GOVERNMENT OF WESTERN AUSTRALIA

METRONET

BYFORD RAIL EXTENSION

Building Resilience – The Role of ESC Training in Improving Byford's Environmental Outcomes

21 Nov 2025

Presentation Overview

Importance of ESC Training

- Why ESC training was vital for environmental success on METRONET's Byford Rail Extension project

Local Environmental Challenges

- Challenges include proximity to Darling Scarp, erodible soils and pressures on drainage networks.

Lessons from the 2024 Winter Season

- How Inadequate ESC planning and implementation limit the effectiveness of controls in the industry.

Best Practices and Recommendations

- Outline best practices and recommendations promote compliance, protection and community trust.

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Context and Challenges

Why ESC Mattered for Byford

Steep Terrain Impact

- Steep gradients from the Darling Scarp accelerate runoff, increasing erosion risk in the Byford area.

Soil Vulnerability

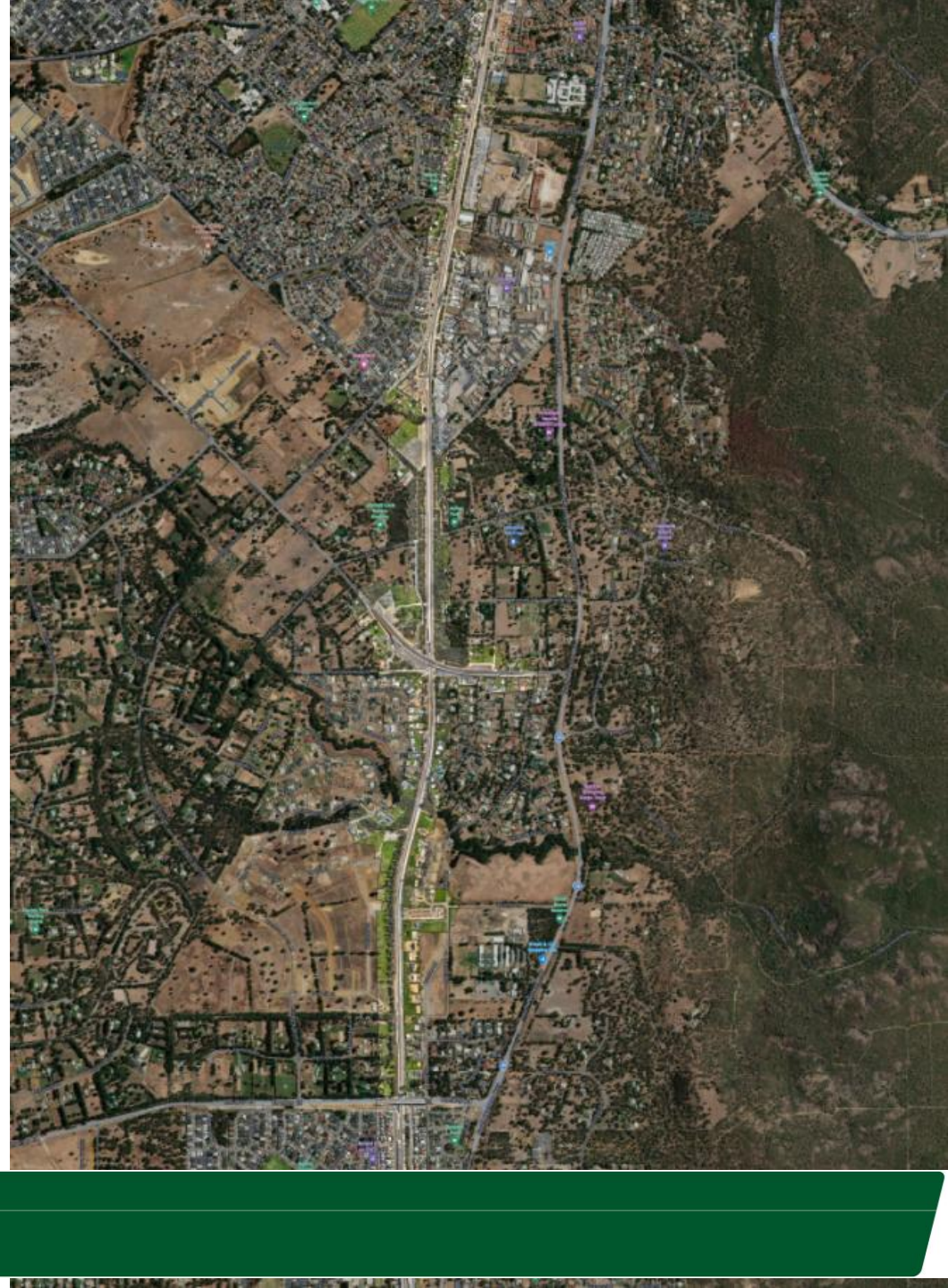
- Sandy and gravelly soils in Byford area highly prone to displacement during heavy rainfall events.

