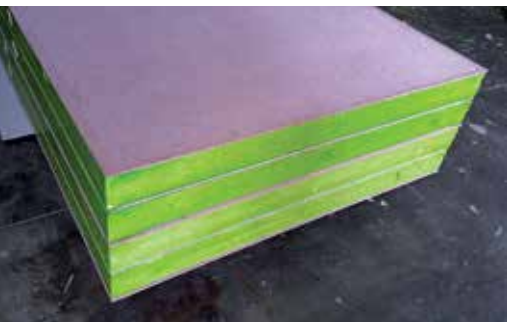
FUTURE BUILDING MATERIAL



R9 SYSTEM

FBM LICENCE LTD

green building council australia
MEMBER 2011-2012

GreenSmart® REGIONAL PARTNER

TABLE OF CONTENTS

BUILDING FOR THE FUTURE

FUTURE BUILDING MATERIAL

The world's strongest, fastest & best insulating Green Technology.

PRODUCT ADVANTAGES

The benefits of R9 System to projects and developments are extensive and include:

- *Load Bearing - Multi Level*
- *Lightweight construction*
- *Cyclone rated*
- *Compliance with BCA/NCC 2012*
- *High insulation value*

Construction

Utilising the R9 System installation as oppose to standard Brickworks/Block work/ Concrete or Timber Frames, the timesaving made on the structure installation also has a positive affect on the timescale of the internal fit out works.

Reduced Environmental Impact

The material components of the R9 System has a low environmental impact. No CFCs, HCFCs or formaldehyde is used in the production or manufacture of the R9 System. The strength, life span and insulation properties of the R9 System are all characteristics that reduce detrimental environmental impacts.

Cost efficiency

Ongoing increases in the costs of construction are resulting in a large number of Australian families being excluded from building and owning their own home. The R9 System is developed to provide Australian families with a high quality affordable alternative to modern and traditional building materials and techniques. The product is easy to transport, lightweight and simple to assemble on-site, regardless of where your construction site may be.

Additional engineering components are eliminated when using the R9 System for construction up to three stories. The product offers significant cost savings when compared with existing cyclone resistant building materials.

Consistent solid feel

The Polyurethane core expands at 3000 pounds per square inch during the manufacturing process. The resulting internal pressure exerted on the exterior of the panels results in a consistent, solid "feel" comparable to most masonry products currently in use.

R9 SYSTEM

FUTURE BUILDING MATERIAL

INTRODUCTION AND OVERVIEW OF FBM LICENCE

INTRODUCTION

The R9 System was developed to provide Australians an affordable building material that will replace conventional energy inefficient building materials. The product is lightweight, easy to transport and simple to assemble onsite. These properties provide immediate benefits for domestic, commercial and rural/mining applications.

Current building materials leave a lasting and destructive carbon footprint on our environment during manufacturing and are inefficient in their thermal efficiency in day to day use.

Governments around the world are setting targets to change the impact caused by inefficient building materials. The continued development and increased use of polyurethane is an important step in assisting the reduction of greenhouse gas emissions which ultimately brings us closer to an environmentally sustainable world.

The use of polyurethane can significantly assist in reducing global warming in a variety of ways. The material is an extremely efficient insulator and improves energy efficiency of buildings by reducing the amount of carbon emissions created by heating and cooling.

THE R9 SYSTEM

The R9 System is a dual rigid polyurethane core, steel braced, building material that is an effective alternative to most construction materials and methods currently being used. It is a composite panel made from super-dense polyurethane and fibre-cement which is both lightweight and strong. The strength means that it can be used as a direct replacement of brick, concrete or steel construction in most applications.

R9 System has the potential to become a de facto standard building material replacing brick and framed construction by providing all the benefits of a strong insulated design with only a micro-carbon footprint.

VIEW OF FBM LICENCE LTD

FBM Licence is an Australian company that manufactures the R9 System for use in the construction industry.

FBM Licence's mission is to provide affordable low carbon foot print housing which will make a significant reduction in the cost of household energy.

FBM Licence's services include:

- Manufacture of R9 System building panels
- Licencing distributors to sell the product
- Brand marketing
- Training and education in the application of R9 System for domestic, commercial and rural projects

While FBM is committed to continued product engineering to showcase the potential applications of the R9 System, FBM is confident that the multitude of benefits and advantages will lead to its use both in Australia and internationally.

VISION & INNOVATION

4. **FBM** FUTURE BUILDING MATERIAL - LICENCE

KEY PERSONNEL

Alistair MacKinlay | Director LLB MAICD

Alistair MacKinlay is a commercial lawyer and investor and the principal of MacKinlays Solicitors and Ronson MacKinlay Conveyancing Solicitors as well as chairman of Barralong Capital Pty Ltd and Soktan Pte Ltd.

Alistair has practiced law for 40 years and now specialises in advising (and investing in) small and medium enterprises (SMEs) on acquisitions, dispositions and strategic direction. Until recently Alistair was the owner and chairman of Jeyco (1992) Pty Ltd, a marine services company servicing the oil, gas and mining sectors, with a turnover in excess of 25 million dollars per annum. Jeyco was acquired in February 2012 by Actuant Corporation (NYSE: ATU), a NYSE publically listed company.

Alistair has been a director, both executive and non-executive, of a number of ASX listed and private industrial and mining companies, including Fortescue Mining (FMG). He is experienced in overseas investment and trade, particularly in the United States and Asia.

Alistair is also the Chairman of Equestrian Western Australia the peak body for Olympic horse sports in Western Australia, and the Director of Hermitage Dressage, a sport horse stud.

Colin J Barboutis | Director

Colin Barboutis is a corporate adviser of RM Corporate Finance. He is actively involved in a range of corporate initiatives including mergers and acquisitions (MAs), initial public offerings (IPOs), consultancy and corporate advisory roles. Colin was a licensed advisor of Willian Noall Limited (Perth) from 1990 to 2000. He was also a company director for several listed companies prior to joining RM Capital in 2005.

