

# EFC – earth friendly concrete

- **Normal concrete made with an alternative sustainable binder**
- **No ordinary Portland Cement**
- **Geopolymer binder :**
  - Fly ash
  - Ground Granulated Blast Furnace Slag
  - Alkaline (chemical) activator
  - Water

The logo for WAGNERS is a yellow rounded rectangle with a black border, containing the word "WAGNERS" in bold, black, uppercase letters. It is positioned at the bottom right of the slide, overlapping a decorative graphic of curved lines in blue, red, and black.

**WAGNERS**

# Hardened Properties Comparison

Property	EFC performance (compared to Portland Cement Concrete)
compressive strength	equivalent
flexural tensile strength	higher
early age strength	higher
shrinkage	Lower (220 – 400 $\mu\epsilon$ )
acid resistance	higher
Heat of hydration	VERY low
fire resistance	higher

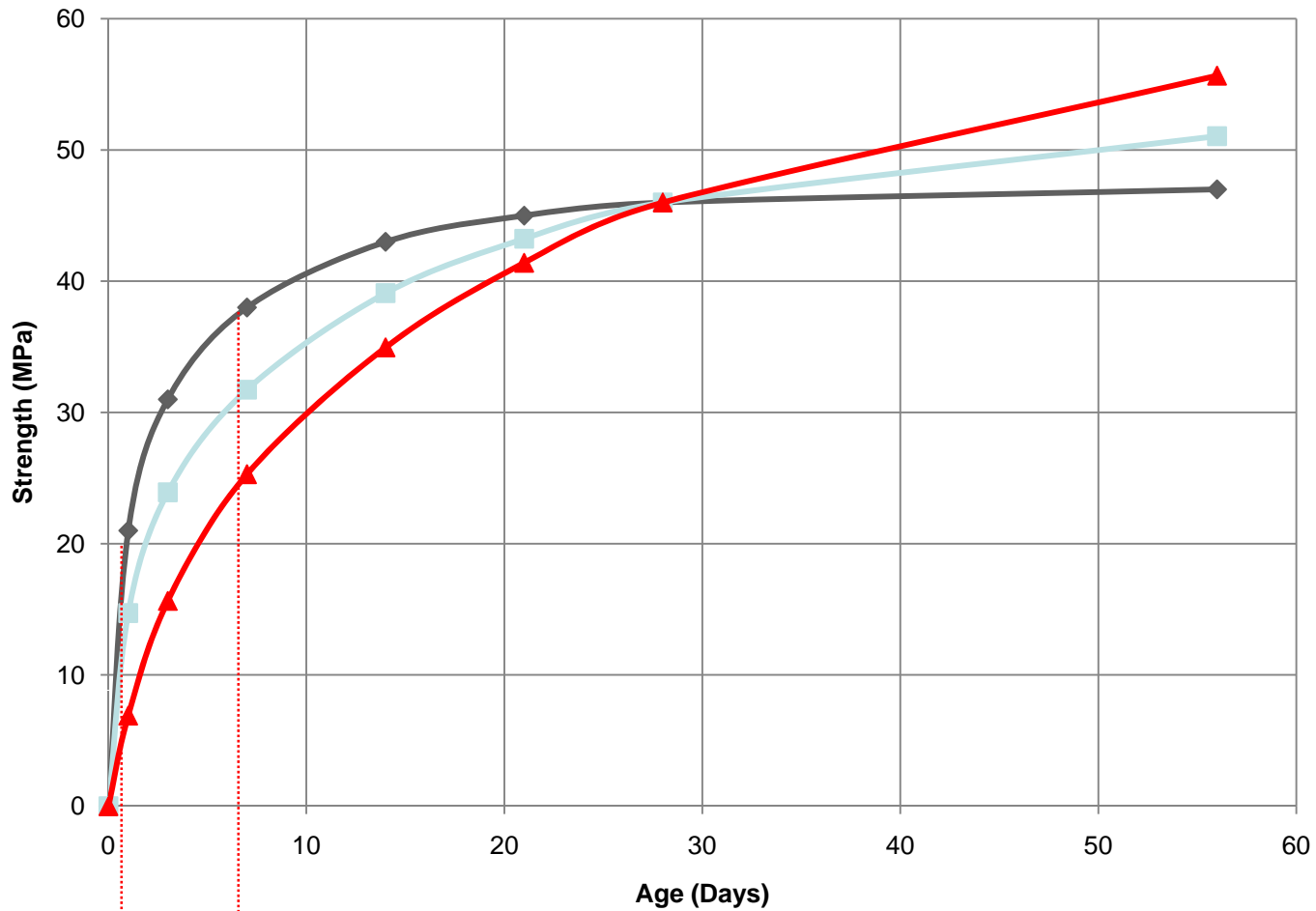
## CO<sup>2</sup> Emissions

- 1 m<sup>3</sup> EFC 25 MPa saves **154 kg of CO<sup>2</sup>**
- 1 m<sup>3</sup> EFC 32 MPa saves **184 kg of CO<sup>2</sup>**
- 1 m<sup>3</sup> EFC 40 MPa saves **220 kg of CO<sup>2</sup>**



**WAGNERS**

# Compressive Strength Development



83% strength – 7 days

46% strength – 1 day

**WAGNERS**

# Wagners EFC Project

- **Licensing agreement with Zeobond**
- **Produced over 1,000 m<sup>3</sup>**
- **Internal R&D production trials**