Residential Development Effects

- Increasing impervious surfaces from residential growth alters drainage, raising sediment transport risks.

Need for Effective ESC

- Understanding local conditions is essential for designing proactive, resilient erosion and sediment control measures.



Why ESC Mattered for Byford

Darling Scarp terrain

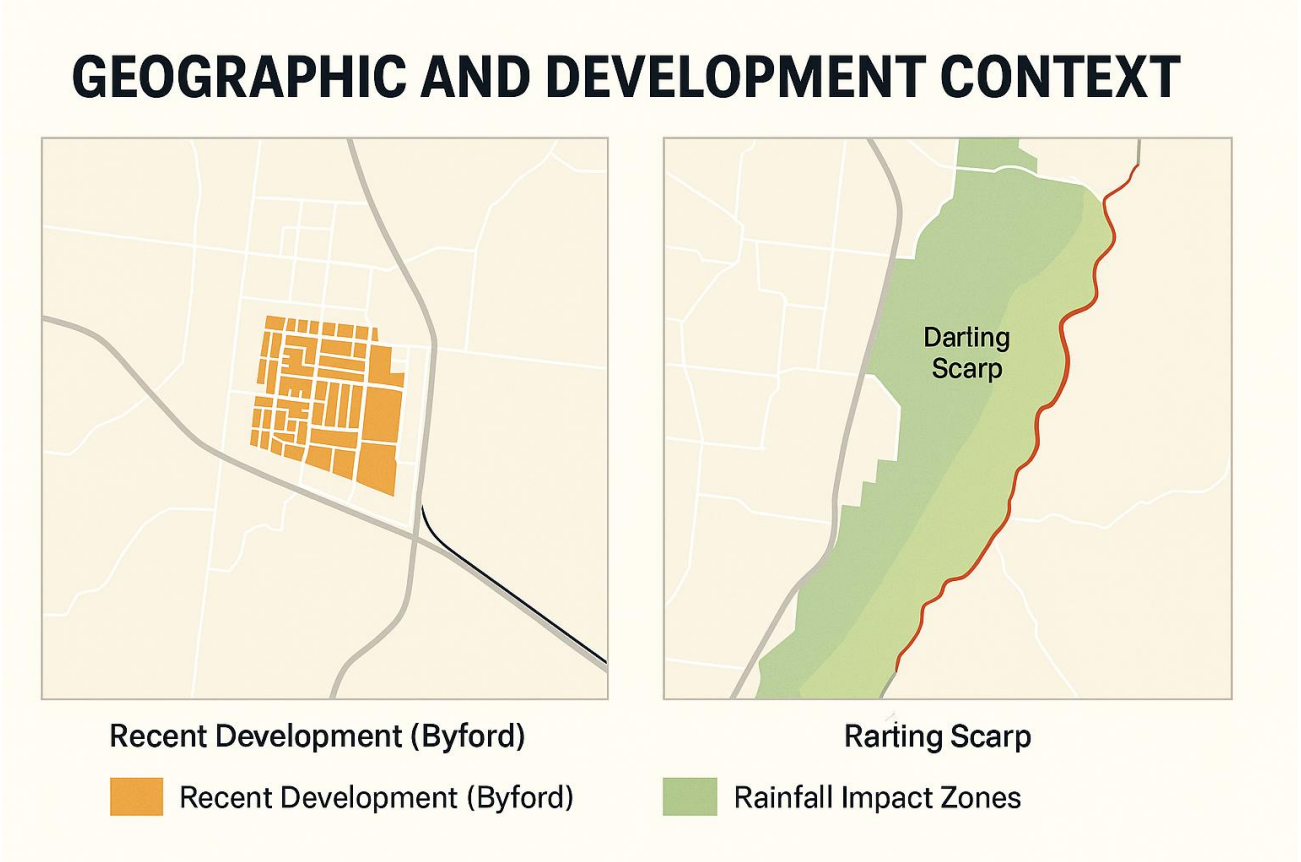
- The green-coloured escarpment illustrates steep terrain causing rapid water runoff and increased erosion risk.

