Gold sponsor


# DESTRUCTION AND RECONSTRUCTION

**- get high ... and dry -**

Colin MacKenzie
Timber Queensland

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# High and Dry

This Presentation:

- Yasi findings
- Assessing and repairing timber homes
  - ✓ Flooring
  - ✓ Frames, trusses
- ETP performance and durability
- Panelised building systems

# “Yasiyasiyasi….rah, rah, rah”

- Yasiyasi I – *Syzygium spp*
- Yasiyasi II – *Clystocalyx spp* + *Syzygium spp*

**YASIYASI**

*Clystocalyx* and *Syzygium* spp
Family: Myrtaceae

**SUGGESTED USES** The yasiyasi timbers are dense hardwoods suitable for heavy construction, decking, domestic and heavy duty flooring, stairs, truck trays, cart bodies, door and window sills. They have also been used as building timbers in localities where more easily nailed alternatives have not been readily available. Other possible uses could include bridge and wharf decking, although checking may be troublesome. The species which make up the yasiyasi group of timbers are subdivided on the basis of mechanical properties into 'yasiyasi I' and 'yasiyasi II', but the two classes are not separately marketed.

**Yasiyasi I**

*Syzygium effusum* (A. Gray) C. Muell. *Eugenia effusa* A. Gray)
*Syzygium nidie* Guillem.

**PHYSICAL PROPERTIES** The colour is generally uniform. Heartwood is brown to red-brown, with bright yellow to red-brown sapwood, up to 10mm wide. Texture is intermediate and the grain usually interlocked. Air dry density is 800kg/m³. Shrinkage is high.

**MECHANICAL PROPERTIES** Strength group S3 (green), SD3 (seasoned).

**WORKING PROPERTIES** In the conversion of green material, sawing characteristics are normal for a dense timber, except for some fibrous bands of interlocked grain and stringy fibres where the saw emerges. Blunting is moderately rapid and hard tipped

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# TC Yasi – Findings

## (Similar to Larry)

Advice and images, thanks to:

- JCU Cyclone Testing Station and
- S. Narsey, MiTek

# TC Yasi - General

- On-ground gust speeds 220 km/h similar to Larry (less than Cat 5 at 290km/h ?)
- Longer duration (3 hr) than Larry, more debris, impact and fatigue
- Impact damage to roofs
- Modern (post 80’s) compliant housing suffered little structural damage due to wind pressure
- Storm surge, significant structural damage

# General

# TC Yasi - Specific

- Roller doors, guttering and flashing, lean-to's and add-ons
- Sheds
- Tile roofs
- Windows and doors (blown in/sucked out)
- Pitched/raftered roofs
- Nailed roof battens
- Fatigue metal roofs and battens (fastener pull through)
- Rust and decay compromised strength

# Specific

# Go Queenslander!!

# Footings, subsidence and termite protection systems

- Ensure (or engage an engineer if necessary) that footings have not been effected by water inundation or flowing water
- Ensure that surfaces around or under the house are free draining and do not allow water to pond
- Ensure gutters and downpipes are free of debris and not damaged
- Check ventilation points in sub-floors are clear of debris and dirt
- Ensure the adequacy of termite protection systems

# Timber Framing

- Where prolonged water immersion or dampness has occurred check to ensure timber has not begun to decay or rot

- Check that metal connectors and/or fixings have not corroded or become loose

- Generally do not begin to install new wall linings until timber framing has a suitable moisture content

# Wall linings and claddings

- Plasterboard inundated by water will generally require removal. (1200mm or 1350mm width sheets are most common)

- Compressed fibre cement sheeting is generally still serviceable after water inundation.

- External fibre cement and timber claddings can generally be retained provided the wall cavity behind the cladding can be thoroughly dried.

# Kitchen cupboards, vanity and laundry units

- Where the water level has not exceeded the kickboards to the cupboards the kickboards can be removed and the space under the cupboard thoroughly dried.

- Where the carcass of the cupboard has been inundated it will usually have swelled and will require replacement

# Timber strip floors

- T&G Strip floors will have to be assessed on a case by case basis.
- Where expansion has been significant damaging boards an overlay floor, replacing the floor or using an alternative floor finish over the floor probably required.

