



DISTINCTIVE HOMES

HOUSE PLANS E-BOOK

DUPLEX/TOWNHOUSE DESIGN

**AN ASSORTMENT OF INTERNATIONAL HOUSE DESIGNS
HELPING BOTH THE HOME OWNER AND BUILDERS**

www.houseplansebook.com

INCLUDES:

An assortment of Australian House Plans that are designed to help both the home owner and small builder find the appropriate plan to suit their needs. This combination of designs can help you select the right size home to fit your budget and allotment.

There are a variety of plans to suit both flat and sloping allotments, low and medium range sizes of houses.

This book is for people who know what they want in a home and also want to design it themselves. Each plan is numbered with a plan number and an order form at the rear enables you to order the plan complete. Included will be a floor plan, elevation plan and sectional plan which will enable you to incorporate your individuality in a home or part thereof with the convenience of full and detailed information.

As an owner of our book you can copy the plan for viewing purposes and for helping create new ideas for your own design. Should you wish to build the plan or copy part of the plan for building you need to purchase a License.

PROFESSIONAL EXPERTISE

We have been in the building industry since 1970 starting out as apprentice carpenters, and progressing through all aspects of building, marketing and sales.

We have built many hundreds of homes during our construction history and we were Government Certified as a preferred builder for The Australian Defence Force (Defence Service Homes) and the Queensland Housing Commission. We have also acted as building consultants for a number of builders.

We have owned and operated several building companies and we have now merged our companies to form Distinctive Homes so we may better serve our repeat customer base.



Home Building Design

The design of a home must incorporate your lifestyle, your budget, the shape of your land, the climate and last but not least re-sale value .

The Land:

If you intend to have a distinctive shaped home you should consider purchasing your land first, as this sets the amount of area you can build to as well as set a budget to allow for building.

Lifestyle:

Your lifestyle should be incorporate into the design of the home. For example - if you like to do a lot of entertaining the design can include a large entertainment area that has easy access to the kitchen area. Whereas if you like outdoor entertaining such as BBQ etc. you can design the home more to outdoor living with larger outdoor covered areas. Some people prefer more of a private life and do little entertaining. They can require a more private home front with the house designed towards a relaxed home environment with reading rooms, or a home cinema area with only a minimum of entertainment areas.

Budget:

Design a home to your budget is probably one of the most neglected areas in home design and causes many of the problems in building . You should carefully budget for all the aspects of costs prior to designing the home itself . This will help in choosing many of the features you would like to bring to the design. Very few people have an unlimited budget, so if you do not allow for the finishing items such as landscaping, fencing, pools etc. prior to designing the home you tend to build a home that is larger than it should have been and you will have sacrificed finishing off the home. A well designed home completely finished has much more a appeal and re-sale value than a large unfinished home.!

Aspect:

The aspect of the home is very important and easy to design into the home layout . The easiest method is to draw the land shape showing the house as a rectangle on the land. Now show the north/south direction on the drawing. You can draw small boxes in the house area where the position of each room should be in relation to the sun, heat and cold. For example - the ideal position for the kitchen is usually on the eastern side of the home so it gets the morning sun which can incorporate a breakfast or meals area. The garage is most commonly put facing the street but can be utilised to protect the home from hot western sun or simply to block the street noise from a room located behind the garage. When designing this layout you should keep in mind the time the rooms are most used, such as bedrooms - they are mostly used at night and therefore can be placed in the areas of the design that have the most extreme weather conditions in the day time. Whereas areas such as family rooms and lounge rooms are utilised at all times of the day and night and should be given the best position in the design with easy access to kitchen and bathroom areas.

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The People Involved in Construction.

The People involved in Construction.

Architect

The Architect is the designer of the home usually in conjunction with the home owner or builder.

Draftsman

Also gets involved in designing the home and is mostly employed by Builders or Architects to do the drawing of the home in detail so it is ready for construction.

The Interior Designer

They are usually responsible for the interior selections and colour co-ordination so the home blends throughout.

The General Contractor or Builder

He/She is mainly the Manager of the building construction and co-ordinates the design, sub-contractors and suppliers, Councils and home-owners throughout the project to its completion.

The Sub-Contractor

The Sub-Contractor works directly for the Builder and does the work specific to his trade e.g the carpenter completes the carpentry work throughout the home at an agreed price with the Contractor.

Licensed Trade People

Some of the trades have to be licensed to comply with Laws. Example- plumbers and electricians have to be licensed before they can work on any site.

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Material Supplier

This is the supplier of the various materials in the home. Most material suppliers specialise in a particular material.

For Example -the Plumbing fixtures. Suppliers mainly stay in their own areas and do not supply materials such as timber. However some suppliers do stock many of the materials used in a house, such as the hardware. Some suppliers may supply the majority of the products in the home.

Equipment Supplier

Specialise in Equipment - such as heavy equipment used in earthworks as well as items such as scaffolding planks etc.

Inspectors

Councils and Government departments have inspectors to check that the work is in accordance with the Building Act and State and Federal Laws.

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Duplex Design: 318 Twins Corner Duplex

		
2 x 4 Beds	2 x 2 Bath	2 x 2 Car

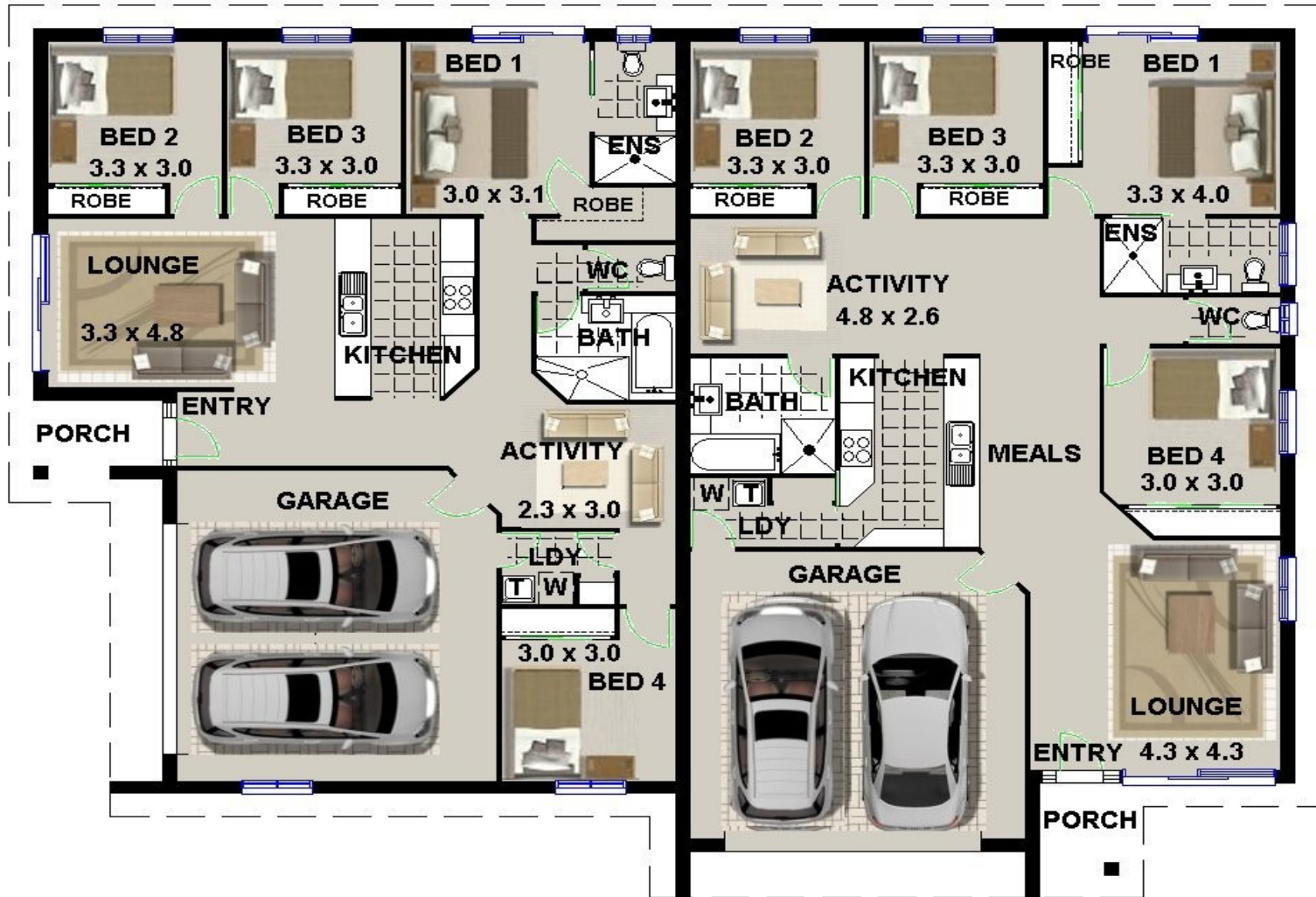


Metric Sizes

34 squares

Total Area: 318 m2

Width of home: 22.50 meters
 Depth of Home: 17.3 meters
 Ceiling Heights: 2.4 or 2.7 meters



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Duplex Design: 146D



		
1 x 3 Beds	1 x 2 Bath	1 Single Car

Metric Sizes

13.5 squares

Total Area: 126.2 m2

Width of home: 10.4 meters
 Depth of Home: 10.9 meters
 Ceiling Heights: 2.4 meters

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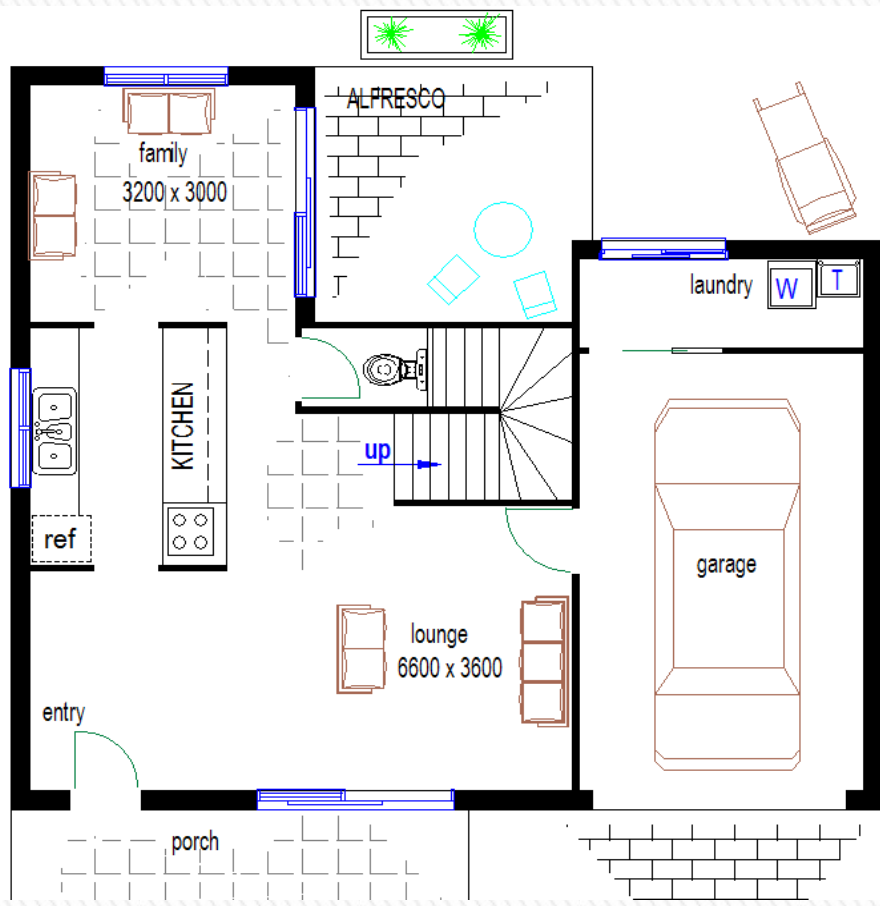
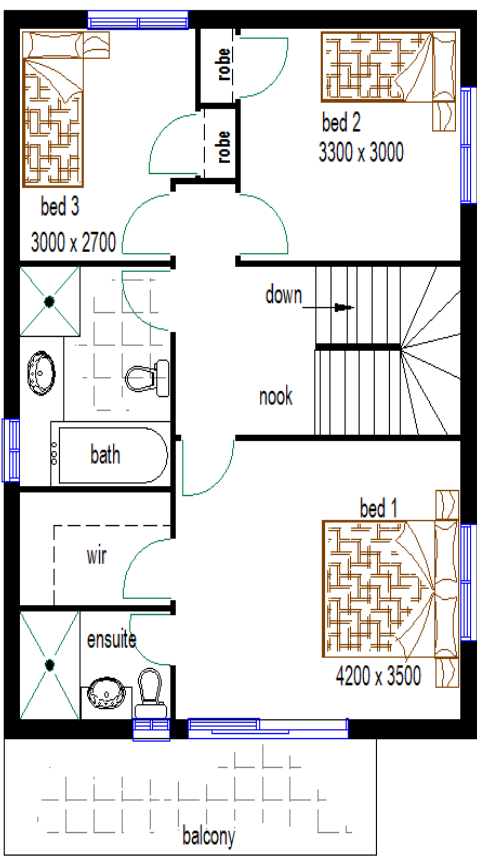


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Duplex Design: 299 Townhouse



		
2 x 3 Beds	2 x 2 Bath	2 Double Car

Metric Sizes

39 squares 3900 sq feet

Total Area: 362 m2

Width of home: 15.775 meters

Depth of Home: 15.525 meters

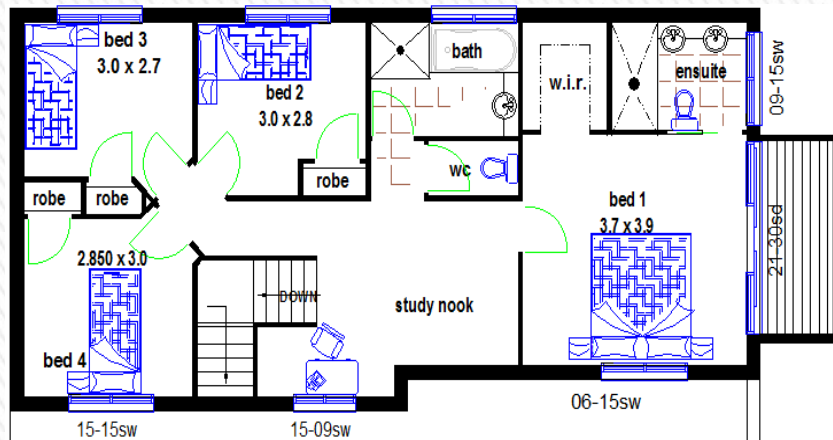
Ceiling Heights: 27 meters

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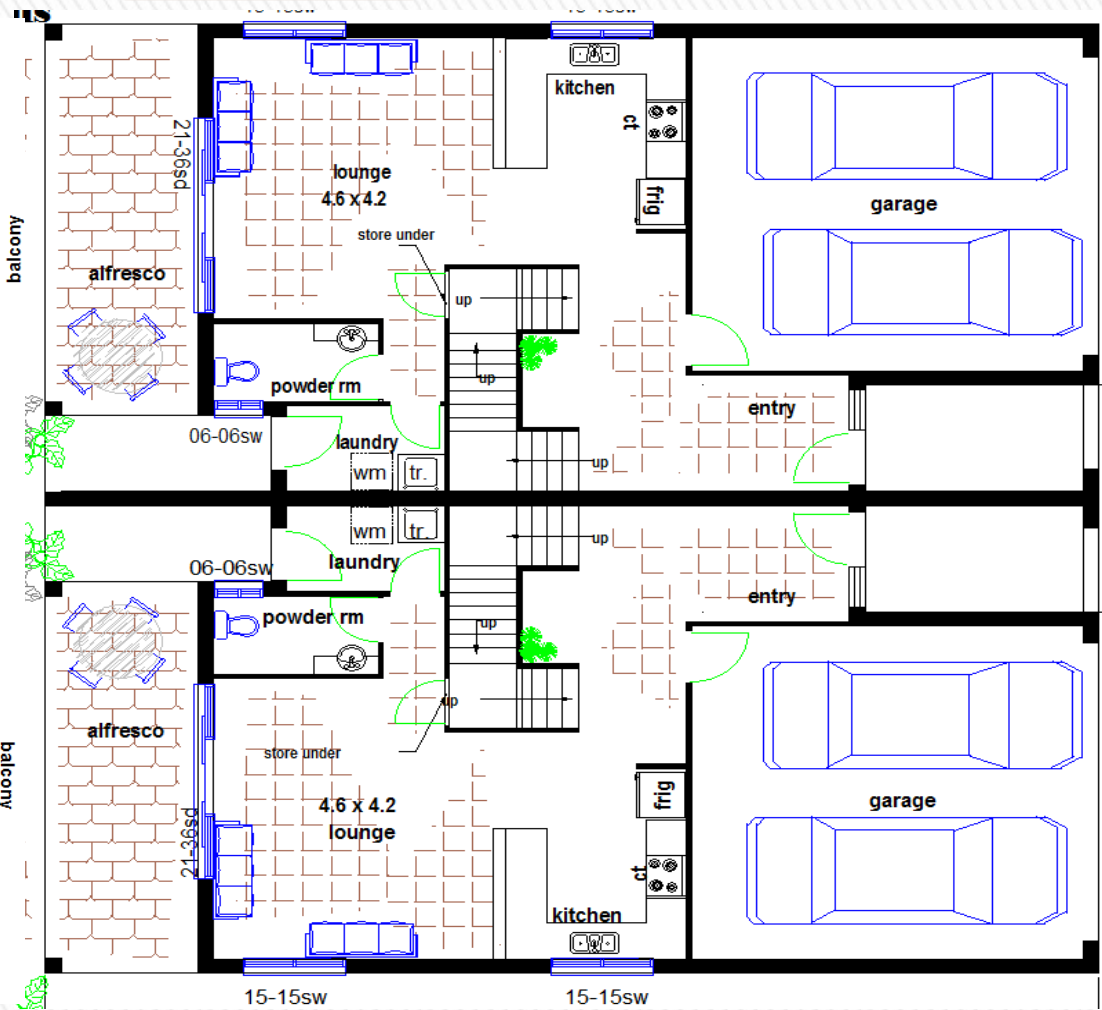
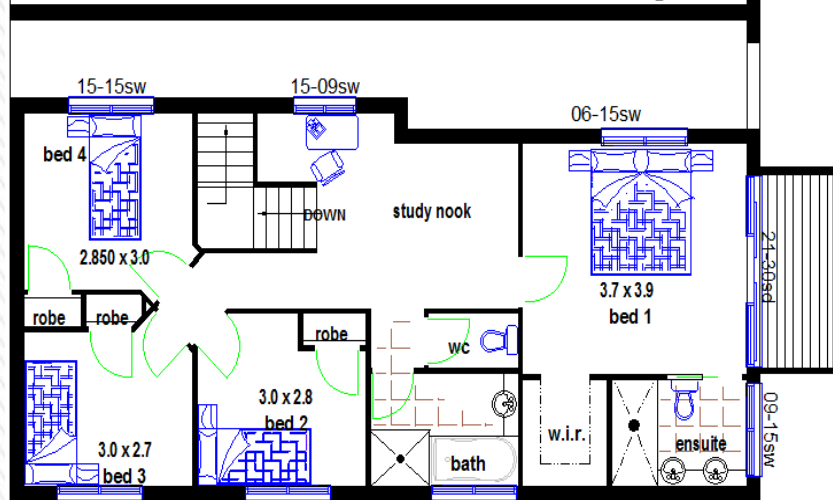
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Collection of Designs



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Home Design: KIWI 48

		
1 Beds	1 Bath	

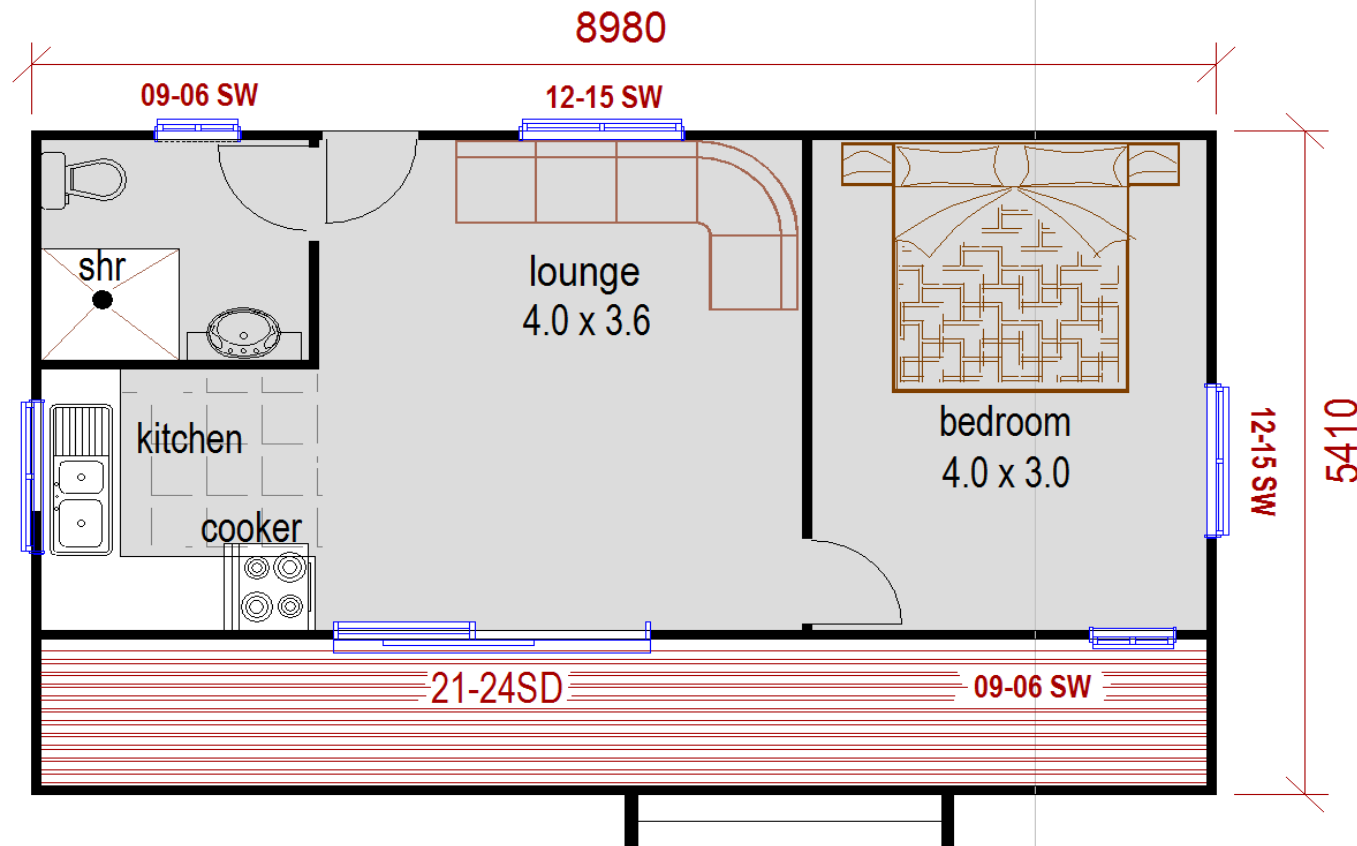


Metric Sizes

5.1 squares

Total Area: 48 m2

Width of home: 8.980 meters
 Depth of Home: 5.410 meters
 Ceiling Heights: 2.4 meters



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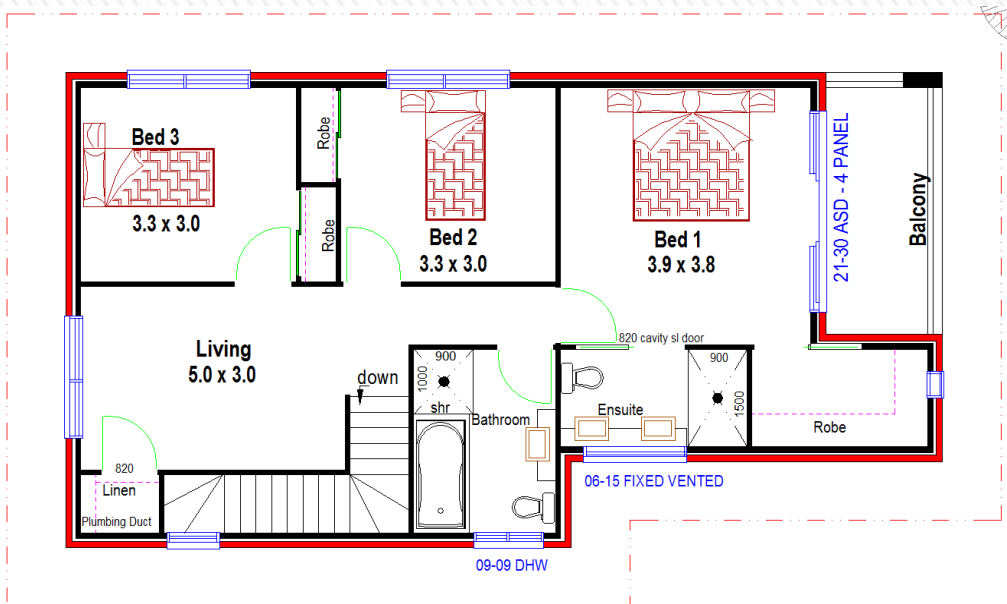
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Duplex Design: 213 DU

		
3 Beds	2 Bath	2 Car

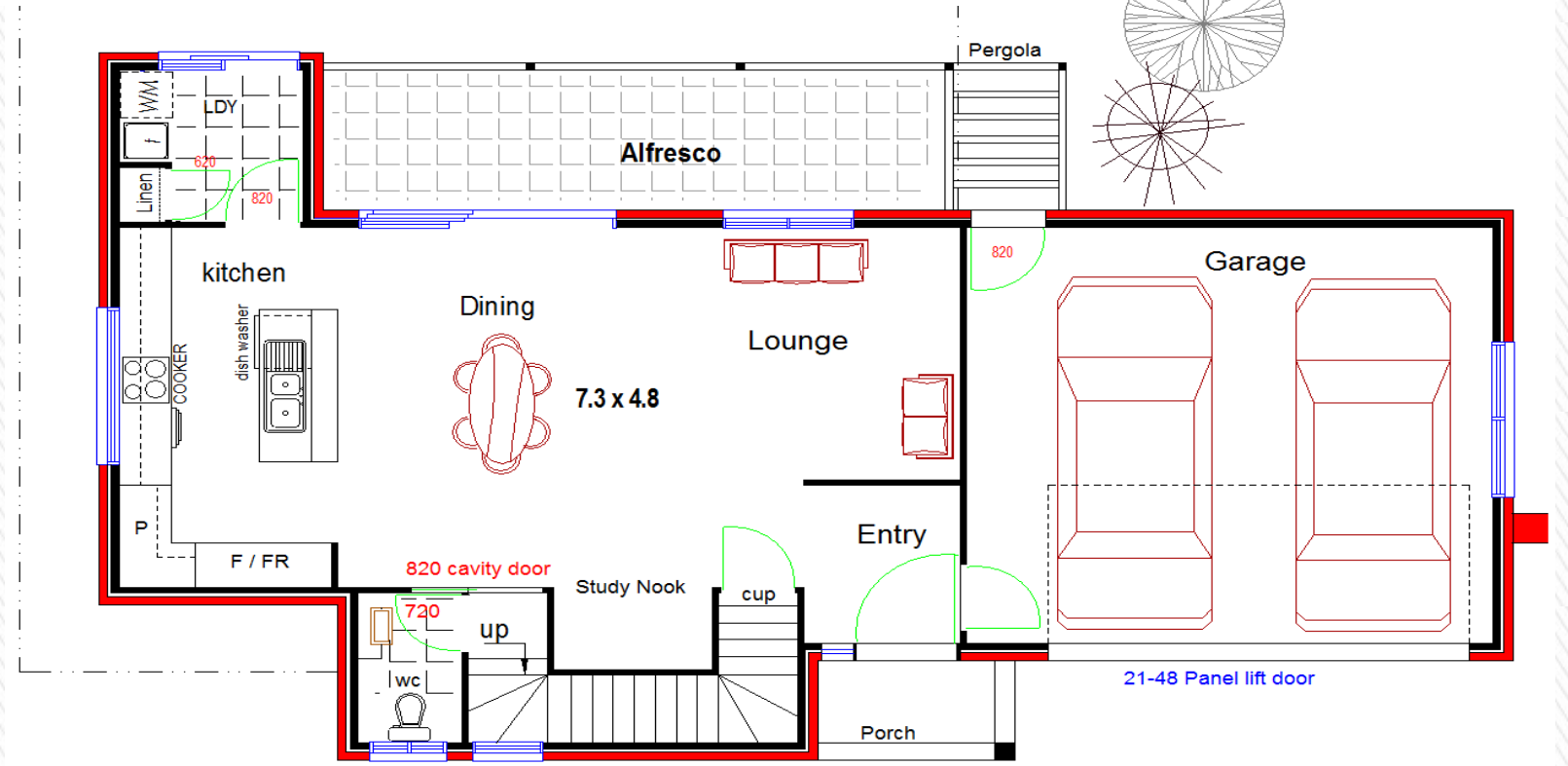
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Villa Design: Twins 131

		
1 x 3 Beds	1 x 2 Bath	1 Single Car



Metric Sizes

13.9 squares

Total Area: 130.7 m2

Width of home: 14.2 meters
 Depth of Home: 9.20 meters
 Ceiling Heights: 2.4 meters