Colin has spent more than a decade in the marketing industry with an international company prior to entering the stockbroking/investment industry. His breadth of expertise and experience spans international marketing and sales.

More recently, Colin has been involved with gold and base metal exploration and mining projects, and has acted as a consultant to private and publically listed companies.

Chris Mandzufus | Director

Chris Mandzufas is a Chartered Accountant who graduated from the University of Western Australia in with a Bachelor of Commerce – major in Accounting and Finance (1990).

Chris has a diverse range of skills and experience as a result of providing accounting, taxation and management consulting services to owners and managing directors of fast growing businesses, from small private businesses to public companies. This has included financial reporting to the board (both private and public companies); management reporting; tax compliance and planning (including income tax, FBT and salary packaging); growth restructuring and consulting; co-ordinating and assisting client strategic operating plans; hands on day-to day business advice; overview of client corporate secretarial compliance; and budget and cashflow forecasting: estate planning and asset protection.

Chris is presently holds the following positions:

- Director in Brentnalls WA (a specialized chartered accountancy firm) – since 2006.
- Director of a large Private Ancillary Fund set up to benefit DGR's in the WA community.
- Deputy Chairman of the Brentnalls National Affiliation of accounting and advisory firms.

PRODUCT TESTING & TEAMWORK

FUTURE BUILDING MATERIAL

DESIGN & SPECIFICATION

The R9 System consists of:

- A Polyurethane (PU) core
- Compressed fibre cement (CFC) sheeting (1 x 6mm & 2 x 4.5mm thick boards)
- A 2mm BMT C-section steel stud lining the base, top and sides of each panels.

The standard dimensions of the panel are:

- Width: 1220mm
- Height: 2400mm to 3500mm
- Thickness A: 93mm
- Thickness B: 210mm

Steel studs are recessed into the panel, and the CFC sheeting is screw fixed at regular centres to the steel stud. As each panel is constructed, the adjoining studs are fixed together at regular intervals.

The properties of the R9 System are summarised as follows:

- Polyurethane (PIR) compressive strength = 100 - 300kPA
- Minimum Bending Strength of CFC = 10MPa (Wet) & 6MPa (Dry)
- Average Modulus of Elasticity = 5GPa (Wet) & 8GPa (Dry)
- Steel Stud Material Thickness = 2mm
- Steel Stud Yield Strength = 300MPa
- Screw Details = 8g screws at 300 centres
- 93mm panel weight = 30kg/m2 (excluding steel studs)
- 210mm panel weight = 35kg/m2 (excluding steel studs)

Some of the key advantages of the R9 System include:

- load bearing without additional support
- lightweight - two men can carry 1.2 metres of wall
- multi-storey construction – up to 3 storey – with no additional support required
- cyclone rated
- complies with BCA /NCC 2011/2012
- rated R5 for 93mm panels and R11 for 210mm panels.
- services can be chased and conduited on site or factory
- reduced environmental impact when compared with current building materials and techniques
- little or no need for time consuming ‘wet trades’

R9 System can be used as either a standard wall panel or as load bearing elements in domestic, commercial and remote area applications. The panel is stronger than any other lightweight building material available and is the first to support a 200mm concrete floor slab without the need of additional structural support.

PRODUCT ADVANTANGES

The benefits of the R9 System to projects and developments are extensive and include:

Reduced Environmental Impact

The material components of the R9 System have a low environmental impact in particular polyurethane. Polyurethane foam is a very versatile material which offers a closed cell structure which encapsulates high insulation. This is the primary reason for its very efficient insulation to thickness ratio which saves space and materials while achieving high insulation values.

Used in the correct application polyurethane can be an effective insulator which can significantly improve the energy efficiency of buildings and reduce the need for heating and cooling which results in lower carbon emissions.

The long term durability and high performance of polyurethane means that the material has a longer life than other building materials making its contribution to energy conversation higher. The energy consumption used for its production is relatively low which significantly contributes to the conservation of energy and resources.

No CFCs, HCFCs or formaldehyde is used in the production or manufacture of R9. The strength, life span and insulation properties of R9 are all characteristics that reduce detrimental environmental impacts.

Cost efficiency

Ongoing increases in the costs of construction are resulting in a large number of Australian families being excluded from building and owning their own home. The R9 System was developed to provide Australian families with a high quality affordable alternative to modern and traditional building materials and techniques. The product is easy to transport, lightweight and simple to assemble on-site, regardless of where your construction site may be.

Additional engineering components are eliminated when using the R9 System for construction up to three stories. The product offers significant cost savings when compared with existing cyclone resistant building materials. Typical cost savings for a single story house are between 10 and 15 % over brick construction.

Limited need for "wet trades"

The use of the R9 System eliminates time consuming and costly wet trades. For example, internal walls do not require internal plastering - joints are taped, filled, sanded and painted. The exterior can be finished using a render coat, plaster, cladding or paint finish.

Consistent solid feel

The Polyurethane core expands at 3000 pounds per square inch during the manufacturing process. The resulting internal pressure exerted on the exterior of the panels results in a consistent, solid "feel" comparable to most masonry products currently in use.

Faster construction times

When built by an experienced crew, wall sections (approximately 3.5sqm) can be erected in 10 minutes effectively saving days of construction time. A standard four-by-two bedroom house can be at lockup stage in four weeks.

High energy rating (R Value, Insulation)

Polyurethane has more than double the insulation rating for roof batts making it the best insulating panel commercially available to the building industry. The same technology is currently in use to insulate above ground gas pipes and very thin freezer panels which require maximum insulation incorporated in stylish design.

The insulation characteristics make it suitable for use in both freezing conditions and high or humid ambient temperatures.

Strength

The R9 System is not only able to bear high weight loadings, it is also has high external load resistance from wind and precipitation

Strength testing was undertaken by the University of Western Australia Civil Engineering Department on both 93 and 210mm panels (each in isolation). Both panel satisfied requirements for cyclonic impact testing for AS1170.0 (Wind Loading Code) and the Building Code of Australia.