# Particleboard and plywood floors

- Plywood floors are relatively stable and are usually structurally adequate after water immersion
- Particleboard floors are more susceptible to damage
  - As a guide it is suggested that if sheet edges have swollen by more than 5mm then the structural adequacy of the floor may have been compromised.
- Check for secondary structural damage

# Wet Areas


Bathroom above not stripped out 8 weeks after flood

# Engineered Timber Products

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# Durability of ETP's

Combination of:-

- Suitability of adhesive for exposure conditions
- The timber durability (and treatment)
- Resistance to weathering

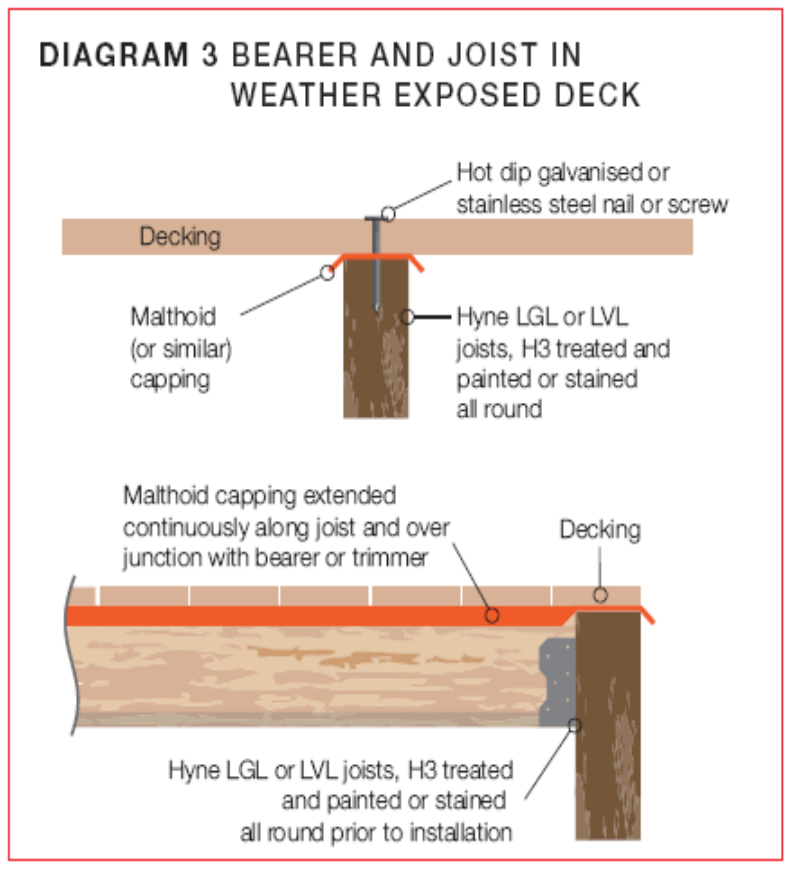
# Adhesives and exposure conditions

| Adhesive Type | Exposure conditions | Typical Adhesives used |
|---|---|---|
| Type I | Full weather exposure Temp.>$50^0$C | Resorcinol, phenol-resorcinol and polyurethane |
| Type II | Protected from weather Temp.<$50^0$C RH<85% @$20^0$C | Melamine urea formaldehyde, polyurethane |

# Typical manufacturers recommendations

- ‘I’ Beams not suitable for weather exposed app’s
- H3 treated pine (LVL and glulam) or Durable hardwood (glulam) OK
- No moisture traps
- HDG or stainless fasteners
- Before erection – prime all round with oil-based primer
- Two coats of solid, light coloured, oil or acrylic
- Sun exposed faces to be sheeted
- Malthoid or similar to tops of joists/beams
- End caps to exposed end grain

# Typical manufacturers recommendations




# Weathering and Finishing

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# Industry Initiatives

# Updated Hyne Recommendations

TDS 5 – Site handling and protection

TDS 6 - Weather exposed applications

TDS8 - Sealing, painting or varnishing


HYNE

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# New Hyne TDS

TDS 9 – Design for durability

- BCA requirements
- Target design life
- Detailing and
  to achieve design life


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# PBS by Carter Holt Harvey

## The Issues:

- Construction Time Increasing
- Housing Affordability Decreasing
- Skilled Trade Availability Decreasing
- Wood Volume per house decreasing

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The natural solution for you.