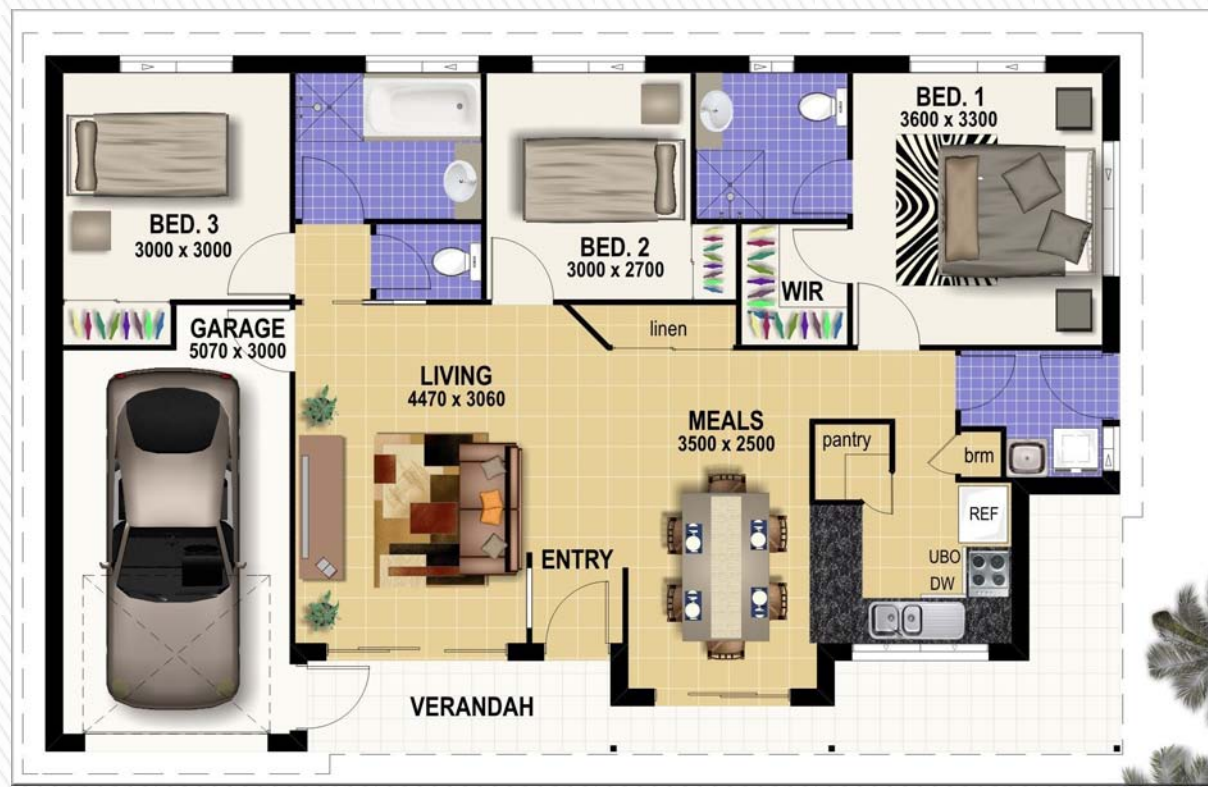
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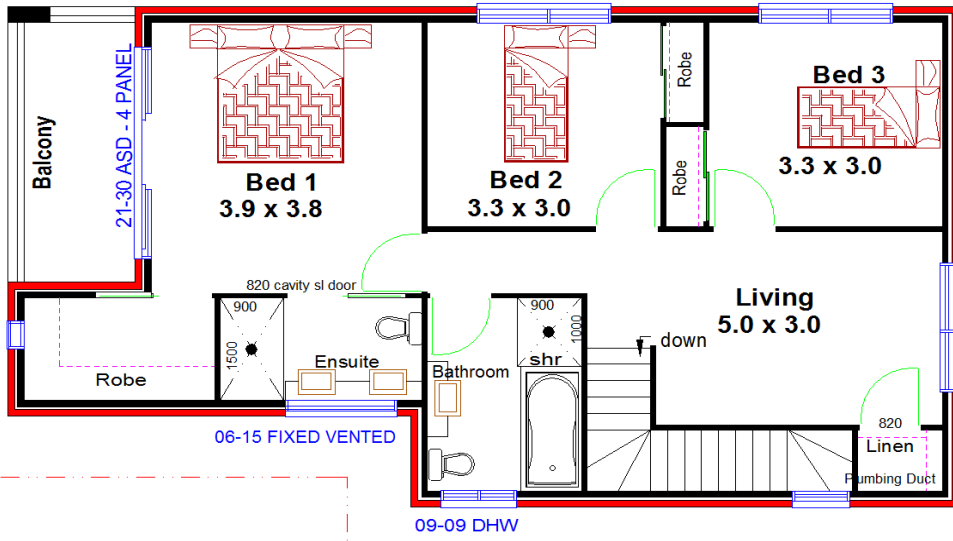
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Duplex Design: 213 TH

		
3 Beds	2 Bath	2 Car



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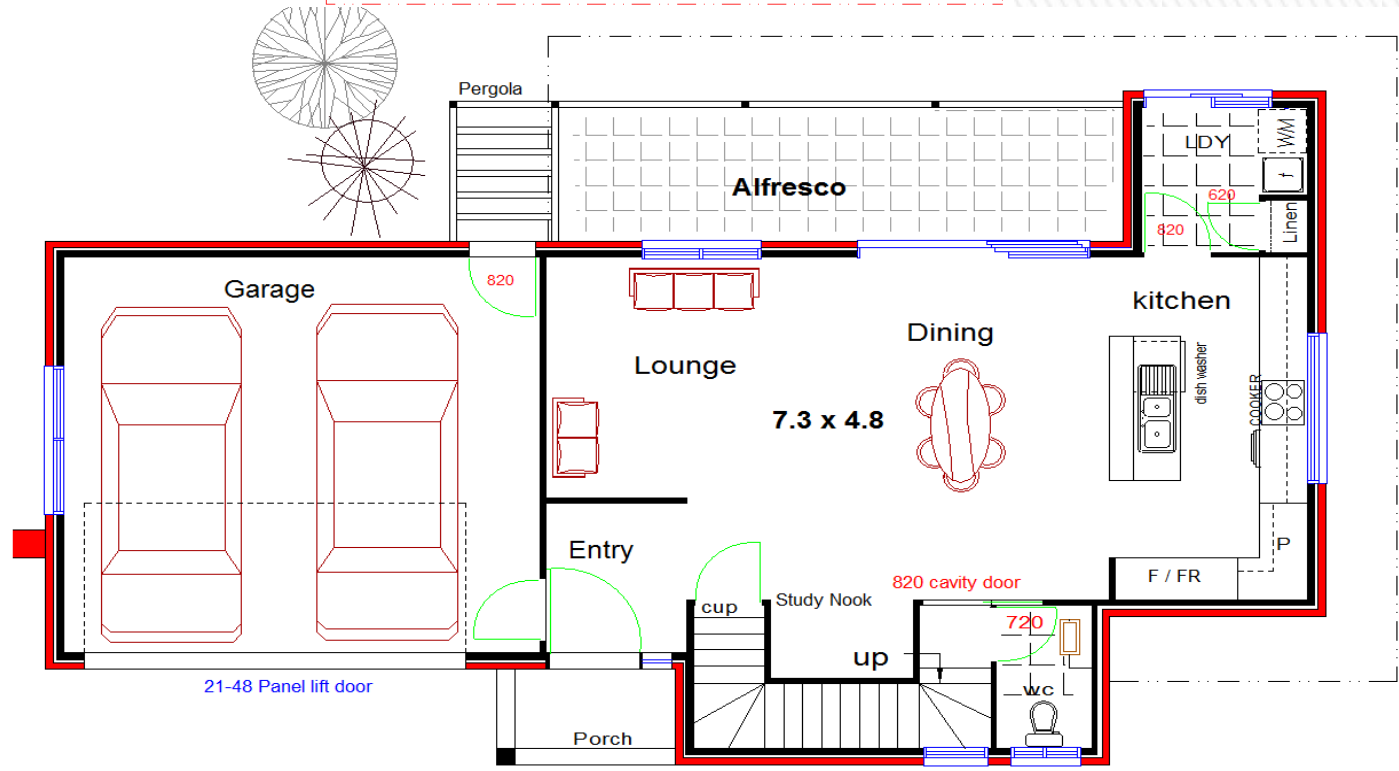
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Duplex Design: 345D Triplex

		
3 x 3 Beds	3 x 1 Bath	3 x 1 Car

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Metric Sizes

36.5 squares

Total Area: 336 m2

Width of home: 28.3 meters
Depth of Home: 14.6 meters
Ceiling Heights: 2.4 meters



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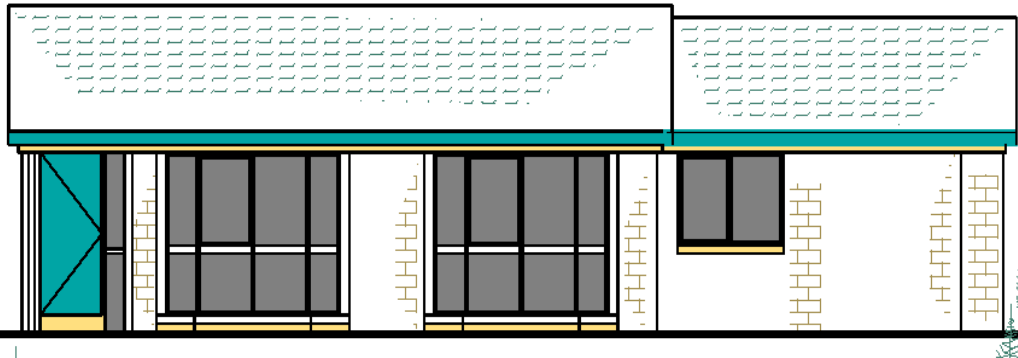
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Home Design: CLM 1071 - 125 m2

		
3 Beds	2 Bath	1 Car



Metric Sizes

 13.4 squares

 Total Area: 125 m2

 Width of home: 19.0 meters
 Depth of Home: 12.3 meters
 Ceiling Heights: 2.4 meters

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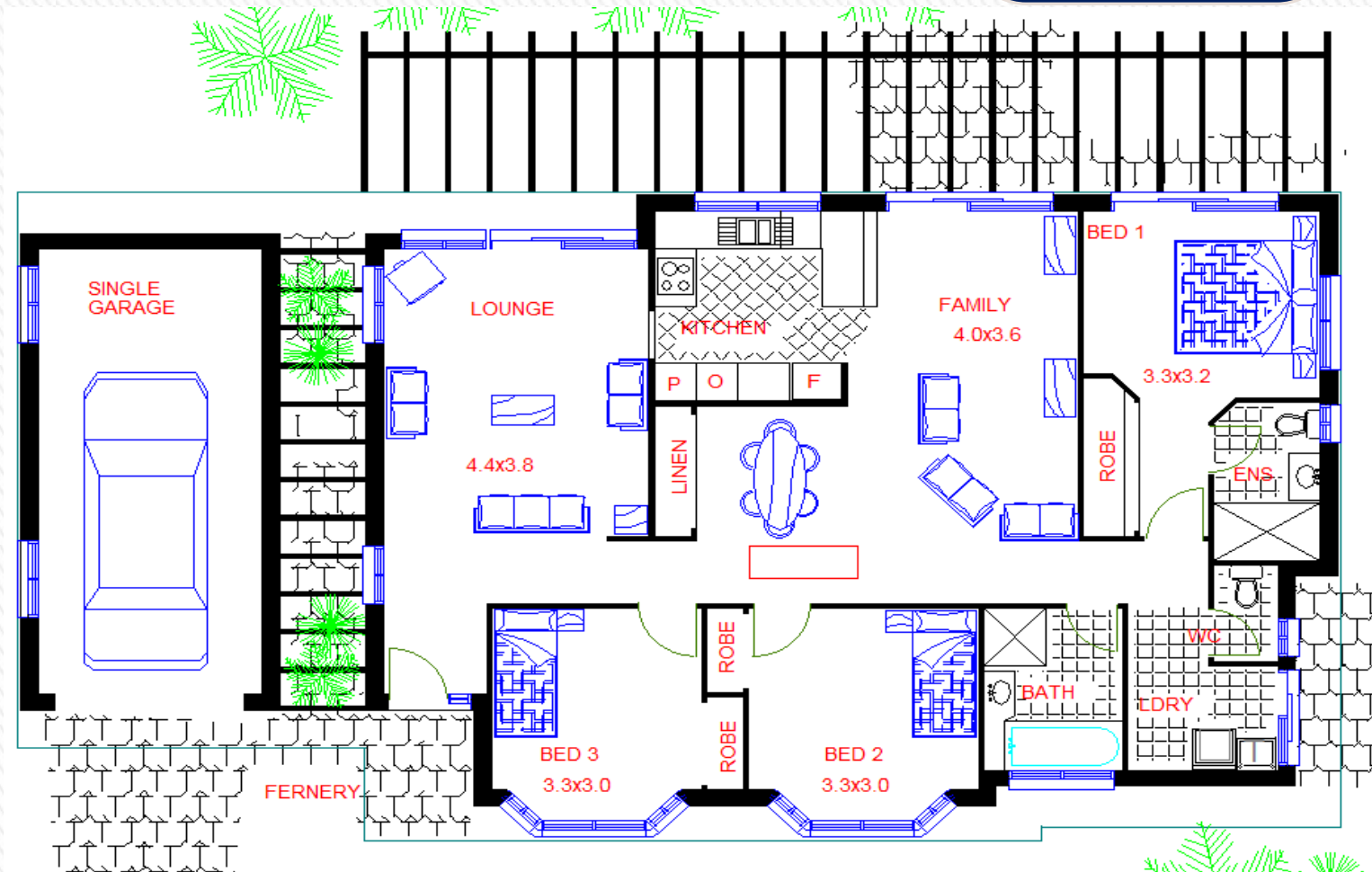
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Home Design: CLM 80

		
2 Beds	1 Bath	



Metric Sizes

8.6 squares

Total Area: 80 m2

Width of home: 10.0 meters
 Depth of Home: 8.0 meters
 Ceiling Heights: 2.4 meters

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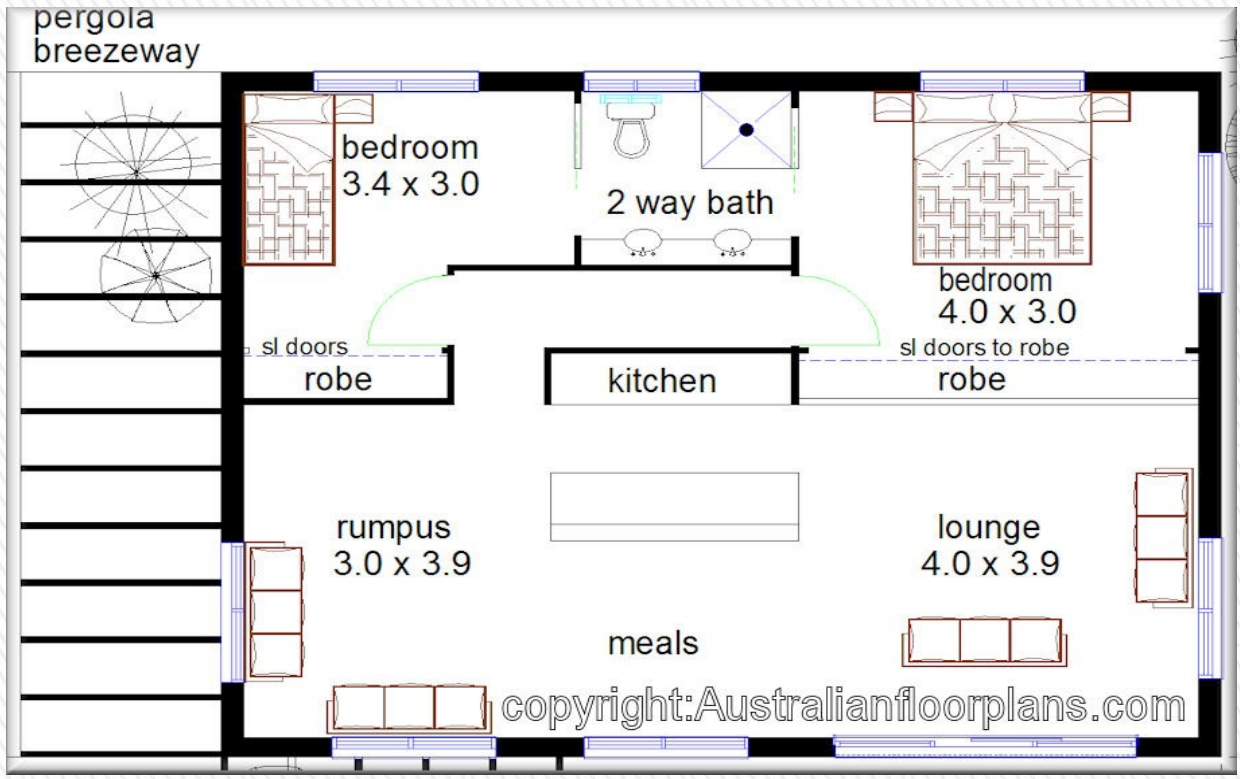
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Home Design: CLM 105

		
2 Beds	1 Bath	2 Car

Metric Sizes

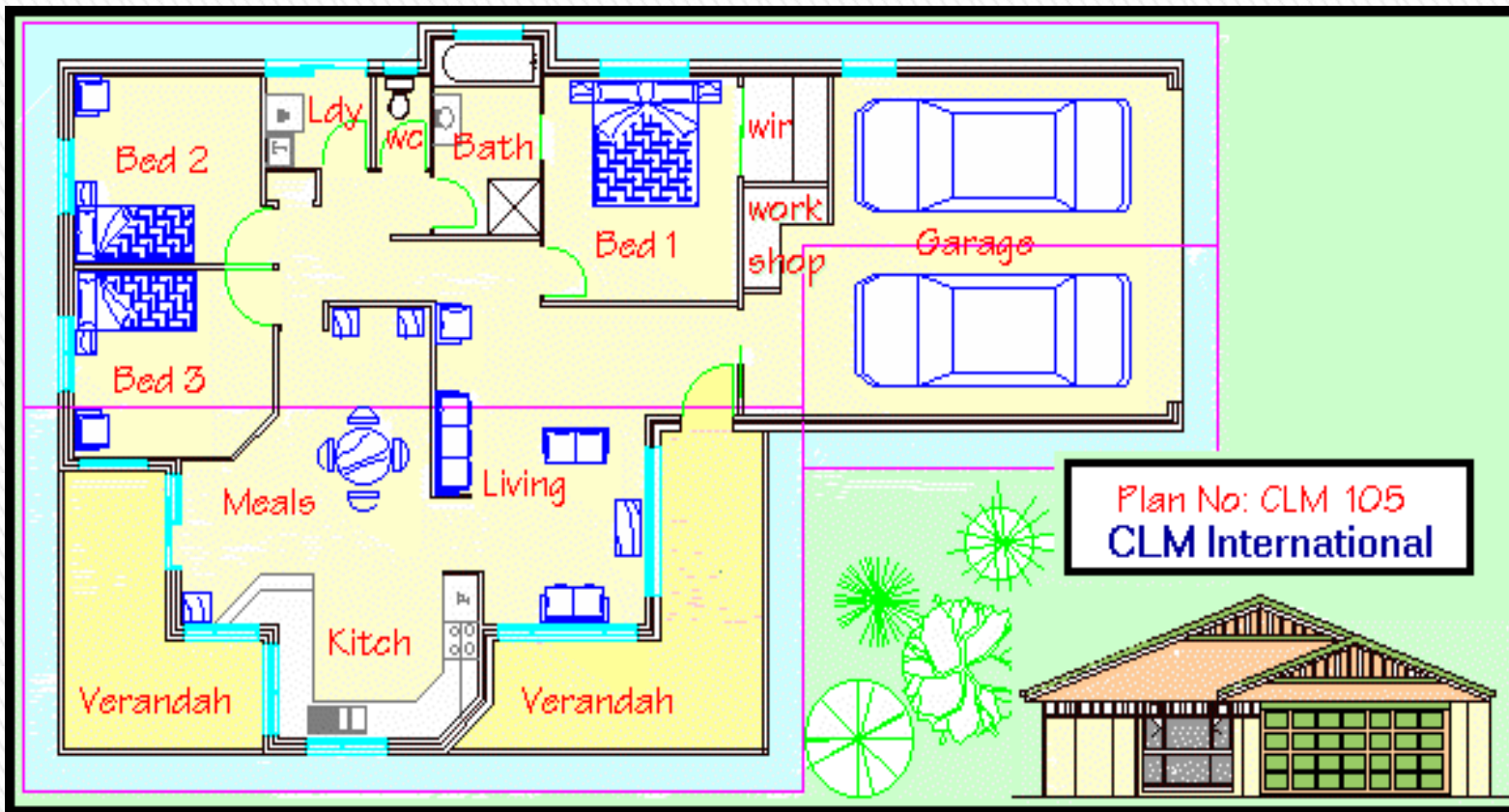
11.3 squares

Total Area: 105 m2

Width of home: 20.3 meters

Depth of Home: 12.9 meters

Ceiling Heights: 2.4 meters



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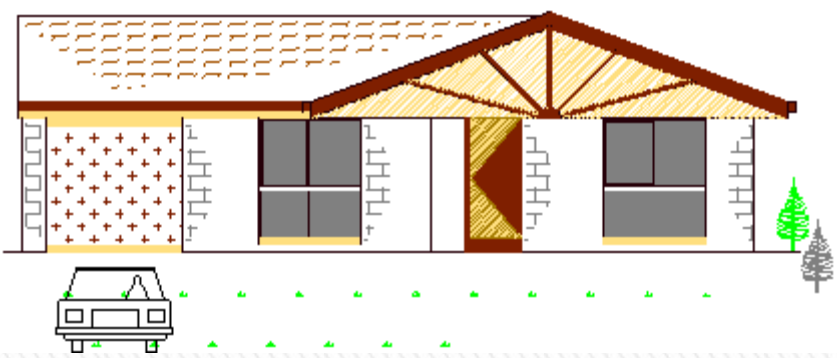
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Home Design: CLM 115

		
3 Beds	1 Bath	1 Car

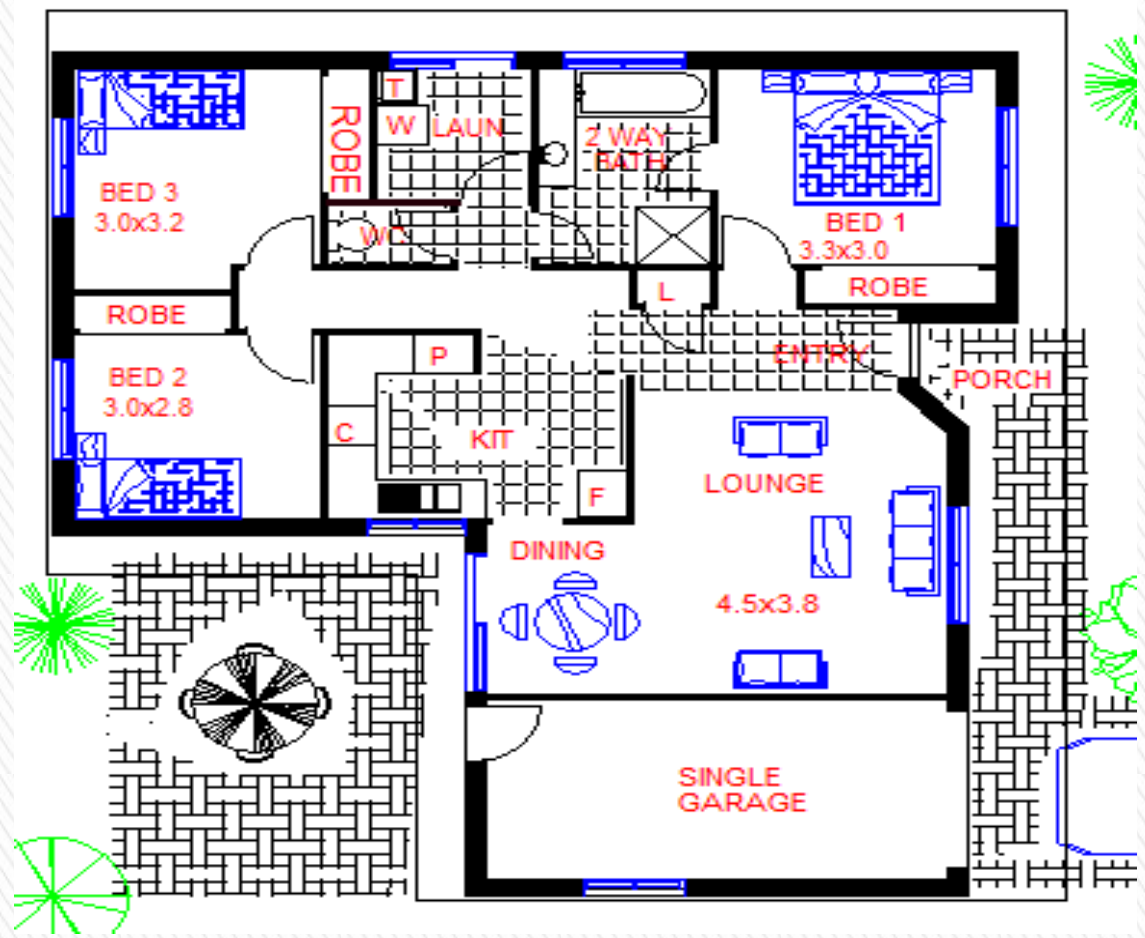


Metric Sizes

12.7 squares

Total Area: 115 m2

Width of home: 20.3 meters
Depth of Home: 12.9 meters
Ceiling Heights: 2.4 meters



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Home Design: SKIPPY 55

		
2 Beds	1 Bath	



Metric Sizes

5.9 squares

Total Area: 55 m2

Width of home: 12.0 meters

Depth of Home: 4.64 meters

Ceiling Heights: 2.4 meters

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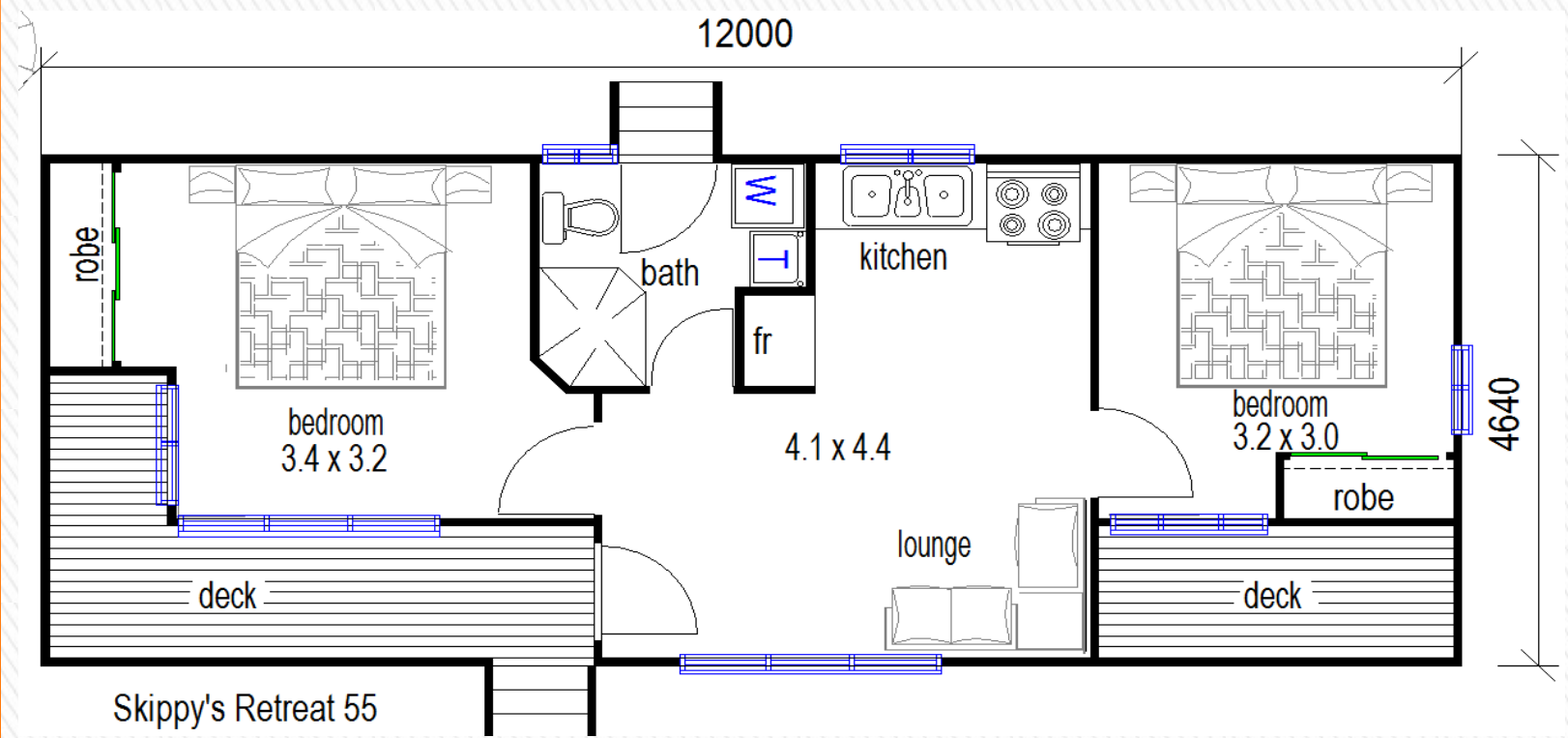