LOW ENVIRONMENTAL IMPACT

DESIGN EXAMPLE

The following design example illustrates the number of storeys that could be achieved in a construction with each panel thickness (93mm & 210mm).

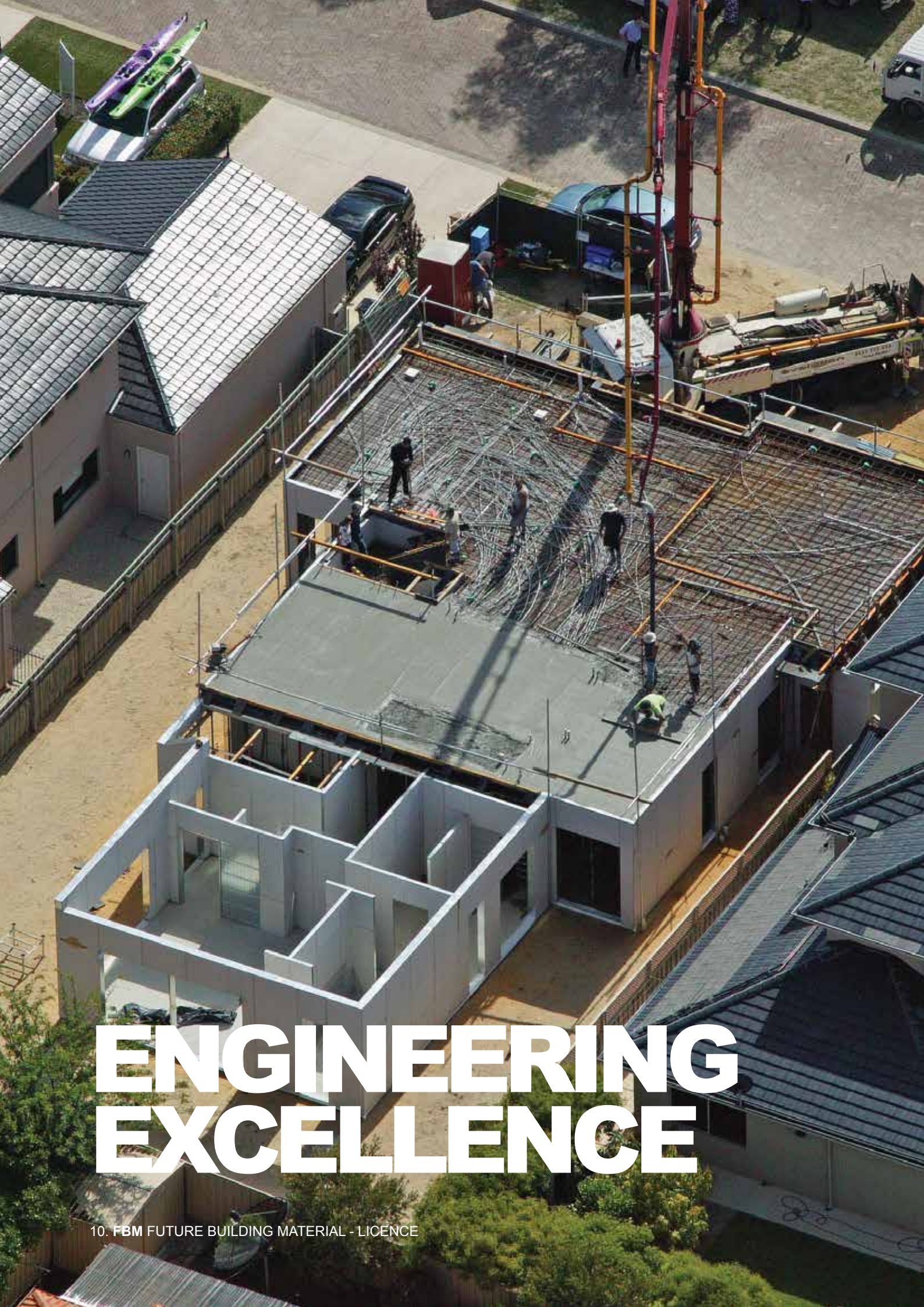
This example was based on the following design criteria:
- Plan dimension = 12 x 6 metres
- Wall height = 2.4 metres
- Slab thickness = 200 mm (concrete)
- Roof Dead Load = 0.4kPa
- Roof Live Load = 0.25kPa
- Floor Live Load = 1.25kPa

Table 2.2: Panel Load Testing and Number of Storeys Achievable

No. of Storeys	Dead Load	Live Load	Ultimate Load	Adequacy of Panel	
SINGLE STOREY	[kN/m]	[kN/m]	[kN/m]	93mm	210mm
1	1.9	0.8	4	Y	Y
2	17	5.3	29	Y	Y
3	32.2	9.8	54	N	Y

Notes:
1. Loadings are at the foundation level
2. Y - denotes panel is structurally adequate
3. N - denotes panel requires additional structural engineering

From the results of the loading calculation in Table 2.2 it is clear that a 210mm thick panel is structurally adequate to construct a building up to 3 storeys high. While testing did show that a panel could support greater loads, the indicated example was calculated based on loads that limit the axial shortening of the panel to less than 10mm.



ENGINEERING EXCELLENCE

FUTURE BUILDING MATERIAL

ENGINEERING

‘World’s first - Record breaking 180 Tonnes of load onto 100kg per linear metre load bearing the R9 System.’

FBM is committed to working with professional, qualified and reputable consultants who share our vision of a more sustainable future. FBM prides itself in developing strong working relationships with consultants who are committed to, and focused on, the delivery of specialised objectives for the projects in which they are involved.

ROBERT BIRD GROUP

The Robert Bird Group (RBG) has been engaged by FBM as the lead consulting Engineers for the R9 System, this includes the development of a National Specification document (NATSPEC). They also assist in providing product value engineering for other FBM projects.

NATSPEC

The Robert Bird Group is an Australian owned, international practice of consulting engineers, with offices in Australia, the United Kingdom, the United Arab Emirates, India and Malaysia. They are experienced in providing exceptional value for clients through the intelligent application of engineering science and the innovative approach to planning for construction.