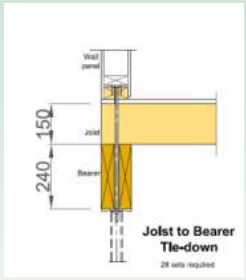
## Solution: CHH Panelised Building System (PBS)

- Up to 40% reduction in construction time
- Maximise use of skilled trades
- No on-site waste
- OH&S advantages
- Utilises existing supply channels
- CHH design/engineering support

# Small Panels – Remote Areas



- Easy handling (<100kg)
- Semi-skilled (4-6 people)
- Quick (3 days to lock up)
- Standard finish




# Small Panels – Rebuilding



- Revive communities
- Fast re-build
- Raised floor to suit
- Contemporary design

*Images courtesy of Bléuscape design*

# Large Panels – Sloped Sites



- 1-day to lock-up
- Minimal scaffolding
- Faster turnover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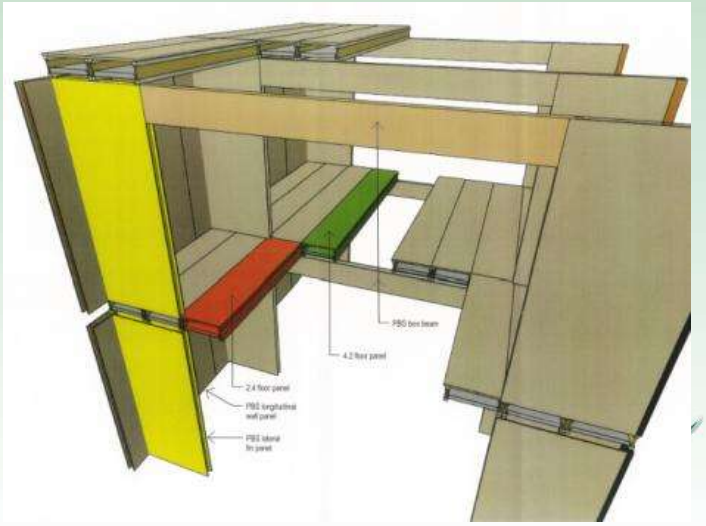
# Large Panels – Med. Density



- Pre-fab panels
- Remove follow-on trades
- Affordable



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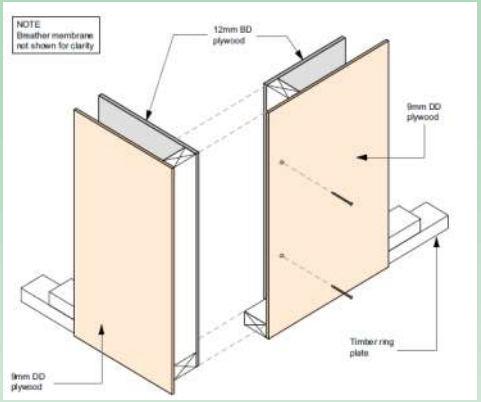
# CHH / TQ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**Request for Expressions of Interest**

Construction trends in Australia have been put under many pressures in recent times due to factors such as reduced availability of trades, the requirement for faster built solutions and the ability to adequately respond to natural disasters, and a need to change the focus of building processes to make housing more affordable. In response to these pressures Carter Holt Harvey has developed the Panelised Building System (PBS). This has a number of different options, ranging from small panels suitable to be handled and constructed by two people through to full size wall options craned in for use where lifting equipment is readily available.

Carter Holt Harvey, with support from Timber Queensland, is seeking Expressions of Interest from appropriate parties to demonstrate how these particular building issues can be addressed with innovative wood based building systems such as PBS. We seek proposals from builders who share our concerns with the limitations of conventional building systems and who would be prepared to put forward and deliver a PBS project on a commercial basis. Proposals will be jointly reviewed by CHH, Timber Queensland, an independent architect and a representative of the Frame & Truss industry.

When preparing expressions of interest, builders are invited to focus on:

1. Their ability to display the benefits of the PBS solution.
2. Their ability to highlight the advantages and flexibility of pre-fab wood based construction.
3. How they can demonstrate the market potential that can be captured by PBS.
4. Their ability to be able to deliver a PBS project in a reasonably short time frame.

Basic details of the PBS system can be found in two videos on the CHH website in the building faster section at http://www.chhwoodproducts.com.au/builders/. This link also contains a case study on the first remote area prototype.

Submissions should be made directly via email by Tuesday 29th March, 2011 to George Dolezal using the contact details below.

Carter Holt Harvey (CHH) is the largest wood products producer in Australia, with a turnover exceeding AU$1 billion. Our residential product portfolio extends throughout the complete range of structural wood products, including market leading brands such as hySPAN, ECOply, PLYfloor, STRUCTAflor, LASERframe and hyJOIST.

Any queries with respect to this request for Expressions of Interest should be addressed to:

George Dolezal (Market Engineer, Building Solutions)
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Ron Green (Product Development & Innovation Manager)
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**www.chhwoodproducts.com.au/builders**

# THANK YOU

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