  - **Precast panel retaining wall**
  - **Street pavement**
  - **Precast prestressed bridge beams test**
  - **Water tank**
- **Commercial projects**
  - **Eastern Busway, precast panels**
  - **Toowoomba RC footpath**
  - **POB weighbridge pavement**

The logo for Wagners, featuring the word "WAGNERS" in bold, black, uppercase letters on a yellow rectangular background with rounded corners and a black border. The logo is positioned at the bottom right of the slide, partially overlapping a decorative graphic element.

**WAGNERS**

# Eastern Busway panels



Client: Leighton Contractors  
Approving Authority: QLD Transport & Main Roads

**WAGNERS**

# Precast Panels, 40 MPa



# Footpath

- 1<sup>st</sup> external customer to use EFC, 18<sup>th</sup> August 2010
- Toowoomba Regional Council footpath



**WAGNERS**

# Port of Brisbane

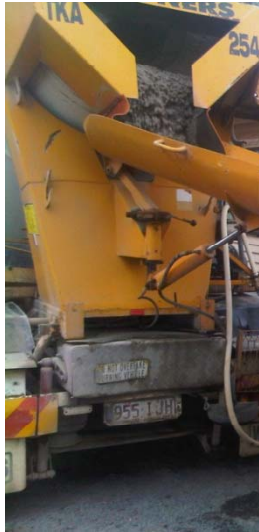


**Weighbridge slab, 2-3 November 2010**

**WAGNERS**



# Carpark Pavement – Toowoomba November 2010

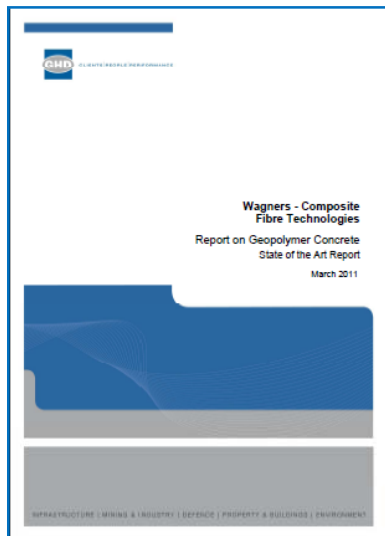


# Product Development Technical Development

**R&D**

**Bridge Beams Study**

**GHD Engineering Review**



**WAGNERS**

# Bridge Beams Study



**WAGNERS**

# Private street pavement



**Complete testing data set on 2 x strength grades  
for independent engineering report by GHD**

**WAGNERS**