Their project portfolio is technically and geographically diverse. Over 25 years RBG has built an international reputation for expertise in the engineering of complex projects.

SPECIFICATION & TESTING

The R9 System has been tested and proven to be strong, load bearing, water proof, fire-retardant and acoustically insulated. It has been ‘live’ tested in Australia to comply fully with the latest Building Code of Australia (BCA).

- 25 tonnes compression strength
- Category D cyclone rated
- Very high insulation value up to R11
- Easy and fast to build
- Waterproof
- Fire-retardant

R9 SYSTEM

The University of Western Australia's (UWA) Civil Engineering Department carried out testing on the R9 System to determine strength characteristics that will assist engineers in designing the panels specifically for Australian conditions.

The summary report produced by engineers based on the testing by UWA states 'both panels will satisfy the loadings applied in most Australian conditions in the multi-story residential, rural and commercial market, as per the standard practice this will be signed off by an Engineer for each project'.

Testing was carried out on a single 1220mm long panel (in isolation) and consisted of the following:

Concentric and Eccentric Compression

Concentric compression test: Each panel thickness (93mm & 210mm) was tested on a 2.4 high panel. A point load was applied to the top of the panel which was partially distributed via a 250PFC (flanges down) lying flat.

Eccentric compression test: Pressure was applied at 1/6th of the panel thickness from the centre of the panel, for heights of 2.4 and 3.5 metre for each panel thickness. Both panels performed very well during the concentric and eccentric compression tests. Compressive failure stressed for the 93mm and 210mm thick panels of 1.8MPa and 1.0MPa respectively over the gross area of the panel.

Flashing detail

UWA Testing

Point Loading Testing

Bend

Each panel thickness was tested using a two point bending test for 2.4 metre and 3.5 metre spans.

The panels have adequate capacity to support wind loads in accordance with AS 1170 (Wind Loading Code) and AS 4055 (Wind Loads for Housing).

Rack

The racking test is performed to assist in engineering the design of a structure to resist lateral load. For the purpose of wall bracing design, each panel thickness was tested to determine the racking capacity for one (1) x 1.2m long panel. The failure mechanism for this test is a bending failure in the bottom track.

Cyclonic Impact

Cyclonic impact testing is undertaken to ensure the R9 System satisfies the requirements of AS1170.2 (Wind Loading Code) and the Building Code of Australia.

To determine whether a mass would penetrate a panel, four tests were performed in which a 4kg timber mass was fired at a panel, at a velocity of 20m/s. A 2.4 meter and 3.5 meter long panel of each thickness were tested.

Both panel thicknesses passed the test with the 4kg timber not totally penetrating the panels.

Fire Resistance

Tests were performed in accordance with AS/NZS 3837:1998- standard for heat and smoke release rates for materials and products. Six samples were tested. Each sample was wrapped in aluminium foil so that the four edges and the bottom of the sample were covered.

The sample classification was determined Group 1, which means the Panel complies with Specification A2.4 of the Building Code of Australia.

Acoustic Insulation

The R9 System were tested to AS191 - Acoustics method for laboratory measurement of airborne sound insulation of building E elements. The panels comply with AS/ISO 717-1 Acoustic rating of sound insulation in buildings and of building elements -Part1: Airborne sound insulation.

WALL PANEL DESIGN

R9 System - 93MM

A typical plan and section view of a 93mm wall panel illustrates the composition of the wall panel, comprising of four layers which includes:

- **Exposed face:** **6mm thick fibre reinforced cement sheet**
- **Frame:** **2mm thick steel frame**
- **Core:** **39mm and 39mm thick rigid polyurethane foam**
- **Backing:** **4.5mm thick fibre reinforced cement sheet**

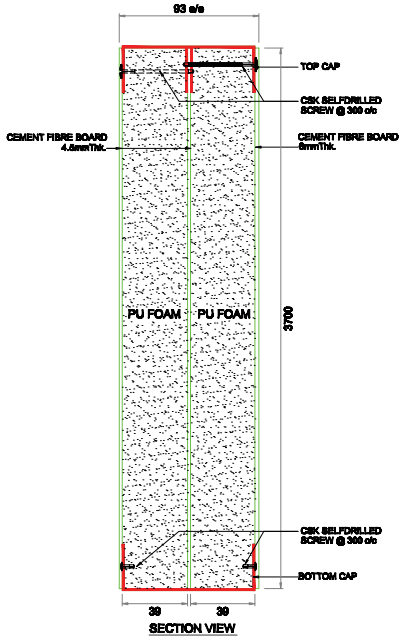
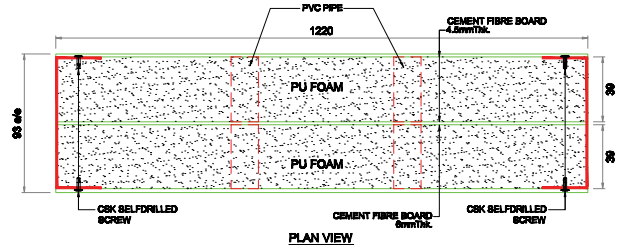


Figure 3.3.1A: 93mm Panel Plan & Elevation Section View

Table 3.3.1: Panel Material Specification and Tests

MATERIAL	TEST	RESULTS
Polyurethane (PU)	Compression Strength	100 - 300 (KPa)
	Fire Retardant Grade	B3 (Self Extinguishing)
	Thermal Conductivity	0.020-0.022 (W/mK)
	Injected Density	40 (+/-2KG/m2)
CEMENT FIBRE BOARD (4.5mm thick / 6mm thick)	Cement Fiber Board	2440mm (L) x 1220mm (w)
	Thermal Conductivity	0.24 (W/mK)
	Minimum Bending Strength	6 MPa (Dry) 10 MPa (wet)
	Average Modulus of Elasticity	8 GPa (Dry) 8 GPA (wet)