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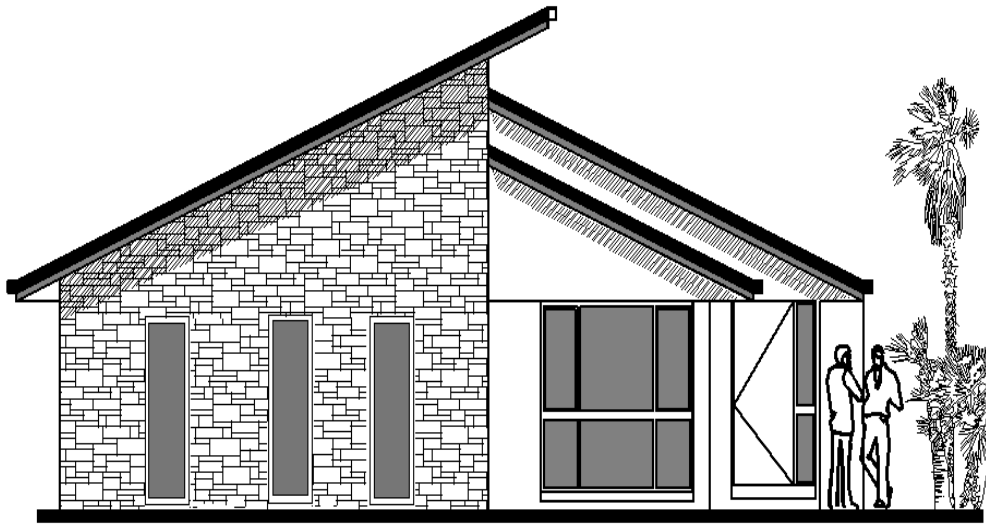


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Home Design: CLM 167 -167 m2

		
4 Beds	2 Bath	2 Car



Metric Sizes

17.9 squares

Total Area: 167 m2

Width of home: 15.0 meters
Depth of Home: 16.6 meters
Ceiling Heights: 2.4 meters

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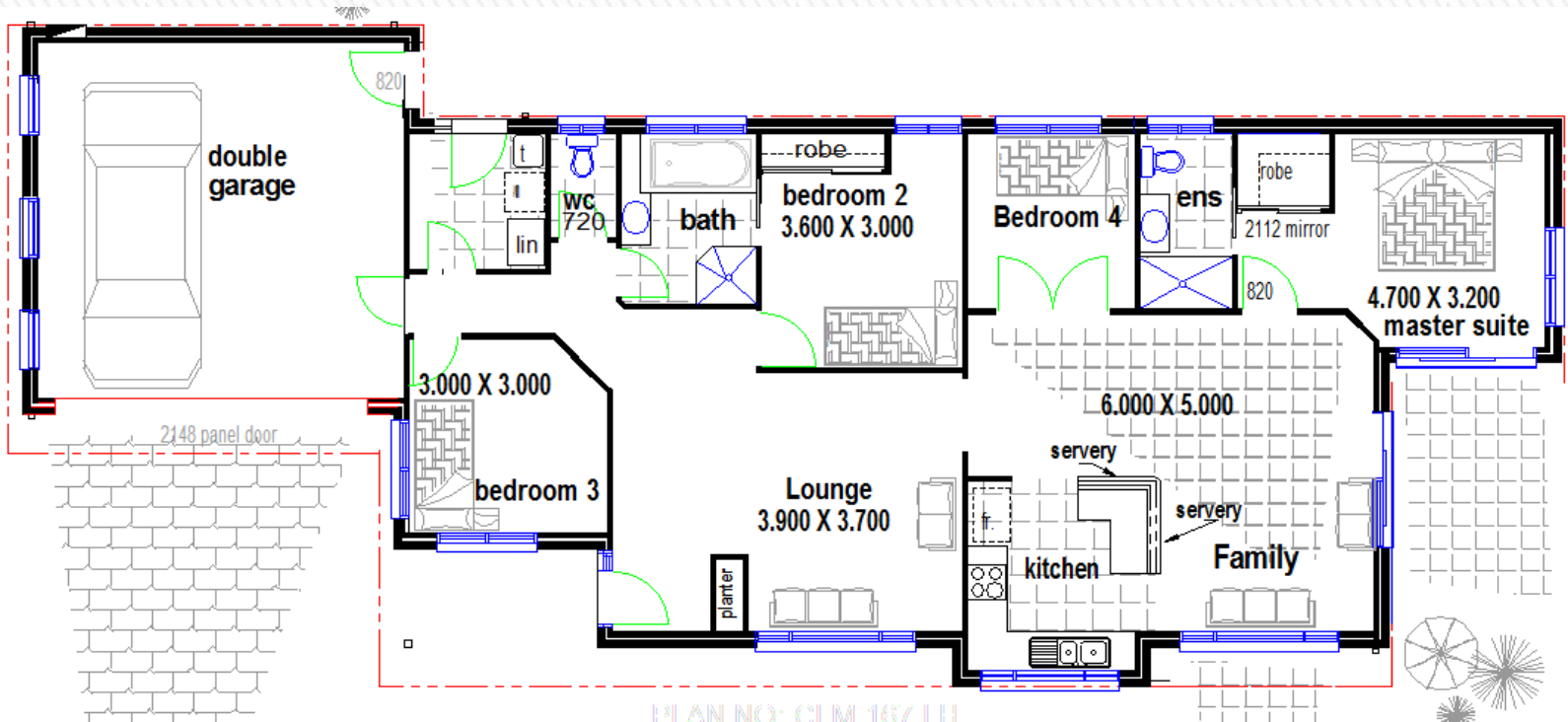
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Home Design: KR 170

		
2 Beds	1 Bath	0 Car



Metric Sizes

18.2 squares

Total Area: 170 m2

Width of home: 16.0 meters
Depth of Home: 14.2 meters
Ceiling Heights: 2.4 meters



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Home Design: CLM 141- 172 m2

		
3 Beds	2 Bath	2 Car

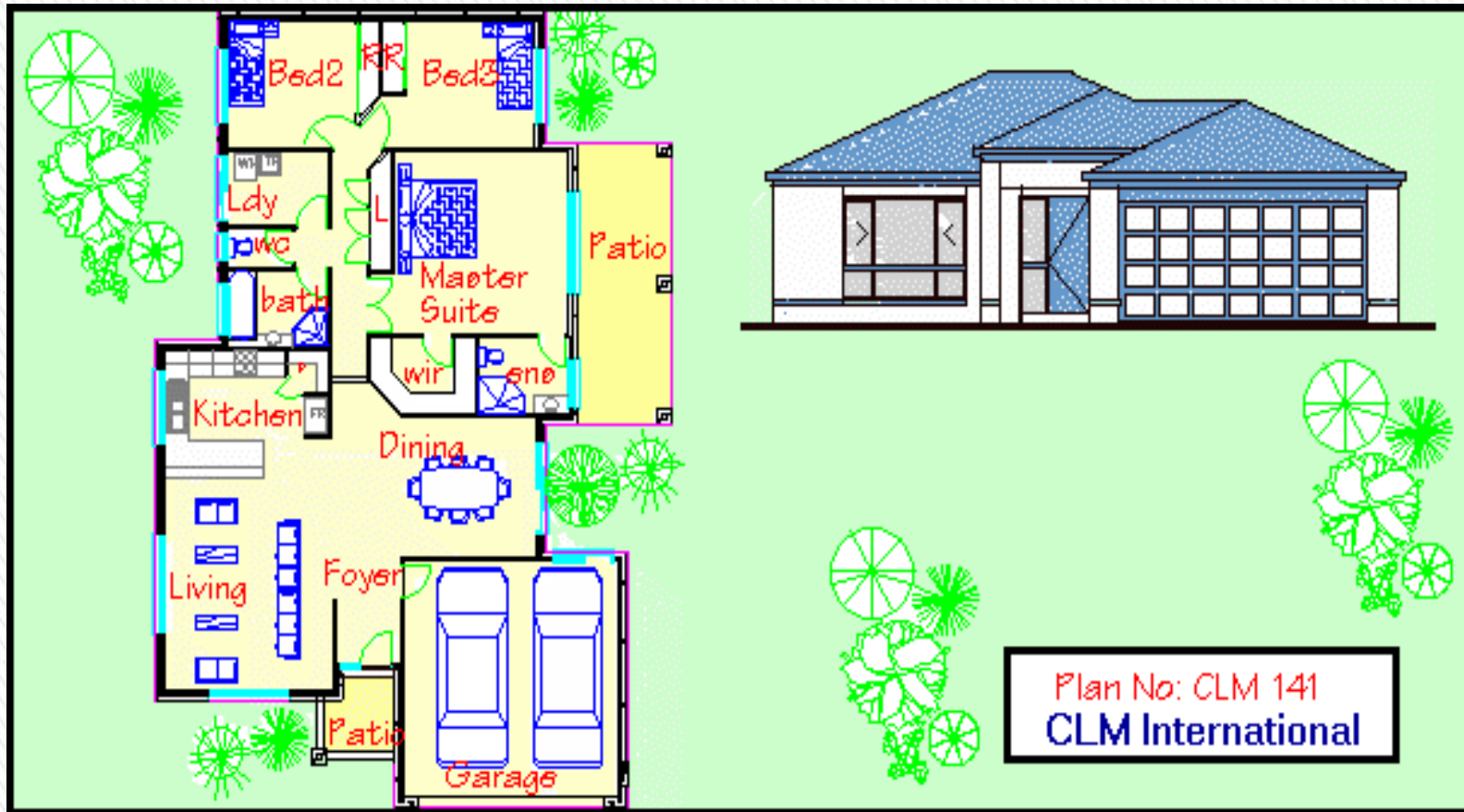


Metric Sizes

18.5 squares

Total Area: 172 m2

Width of home: 16.0 meters
 Depth of Home: 14.2 meters
 Ceiling Heights: 2.4 meters



Plan No: CLM 141
CLM International

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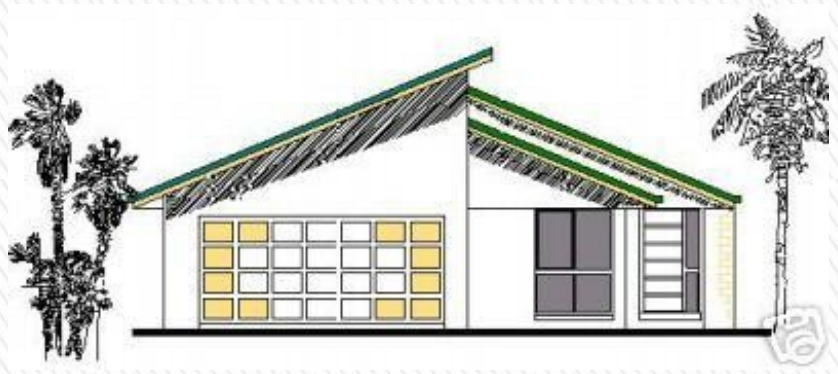


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Home Design: CLM 168 -162 m2

		
4 Beds	2 Bath	2 Car

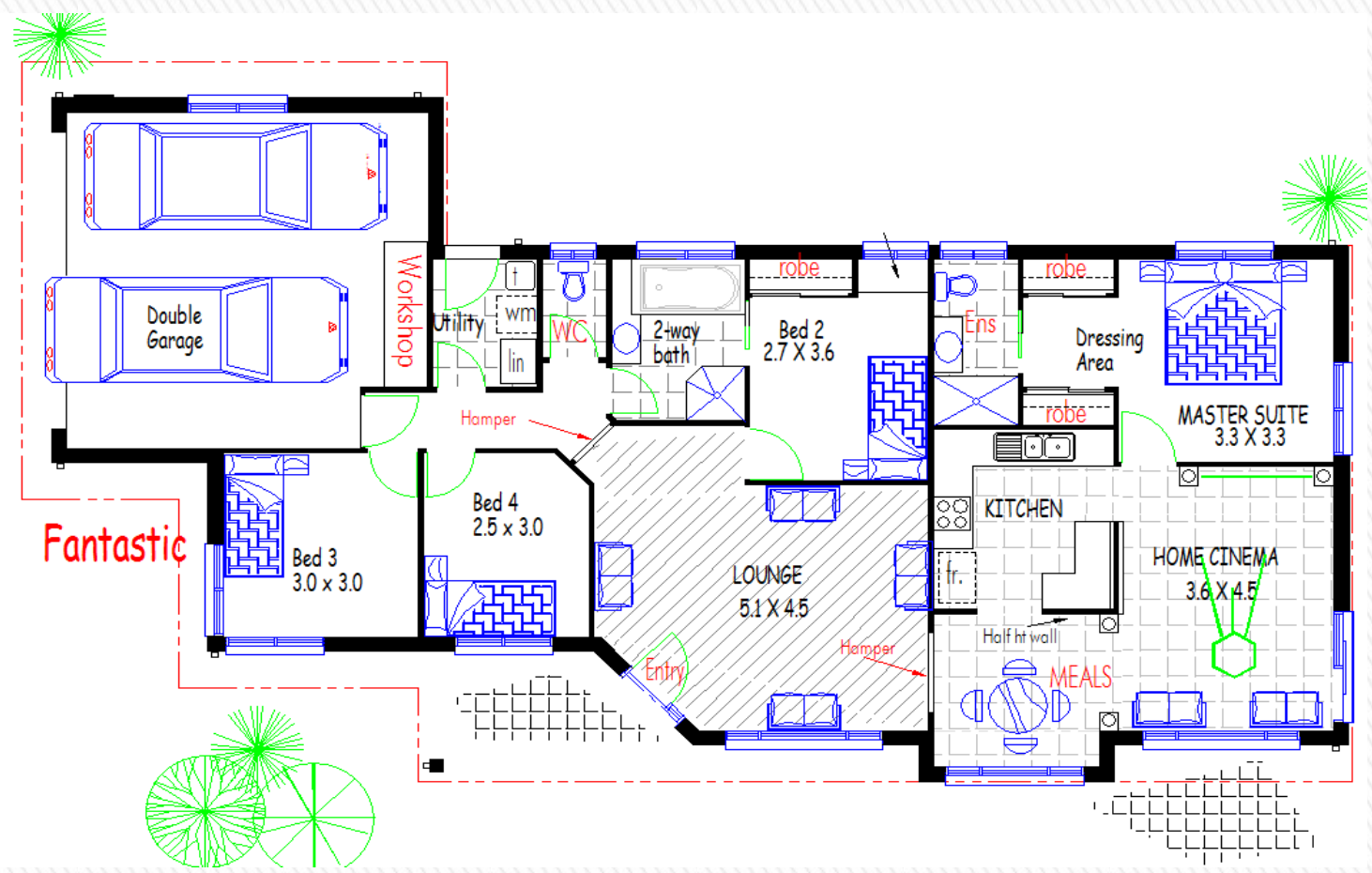


Metric Sizes

17.4 squares

Total Area: 162 m2

Width of home: 11.8 meters
Depth of Home: 21.1 meters
Ceiling Heights: 2.4 meters



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Home Design: GECKO 19



		
1 Beds	1 Bath	

Metric Sizes

2.5 squares

Total Area: 23 m2

Width of home: 6.510 meters

Depth of Home: 6.5 meters

Ceiling Heights: 2.4 meters

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Home Design: CLM 143-196 m2

		
3 Beds	2 Bath	2 Car

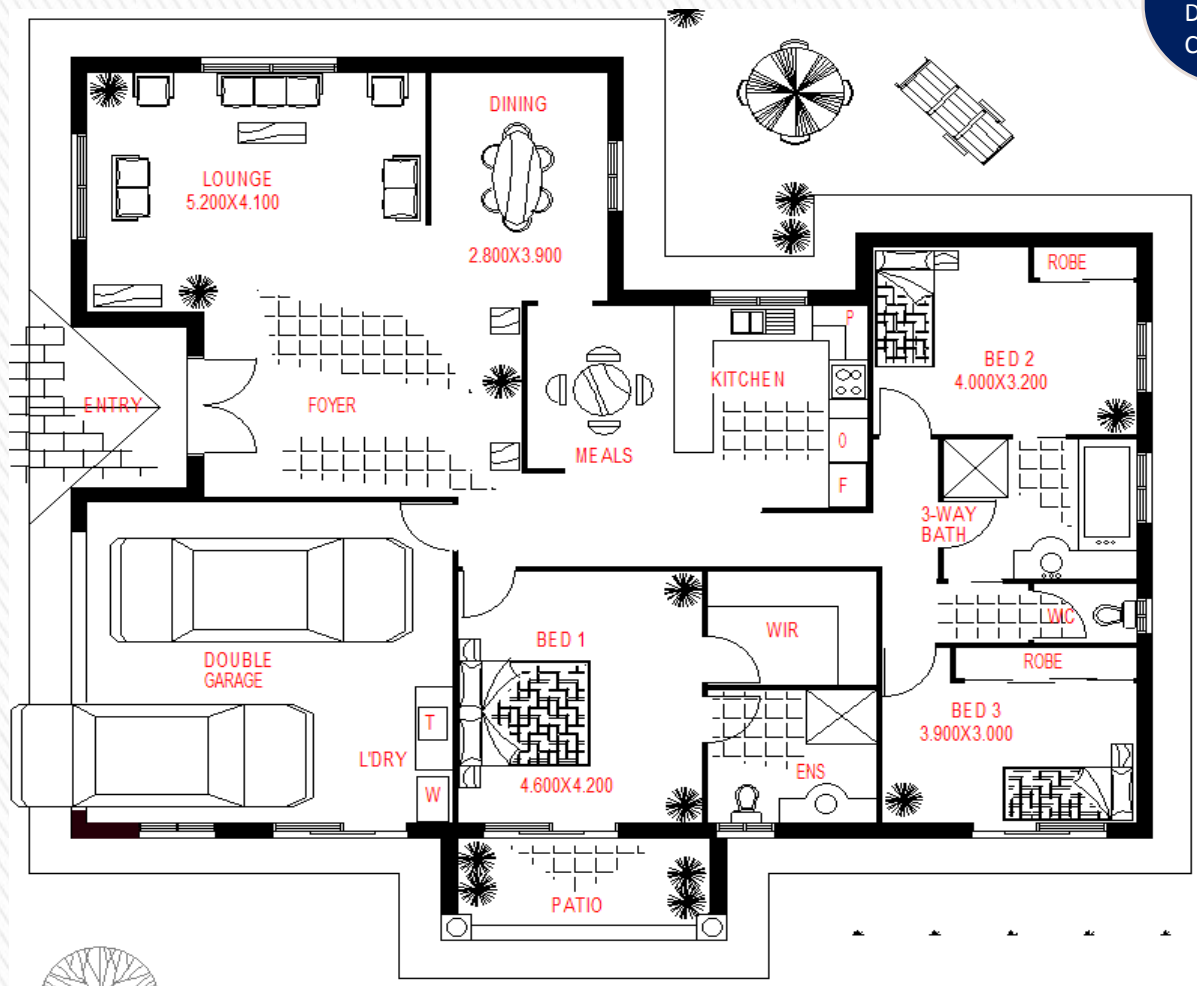


Metric Sizes

 21 squares

 Total Area: 196 m2

 Width of home: 17.2 meters
 Depth of Home: 18.2 meters
 Ceiling Heights: 2.4 meters



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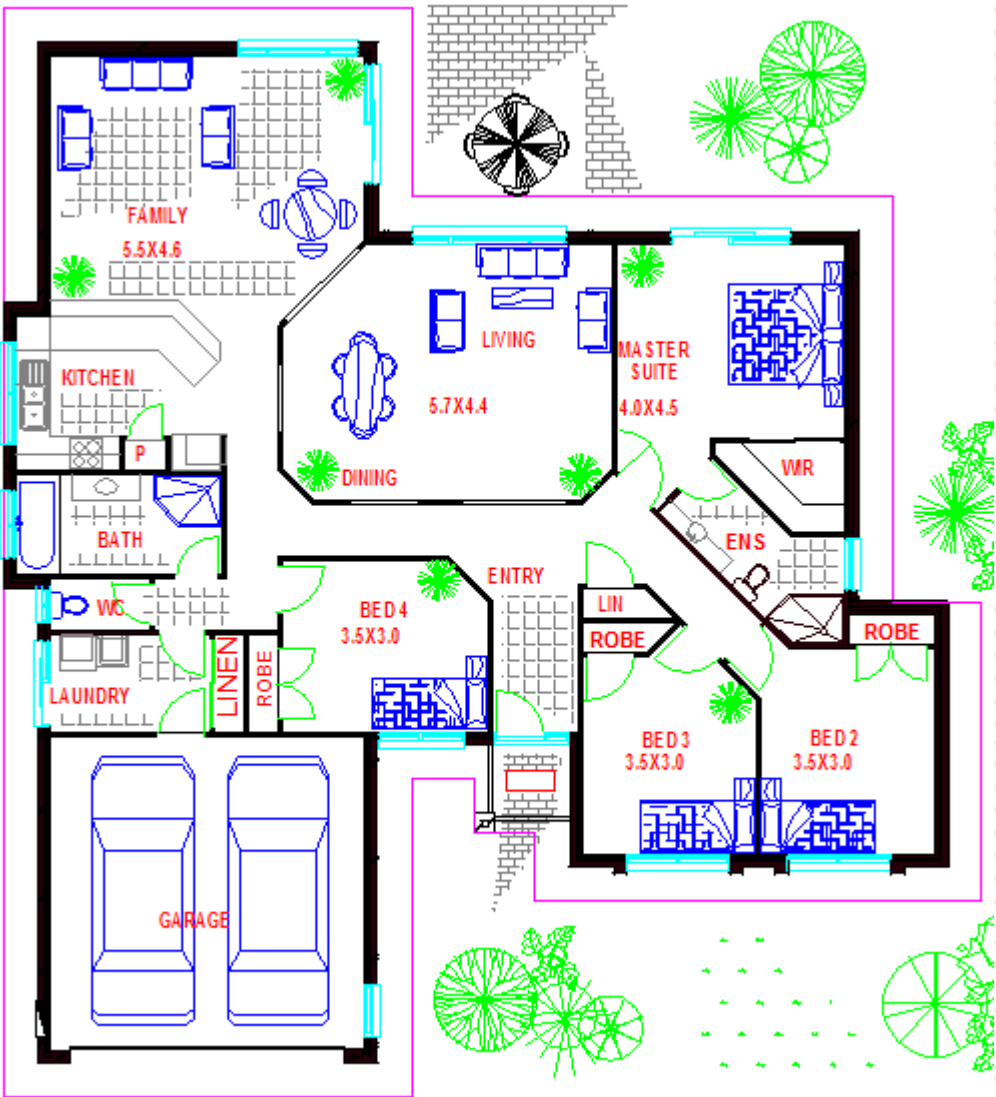
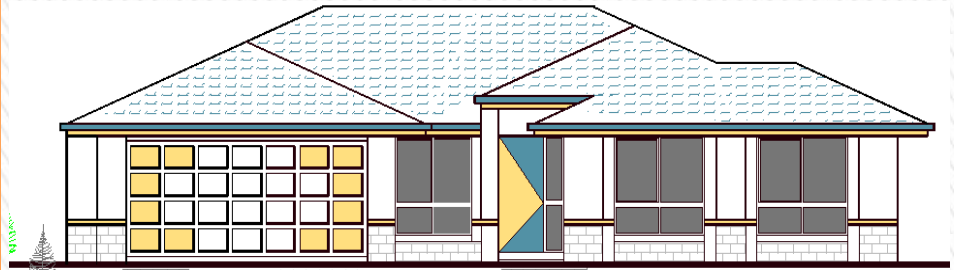
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Home Design: CLM 166 -203 m2

		
4 Beds	2 Bath	2 Car



Metric Sizes

21.8 squares

Total Area: 203 m2

Width of home: 17.5 meters
 Depth of Home: 19.1 meters
 Ceiling Heights: 2.4 meters

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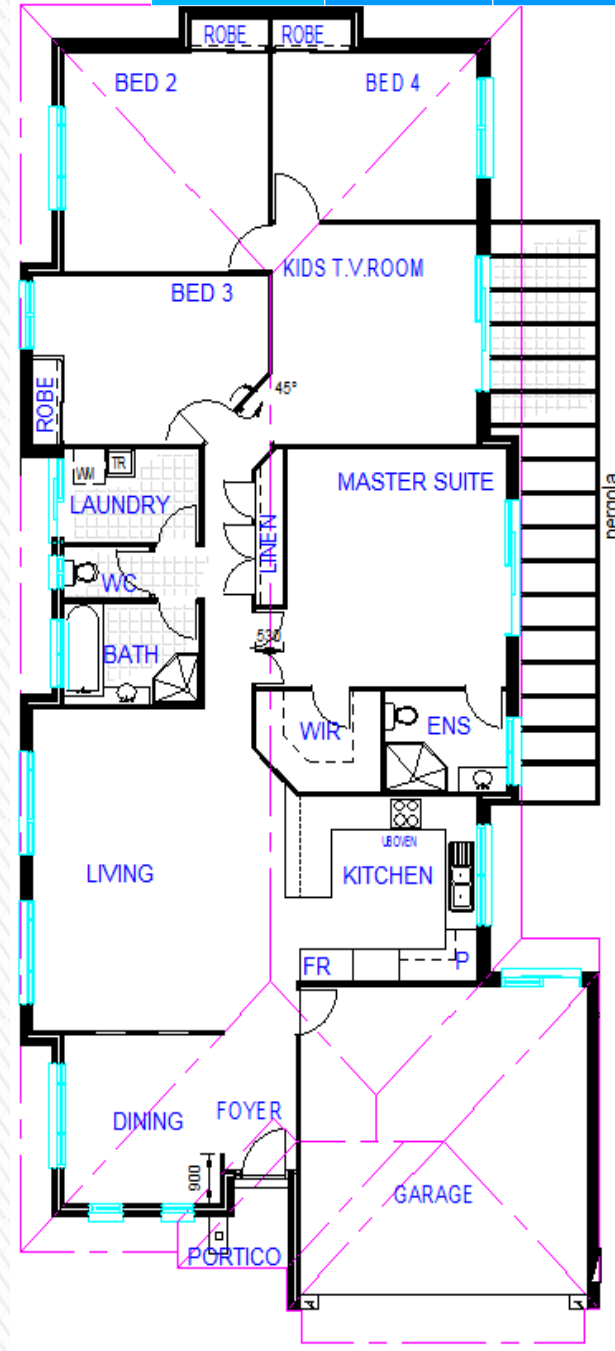
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Home Design: CLM 203-203 m2



		
4 Beds	2 Bath	2 Car



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Metric Sizes

 21.48 squares

 Total Area: 203 m2

 Width of home: 11.1 meters
 Depth of Home: 23.2 meters
 Ceiling Heights: 2.4 meters

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Home Design: KR 242

		
3 Beds	2 Bath	2 Car



Metric Sizes

26.0 squares

Total Area: 242 m2

Width of home: 12.8 meters
 Depth of Home: 24.0 meters
 Ceiling Heights: 2.4 meters

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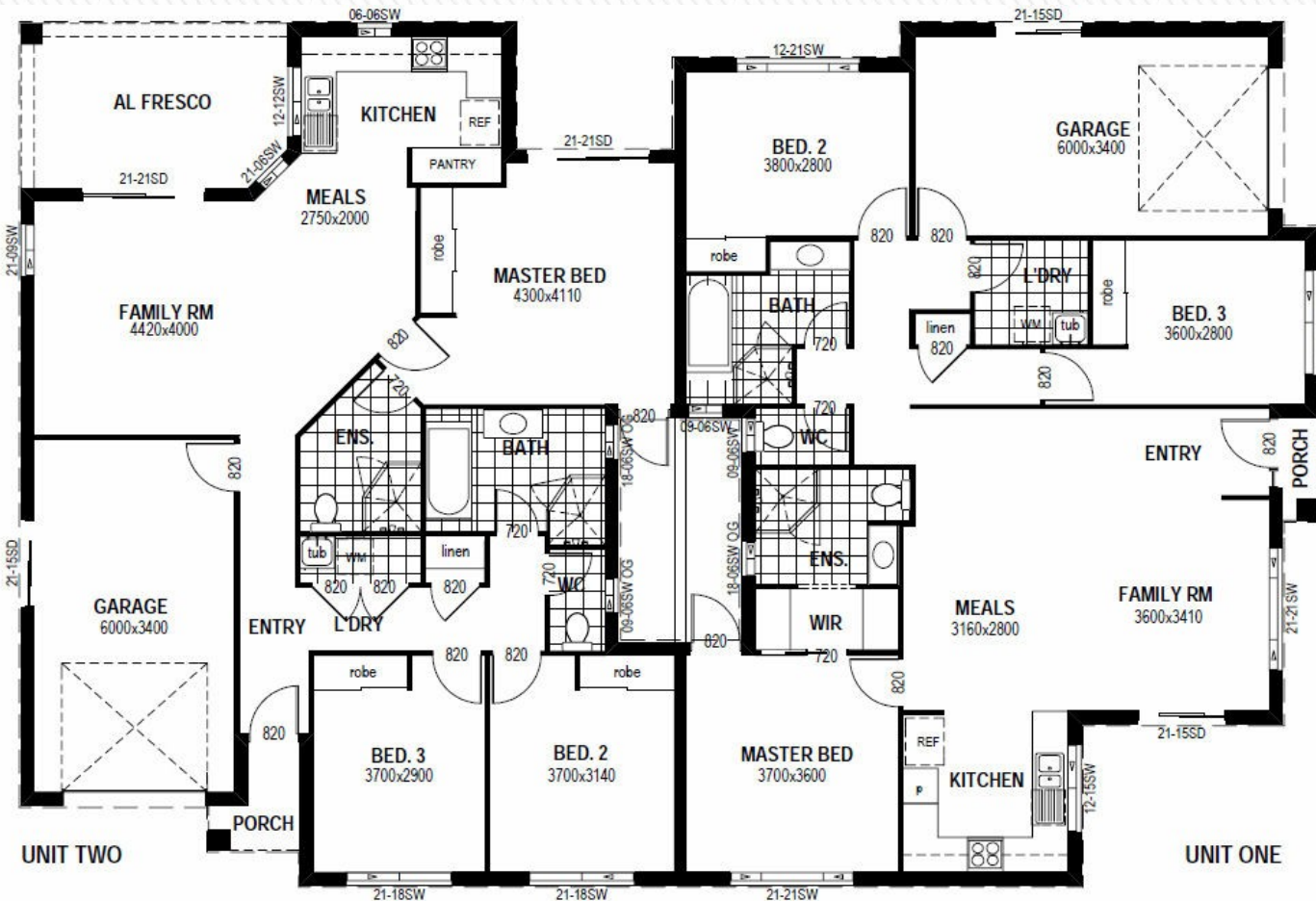
Duplex Design: 293D

