

Queensland Rail type approved Duratrack composite recycled plastic railway sleeper and commenced a trial with in total 150 installed sleepers at two different main locations.

In the first trial, during a line closure 75 sleepers were installed between Helidon and Gatton in the Lockyer Valley, near Toowoomba. The trial, which will run for approximately 12-18 months, will be conducted and monitored in accordance with the Queensland Rail test plan.

#### Queensland Rail - Mainline Trial #2 - Chinchilla to Miles – November 2018

The second mainline trial installation of these innovative sleepers has been completed between Chinchilla and Miles, in the Western Downes region about 200kms west of Toowoomba. As for the first trial, the approximately 12-18 months long trial will be conducted and monitored in accordance.

#### V/Line - Wyndham Vale Train Stabling Facility – July 2019

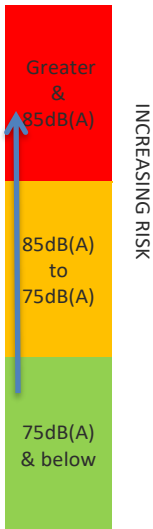
During the construction of a new stabling yard entry track at Wyndham Vale, V/Line installed 120 recycled sleepers as a trial.



Source: Star weekly, <https://www.starweekly.com.au/news/fantastic-plastic-on-track/>

# Noise Exposure and Hearing Loss

Within rail operations there are many hazardous noise workplace environments. Exposure to loud noise from all sources is the most common preventable cause of hearing loss and impairment.



## Australian Exposure Standards

We must ensure workers are not exposed to occupational noise levels greater than the;

- **eight hour exposure standard or LAeq,8h of 85dB(A) or the**
- **peak noise or LC,PEAK of 140 dB(C)**
- **Regulation 56 of Workplace Health and Safety Regulations 2011 (Cth).**

If a shift length is longer than eight hours the noise exposure for the worker is adjusted to reflect the extended shift which is equivalent to an eight hour exposure and compared to the workplace 8 hour exposure standard of 85 dB(A). No adjustment to the peak noise exposure standard is required for an extended work shift as peak noise is capable of causing instantaneous damage.

Further it is stated by Safe Work Australia (2011) that research has shown that majority of people are protected at the legislated exposure standard however damage to hearing can occur for eight hour exposure of LAeq,8h of 75dB(A) or the peak noise or LC,PEAK of 130 dB(C).

Worker's noise exposure and workplace noise must be maintained below the Australian workplace exposure standard.

## Controls

We must manage risks and hazards by identifying them, assessing risk, applying the hierarchy of controls to ensure that the exposure standard is not exceeded and reviewing the effectiveness of them. Some of the loud noise situations when using an example of a driver of a diesel locomotive in freight and bulk operations are in table 2, hence controls for drivers could be:

Noise source/activity	SPL dB(A)
Locomotive engine room	100-105
Locomotive electrical room	90-95
Aggregate tipping area	85-90
Standing 1m away on ground from idling locomotive	86
Provisioning shed with idle diesel locomotives	91
Grain tipping with feeder operating	86-90

Table 2: Examples of noise levels (SPL) for rail

**Elimination:** Power down and turn off all locomotives where practicable so that people in vicinity are not exposed to noise from idling locomotive.

**Substitution:** Use modern locomotive fleet that have been designed to produce less noise.

**Engineering:** Apply effective noise dampening insulation to driver cabins and re-design loco horn to 'throw' noise in front of loco and not down into the cabin.

**Administrative:** use the one metre rule to minimise noise exposure. Stay away from high noise areas like tipping areas if practicable for work operations. Turn down volume of communication radios.

PPE: Hearing protectors (HP) shall be worn correctly and be compliant with AS1269.3. Areas designated by signage as high noise such as engine and electrical rooms, provisioning shed for fuelling and tipping areas are mandatory HP areas.

## How loud is 85 dB(A) – The One Metre Rule

If you need to raise your voice to talk to someone about one metre away you can assume the sound level is likely to be hazardous and damaging to hearing.

The challenge is to take immediate control where possible. Consider this one metre rule in the context of track work, rolling stock maintenance, operations and line haul. Think about where the noise is and what controls are needed. Always remember that PPE in the form of hearing protection is the lowest level of control. The design process is a fantastic place to start in making sure the exposure does not occur. Design quiet!!

Thanks for reading

**FAST TRACK**