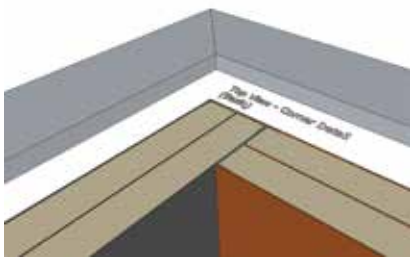


Figure 3.3.1B: 93mm Panel Plan & Section View

R9 System - 210mm

A typical plan and section view of a 210mm wall panel illustrates the composition of the wall panel, comprising of four layers which includes:

- **Exposed face:** **6mm thick fibre reinforced cement sheet**
- **Frame:** **2mm thick steel frame**
- **Core:** **98mm and 97mm thick rigid polyurethane foam**
- **Backing:** **4.5mm thick fibre reinforced cement sheet**

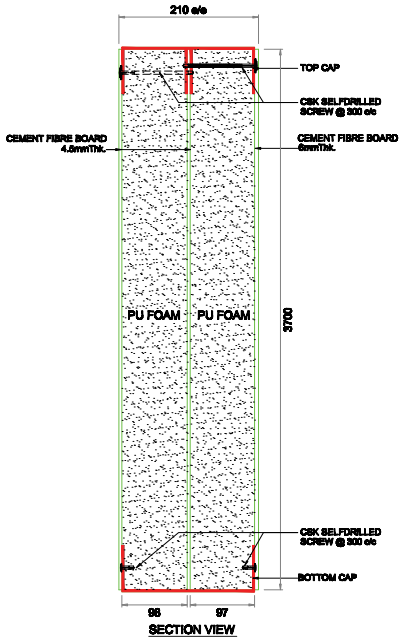


Figure 3.3.2A: 210mm Panel Plan & Elevation Section View

Table 3.3.2: Panel Material Specification and Tests

MATERIAL	TEST	RESULTS
Polyurethane (PU)	Compression Strength	100 - 300 (KPa)
	Fire Retardant Grade	B3 (Self Extinguishing)
	Thermal Conductivity	0.020-0.022 (W/mK)
	Injected Density	40 (+/-2KG/m2)
CEMENT FIBRE BOARD (4.5mm thick / 6mm thick)	Cement Fiber Board	2440mm (L) x 1220mm (w)
	Thermal Conductivity	0.24 (W/mK)
	Minimum Bending Strength	6 MPa (Dry) 10 MPa (wet)
	Average Modulus of Elasticity	8 GPa (Dry) 8 GPA (wet)

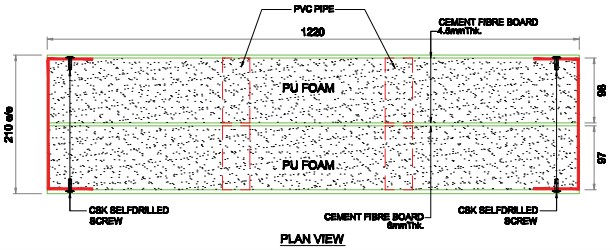
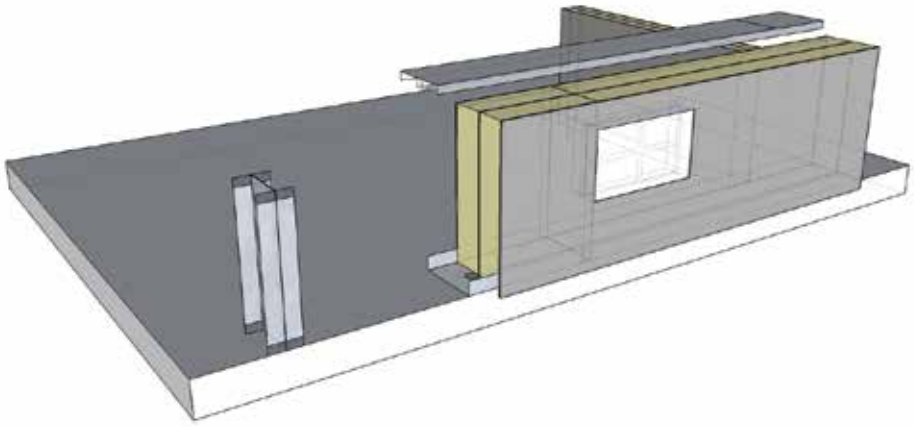


Figure 3.3.2B: 210mm Panel Plan and Section View



R9 SYSTEM R-VALUE TESTS

Both CADDS Energy and BRANZ performed the thermal R-Value tests on the R9 System for both the 93mm and 210mm panels. The results are summarised as follows and detailed results shown in tables 3.3.3, 3.3.4, 3.3.5 & 3.3.6:

	CADDS Energy	BRANZ
93mm panel R-Value	3.743	2.9
210mm panel R-Value	9.061	9.5

Table 3.3.3: CADDS Energy - 93mm panel Thermal Conductivity Test

MATERIAL NAME	MATERIAL THICKNESS	R-VALUE
Air Film	External Air	0.040
Fibre Cement	4.5mm	0.014
Polyurethane Foam	39.0mm	1.773
Fibre Cement	4.5mm	0.014
Polyurethane Foam	39.0mm	1.773
Fibre Cement	6.0mm	0.019
Air Film	Internal Air	0.110
Total		**3.743**

Table 3.3.4: BRANZ - 93mm panel Thermal Resistance Test

Nominal Upper Plate Temperature	9.9°C
Nominal Lower Plate Temperature	36.1°C
Nominal Difference in Temperature	26.2K
Nominal Mean Temperature	23.0°C
Testing date	29/07/13
Grams per sq. metre	26087g/m^2
Sample weight	9313g
Test thickness	92.8mm
Temperature difference	26.0K
Mean temperature	23.0°C
Heat-flux	7.93W/m^2
Thermal resistance	3.27m^{2}K/W
Apparent thermal conductivity	0.0284W/mK
Difference between heat-flux transducers	2.9%