		
2 x 3 Beds	2 x 2 Bath	2 x Single Car



UNIT TWO	
AREAS	SQ METRES
LIVING	111.2
GARAGE	22.8
PORCH	2.1
ALFRESCO	12.4
COURTYARD	4.0
TOTAL	152.5

UNIT ONE	
AREAS	SQ METRES
LIVING	113.4
GARAGE	22.7
PORCH	1.1
COURTYARD	4.0
TOTAL	141.2



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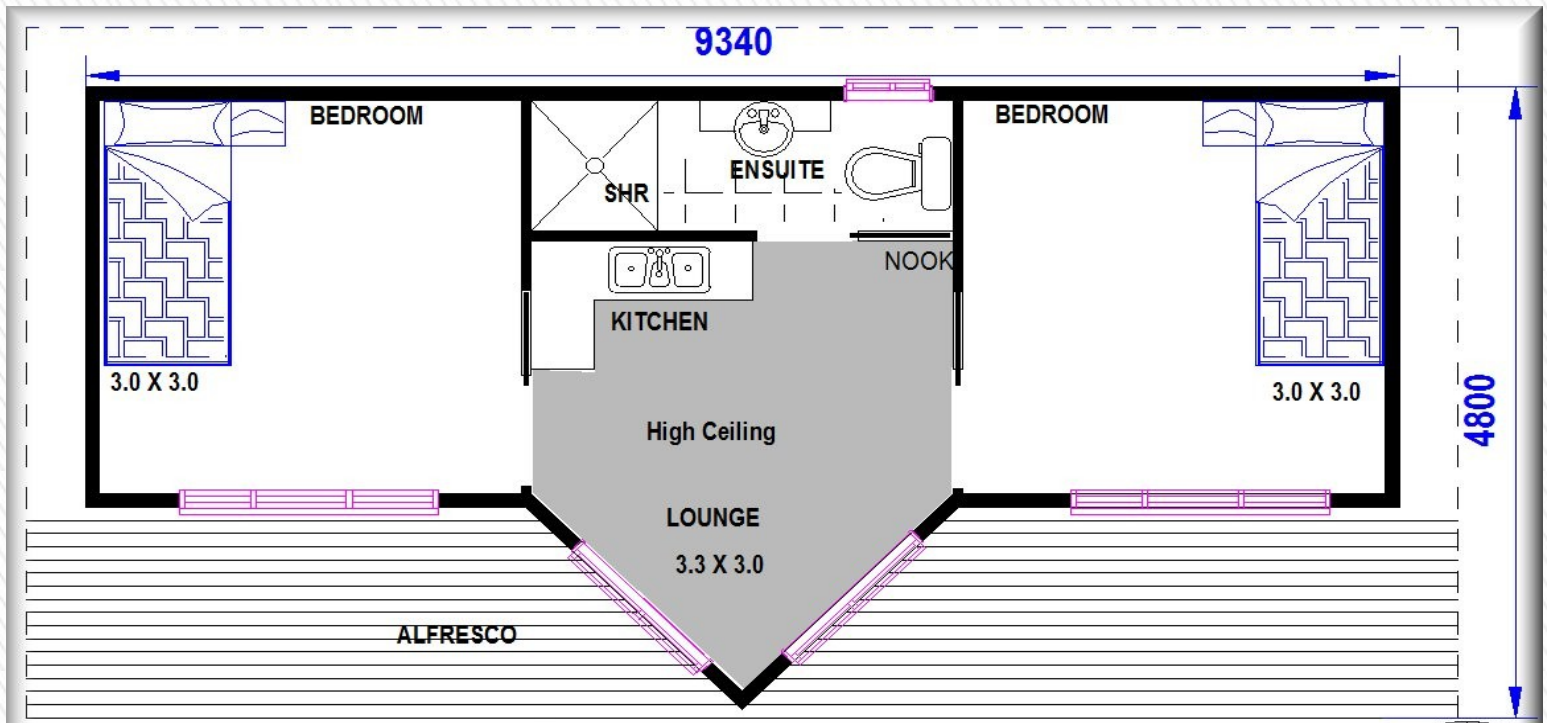
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Home Design: DRAGONFLY 44

		
2 Beds	1 Bath	



Length 9.340 metres
Width 4.800 metres



Dragonfly 44

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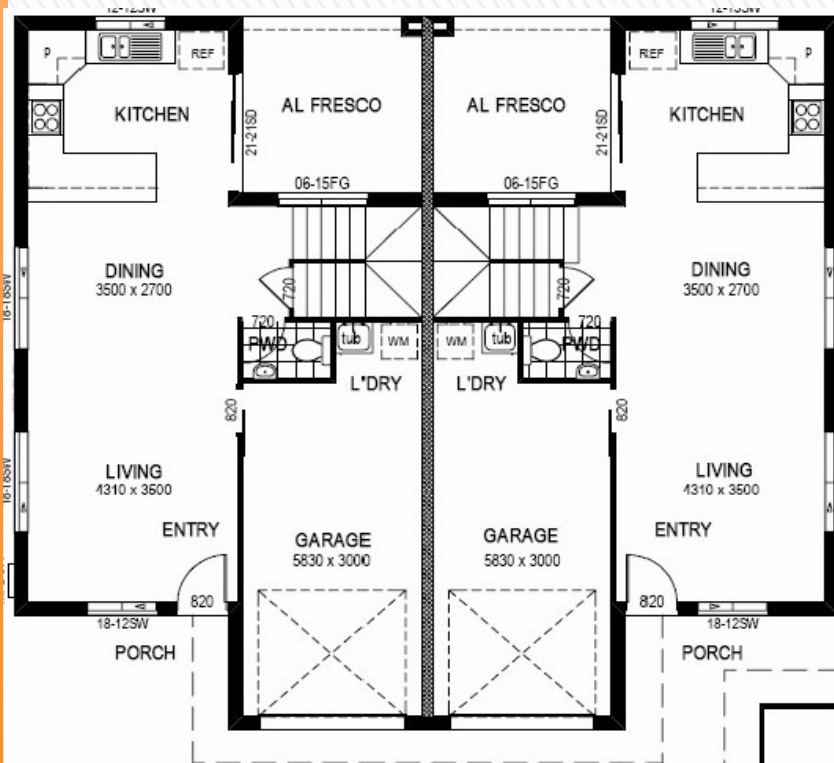
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Duplex Design: NW 296D

		
2 x 3 Beds	2 x 2 Bath	2 x Single Car



New Plan: NW296

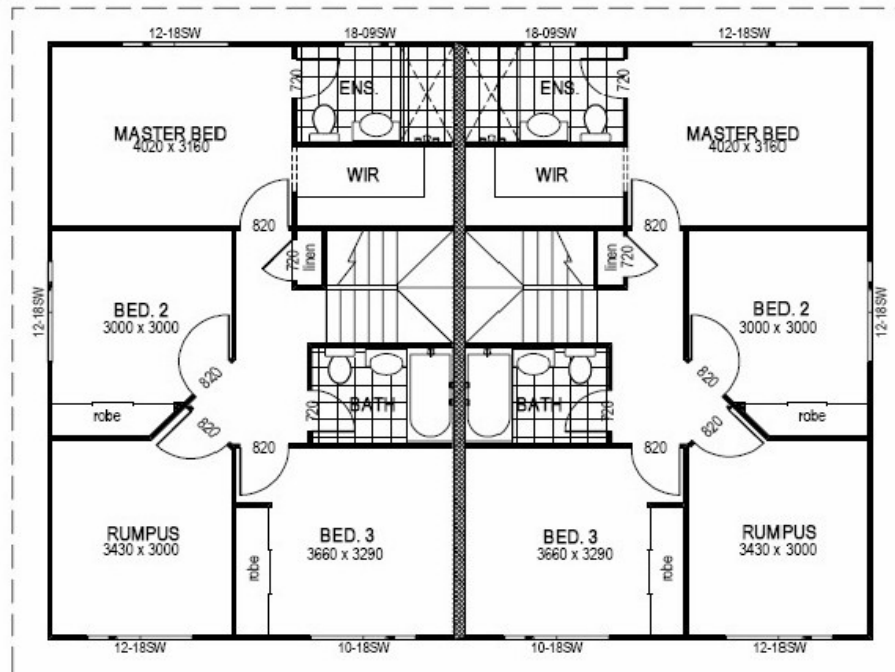
AREAS	SQ METRES
LOWER LIVING	94.6
UPPER LIVING	137.4
GARAGE	45.8
ALFRESCO	18.4
TOTAL	296.2

Metric Sizes

31.96 squares

Total Area: 296 m2

Width of home: 14.2 meters
 Depth of Home: 14.5 meters
 Ceiling Heights: 2.4 meters



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Home Design: OTTER 44

		
2 Beds	1 Bath	



Length 9.300 metres
Width 6.800 metres

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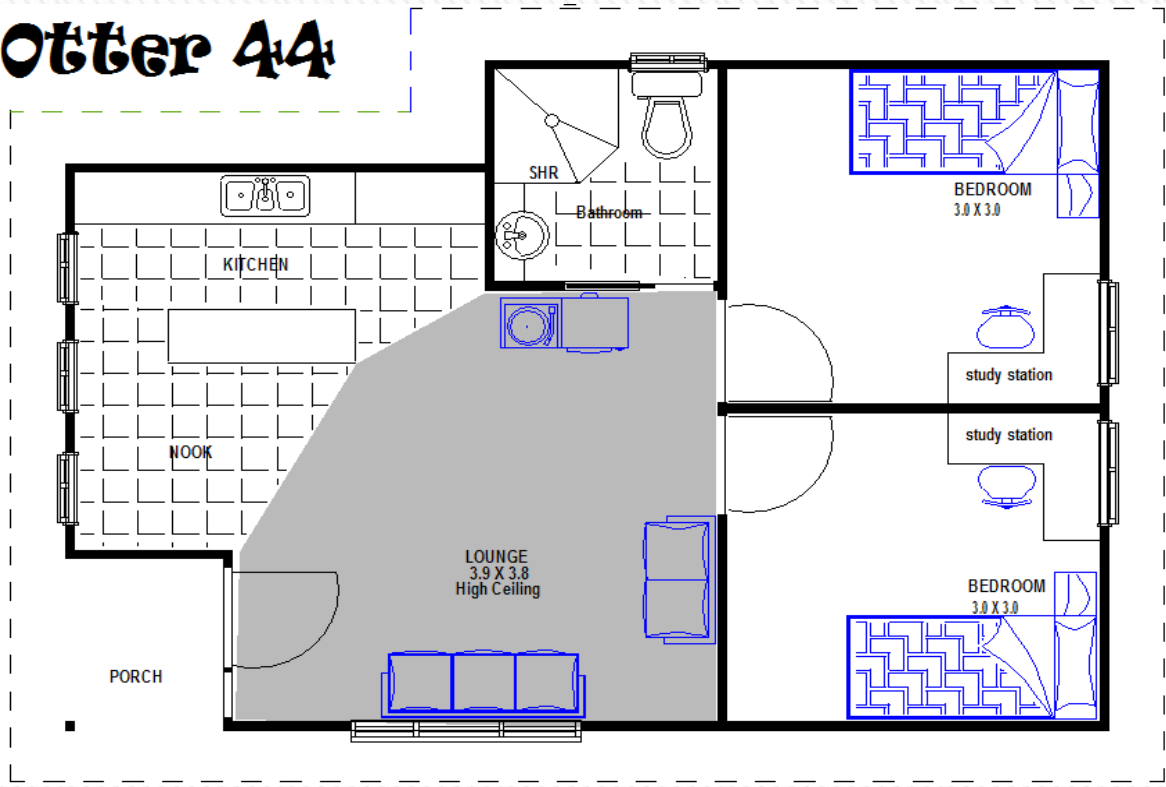
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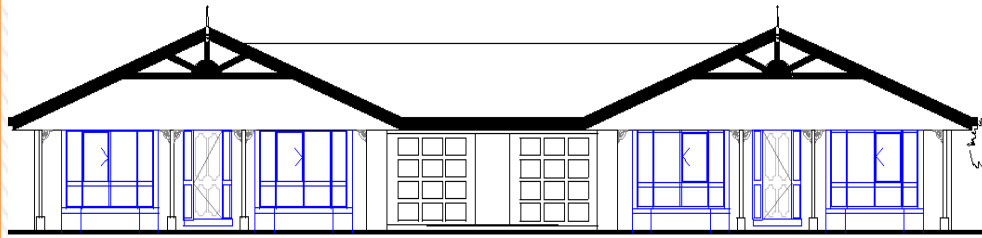





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Duplex Design: 230D



		
2 x 3 Beds	2 x 2 Bath	2 x Single Car

Metric Sizes

24.75 squares
 Total Area: 229.9 m2
 Width of home: 19.3 meters
 Depth of Home: 13.8 meters
 Ceiling Heights: 2.4 meters

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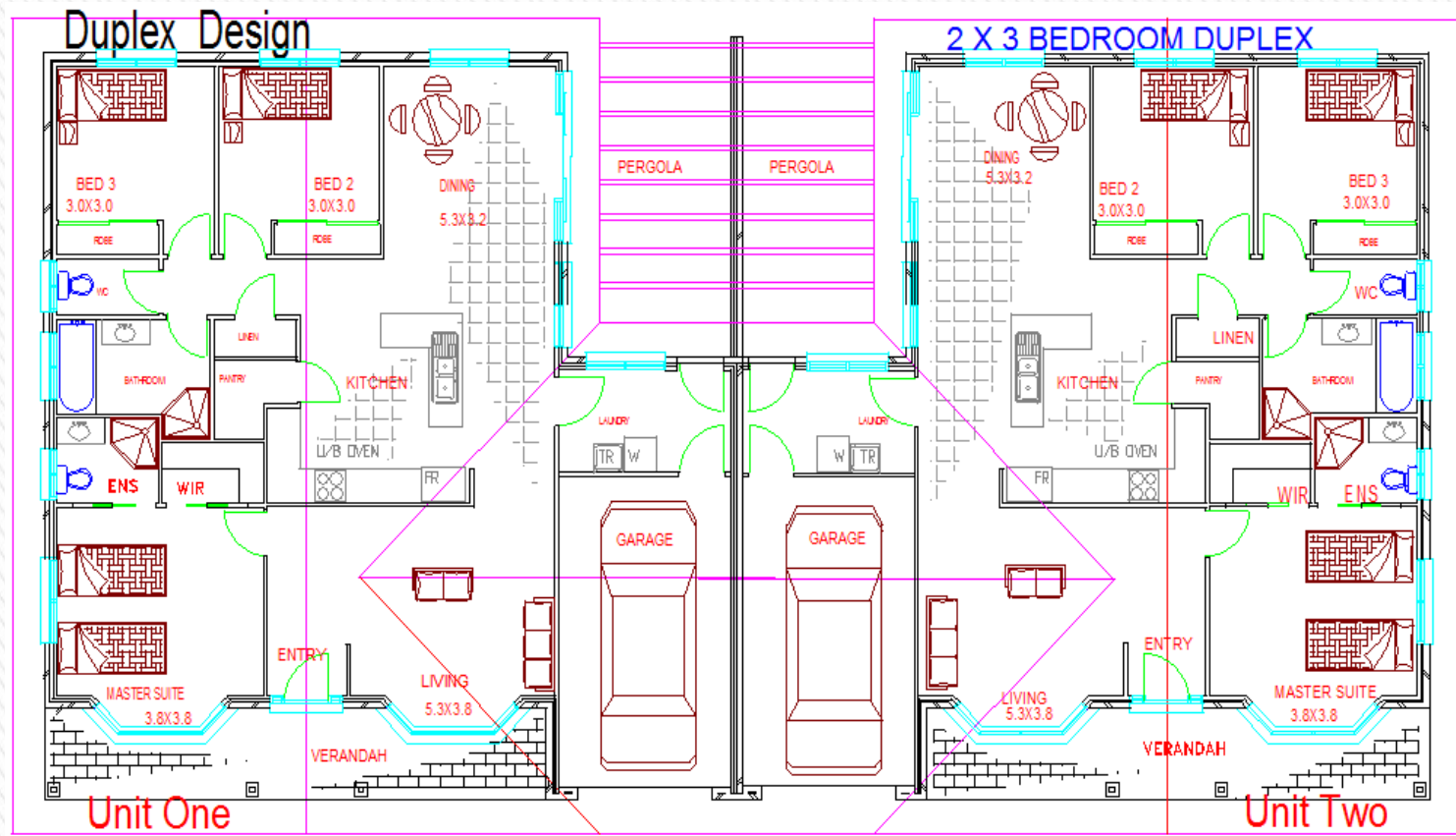
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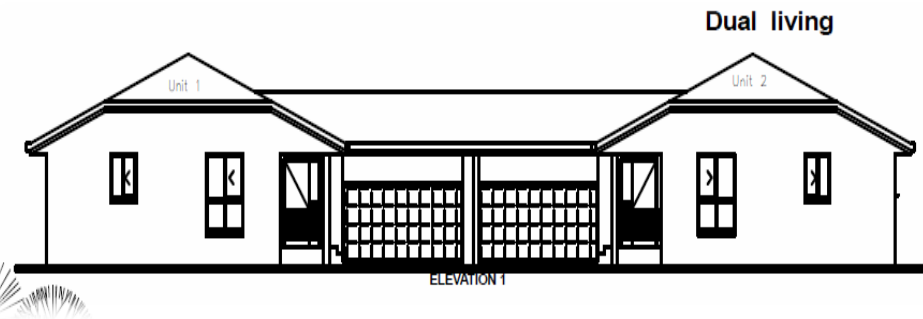
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Duplex Design: 276D

		
2 x 3 Beds	2 x 2 Bath	2 x Dbl Car



Metric Sizes

29.7 squares

Total Area: 276 m2

Width of home: 34.1 meters
Depth of Home: 13.8 meters
Ceiling Heights: 2.4 meters

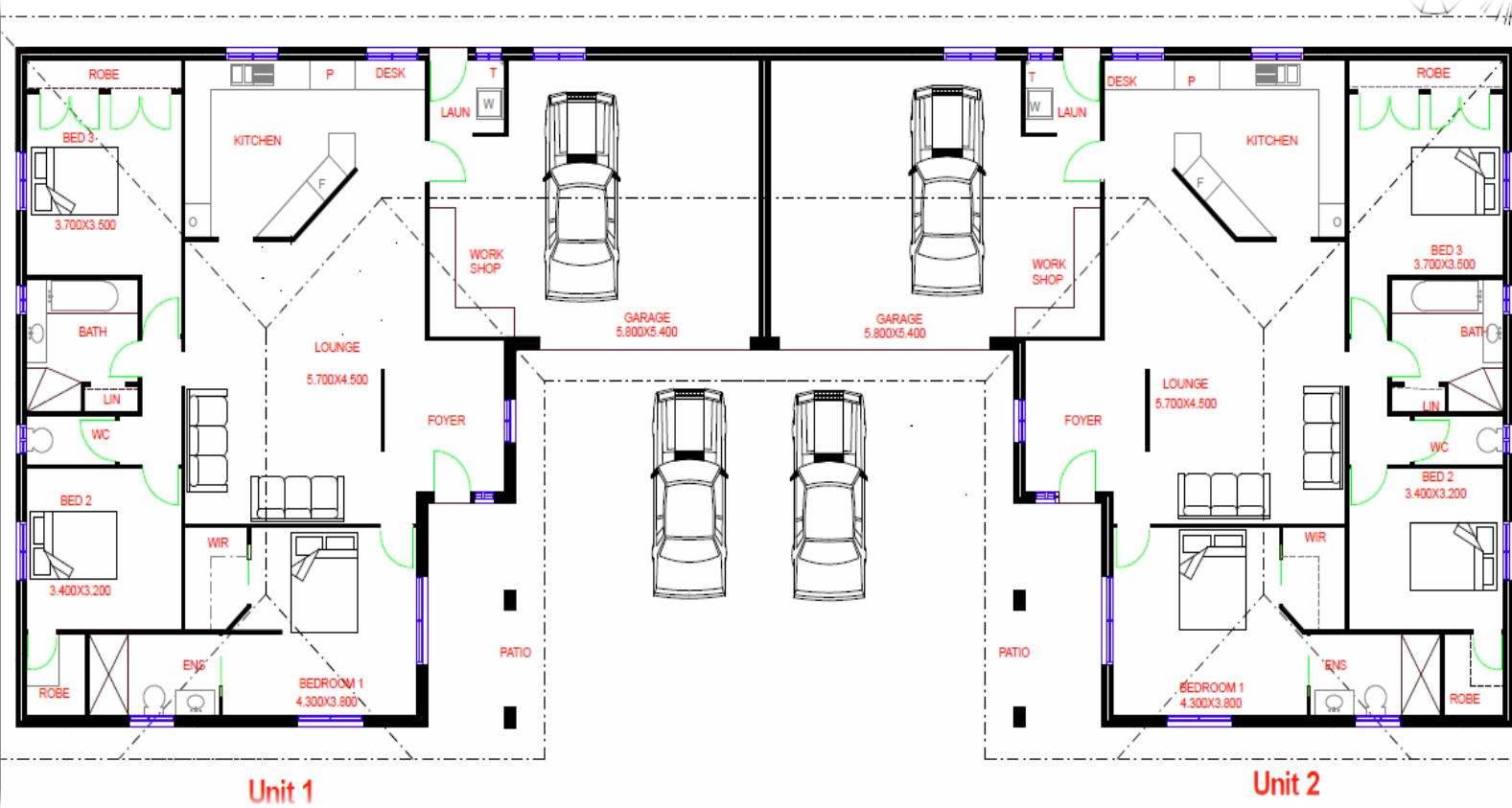
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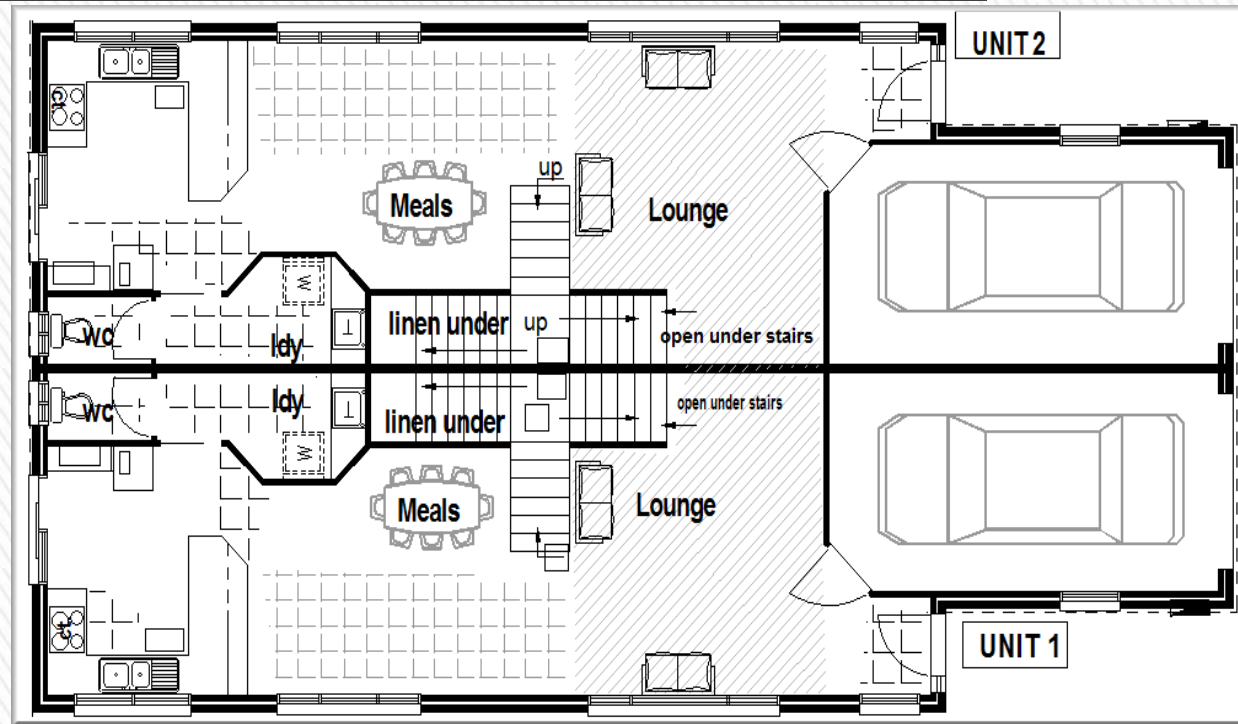
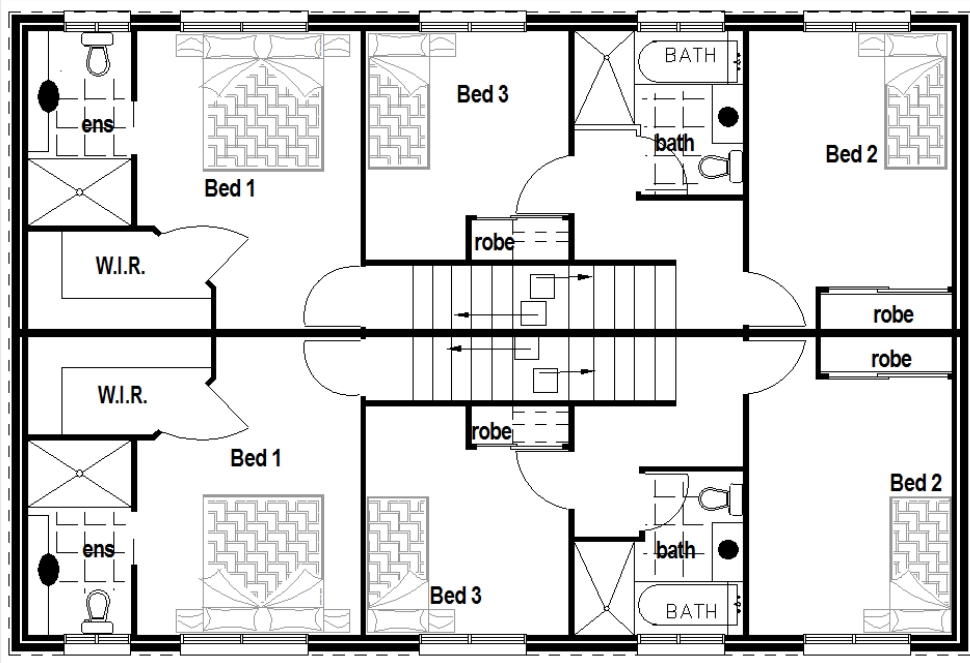
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Duplex Design: 297D



2 x 3 Beds	2 x 2 Bath	2 x Single Car



Metric Sizes
 31.96 squares
 Total Area: 297 m²

 Width of home: 9.4 meters
 Depth of Home: 18.5 meters
 Ceiling Heights: 2.4 meters

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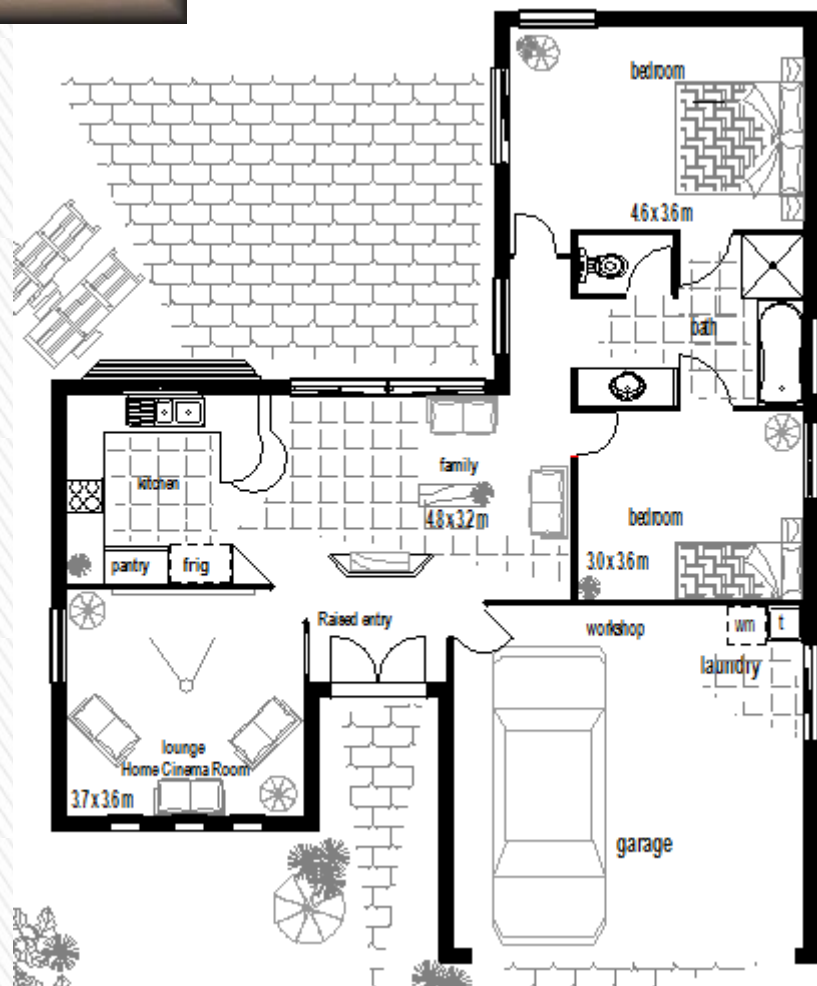
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Home Design: CLM 125