Recent Development Zones

- Orange zones mark recent private developments that increase surface impermeability and erosion potential.

Rainfall impact Areas

- Shaded areas represent regions affected by orographic rainfall, intensifying erosion and sedimentation transport risks.



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Lessons Learned

Root causes of ESC Failures

Delayed ESC Planning

- ESC Plans add little value when not completed before the wet season, this can be due to poor understanding of risk and inexperience with intense storm events among team members.

Erosion Control Failure

- Controls are often undersized and poorly installed failing to contain stormwater sufficiently and allowing sediment runoff from sites.

Insufficient Drainage Consideration

- Drainage and ESC Elements are given insufficient focus during work pack development and site reviews, impacting project resilience.

Environmental and Infrastructure Impact

- Under serviced and sediment blocked drainage systems, cause localised inundation and affect hydrology impacting nearby communities and roadways.

Root causes of ESC Failures

Inadequate Weather Monitoring

- Lack of localised weather data can lead to underestimating storm severity, particularly near the escarpment area which is prone to intense winds.
- During a projects sensitive bulk civils phase intense storms can cause rainfall beyond expected levels, overwhelming stormwater systems and some site controls.

Need for Improved Training

- Historical failures revealed gaps in ESC training, needing more focus on planning, design and execution, highlighting the need for better structured training.

- ESC training being delayed until after the critical wet season, reducing preparedness for environmental compliance

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Best Practices and Recommendations

What Good ESC Training Looks Like

Proactive and Timely Training

- ESC Training should occur well before the wet season to prepare personnel for erosion control challenges ahead.

Localisation of Training Content

- Training should be customised to local soil, topography and weather specifics for effective erosion management.

Hands on and scenario based learning

- Practical site inspections and planning exercises enhance participants' understanding and preparedness.

Cross-Disciplinary Collaboration

- ESC training encourages teamwork across engineering, construction and environmental disciplines for integrated solutions.

Embedding ESC into Project Culture through training

Early integration of ESC

- Incorporate erosion and sediment control in work pack development and risk assessments from project start.

Real-Time Weather Monitoring

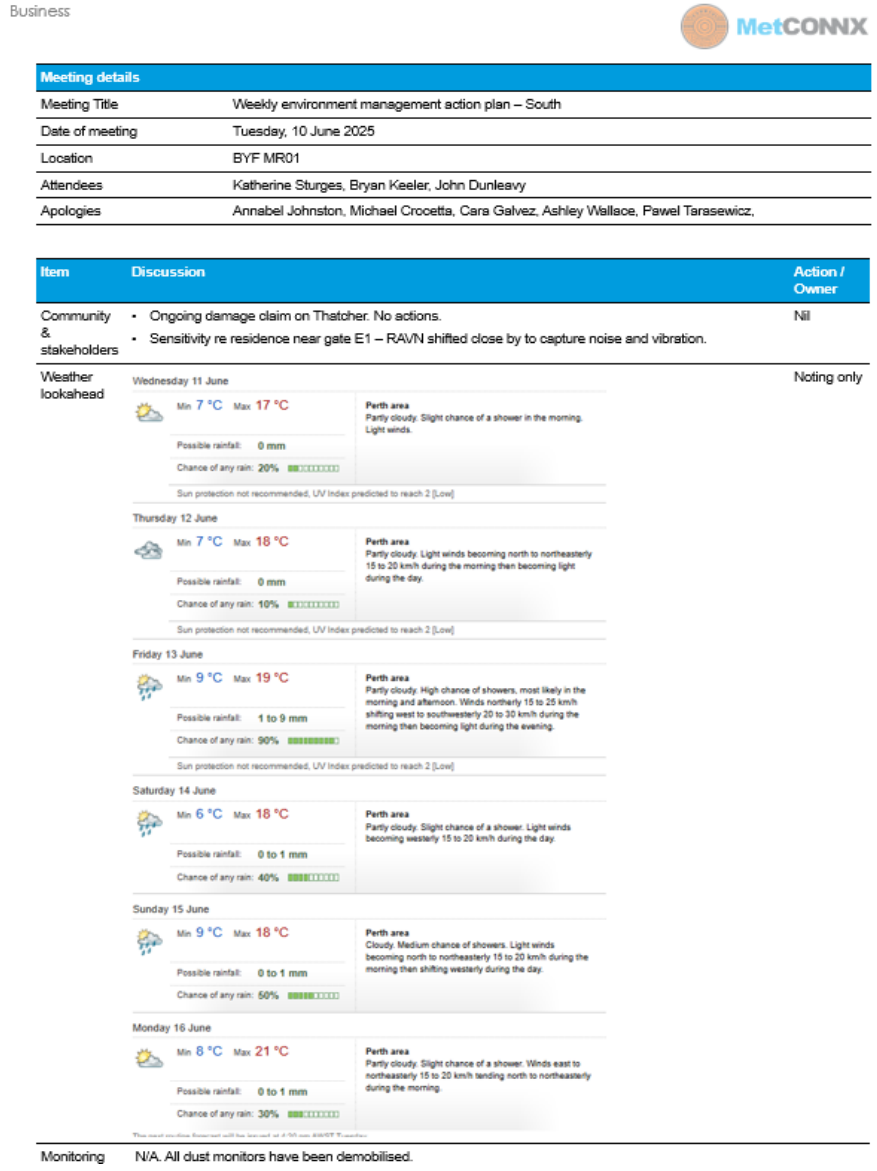
- Use on-site weather monitoring systems to provide real-time data for informed ESC decisions.