Table 3.3.5: CADDS Energy - 210mm panel Thermal Conductivity Test

MATERIAL NAME	MATERIAL THICKNESS	R-VALUE
Air Film	External Air	0.040
Fibre Cement	4.5mm	0.014
Polyurethane Foam	97.5mm	4.432
Fibre Cement	4.5mm	0.014
Polyurethane Foam	97.5mm	4.432
Fibre Cement	6.0mm	0.019
Air Film	Internal Air	0.110
Total		**9.061**

Table 3.3.6: BRANZ - 210mm panel Thermal Resistance Test

Nominal Upper Plate Temperature	9.9°C
Nominal Lower Plate Temperature	36.1°C
Nominal Difference in Temperature	26.2K
Nominal Mean Temperature	23.0°C
Testing date	26/07/13
Grams per sq. metre	30183g/m^2
Sample weight	10866g
Test thickness	208.9mm
Temperature difference	26.0K
Mean temperature	23.0°C
Heat-flux	2.94W/m^2
Thermal resistance	8.53m^{2}K/W
Apparent thermal conductivity	0.0245W/mK
Difference between heat-flux transducers	9.5%

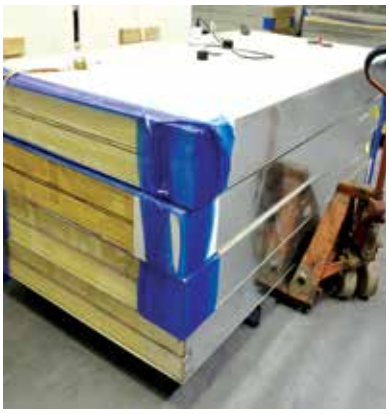
CADDS Testing Notes
These calculations are based on the use of a Polyurethane Foam with a Thermal Conductivity 0.022W/m2.K and product density of 45Kg/m2.

BRANZ Testing Notes
The test equipment used was a LaserComp Fox 801 heat flow meter.

EXPERTISE IN CONSTRUCTION

FUTURE BUILDING MATERIAL

WALL PANEL INSTALLATION



Installation manuals are provided by FBM for clients and builders using the R9 System.

The literature includes:
- Product specifications
- Standard illustrations and diagrams
- Standards details

Installation manuals include supplemental product literature. The supplemental product literature pertains to physical characteristics such as size, weight, finish, material analysis, electrical requirements and other information, such as load tables, test results, assessments and industry quality standards.

TRAINING OF USER'S PERSONNEL

The Builder, Building Manager and/ or the installation personnel can be trained by an experienced construction representative of FBM in the installation of the R9 System. FBM will provide a programme and schedule of training requirements, stating the minimum amount of time needed to train staff to reach competence in installation.

BUILDING CODES AND REGULATIONS

All materials, components, equipment and workmanship are designed to comply with all Statutory Authority codes and regulations, Australian Standards, and any other regulations.

BENEFITS OF THE PRODUCT INSTALLATION PROCESS

The process of re-skilling tradesmen and carpenters in the R9 System installation is minimal. Most key tools and equipment needed for the installation process are already in use or readily available, and the use of equipment requires minimal training.

The installation process also uses standard connections to doors, windows, roof and floor slabs allowing installers to utilise existing skills.

Dustless Cutting System

The R9 System is safe to cut and install on-site. FBM specifies that all on-site cutting is to be undertaken using existing available dustless cutting systems.

FUTURE BUILDING MATERIAL

VALUE PROPOSITION
CASE STUDY

As part of the process of demonstrating the savings available to builders FBM has undertaken a comparative value proposition study. The aim of the study was to evaluate and re-engineer two standard residential designs (single & double storey townhouses), using the R9 System, to demonstrate the speed, construction cost and environmental benefits of using the R9 System in place of a traditional masonry building product.

With increases in volume, and improvements in manufacturing, FBM's goal is to continue to assist our building partners to significantly reduce construction costs, while maintaining or improving quality, resulting in improved profitability.

INTENT OF VALUE PROPOSITION

Both designs were assessed and costed by a Quantity Surveyor using both the traditional brickwork/render construction process and the R9 System construction process. The specific intent of the assessment was to:

• Evaluate and review a current design using the R9 System to demonstrate the construction and environmental benefits achieved by using the R9 System in place of the proposed masonry-building product.

• Produce a comparative study using two Bills of Quantities to compare potential costs gains to assist the decision making process in choosing between the R9 System and comparable products.

SINGLE AND DOUBLE STOREY RESIDENTIAL DWELLING OVERVIEW

The following table provides an overview of the planned configuration for both projects including square meter areas for the floor plan, external and internal walls for each project.

Table 5.2 Summary of Square Meters

	Plan Overview	Footprint Area of House	External Wall Area (210mm)	Internal Wall Area (93mm)
SINGLE STOREY	3 bedrooms, 2 bathrooms, living & dining area, laundry, double garage	159.25sq./m	210sq./m	114sq./m
DOUBLE STOREY TOWN HOUSE	3 bedrooms, 2 bathrooms, living & dining area, laundry	140.90 sq./m	186 sq./m	137 sq./m

Cost Analysis

The bill of quantities takes into consideration the use of the R9 System over masonry and eliminates the construction items no longer required for each dwelling.

Table 5.2.1 provides a summary of construction costs for each project comparing original block work with the proposed R9 System.

Table 5.2.1: Cost Summary Savings

	Masonry	FBM R9	Savings
SINGLE STOREY	$197,617.85	$187,618.85	$10,000±
DOUBLE STOREY/TOWN HOUSE	$243,179.40	$225,609.21	$17,000±

Note: Estimated construction costs may be subject to change.

Construction Programme Analysis

An analysis of the construction programme for both projects indicated a significant time saving for both projects as outlined in Table 5.2.2. There are numerous time savings for both internal and external construction using the R9 System installation methods and technology.