		
2 Beds	1 Bath	2 Car

Length 16.3 metres
Width 10.8 metres



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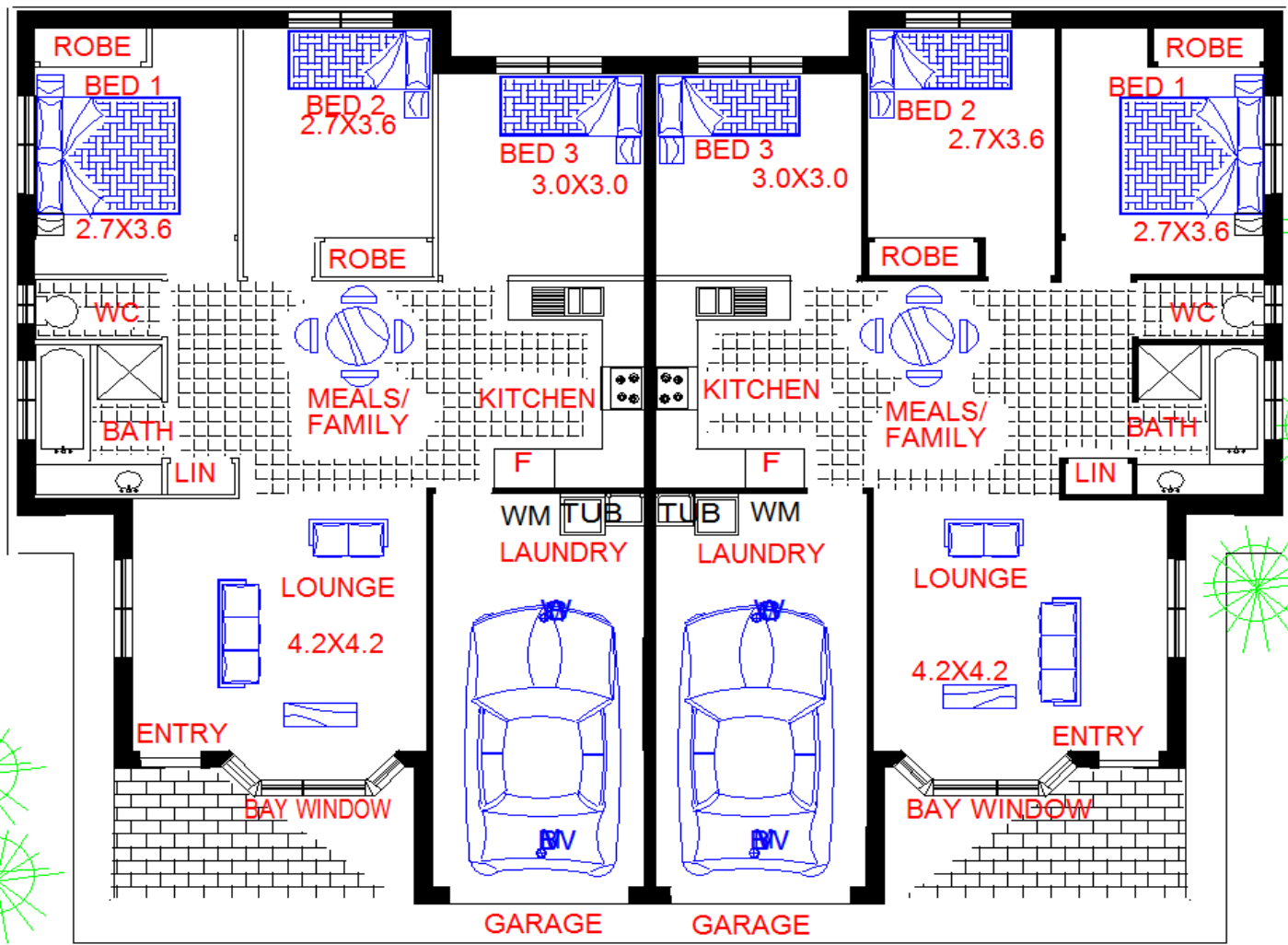
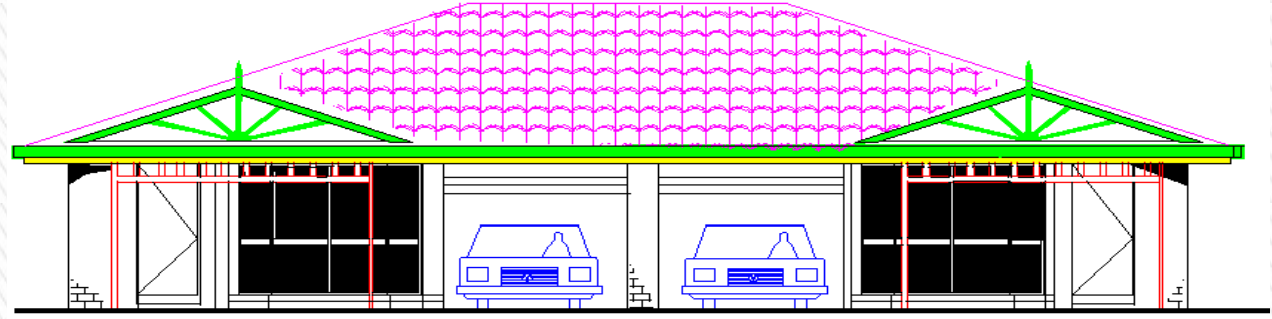
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Duplex Design: CLM 223 D

		
2 X 3 Beds	2 X 1 Bath	2 Car






Metric Sizes
24.1 squares
Total Area: 223 m2

Width of home: 18.2 meters
Depth of Home: 14.3 meters
Ceiling Heights: 2.4 meters

Home Design: KIWI 40



		
2 Beds	1 Bath	

Length 4.340 metres
Width 9.340 metres

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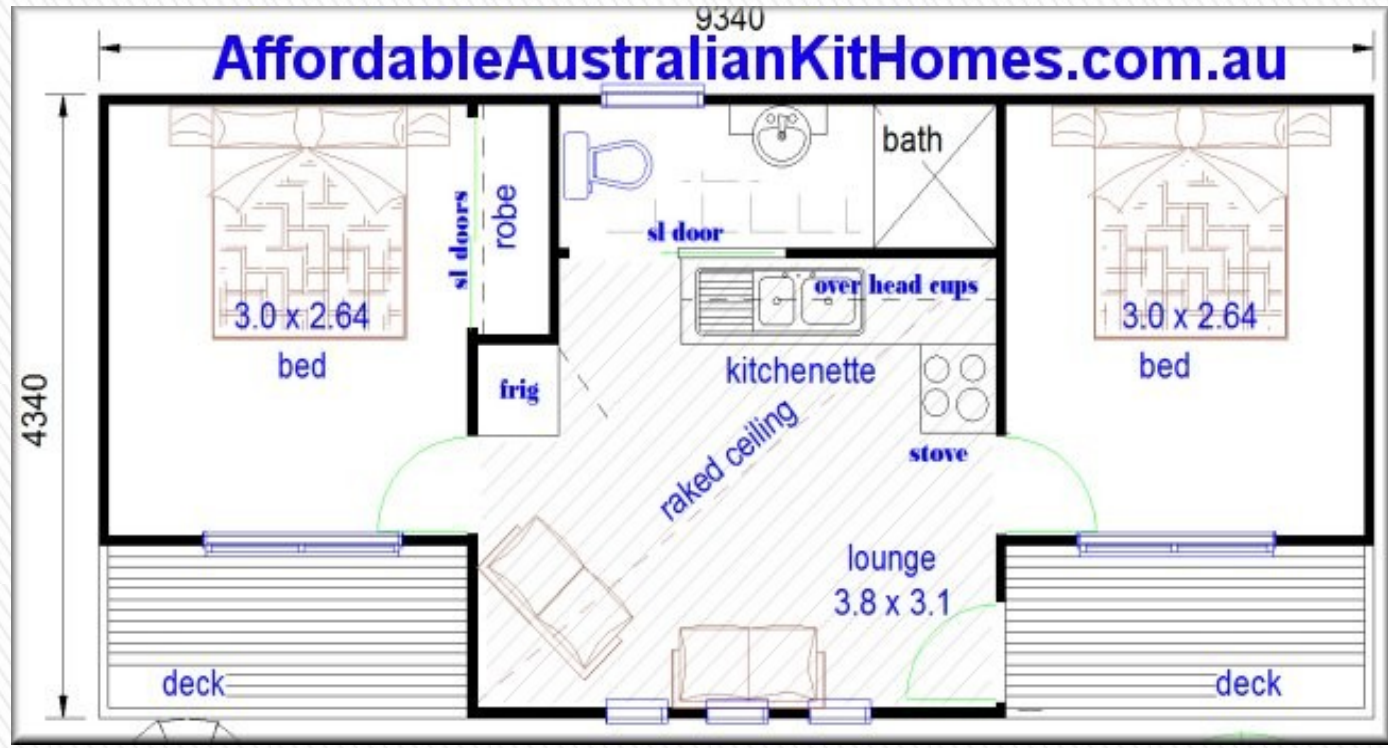
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Duplex Design: 376 Swallow

		
2 x 3 Beds	2 x 2 Bath	2 x Double Car

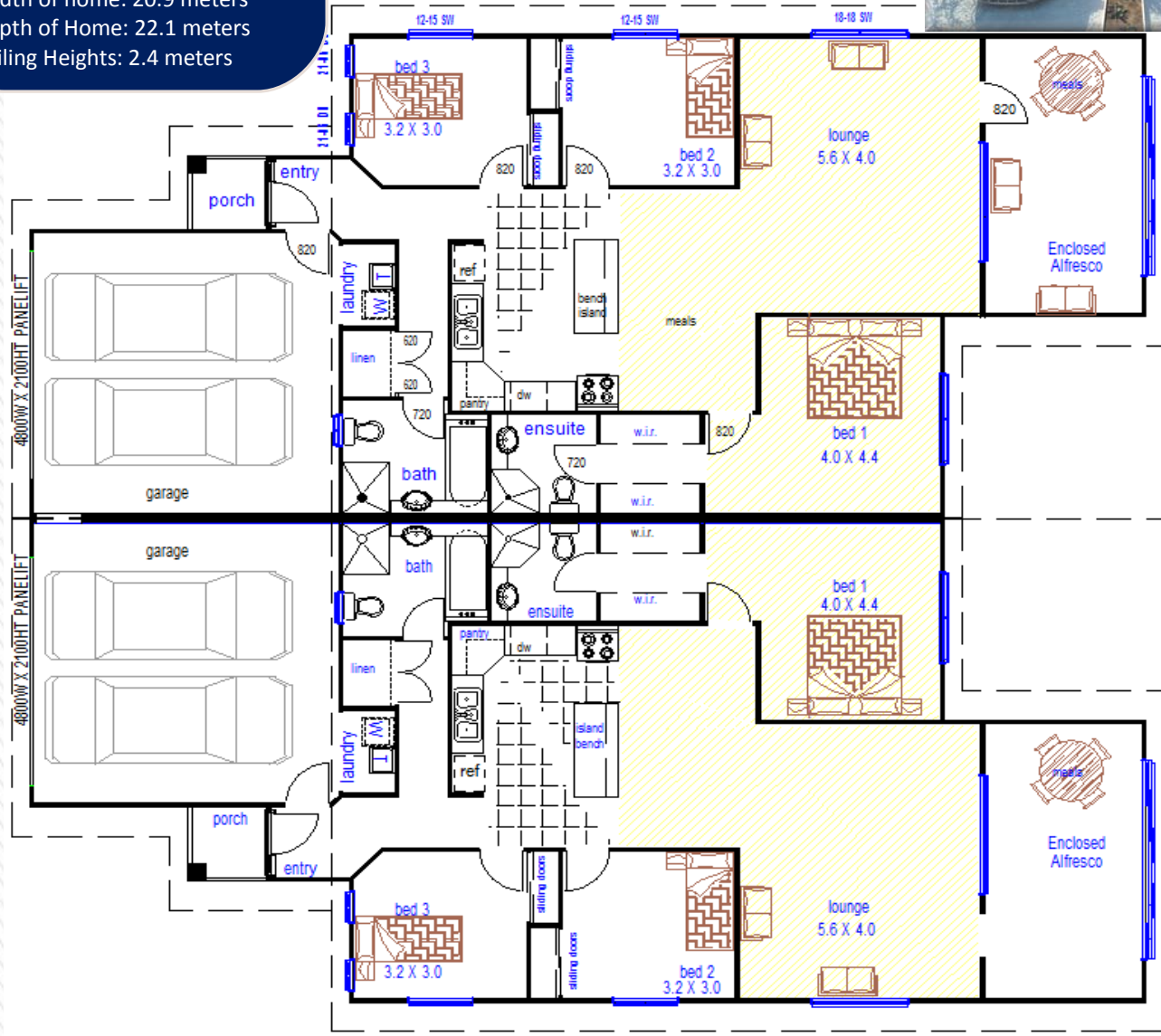


Metric Sizes

 36.4 squares

 Total Area: 338.48 m2

 Width of home: 20.9 meters
 Depth of Home: 22.1 meters
 Ceiling Heights: 2.4 meters



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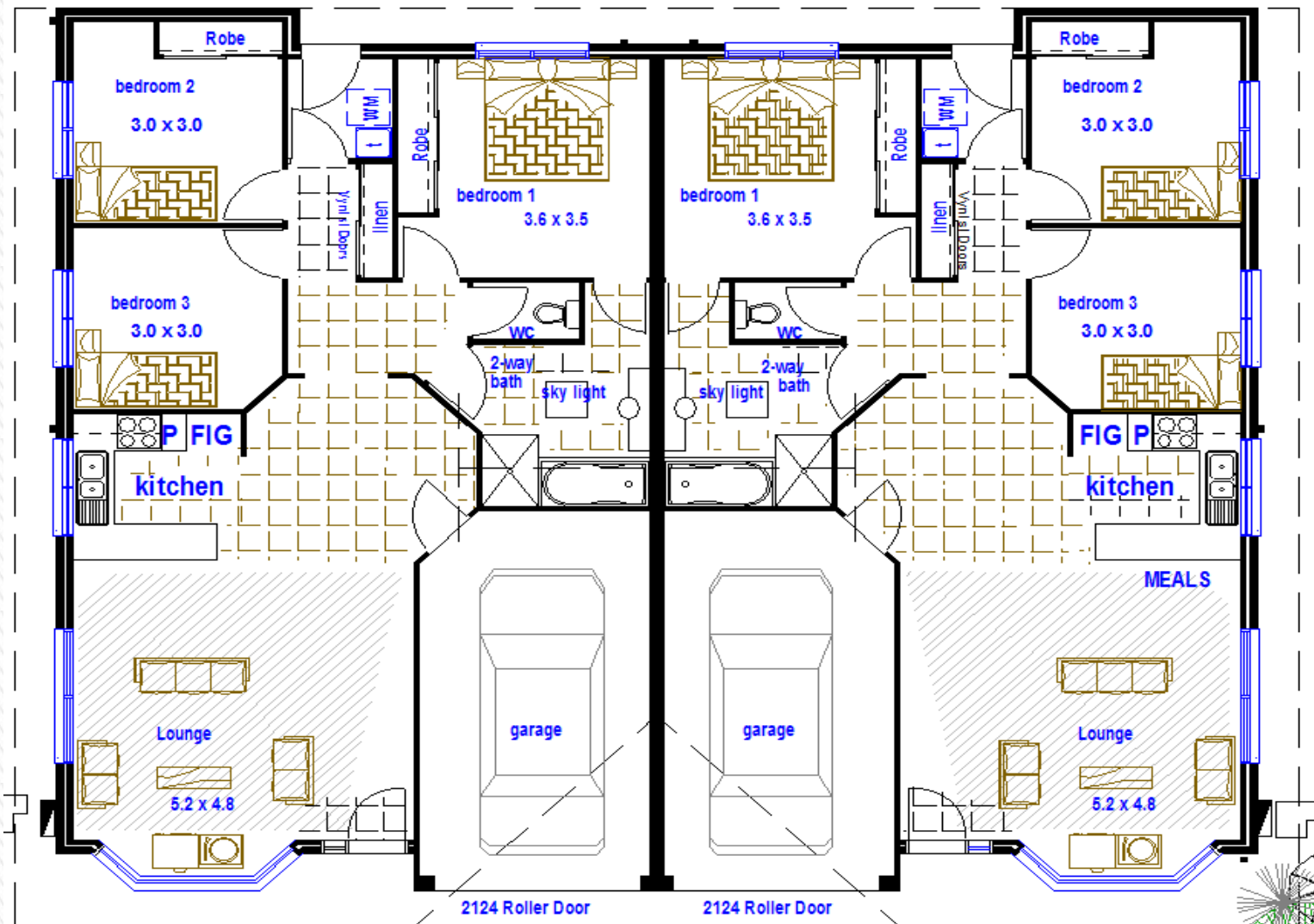
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Duplex Design: 237D

		
2 x 3 Beds	1 x 2 Bath	2 x Single Car

Metric Sizes
 29.7 squares
 Total Area: 276 m2

 Width of home: 34.1 meters
 Depth of Home: 13.8 meters
 Ceiling Heights: 2.4 meters



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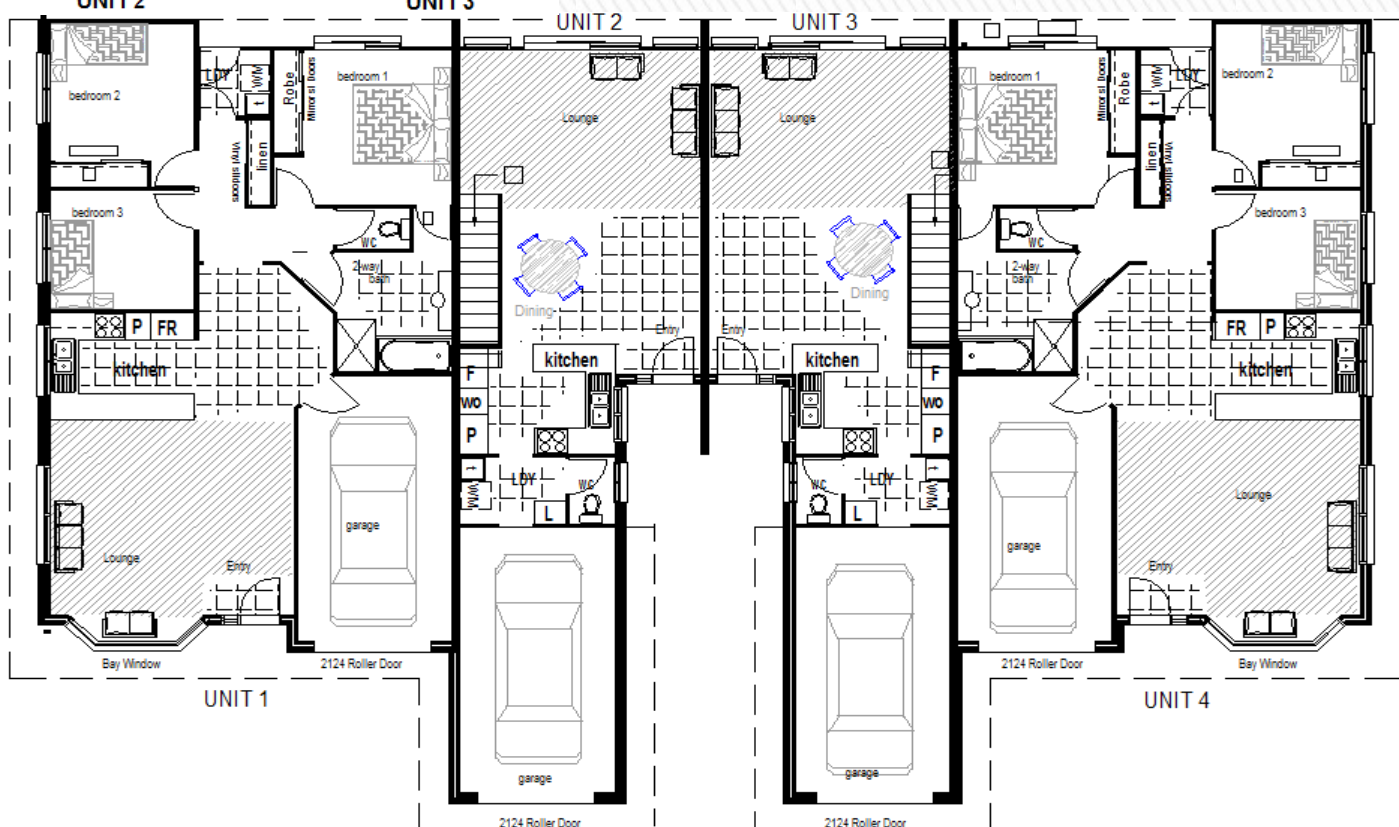
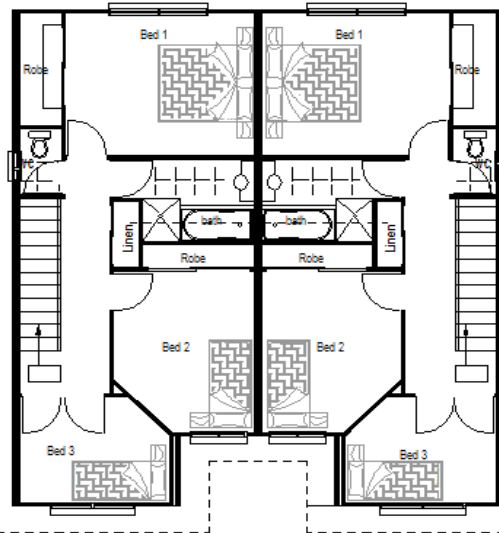
Duplex Design: 380D

Metric Sizes

40.05 squares
Total Area: 379.3 m2

Width of home: 27.57 meters
Depth of Home: 17.66 meters
Ceiling Heights: 2.4 meters

		
4 x 3 Beds	4 x 1 Bath	4 x Single Car



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Duplex Design: NW 239D

		
2 x 2 Beds	1 x 1 Bath	2 x Single Car

Metric Sizes

25.7 squares

Total Area: 239 m2

Width of home: 9.4 meters
 Depth of Home: 26.5 meters
 Ceiling Heights: 2.4 meters



plan no. -

AREAS	SQ METRES
LIVING	182.2
GARAGE	46.4
PORCH	10.8
TOTAL	239.4

Australian Floor Plans
 New Design
 Plan Number NW239

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Duplex Design: NW 313D

		
2 x 3 Beds	2 x 2 Bath	2 x Single Car



New Plan :nw313

AREAS	SQ METRES
LIVING	234.9
GARAGE	41.6
PORCH	5.8
ALFRESCO	31.4
TOTAL	313.7

Metric Sizes

33.9 squares

Total Area: 315 m2

Width of home: 14.4 meters
 Depth of Home: 27.2 meters
 Ceiling Heights: 2.4 meters

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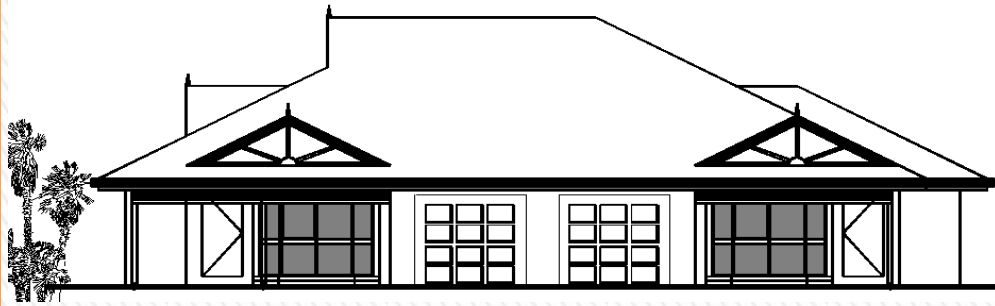


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Duplex Design: 230D



		
2 x 3 Beds	2 x 1 Bath	2 x Single Car

Metric Sizes

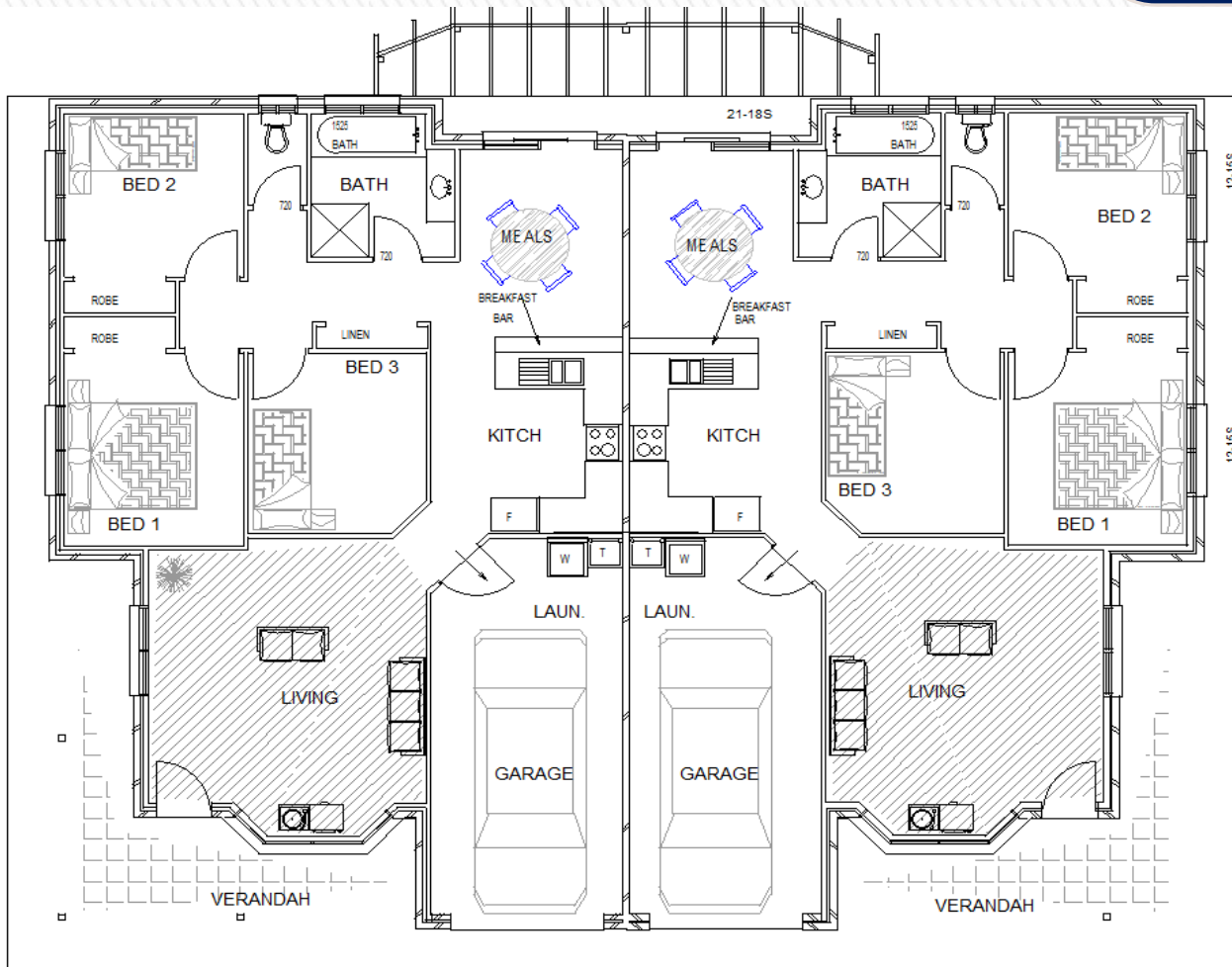
24.75 squares

Total Area: 230 m2

Width of home: 13.2 meters

Depth of Home: 18.5 meters

Ceiling Heights: 2.4 meters



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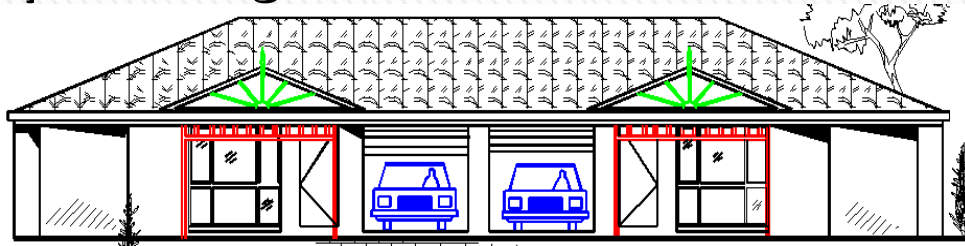
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Duplex Design: 226D



