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**THREE GREENSMART HOUSES – a case study
SUCCESES & LESSONS LEARNT**

1. Sustainable housing
2. Greensmart & partners
3. Houses
4. Design criteria
5. Costs & key findings
6. Successes
7. Lessons learnt
8. Summary




1 – SUSTAINABLE HOUSING

“Sustainability is dead – long live Sustainability”AtKisson

DEFINITION
Houses that sustain themselves with no waste

STRATEGY
Closed loops not linear flows




2 – GREENSMART & PARTNERS

- Energy & Water efficiency
- Site management (Waste)
- Air quality, materials, noise

- Wesley Mission, Delfin Lend Lease, Civic Steel Homes, Ipswich City Council, HIA, Qld Govt., CRC-CI, trades & suppliers



3 – HOUSES – location and sites







3 – HOUSES – clearing & infrastructure







3 – HOUSES – plumbing, slabs, frames







3 – HOUSES – fit-out & waste



3 – HOUSES – solar, tanks, bamboo & natives



3 – HOUSES – Location and sites



4 – DESIGN CRITERIA

- Overcome summer heat & winter cold
- Achieve energy & water efficiency
- Achieve superior air quality
- Adaptable, durable & livable (social design)



5 – COSTS – KEY FINDINGS

average of 3 houses

- Passive design and energy efficiency elements

2.2% (or \$5,668)
increase in costs

- Operational cost saving of \$523pa



5 – COSTS – KEY FINDINGS

average of 3 houses

- Social design initiatives

0.2% (or \$582)
increase in costs



5 – COSTS – KEY FINDINGS

average of 2 houses

- **Rainwater tank supply system**
2.3% (or \$6300) increase in costs
- **Water saving**
\$81 pa
- **Operational cost**
\$98 pa



5 – COSTS – KEY FINDINGS

average of 3 houses

- **Payback periods**
passive design (12yrs)
energy efficiency (<1 yr)
water heating (solar or gas 7 yrs)
water efficiency (<1 yr)
water from tanks for whole house (never)



5 – COSTS – KEY FINDINGS

average of 3 houses

- **Annual greenhouse gas saving of 4.3 tonnes per house**
- **Good site and waste management \$100 saving per house**
- **Superior air quality (non-toxic paints and finishes) no added cost**



6 – SUCCESSES

- 80% waste recycling
- Small lot Greensmart houses
- 74% water saving
- Over 50% energy saving (4.3 tonnes/a)



7 – LESSONS LEARNT

Most cost effective inclusions –

- **Some passive design elements** (orientation, window size & location, shading, extra insulation)
- **solar hot water**
- **water & energy efficiency elements**
- **Social design elements**
- **non-toxic paint and finishes**



7 - LESSONS LEARNT

Least cost effective –

- **Window treatments**
- **Rain water systems**
- **Photo-voltaic panels**
- **Automatic irrigation systems**
- **Higher ceilings**



7 - LESSONS LEARNT

- there is no perfect house
- a simple “services plan”
- social design elements need to be further promoted
- Qld needs an indicator for house design efficiency



7 - LESSONS LEARNT – indicators

Building Energy Rating Scheme (BERS) (thermal performance of the house)

Sustainable Housing Code (SHC - version 8)

Large house (>260m ²)	required 18	scored 61
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Medium house (>130m ² but <260m ²)	required 14	scored 39
		scored 55



8 - SUMMARY

- **Greensmart houses are an effective move towards sustainable housing**
- **Huge efficiencies are possible for minimal costs**
- **An Indicator is needed for mainstream housing in Queensland**



THANK YOU