The R9 System construction technique demonstrated considerable overall time (and as a result additional financial) savings compared with traditional construction by:

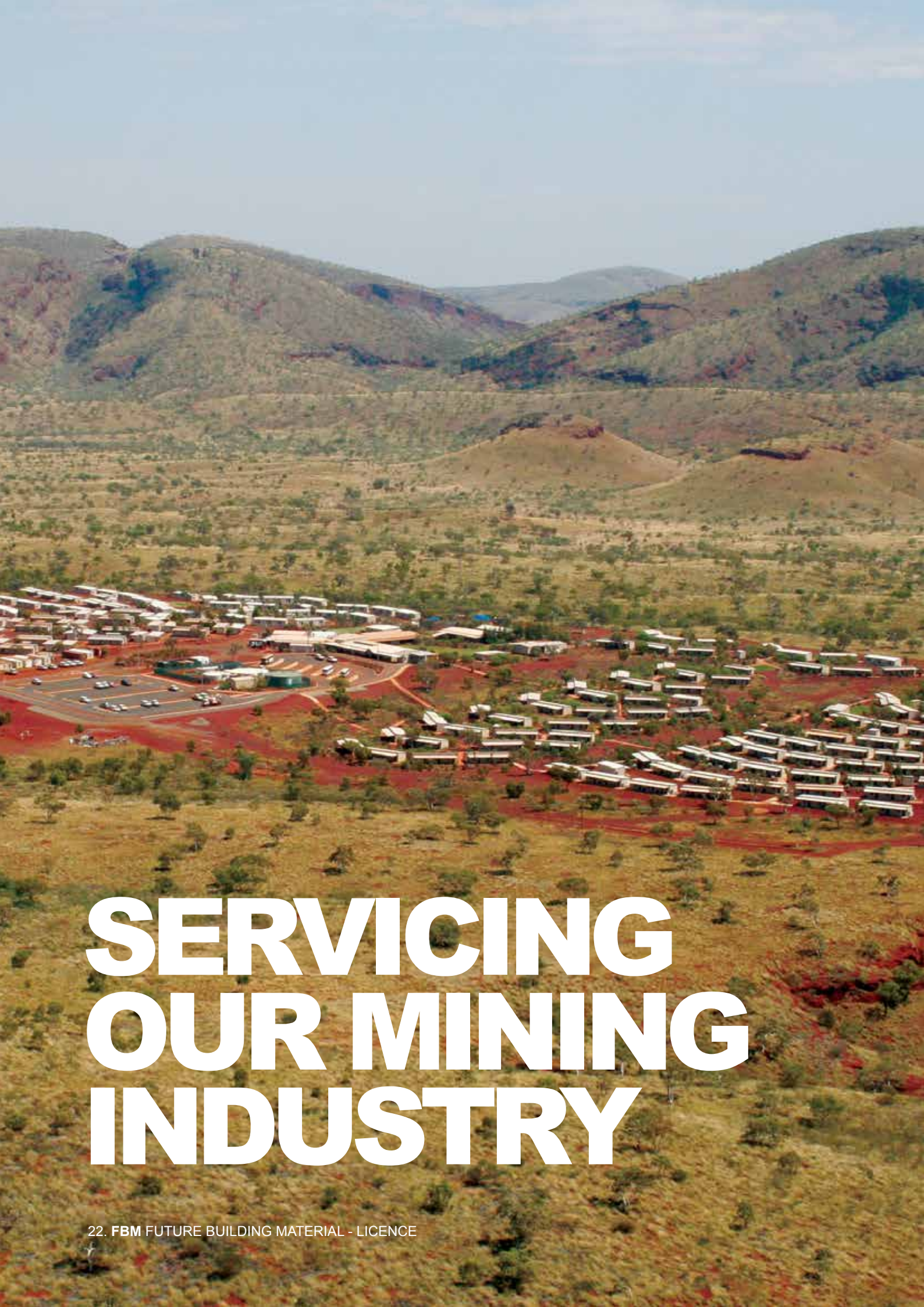
- Reducing construction period
- Allowing faster access for installation of
  - internal walls
  - internal installations such as electrics and plumbing finishing such as floor, door/window installations
  - steel, floors and walls for the double storey townhouse
- Eliminating or drastically reducing the need for brickwork

Table 5.2.2: Time Summary Savings

	Masonry (Days)	R9 System (Days)	Savings (Days)
SINGLE STOREY	105	75	30
DOUBLE STOREY/TOWN HOUSE	160	119	41

The time gains identified for both the single and double storey designs will provide the opportunity for a builder/developer to further explore cost savings associated with the following construction activities:

- Reduced supervisor costs
- Reduced costs of finance
- Potential to complete additional projects and
- Interest earned on early turnover/profits
- Attracting sales for buyer who are renting during the build period
- Increased turnover without employing further funds