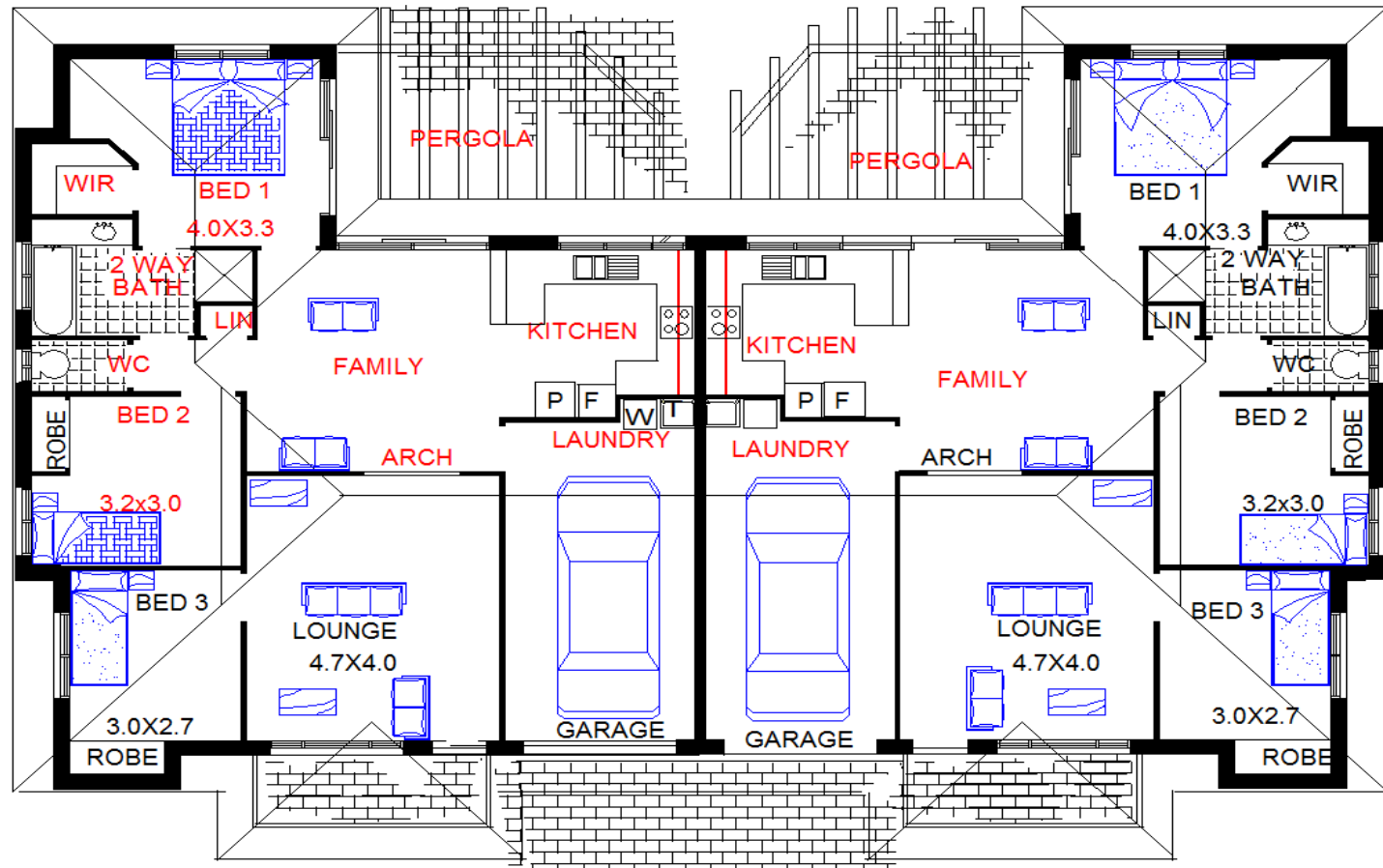
		
2 x 3 Beds	2 x 1 Bath	2 x Single Car

Metric Sizes

 24.3 squares

 Total Area: 226 m2

 Width of home: 12.3 meters
 Depth of Home: 20.5 meters
 Ceiling Heights: 2.4 meters



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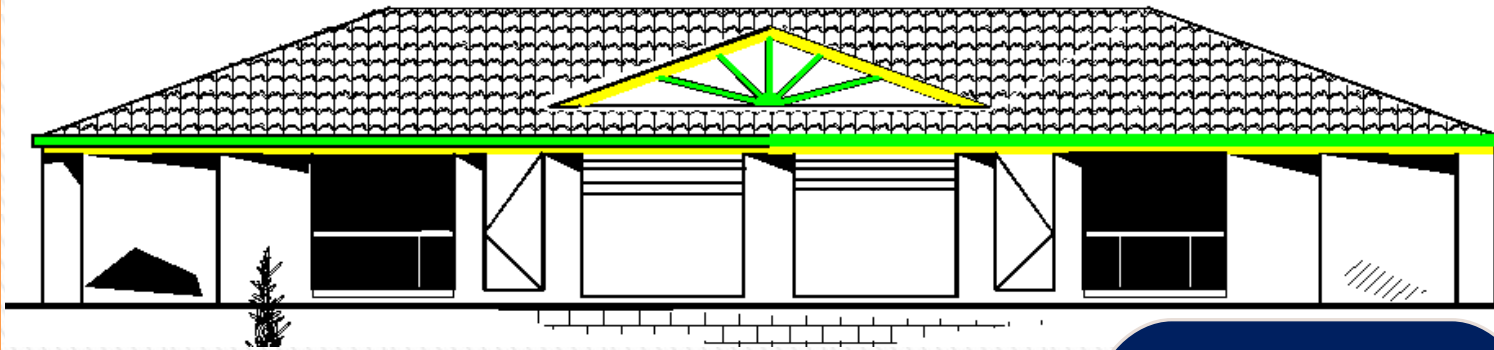
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Duplex Design: 190D

		
2 x 2 Beds	2 x 1 Bath	2 x Single Car

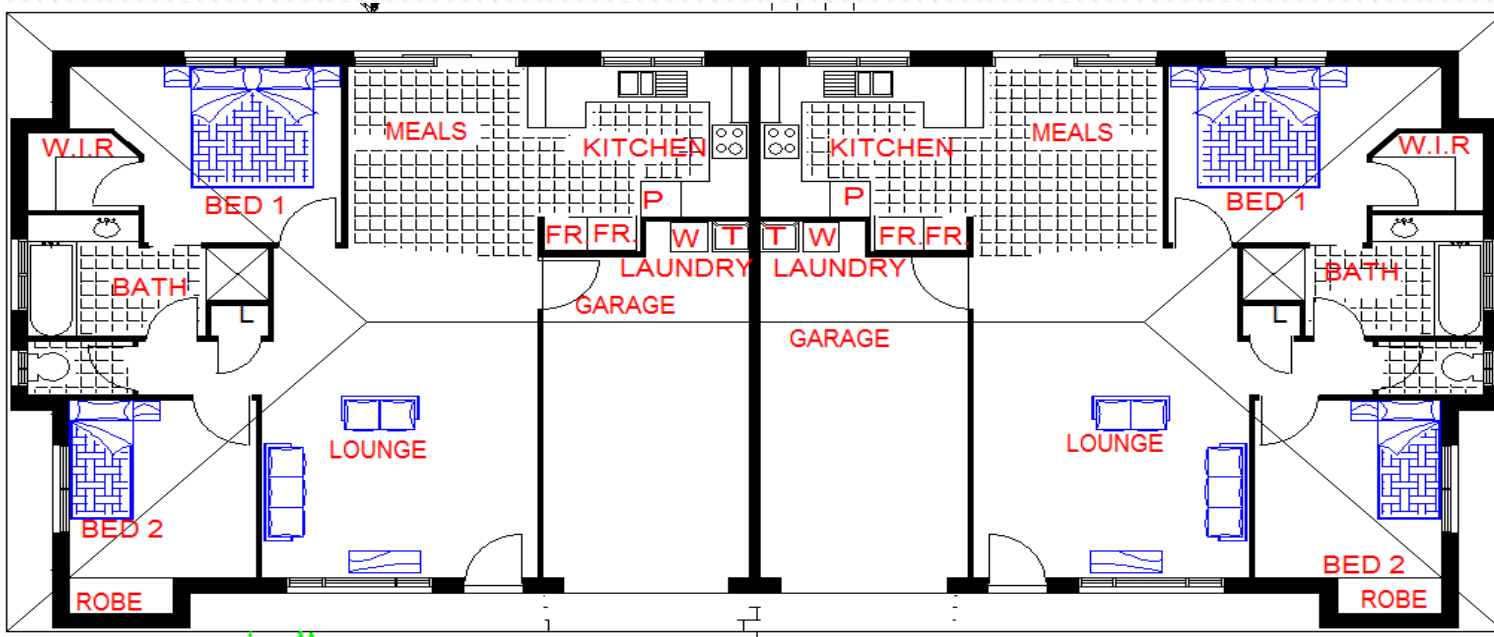


Metric Sizes

 20.4 squares

 Total Area: 190 m2

 Width of home: 10.5 meters
 Depth of Home: 21.7 meters
 Ceiling Heights: 2.4 meters



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Duplex Design: 520D

		
4 x 3 Beds	4 x 1 Bath	4 x Single Car

Metric Sizes

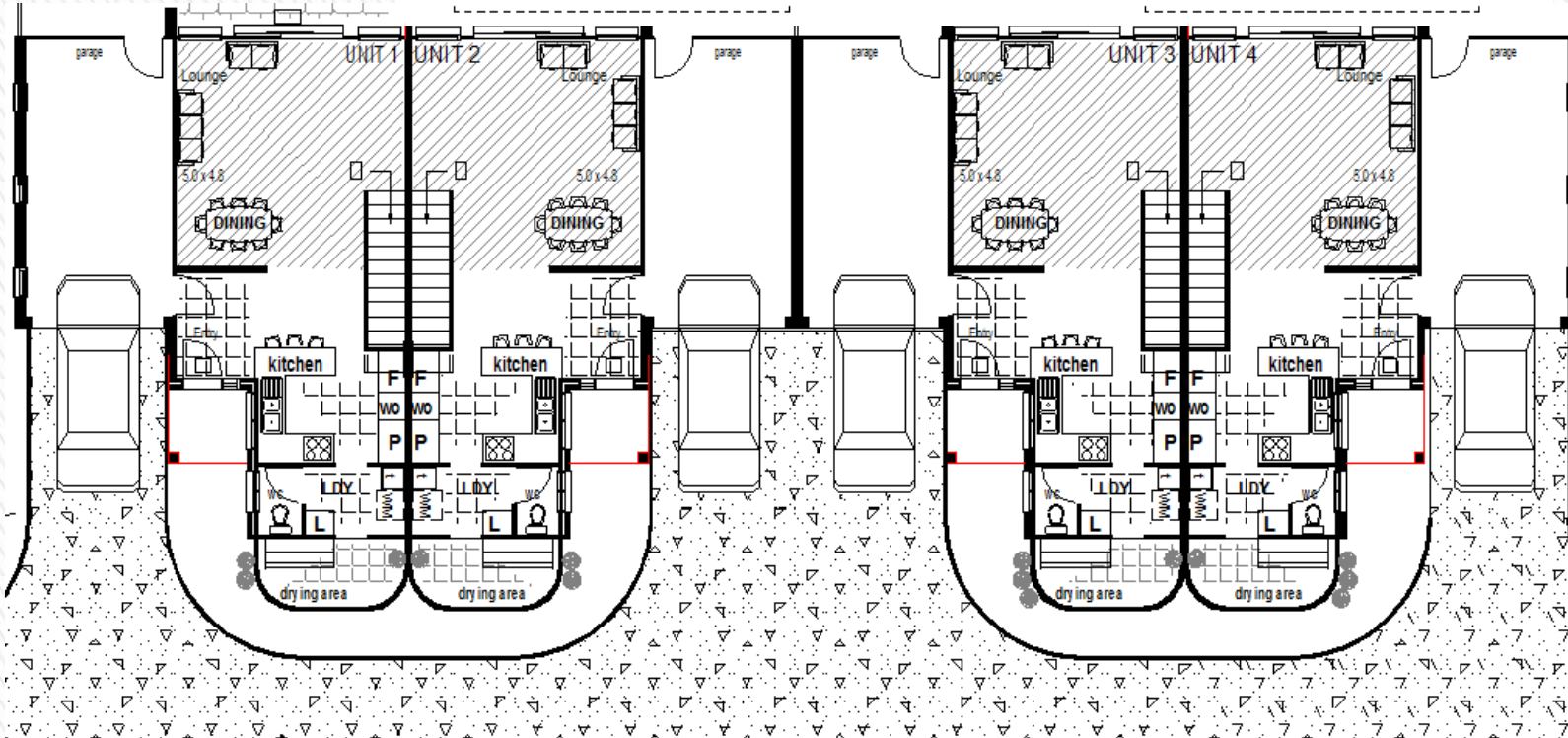
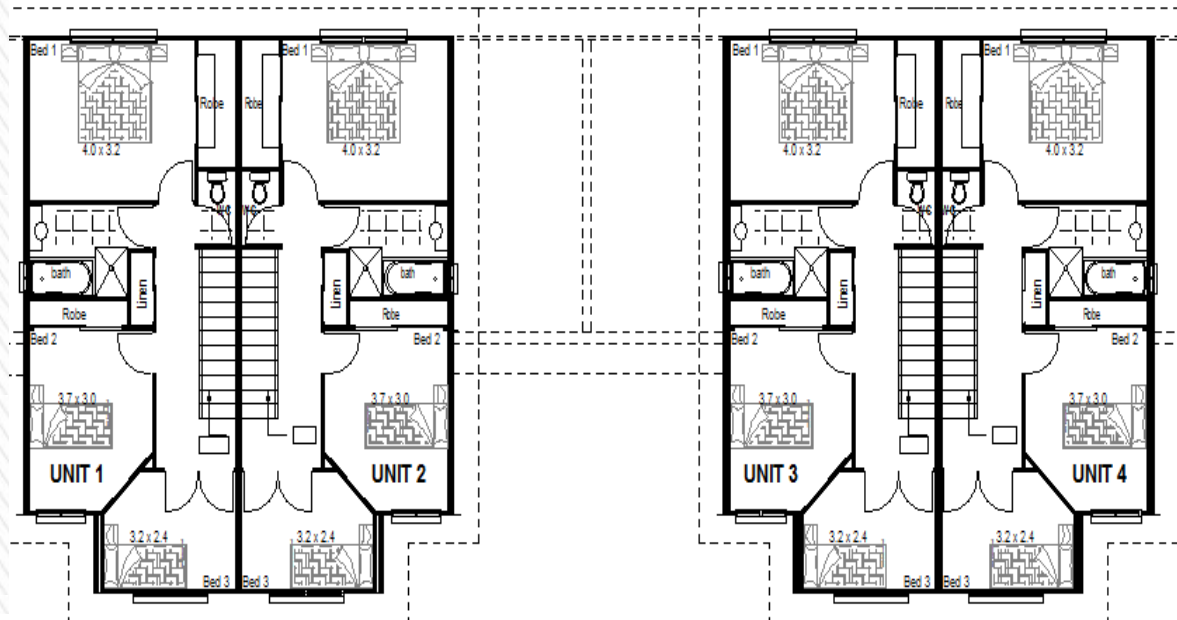
55.94 squares

Total Area: 520 m²

Width of home: 12.6 meters

Depth of Home: 35.3 meters

Ceiling Heights: 2.4 meters



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Duplex Design: 344D Triplex

		
2 x 3 Beds 1 x 2 Beds	3 x 1 Bath	3 x Single Car



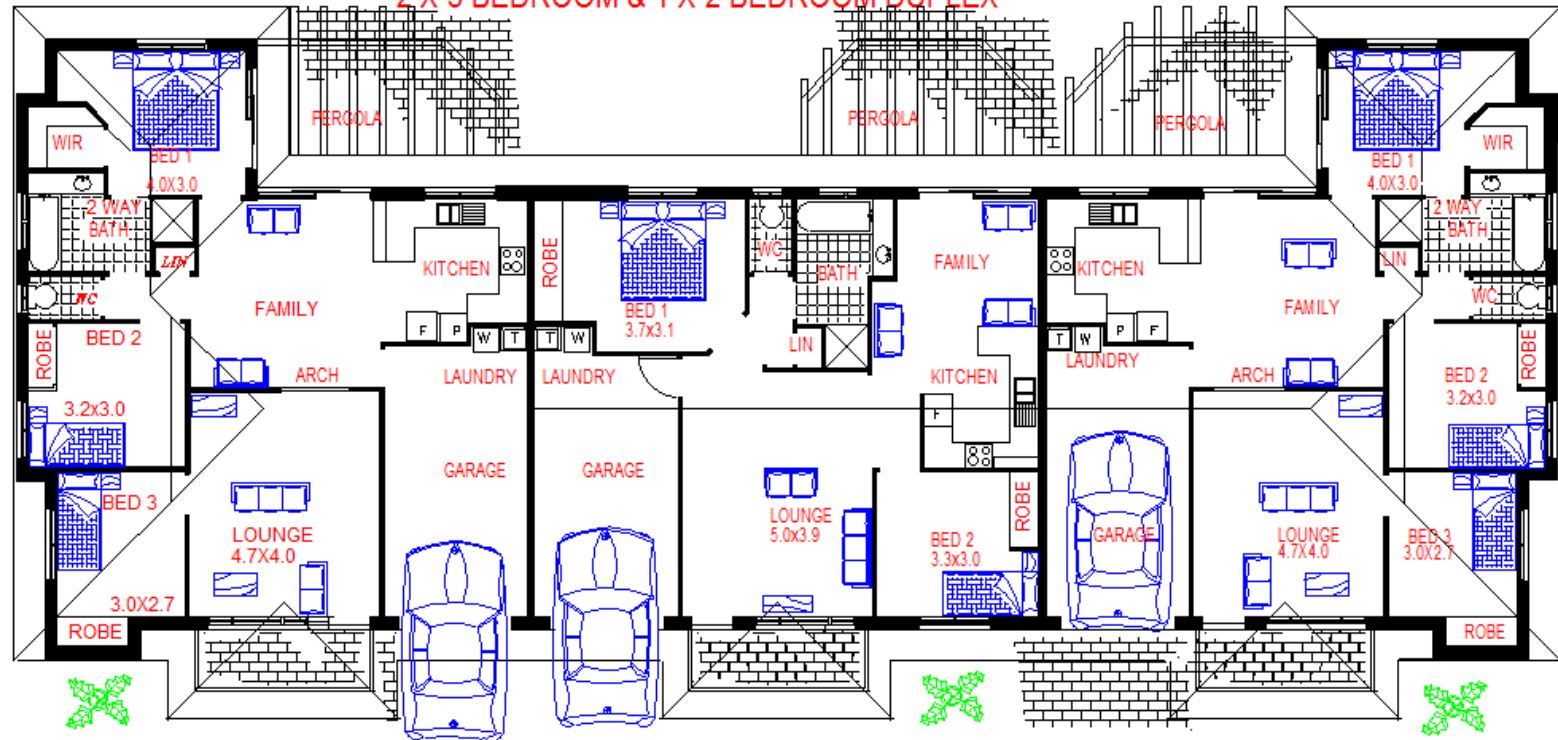
Metric Sizes

 37.0 squares

 Total Area: 344 m2

 Width of home: 14.8 meters
 Depth of Home: 32.3 meters
 Ceiling Heights: 2.4 meters

2 X 3 BEDROOM & 1 X 2 BEDROOM DUPLEX



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Duplex Design: NW 252D



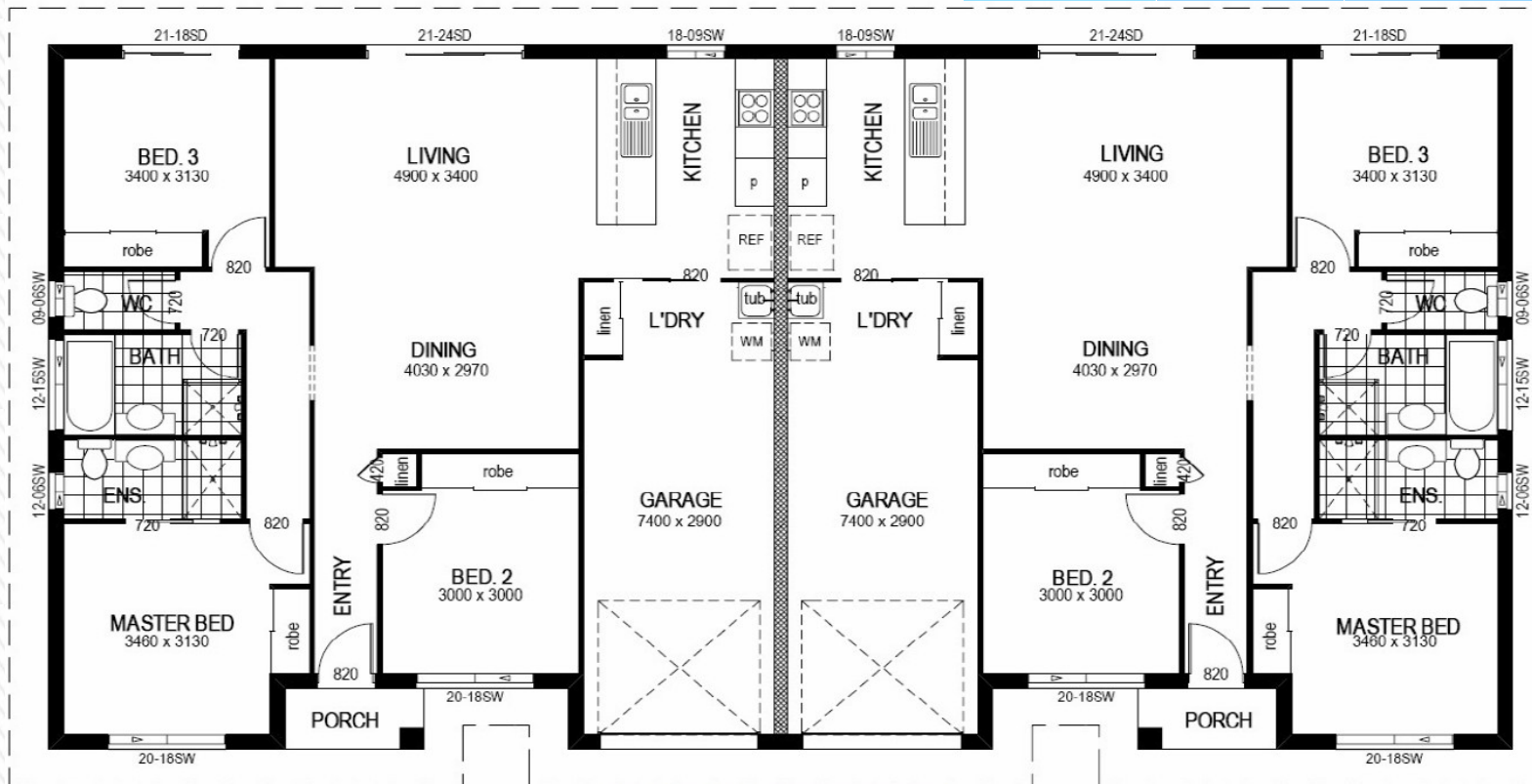
2 x 3 Beds



2 x 2 Bath



2 x Single Car



New Plan :NW252

AREAS	SQ METRES
LIVING	202.0
GARAGE	47.0
PORCH	3.0
TOTAL	252.0

Metric Sizes

27.2 squares

Total Area: 252 m2

Width of home: 12.9 meters
 Depth of Home: 21.5 meters
 Ceiling Heights: 2.4 meters

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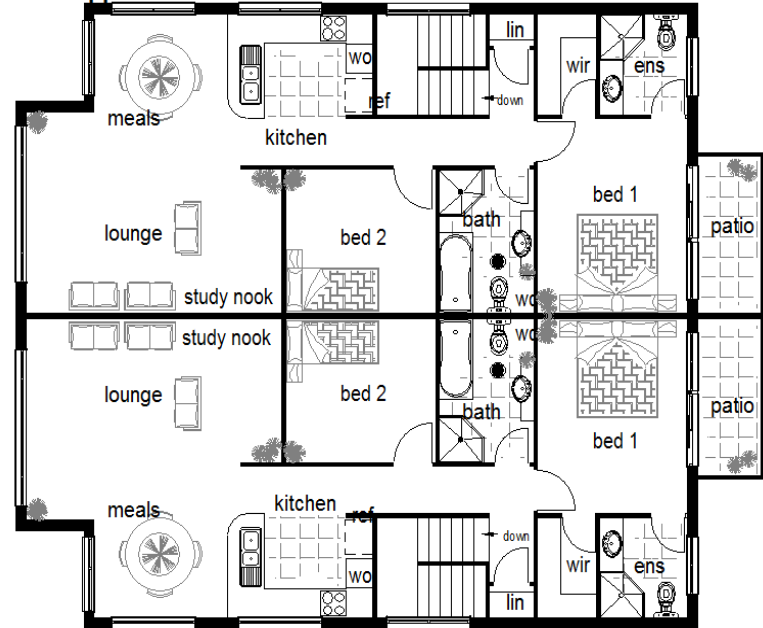
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Duplex Design: 333D

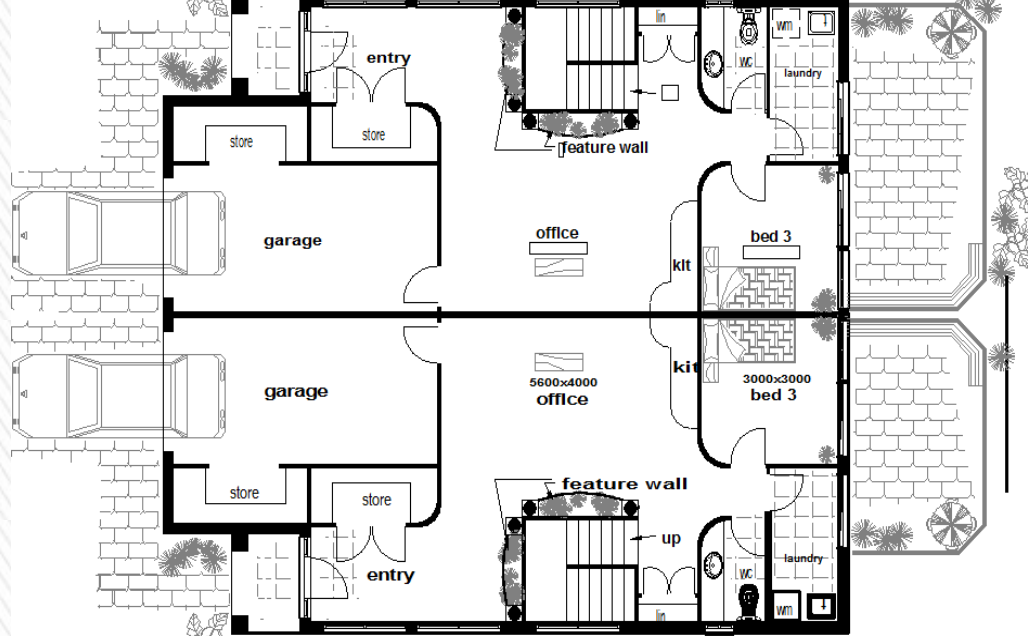
		
2 x 3 Beds	2 x 2 Bath	2 x Single Car

- Areas**
- Unit 1 Lower Level = 68.5 m²
 - Unit 1 Upper Level = 92.8 m²
 - Unit 1 Porch = 3.0 m²
 - Unit 1 Back Patio = 5.1 m²
 - Unit 1 Garage = 22.8 m²
 - Unit 2 Lower Level = 68.5 m²
 - Unit 2 Upper Level = 92.8 m²
 - Unit 2 Porch = 3.0 m²
 - Unit 2 Back Patio = 5.1 m²
 - Unit 2 Garage = 22.8 m²
- Total AREA = 333 M²

unit 1 upper floor



unit 2 upper floor



unit 2

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Duplex Design: 336



2 x 2 Beds 1 x 3 Bed	3 x 1 Bath	2 x Single Car

- ### Features
- * Triplex Design
 - * 3 x 2 x 2 Beds
 - * Spacious Lounge
 - *



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PLAN NO: CLN 345D
 600 sq ft