Adaptive Management

- Conduct regular pre-storm inspections and adapt ESC measures to maintain effectiveness under changing conditions.

Shared responsibility Culture

- Foster accountability and continuous improvement by involving all project teams in ESC efforts.



Business

MetCONNX

Meeting details	
Meeting Title	Weekly environment management action plan – South
Date of meeting	Tuesday, 10 June 2025
Location	BYF MR01
Attendees	Katherine Sturges, Bryan Keeler, John Dunleavy
Apologies	Annabel Johnston, Michael Crocetta, Cara Galvez, Ashley Wallace, Pawel Tarasewicz,

Item	Discussion	Action / Owner
Community & stakeholders	• Ongoing damage claim on Thatcher. No actions. • Sensitivity re residence near gate E1 – RAVN shifted close by to capture noise and vibration.	Nil
Weather lookahead	Wednesday 11 June Min 7 °C Max 17 °C Possible rainfall: 0 mm Chance of any rain: 20% Perth area Partly cloudy. Slight chance of a shower in the morning. Light winds. Sun protection not recommended, UV Index predicted to reach 2 [Low] Thursday 12 June Min 7 °C Max 18 °C Possible rainfall: 0 mm Chance of any rain: 10% Perth area Partly cloudy. Light winds becoming north to northeasterly 15 to 20 km/h during the morning then becoming light during the day. Sun protection not recommended, UV Index predicted to reach 2 [Low] Friday 13 June Min 9 °C Max 19 °C Possible rainfall: 1 to 9 mm Chance of any rain: 90% Perth area Partly cloudy. High chance of showers, most likely in the morning and afternoon. Winds northerly 15 to 25 km/h shifting west to southwesterly 20 to 30 km/h during the morning then becoming light during the evening. Sun protection not recommended, UV Index predicted to reach 2 [Low] Saturday 14 June Min 6 °C Max 18 °C Possible rainfall: 0 to 1 mm Chance of any rain: 40% Perth area Partly cloudy. Slight chance of a shower. Light winds becoming westerly 15 to 20 km/h during the day. Sunday 15 June Min 9 °C Max 18 °C Possible rainfall: 0 to 1 mm Chance of any rain: 50% Perth area Cloudy. Medium chance of showers. Light winds becoming north to northeasterly 15 to 20 km/h during the morning then shifting westerly during the day. Monday 16 June Min 8 °C Max 21 °C Possible rainfall: 0 to 1 mm Chance of any rain: 30% Perth area Partly cloudy. Slight chance of a shower. Winds east to northeasterly 15 to 20 km/h tending north to northeasterly during the morning.	Noting only
Monitoring	N/A. All dust monitors have been demobilised.	

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Conclusion and next steps

Final Thoughts and Recommendations

Proactive Preparation

- Preparing for environmental challenges before they occur reduces risks and improves project outcomes.

Strategic Investment

- Erosion and sediment control training is an investment in environmental protection and community trust.

Building resilience

- Embedding control measures in all project phases strengthens resilience against future environmental challenges.

Engaging Discussion

- Encouraging questions and insights fosters continuous improvement in environmental management.

Continuous Improvement

- Post-2024, the project has embedded proactive ESC training, real-time monitoring, and adaptive management strategies to lead in best practice and exceed compliance expectations.