SERVICING OUR MINING INDUSTRY

FUTURE BUILDING MATERIAL

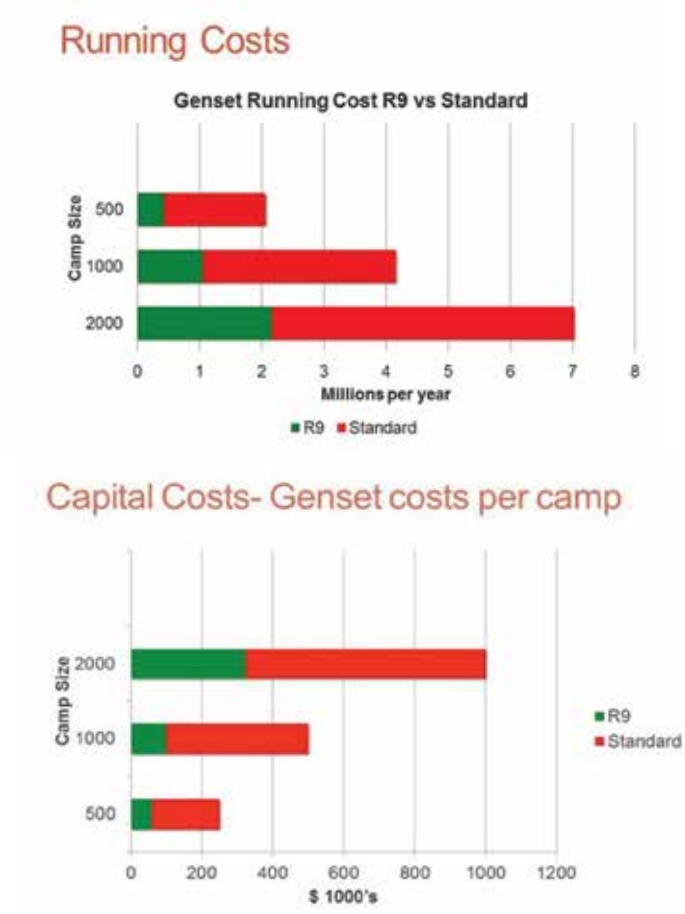
TRANSIENT ACCOMMODATION

Some of the R9 System's greatest benefits apply to remote living, particularly transportable accommodation. The excellent insulation combined with lightweight, easy construction makes the R9 System the ideal building solution to traditional transient accommodation.

The insulation superiority of the R9 System over traditional steel clad construction and the unparalleled fire retardant properties offers both mining companies and indigenous communities with real costs savings and improved amenity standards.

FBM believes that by replacing the traditional steel frame construction that is typically used in transportable transient accommodation with the R9 System, users will enjoy the following benefits:

- Lower capital costs on a one-for-one basis
- Faster completion of project
- Lower labour costs
- Long term savings from reduced electricity demand
- Healthier and safer work environments or communities from improved living conditions



COST ANALYSIS

By comparing the costs of a typical steel clad structure to the R9 System, savings of 10% to 35% for the R9 System were identified.

The use of the R9 System for construction delivers not only energy efficient buildings, but also significant cost savings related to capital, maintenance and management of the building. Savings of up to 10% in infrastructure capital costs (power, water, and sewer) are achievable by reduction in service run lengths.

The high R-Value for insulation against cold and heat provides greater comfort to users. The high R-Value is achieved by the use of polyurethane that has more than twice the insulation value of roof batts, making it the best insulator commercially available to the building industry.

An assessment was undertaken to compare the estimated costs savings in electricity. Both running and infrastructure capital costs were considered in the comparison. Costs were based on fuel price and consumption data confirmed by the generator supplier.

Significant savings were identified, both in terms of capital and on-going running cost, when using the R9 System type energy efficient thermal insulations to minimise air conditioning use.

Further cost savings were identified with relation to transportation, due to the lightweight structure of the R9 System. There is the potential for significant savings when transporting the R9 System modular units to remote locations, and the possibility of savings related to the reduced need for cranes or other heavy equipment.

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QUALITY ANALYSIS

The quality and standard of modular and other buildings vary considerably in the market, depending on the furnishing required, cyclonic zone, terrain and specific client requirements. The quality advantages and benefits of the R9 System include:

Acoustics

A version of polyurethane is currently used in sound studios. This material provides excellent sound reduction for medium to high frequencies. The composition of polyurethane converts sound energy into thermal energy, thereby reducing the amount of sound that can be reflected.

The acoustic superiority of the R9 System over other building materials means all quarters are sound insulated, allowing greater privacy for all users within a modular unit be it 2, 3 or 4 bedrooms.

Comfort

Polyurethane has more than twice the insulation value of roof batts making it the best insulator commercially available to the building industry. This technology is currently being used to insulate above ground gas pipes and very thin freezer panels that require maximum insulation matched with a stylish design.

The R9 System will provide superior insulation against either hot/humid conditions or freezing conditions.

Building Finish

Transient accommodation need no long display uniformity throughout, allowing for customisation of buildings and the entire camp environment.

The unique nature of the R9 System allows clients to pre-select and/or alter the colour, texture or form of the external finish of all buildings.

OTHER BUILDINGS

The impact resistance, durability and strength of the R9 System makes it an ideal construction material for a variety of shelters and buildings including emergency cyclone refuge shelters, kitchen mess buildings and other communal spaces.

FUTURE BUILDING MATERIAL

INTELLECTUAL PROPERTY & INSURANCE

FBM has filed a number of trade mark and patent applications Details of the pending and grated applications are set out in the schedule below.

PATENTS AND/OR PATENT APPLICATIONS

Country	Patent No / Application No.	Status	Filing Date
Australia	2012201775	Pending	11 October 2011
Australia	2012100747	Certified	11 October 2011
Australia	012100346	Certified	11 October 2011
European Patent Office	11831841.9	Pending	11 October 2011
Hong Kong	12109759.8	Pending	11 October 2011
Malaysia	Y2012002811	Pending	11 October 2011
Patent Cooperation Treaty	PCT/AU2011/001293	Demand Filed	11 October 2011
Thailand	1201004380	Pending	11 October 2011
United States of America	13/505952	Pending	11 October 2011
New Zealand	599806	Pending	11 October 2011

TRADE MARKS AND NAMES

Trade Mark Application :1489167 - R9

INSURANCE

FBM has professional indemnity and product liability insurance cover for itself and its Licensees.

FUTURE BUILDING MATERIAL

SUMMARY

The R9 System offers countless benefits to projects throughout Australia and the world. Comprehensive testing has demonstrated the R9 System satisfy the loading requirements applied in most Australian conditions in the multi-storey residential, rural and commercial market.

FBM and our consultants strongly believe that the introduction of the R9 System to a project would provide significant cost, time, quality and environmental advantages. These advantages will form the foundations for sustainable and efficient building programs in which both the builder/developer and the client/consumer will benefit.

Planning and structural flexibility when building with the R9 System allows you to create innovative designs, both internally and externally. With higher volumes and improved manufacturing efficiencies FBM's goal is to offer our building partners significant reductions in their capital and running construction costs, resulting in improved profitability.

FBM is aware that continued product engineering is necessary to showcase the multitude of applications for the R9 System. FBM is committed to delivering projects, which are focused on its specialist objectives.

By partnering with respected professional consultants we maintain a dynamic and evolving business plan, helping us to achieve our goals and grow our business.

www.fbmlicence.com.au

FUTURE BUILDING MATERIAL

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