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Duplex Design: 234D



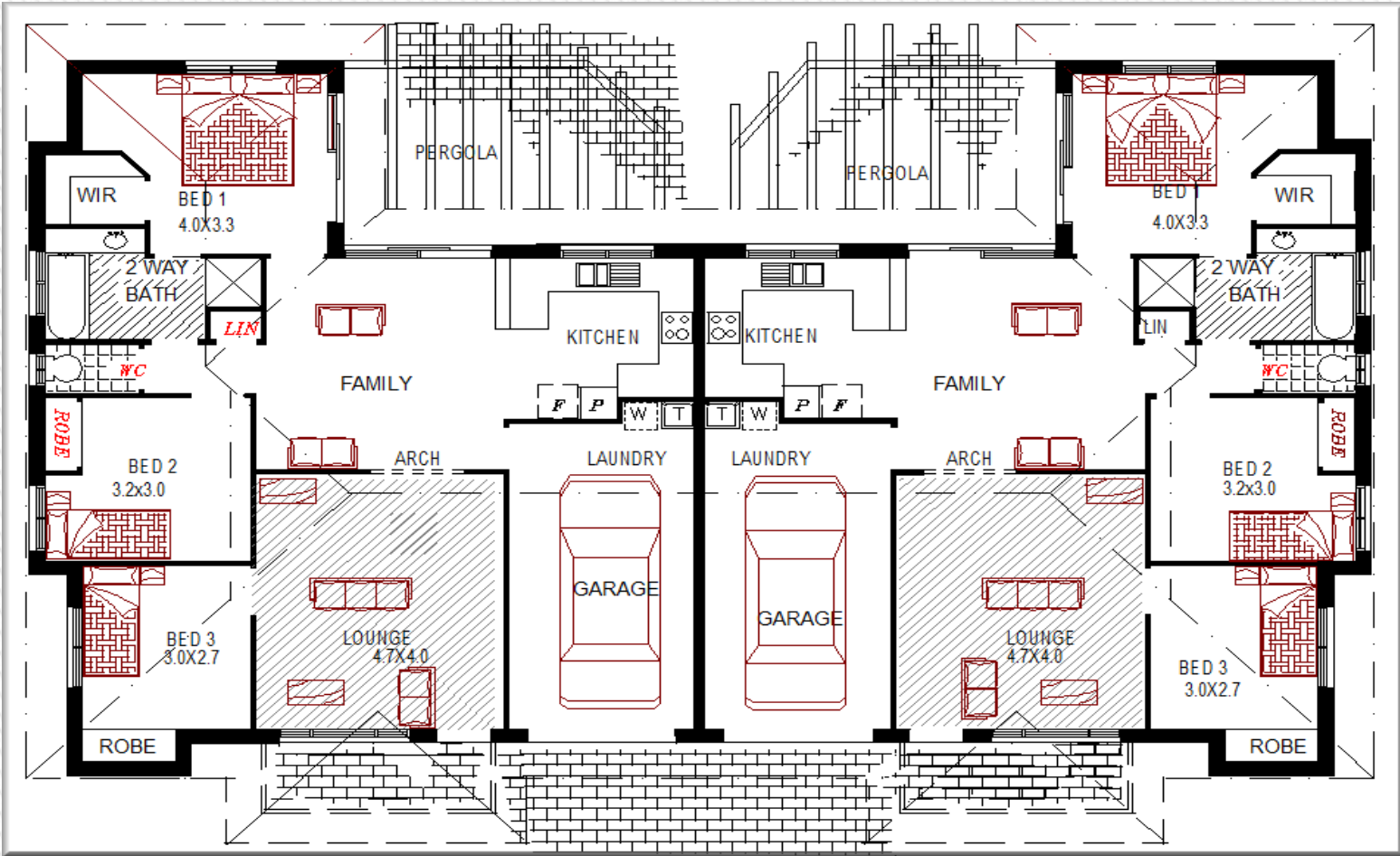
		
2 x 3 Beds	2 x 1 Bath	2 x Single Car

Metric Sizes

 25.2 squares

 Total Area: 234 m2

 Width of home: 15.0 meters
 Depth of Home: 22.5 meters
 Ceiling Heights: 2.4 meters



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Villa Design: Twins 128



2 x 3 Beds



2 x 1 Bath



2 x Single Car



Size Per Unit

Areas

Living 91.52m2
Garage 20.210m2
Verandah 8.50m2
total: 120.23m2

Metric Sizes

25.2 squares
Total Area: 234 m2
Width of home: 15.0 meters
Depth of Home: 22.5 meters
Ceiling Heights: 2.4 meters



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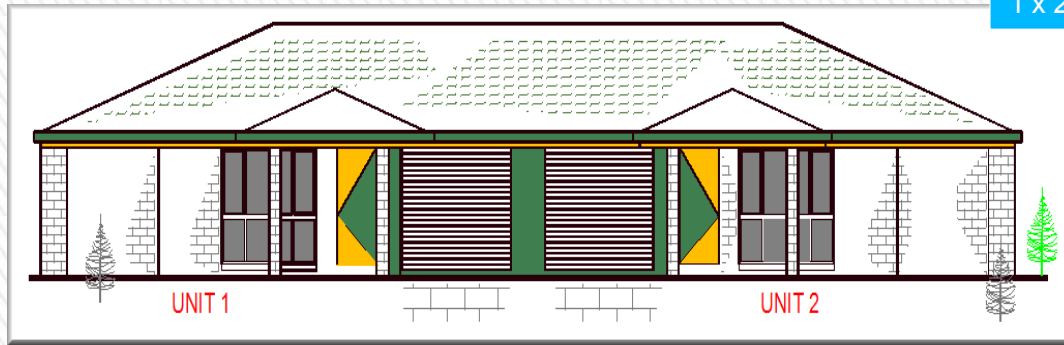





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Duplex Design: Raaf 173



		
1 x 3 Beds 1 x 2 Beds	2 x 1 Bath	2 x Single Car

Metric Sizes

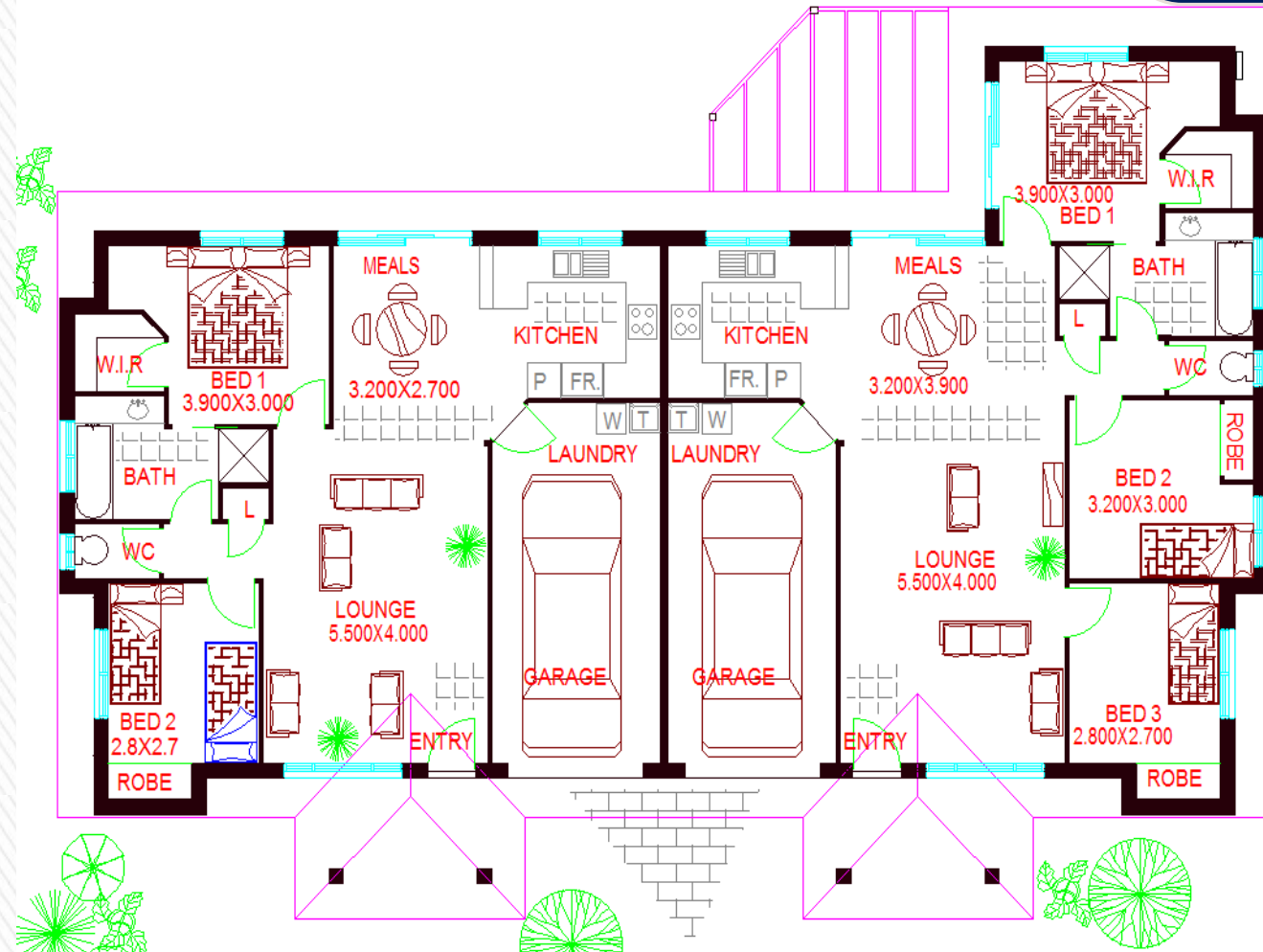
23.1 squares

Total Area: 215 m2

Width of home: 15.2 meters

Depth of Home: 21.6 meters

Ceiling Heights: 2.4 meters



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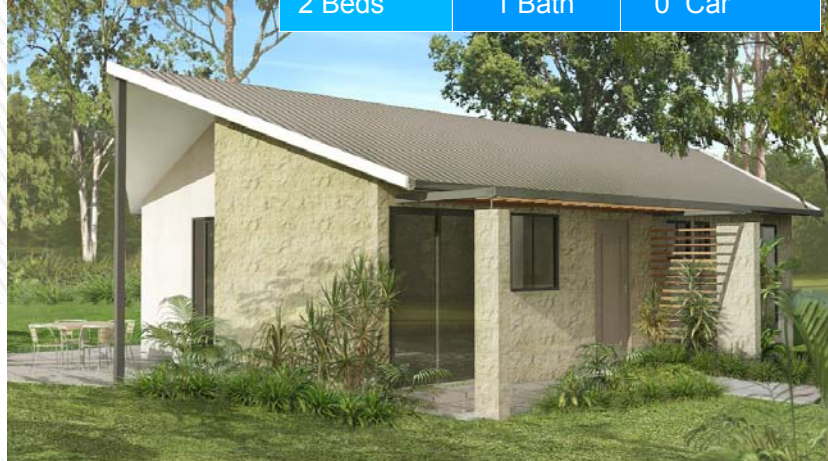
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Home Design: KR 120

		
2 Beds	1 Bath	0 Car



Metric Sizes

 12.9 squares

 Total Area: 120 m2

 Width of home: 16.3 meters
 Depth of Home: 10.8 meters
 Ceiling Heights: 2.4 meters

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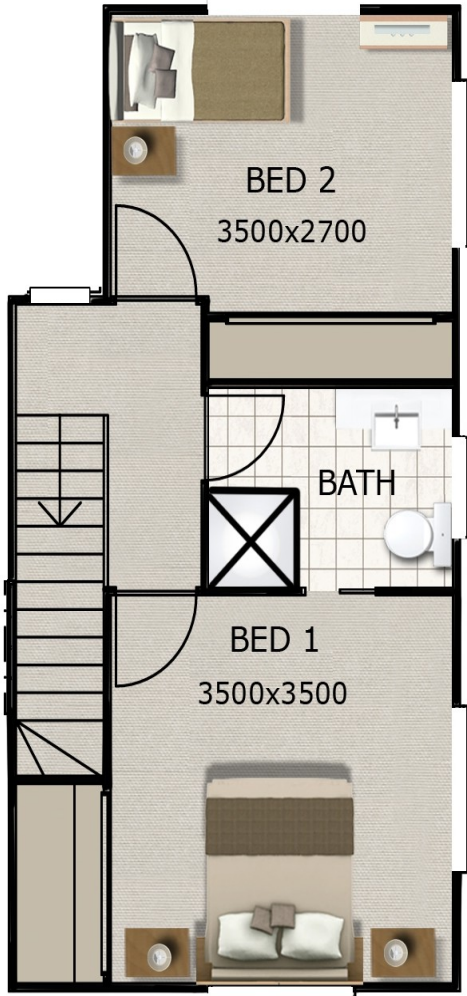
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Home Design: KR 180D

		
3 Beds	2 Bath	Single Car

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Metric Sizes

16.4 squares

Total Area: 150 m2

Width of home: 8.90 meters
Depth of Home: 13.92 meters
Ceiling Heights: 2.4 meters

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Home Design: CLM 50 Fawn

Length 6.800 metres
Width 6.400 metres



Metric Sizes

4.5 squares

Total Area: 42 m²

Width of home: 7.6 meters

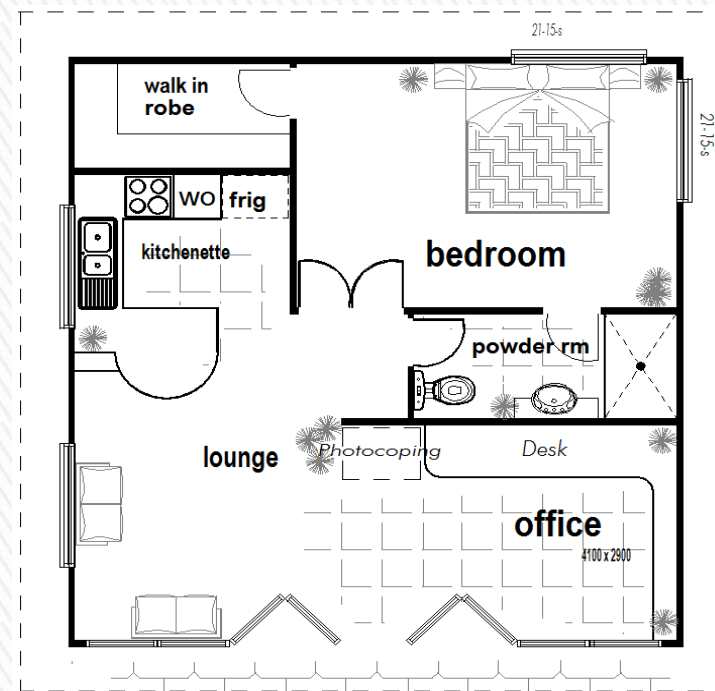
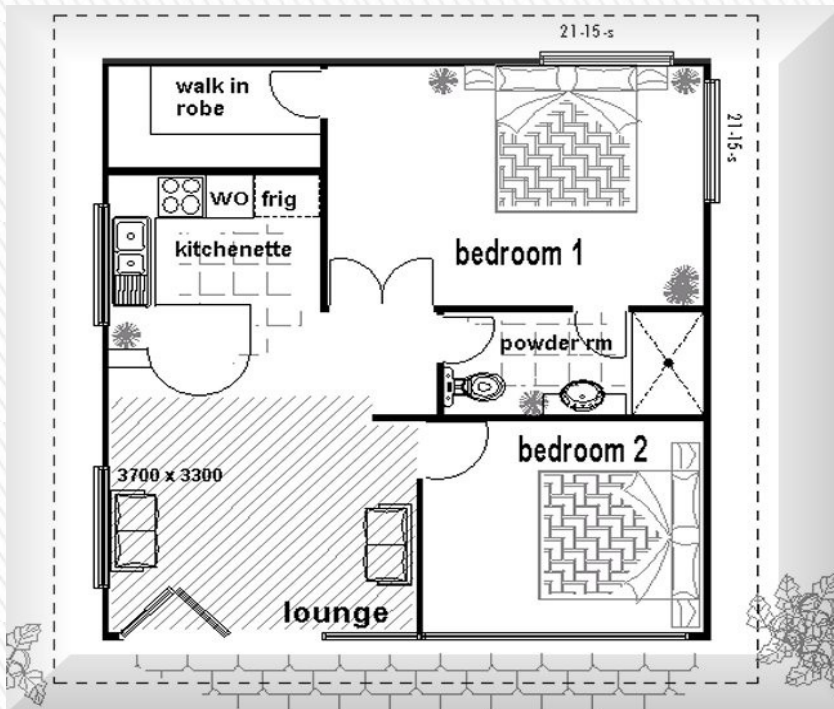
Depth of Home: 7.9 meters

Ceiling Heights: 2.4 meters

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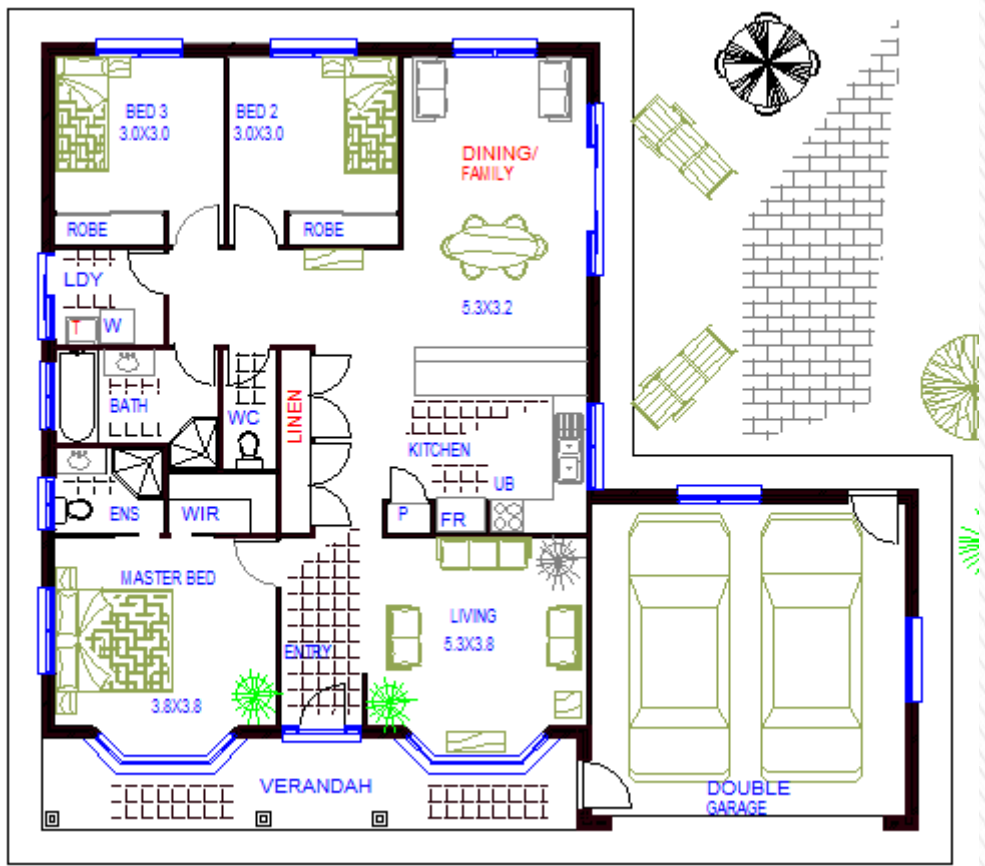
Home Design: CLM 119 -164 m2

		
3 Beds	2 Bath	2 Car



Metric Sizes

17.6 squares
 Total Area: 164 m2
 Width of home: 15.0 meters
 Depth of Home: 16.6 meters
 Ceiling Heights: 2.4 meters



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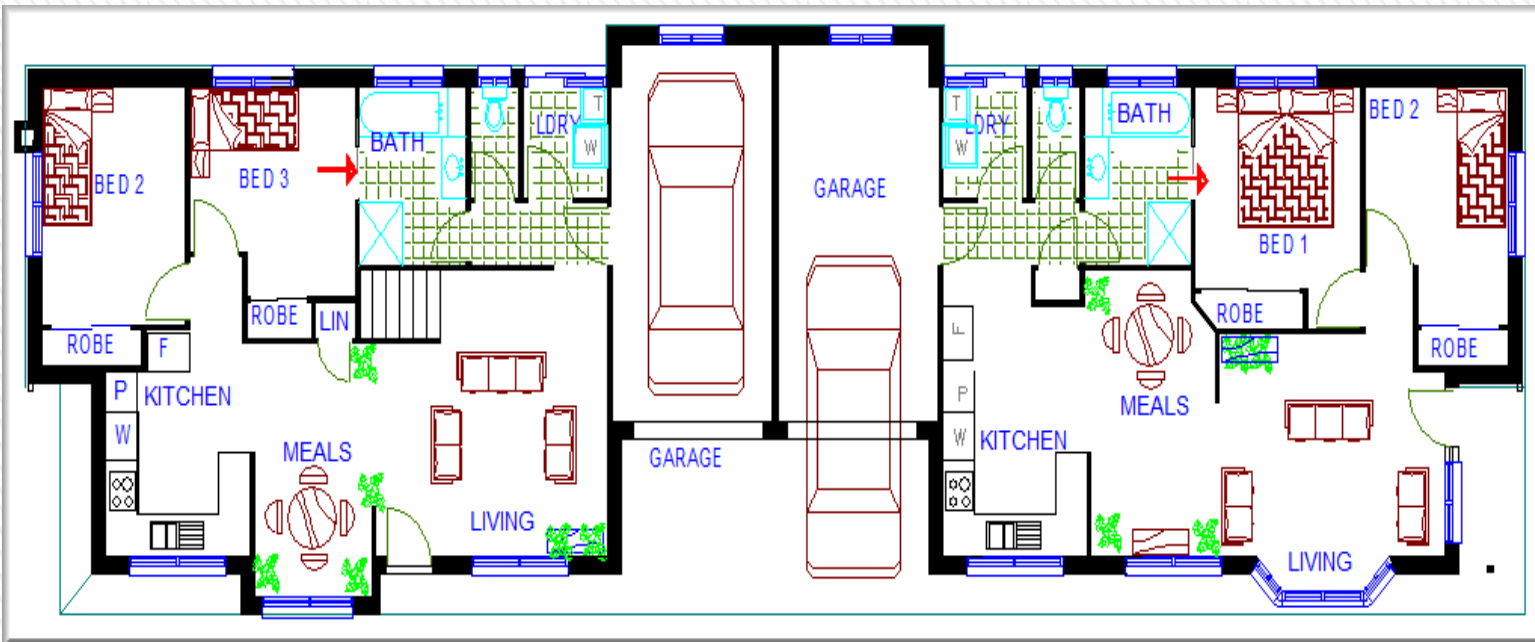
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Duplex Design: Townhouse 220



1 x 3 Beds 1 x 2 Beds	1 x 2 Bath 1 x 1 Bath	2 x Single Car

Metric Sizes

23.6 squares

Total Area: 220 m2

Width of home: 7.9 meters

Depth of Home: 28.0 meters

Ceiling Heights: 2.4 meters

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Home Design: KR 180



		
3 Beds	2 Bath	Single Car



Metric Sizes

 19.37 squares

 Total Area: 180 m2

 Width of home: 14.3 meters
 Depth of Home: 17.0 meters
 Ceiling Heights: 2.4 meters

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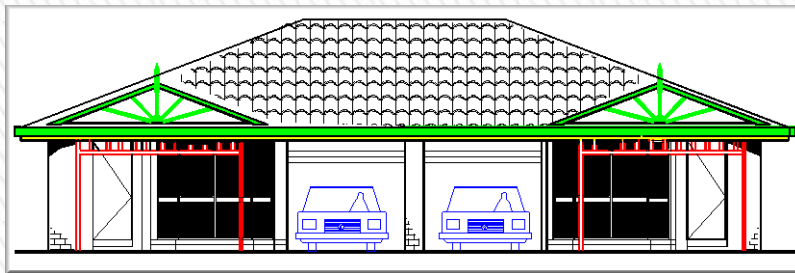
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Duplex Design: Slik 223



		
2 x 3 Beds	2 x 1 Bath	2 x Single Car

Metric Sizes

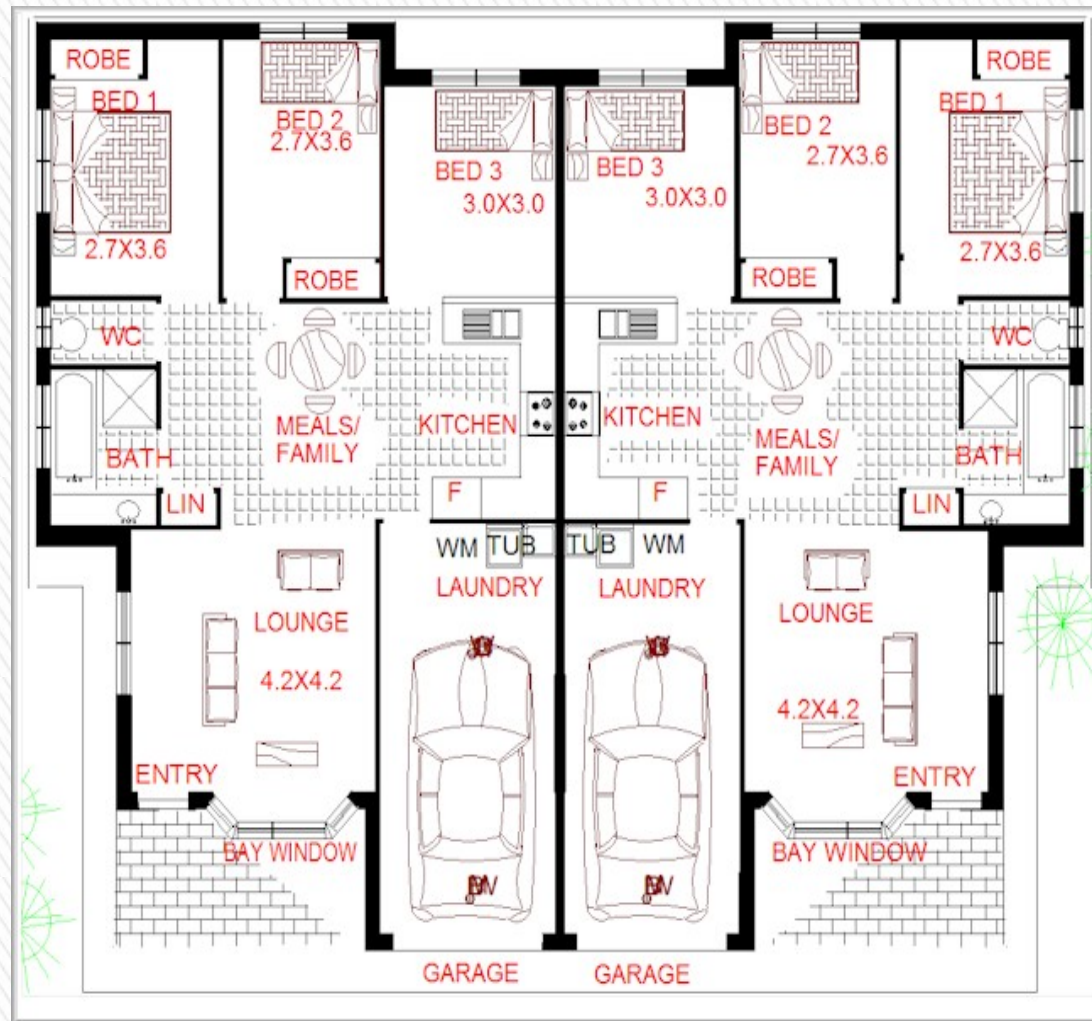
23.8 squares

Total Area: 223 m2

Width of home: 14.3 meters

Depth of Home: 18.2 meters

Ceiling Heights: 2.4 meters



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DATE: ___/___/20

Client: _____ Dwg# _____

Address: _____

Phone No: _____ Mobile No: _____

RP or SP#: _____ House Design: _____

Please Circle required				Please Circle required			
Floor	Concrete	Timber Elevated floor		Garage	Single	Double	
Roof Pitch	20 deg	22.5 deg	25 deg	Local Council is			
Roof Material	Roof Tiles	Metal roof		Land			
Ceiling Height	2440mm	2550mm	2740mm	Slope of Land - Looking from street			
No of bedrooms	2 3	4	5	Falls left to right			
Other rooms req	Lounge	Home Cinema	Family	Falls right to left			
Water	Town water	Water Tank		Rise from the road			
Cladding	Brick	Hardiplank	Render	Falls from the road			
Hot Water	Gas	Electric Heating	Solar Heating	Notes: To have a Land survey is best			
Bracing (if known)	N2	N3 N4	C1 C2	Frame			
House levels	Single	Double	3 storey	Wall & Roof Frame	Timber	Steel	Block
Toilet	Sewer	Treatment Plant					

Other Notes:

Please advise if you require special sizes for the rooms otherwise we will use STD rooms sizes

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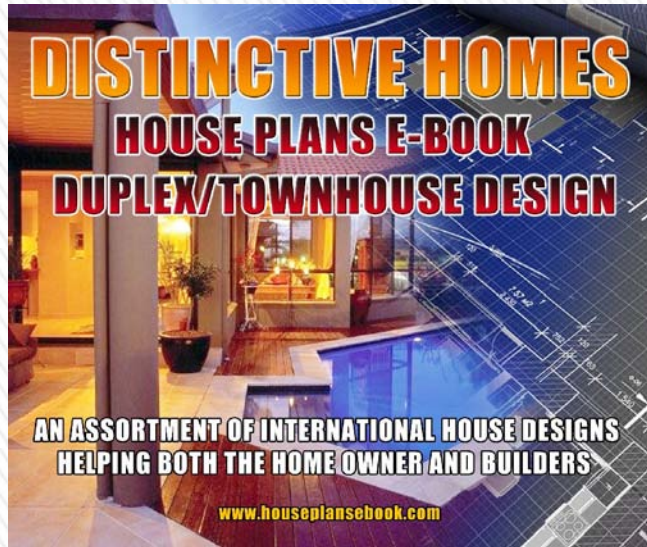
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SELLING TIPS

To help sell your home.

General

Have the exterior of your home in tip-top condition, the first impression of a potential buyer is a very important step - a consistent appearance of cleanliness and organization throughout the home will help to encourage the potential buyer to make an offer.

Is your home physically fit? No house is perfect, and a home inspection is not intended to identify every little blemish or minute surface imperfection.

Check Your Curb Appeal

A home that is visually appealing and in good condition will attract potential buyers driving down the street. Use this checklist to view your property through an outsider's eyes.

Are the lawn and shrubs well maintained?

Are there cracks in the foundation or walkways?

Does the driveway need resurfacing?

Are the gutters, chimney and walls in good condition?

Do the window casings, shutters, siding or doors need painting?

Are garbage and debris stored out of sight?

On the Inside

Strong curb appeal will lure potential buyers inside, where you have to live up to their expectations. Fortunately, there are plenty of easy improvements you can make to your home's interior without spending a lot of money. Cleaning is No. 1. Your windows, floors and bathroom tiles should sparkle. Make sure you have clean heating and air conditioning filters. Shampoo dirty carpets, repair dripping faucets and oil squeaky doors. It may not seem fair, but a peek in the oven may be the hallmark by which a buyer judges how well you have kept up your home. Remove unnecessary clutter from the garage, basement, attic and closets. If your home is crowded with too much furniture, consider putting some things into storage. If a room needs a fresh coat of paint, use a neutral off-white. Think, too, about how your home smells. You may be used to the smell of a pet or cigarettes, but such odors can be a strong turn-off to others. Finally, set a mood for the buyer. Make your house homey with live flowers and fresh guest towels in the bathroom. Place scented potpourri around the house or, on the day you're expecting a potential buyer, pop a batch of frozen cinnamon rolls into the oven for a welcoming aroma.

Remember, cosmetic changes do not have to be expensive. In fact, costly home improvements do not necessarily offer a good return on your investment when you sell. It's attention to the basics -- anything that says "this home has been carefully maintained" -- that will help you get the price you want.

Go It Alone--or Choose an Agent?

Some homeowners decide to sell their homes themselves in order to save the commission charged by a real estate agent.

The commission rate may vary, depending on where you live or what agency you choose, but it is generally upwards of 5%. However, handling your own sale means you will be responsible for placing ads, answering phones and showing your home to strangers. What's more, buyers who know you are saving on an agent's commission may offer less for your home, wiping out the financial incentive to do it all yourself.

You may decide an agent's commission is a bargain the first time that a would-be buyer shows up unannounced at dinnertime. Also, be aware that a real estate agent probably knows a lot more about the business of selling a home than you do. Here are some of the advantages professional agents offer:

- They will help you establish a fair asking price for your home.
- They will promote your home to other agents and list your property in multiple listing services. A multiple listing service is a book or computer database that all real estate agents who subscribe to the service can access.
- Your home will get exposure to all those agents, one of whom may have the perfect buyer.
- They will create, pay for and place advertising for you.
- They will schedule appointments to show your home to prospective buyers even when you are not there.
- They can weed out buyers who will not qualify for a mortgage.
- They can refer you to sources for insurance, inspections, legal counsel and financing.
- They will help you negotiate with the buyer.

If you decide to sell through an agent, ask friends and neighbors for recommendations. Talk to several agents before picking the one you want to work with. Taking a walk through your home with an agent should give you a feel for how that person will handle prospective buyers. Ask prospective agents how they plan to market your home. Don't sign with an agent just because he or she suggests the highest asking price. Negotiate the broker's commission prior to listing your home, and sign for a limited period of time -- usually three to six months.

=====

EXTERIOR more detailed

First Impression... First Impression... First Impression...

Once your home is placed on the market, it is in competition with every other home for sale.

By giving your home an advantage in appearance, atmosphere, price, and terms, your home will sell more quickly.

To prepare your home to sell, you should place it on a pedestal, a rotating carousel glistening at every turn.

The front of your home must welcome a potential buyer from the first sight. If they are hesitant to enter your home because of the outside appearance, they probably won't stay for long and more importantly won't buy.

The outside of your home should be well maintained and free from debris.

Make sure the paint is in good condition, Check surfaces such as siding, trim, and doors. Touch up with paint, or clean to remove dirt, cobwebs, etc.

Keep your lawn well-trimmed and edged up the driveway and along the sidewalks.

Landscaping should be well manicured, trim shrubs and remove all dead limbs/debris. Keep plants from blocking windows and entry ways.

Search your home and yard and fencing for anything that need repaired or cleaned.

Clear all walk ways from all snow and ice, or sweep to remove unwanted dirt and debris.

Clean dirt and leaves from gutters and downspouts. Touch up with paint if needed; realign if out-of-place.

Neatly arrange outdoor items such as hoses, sprinklers, lawn furniture, and firewood.

Clear patios or decks of all small items; planters/flower pots, portable barbecues, charcoal briquettes, toys, etc. (place these items neatly into a shed or garage).

Store lawn equipment and tools out of sight (especially away from the front of the home).

Clean, paint or stain the front door and surrounding trim.

Make sure the exterior lighting and doorbell work.

Remove cobwebs from any light fixtures and landscaping.

Make sure that the front door and screen do not stick or have loose/broken handles.

Clean windows/screens and repair any damage.

Inspect and replace any damaged shingles or flashing on the roof.

INTERIOR more detailed

Following are a few suggestions to prepare the interior of your home:

Let the Sunshine in, open the drapes and shades, or turn on the lights to make your home bright and cheerful.

Turn off the television. Have an FM stereo on during the day for all showings - Soft mellow music can be appealing, but keep it low.

A fire in the fireplace during the winter is a great touch.

Now, it's time to do a "spring cleaning," even if it is Fall. The items listed below will not add to the value of your home, they simply improve the show quality of your home. When complete, these cosmetic enhancements reduce initial hesitations and rejections of a potential buyer. The result is that your home will appeal to a potential buyer and sell quicker. If a home shows well and sells shortly after being listed, you as the seller will realize a greater profit.

Other than the deep cleaning, we have listed a few suggestions to prepare the interior of your home:

Entry into your home needs to be as open and free from clutter as possible. This is the second "first impression" that a potential buyer realizes when visiting your home.

Inspect all surfaces for smudges, chips in paint / tile / wood work, and damaged wallpaper. Clean and repair when possible. If painted walls are inadequate, you should consider painting. Neutral colors are best for resale.

Faded walls, torn wallpaper, and worn woodwork reduce the overall appearance of your home.

Window treatments should be cleaned and straightened accordingly.

Shampoo carpets and wax floors. If your carpet does not clean well due to wear, you might consider replacing it. The replacement cost may not be recovered, however, your home may sell faster.

Furniture throughout your home should be arranged to provide as much open space as possible.

Extra toys in a child's room and nic-nacs actually make your rooms appear smaller -store these items.

Neatly arrange all closets. Only a few items should be stored on overhead shelves and on floors, thus making a more open and larger appearance.

Make sure windows and cabinet doors open easily and do not squeak.

Remove messages, pictures, etc. from your refrigerator.

Clear the kitchen/bathroom countertops from any personal items and clutter. Organize the cabinets and cupboards in a neat and orderly fashion.

Clean and polish all sinks and fixtures. Deodorize the garbage disposer.

Repair any drips or running water.

Remove mildew and stains from tiles and regrout or recaulk if necessary.

Display your best towels and rugs, coordinate towels to one or two colors only.

Hang a new shower curtain.

Repair doors that stick or have loose knobs, cracked switch plates and outlet covers, pulls on drawers and cabinets, towel racks, loose stair banisters.

Vacuum and organize your garage, basement and attic to provide maximum floor space.

Setting a Fair Price

Naturally, you want to get top dollar for your home. But, at the same time, you don't want to scare off potential buyers with a price tag that's too high. Setting an artificially high price may cause your property to languish on the market for months. Reducing your asking price later on may lead buyers to wonder if there is something wrong with your home. Here are some of the factors to consider in pricing your home.

- Your location
- Economic conditions
- Supply and demand in the local housing market
- Seasonal influences
- Local schools
- Average home prices in the neighborhood
- Your home's extras -- pool, fireplace, central air, etc.

To determine the value of your home, you probably will want the advice of a real estate agent or appraiser. Ask an agent to prepare a market analysis for you, showing the recent selling prices of three neighborhood properties comparable to your own. The agent can help you adjust for the unique features of your own property.

Either you or your agent will want to quickly weed out potential buyers who cannot really afford to purchase your home. A number of factors will help determine whether or not you are wasting your time negotiating a sale.

- The buyer's debt and credit history
- The buyer's current income and employment
- The buyer's cash position and availability of a down payment
- The length of time the buyer needs before closing on your home
- How interested the buyer appears to be in your home versus others

Seek Legal Representation

When selling your home -- particularly if you are selling on your own -- it's a good idea to be represented by an attorney.

Look for an attorney with expertise in real estate transactions. When a potential buyer puts an offer in writing and you accept it, the signed acceptance becomes the sales contract. Your attorney will be present at the actual closing to protect your interests and can assist you with the following elements of a sales contract:

- The sale price
- What is included in the sale price -- draperies, carpeting, light fixtures, heating oil, etc.
- The amount of the down payment
- The date of settlement and possession date
- Contingencies to the sale--inspections, required improvements, legal review of the contract by the buyer's or seller's attorney, etc.
- The amount and length of the mortgage loan, interest rate and time limits to secure the loan
- Determining which closing costs are to be paid by the buyer and which by the seller

Tax Implications

Selling a home can have a major impact on your federal and state tax returns. Check with your tax consultant on the factors that may affect taxes resulting from the sale of your home. For example:

- Gain from the sale of a prior home on which tax was postponed
- Whether you purchased the home or acquired it by gift or inheritance
- Whether you used your home partly for business or rental
- Costs associated with selling your home
- Home improvements or additions, which may help to offset capital gains
- Your age (If you are 55 years of age or older, you may be eligible for a one-time-only capital gains exclusion of up to \$125,000 on the sale of your home.)
- Purchase of another home of equal or greater value within two years prior or subsequent to the sale of your current home.

The sale of your home.

In certain cases you can exclude up to \$250,000 in gain (\$500,000 for married couples filing a joint return) on the sale of property that was your principle residence for at least two years. Generally, you can use this exclusion every two years.

Make your mortgage work for you.

By carefully choosing from a wide range of mortgages and loan arrangements you can speed up the whole paying off process and own your own home outright a lot sooner.

The key is to find a loan not just with a low interest rate but the flexibility that will allow you to apply a few interest-cutting tricks. Of course, paying off as much as you can as quickly as you can is also a big help.

Salary Account Mortgages

One of the best ways to pay off your loan quickly is to dump your entire salary into an account which can then knock down the loan principal. They are salary account loans, and they see your day-to-day transaction account combined with a home loan account. Your pay packet is debited straight into the account on pay day reducing the loan principal by your full income immediately after you're paid.

It's better than having to wait for the monthly instalment to fall due later in the month when you only pay a lesser amount anyway. It can create huge savings in loan interest over the duration of the loan because every month, your outstanding loan amount is slightly lower than if you had a standard variable rate loan. But usually a slightly higher interest rate is charged for the privilege. With an attached credit card or chequebook, borrowers can make withdrawals from the account for whatever they need.

Used wisely, the salary loan arrangement can be a great idea, according to Chris Gosselin, from bank monitoring service Market facts. "They can give you significant savings but home owners opting for this should make sure that they are disciplined and well organised," he warned.

Gosselin says to make the most of this account, use a separate credit card which offers an interest-free period for your monthly spending. When the monthly credit card bill falls due, make one transaction from your salary account to pay the credit card bill.

"This reduces transaction fees and makes the most of the account's interest-cutting potential by leaving your income in the account for longer before bills have to be paid. But you must make sure you pay the credit card off in full by the due date," said Gosselin.

Salary features on standard variable home loan accounts are still not universally available from all the banks, but some lenders offering this type of loan are Bank of Melbourne, Westpac, MLC Building Society, Colonial State, Citibank and Bank of New Zealand.

Offset Accounts

Offset accounts can save borrowers thousands in interest over the term of their home loan. It's basically a deposit account but instead of interest being paid on your savings you receive a credit or an interest offset against your home loan.

Make sure that if you go for an offset account the interest rate you receive as an offset is the same you are paying on your mortgage. ANZ Bank has launched a new mortgage offset account which is much like any transaction account.

Every dollar in the account reduces the outstanding home loan balance by the same amount, thus reducing loan interest charges. There are no transaction fees but there is a flat monthly account-

keeping fee of \$10.

Redraw Facilities

Redraw facilities allow extra repayments made above the minimum monthly repayment to be withdrawn by the borrower at a later date should the need arise.

This allows you to funnel all your savings into the home loan, thus reducing the principal substantially. Yet you have the flexibility of getting at your money back if need be.

It essentially turns a home loan account into a savings account as well. But lenders do place restrictions on the number of redraws per year and the size of withdrawals.

All the banks now offer some form of redraw facility and non-bank lenders are also adding this feature.

Extra Repayments

The ability to pay big lump sums or little extra repayments to your home loan is the key to paying it off quickly and reducing the overall interest charged. Remember interest saved is interest earned -- and at the home loan rate of 6 to 7.5 per cent. Compare that to what those savings would otherwise earn in a bank deposit account – around 2 per cent at best, which is then taxable.

Pay half the monthly instalment every two weeks, making the equivalent of thirteen monthly payments a year instead of twelve. On a \$100,000 loan over 25 years at 6.8 per cent, this will cut more than five years off the loan and save around \$20,000 in interest. Make additional one-off payments when ever you can.

Work Your Money

Budget to save, don't just aim to save what's left over each month. Don't leave spare money sitting in deposit accounts, make an extra loan payment even the smallest amount pays off.

Give up smoking. A pack a day equals around \$200 per month. Paid off the mortgage, this will save \$50,000 in interest and cut more than 10 years off a \$100,000, 25-year loan at 6.8 per cent.

Other Deals

If you are a doctor, accountant or lawyer you'll probably know that the banks sweeten your deals. Professional packages offer discount rates on home loans with cheaper (or no) application fees. Even a 0.5 per cent reduction over 20 years adds up to thousands of dollars in savings so its worth trying to wring a discount from lenders even if you aren't a member of one of these professions.

Knowing what is on offer should be the trigger for you to go to the bank manager, say that you are just as good a customer and want the same deal. Take in your records to prove your point.

Shop around

Make competition work for you. With mortgage originators muscling in on traditional bank market share there are a great many deals around all with varying degrees of interest rate and features. But before you jump in and switch lenders make sure the cost of refinancing that is terminating one loan and establishing another is worth your while.

Don't just look at the interest rate. Sure, this helps, but then there are the fees, loan conditions and other options which can also be negotiated.

The bank manager may have more flexibility to negotiate on these grounds which could give similar bottom line benefits.

TIP: Use a separate credit card account which offers an interest-free period (of up to 55 days) for your monthly spending. When the monthly credit card bill falls due, make one transaction from your salary account to pay the credit card bill.

This reduces transaction fees and makes the most of the account's interest-cutting potential by leaving your income in the account for longer before bills have to be paid

Bridging finance

How to get by in between buying and selling homes.

You've found the home of your dreams, but there's a snag ... you haven't sold your other house yet and you need to bridge the gap.

Nowadays, the banks view bridging finance as an opportunity to keep customers rather than fleece them. The bad old days of extortionate interest charges and rigid repayments have given way to flexibility and lower rates.

An alternative is to 'top up' back to the original amount borrowed and beyond, especially if your income and home value has increased. You will still need to pay standard application fees but can save on stamp duty costs, as you will only pay on the amount above your original loan.

If you have a line-of-credit attached to your current mortgage, it can be as easy as signing a cheque. These are usually a maximum of 65 per cent of your LVR and rates are usually just above variable rates but way below personal loan rates.

If you don't have either of these, then a second mortgage could be the best option. Repayments options are also quite flexible with these banks. They can be interest-only and can be capitalised and added back onto your bridging loan.

Lighting efficiency decreases your energy bills.

If you replace 25% of your lights in high-use areas with fluorescents, you can save about 50% of your lighting energy bill.

Indoor Lighting

Use linear fluorescent and energy-efficient compact fluorescent lamps (CFLs) in fixtures throughout your home to provide high-quality and high-efficiency lighting. Fluorescent lamps are much more efficient than incandescent bulbs and last 6 to 10 times longer. Although fluorescent and compact fluorescent lamps are more expensive than incandescent bulbs, they pay for themselves by saving energy over their lifetime.

Indoor Lighting Tips

Turn off the lights in any room you're not using, or consider installing timers, photo cells, or occupancy sensors to reduce the amount of time your lights are on.

Use task lighting; instead of brightly lighting an entire room, focus the light where you need it. For example, use fluorescent under-cabinet lighting for kitchen sinks and countertops under cabinets.

Consider three-way lamps; they make it easier to keep lighting levels low when brighter light is not necessary.

Use 4-foot fluorescent fixtures with reflective backing and electronic ballasts for your workroom, garage and laundry areas.

Consider using 4-watt mini-fluorescent or electro-luminescent night lights. Both lights are much more efficient than their incandescent counterparts. The luminescent lights are cool to the touch.

Compact Fluorescent Bulbs - These compact fluorescent bulbs are four times more energy efficient than incandescent bulbs and provide the same lighting.

Use CFLs in all the portable table and floor lamps in your home. Consider carefully the size and fit of these systems when you select them. Some home fixtures may not accommodate some of the larger CFLs.

For spot lighting, consider CFLs with reflectors. The lamps range in wattage from 13-watt to 32-watt and provide a very directed light using a reflector and lens system.

Take advantage of daylight by using light-colored, loose-weave curtains on your windows to allow daylight to penetrate the room while preserving privacy. Also, decorate with lighter colors that reflect daylight.

Torchiere Lamp Halogen lamps generate excessive heat that can create fire hazards. Use compact fluorescent lamps in your torchiere fixtures. They are safer and use much less energy.

If you have torchiere fixtures with halogen lamps, consider replacing them with compact fluorescent torchieres. Compact fluorescent torchieres use 60% to 80% less energy and can produce more light (lumens) than the halogen torchieres.

Outdoor Lighting

Many homeowners use outdoor lighting for decoration and security. When shopping for outdoor lights, you will find a variety of products, from low-voltage pathway lighting to high-sodium motion-detector floodlights. Some stores also carry lights powered by small photovoltaic (PV) modules that convert sunlight directly into electricity; consider PV-powered lights for areas that are not close to an existing power supply line.

Outdoor Lighting Tips

Use outdoor lights with a photocell unit or a timer so they will turn off during the day.

Turn off decorative outdoor gas lamps; just eight gas lamps burning year round use as much natural gas as it takes to heat an average-size home during an entire winter.

Exterior lighting is one of the best places to use CFLs because of their long life. If you live in a cold climate, be sure to buy a lamp with a cold-weather ballast.

Landscaping

is a natural and beautiful way to keep your home more comfortable and reduce your energy bills. In addition to adding aesthetic value and environmental quality to your home, a well-placed tree, shrub, or vine can deliver effective shade, act as a windbreak, and reduce overall energy bills.

Carefully positioned trees can save up to 25% of a typical household's energy for heating and cooling. Computer models from DOE predict that just three trees, properly placed around the house, can save an average household between \$100 and \$250 in heating and cooling energy costs annually. During the summer months, the most effective way to keep your home cool is to prevent the heat from building up in the first place. A primary source of heat buildup is sunlight absorbed by your home's roof, walls, and windows. Dark-colored home exteriors absorb 70% to 90% of the radiant energy from the sun that strikes the home's surfaces. Some of this absorbed energy is then transferred into your home by way of conduction, resulting in heat gain inside the house. In contrast, light-colored surfaces effectively reflect most of the heat away from your home. Landscaping can also help block and absorb the sun's energy to help decrease heat buildup in your home by providing shade and evaporative cooling.

Shading and evaporative cooling from trees can reduce the air temperature around your home. Studies conducted by the Lawrence Berkeley National Laboratory found summer daytime air temperatures to be 3° to 6°F cooler in tree-shaded neighborhoods than in treeless areas. The energy-conserving landscape strategies you should use for your home depend on the type of climate in which you live.

Buildings and
Trees – Natural
Partners
Deciduous trees
planted on the south
and on the west will
help keep your
house cool in the
summer and allow
sun to shine in the
windows in the
winter.

Landscaping Tips – Dependent on Geographic Area

- Trees that lose their leaves in the fall (i.e., deciduous) are the most effective at reducing heating and cooling energy costs.

When selectively placed around a house, they provide excellent protection from the summer sun but permit winter sunlight to reach and warm your house. The height, growth rate, branch spread, and shape are all factors to consider in choosing a tree.

- Vines provide shading and cooling. Grown on trellises, vines can shade windows or the whole side of a house.

- Deflect winter winds by planting evergreen trees and shrubs on the north and west sides of your house; deflect summer winds by planting on the south and west sides of your house.

Orientation of the house and surrounding landscaping has a large effect on energy consumption. A well-oriented, well-designed home admits low-angle winter sun to reduce heating bills; rejects overhead summer sun to reduce cooling bills; and minimizes the chill effect of winter winds. Fences, walls, other nearby buildings, and rows of trees or shrubs block or channel the wind. Bodies of water moderate temperature but increase humidity and produce glare. Trees provide shade, windbreaks, and wind channels. Pavement reflects or absorbs heat, depending on whether it is light or dark in color.

Just as wearing white clothes reflects the sun's heat from your body, a white or light-colored roof will help reflect the sun's heat away from your home. This strategy works particularly well when trees are located next to the reflecting surface. Not only does the tree provide shade, it absorbs the reflected sunlight for photosynthesis. In the process, water evaporates from the tree, cooling the air around the house.

Contact your county extension agents, public libraries, local nurseries, landscape architects, landscape contractors, and state and local energy offices for additional information on energy-efficient landscaping and regional plants and their maintenance requirements.

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Healthy Lawn, Healthy Environment

[Graphic Omitted]

Caring for Your Lawn in an Environmentally Friendly Way

[Graphic Omitted]

United States Environmental Protection Agency
Washington DC 20460

Prevention, Pesticides And Toxic Substances (H7506C)

700-K-92-005
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Healthy Lawn, Healthy Environment

Caring for Your Lawn in an Environmentally Friendly Way

Picture a healthy green lawn: perfect for lounging, great for ball games and cookouts, a real asset to your home. But did you know that your lawn--and how you take care of it--can also help the environment?

- * Healthy grass provides feeding ground for birds, who find it a rich source of insects, worms, and other food. Thick grass prevents soil erosion, filters contaminants from rainwater, and absorbs many types of airborne pollutants, like dust and soot. Grass is also highly efficient at converting carbon dioxide to oxygen, a process that helps clean the air.
- * Caring for your lawn properly can both enhance its appearance and contribute to its environmental benefits. You don't have to be an expert to grow a healthy lawn. Just keep in mind that the secret is to work with nature. This means creating conditions for grass to thrive and resist damage from weeds, disease, and insect pests. It means setting realistic goals for your lawn, whether you or a professional lawn care service will be doing the work. And if you choose to use pesticides, it means using them with care so as to get the most benefit and reduce any risks.
- * Caring for your lawn in an environmentally sensible way can have a bigger impact than you might think. Your lawn is only a small piece of land, but all the lawns across the country cover a lot of ground. That means you and your lawn care activities, along with everyone else's, can make a difference to the environment. And that's why taking care of the environment begins in our own backyards.

Working With Nature: A Preventive Health Care Program For Your Lawn

To start, think about lawn care as a preventive health care program, like one you would use to keep up your own health. The idea is to prevent problems from occurring so you don't have to treat them. As they say, an ounce of prevention is worth a pound of cure. A healthy

lawn can out-compete most weeds, survive most insect attacks, and fend off most diseases--before these problems ever get the upper hand.

Your lawn care program should be tailored to local conditions--the amount of rainfall you get, for example, and the type of soil you have. The sources listed at the back of this brochure can help you design a lawn care program that suits both local conditions and your own particular needs. But no matter where you live, you can use the program outlined in this brochure as a general guide to growing a healthy lawn.

A preventive health care program for your lawn should have the following steps:

1. Develop healthy soil
2. Choose a grass type that thrives in your climate
3. Mow high, often, and with sharp blades
4. Water deeply but not too often
5. Correct thatch build-up
6. Set realistic goals

1. Develop Healthy Soil

Good soil is the foundation of a healthy lawn. To grow well, your lawn needs soil with good texture, some key nutrients, and the right pH, or acidity/alkalinity balance.

Start by checking the texture of your soil to see whether it's heavy with clay, light and sandy, or somewhere in between. Lawns grow best in soil with intermediate or "loamy" soils that have a mix of clay, silt, and sand. Whatever soil type you have, you can probably improve it by periodically adding organic matter like compost, manure, or grass clippings. Organic matter helps to lighten a predominantly clay soil and it helps sandy soil retain water and nutrients.

Also check to see if your soil is packed down from lots of use or heavy clay content. This makes it harder for air and water to penetrate, and for grass roots to grow. To loosen compacted soil, some lawns may need to be aerated several times a year. This process involves pulling out plugs of soil to create air spaces, so water and nutrients can again penetrate to the grass roots.

Most lawns need to be fertilized every year, because they need more nitrogen, phosphorus, and potassium than soils usually contain. These three elements are the primary ingredients found in most lawn

fertilizers. It's important not to over-fertilize--you could do more harm to your lawn than good--and it's best to use a slow-release fertilizer that feeds the lawn slowly. It's also important to check the soil's pH. Grass is best able to absorb nutrients in a slightly acidic soil, with a pH of 6.5 to 7.0. Soil that is too acidic can be "sweetened" with lime; soil that's not acid enough can be made more sour by adding sulfur.

Have your soil tested periodically to see whether it needs more organic matter or the pH needs adjusting. Your county extension agent (listed in your phone book under county government) or local nursery should be able to tell you how to do this. These experts can also help you choose the right fertilizer, compost, and other "soil amendments," and they can advise you about aerating if your soil is compacted. If a professional service takes care of your lawn, make sure it takes these same steps to develop good soil. There's no getting around it: your lawn's health is only as good as the soil it grows in.

2. Choose A Grass Type That Thrives In Your Climate

The right type of grass--one that suits your needs and likes the local weather--will always give better results. Grasses vary in the type of climate they prefer, the amount of water and nutrients they need, their resistance to pests, their tolerance for shade, and the degree of wear they can withstand.

If you are putting in a new lawn, it will be worth your while to do some research to identify the best grass type for your needs.

If you're working with an established lawn that fails to thrive despite proper care, you might consider replanting with a different type of grass.

Why struggle to grow grass that's susceptible to fungal disease if you live in a humid climate? Or a water-loving species if you live in an area with water shortages? Grass that is well-adapted to your area will grow better and resist local pests and diseases better.

New grass varieties and mixtures come out on the market every year.

Ask your county extension agent or another one of the sources listed in this brochure for recommendations.

3. Mow High, Often and With Sharp Blades

Mowing high--that is, keeping your lawn a bit long--will produce stronger, healthier grass with fewer pest problems.

Longer grass has more leaf surface to take in sunlight. This enables it to grow thicker and develop a deeper root system, which in turn helps the grass survive drought, tolerate insect damage, and fend off diseases. Longer grass also shades the soil surface keeping it cooler, helping it retain moisture, and making it difficult for weeds to germinate and grow.

A lawn's ideal length will vary with the type of grass, but many turf grass species are healthiest when kept between 2-1/2 and 3-1/2 inches. The ruler at the back of this brochure will help the best mowing height for your grass variety. You may have to readjust your mower--most are set too low.

It's also important to mow with sharp blades to prevent tearing and injuring the grass. And it's best to mow often, because grass adjusts better to frequent than infrequent mowing. The rule of thumb is to mow often enough that you never cut more than one-third of the height of the grass blades. Save some time and help your lawn and the environment by leaving short clippings on the grass--where they recycle nitrogen--rather than sending them in bags to the landfill.

You don't have to grow a foot-high meadow to get good results. Just adding an inch will give most lawns a real boost.

4. Water Deeply But Not Too Often

Watering properly will help your lawn grow deep roots that make it stronger and less vulnerable to drought. Most lawns are watered too often but with too little water. It's best to water only when the lawn really needs it, and then to water slowly and deeply. This trains the grass roots down. Frequent shallow watering trains the roots to stay near the surface, making the lawn less able to find moisture during dry periods.

Every lawn's watering needs are unique: they depend on local rainfall, the grass and soil type, and the general health of the lawn. But even in very dry areas, no established home lawn should require daily watering.

Try to water your lawn in a way that imitates a slow, soaking rain, by using trickle irrigation, soaker hoses, or other water-conserving methods. It's also best to water in the early morning, especially during hot summer months, to reduce evaporation. Apply about an inch of water--enough that it soaks 6-8 inches into the soil. Then let the lawn dry out thoroughly before watering it again.

The best rule is to water only when the lawn begins to wilt from dryness--when the color dulls and footprints stay compressed for more than a few seconds.

5. Correct Thatch Build-Up

All grass forms a layer of dead plant material, known as thatch, between the grass blades and the soil. When thatch gets too thick--deeper than one-half inch--it prevents water and nutrients from penetrating to the soil and grass roots. Some grasses tend to form a thick layer of thatch. Overuse of fertilizer can also create a heavy layer of thatch.

You can reduce thatch by raking the lawn or using a machine that slices through the thatch layer to break it up. Sprinkling a thin layer of topsoil or compost over the lawn will also help.

In a healthy lawn, microorganisms and earthworms help keep the thatch layer in balance by decomposing it and releasing the nutrients into the soil.

6. Set Realistic Goals

Setting realistic goals will allow you to conduct an environmentally sensible lawn care program. It's probably not necessary to aim for putting-green perfection. Did you know that a lawn with 15 percent weeds can look practically weed-free to the average observer? Even a healthy lawn is likely to have some weeds or insect pests. But it will also have beneficial insects and other organisms that help keep pests under control.

Also realize that grass just can't grow well in certain spots. Why fight a losing battle with your lawn, when you have other options? At the base of a tree, for example, you might have better luck with wood chips or shade-loving ornamental plants like ivy, periwinkle, or pachysandra. If your climate is very dry, consider converting some of your lawn to dry-garden landscaping. It could save time, money, and water resources.

What Is IPM?

Integrated Pest Management is essentially common-sense pest control. IPM is not a new concept; some forms of it have been practiced for centuries.

IPM involves the carefully managed use of three different pest control tactics--biological, cultural, and chemical--to get the best long-term results with the least disruption of the environment. Biological control means using natural enemies of the pest, like lady bugs to control aphids. Cultural or horticultural control involves the use of gardening methods, like mowing high to shade out weeds. Chemical control involves the judicious use of pesticides.

IPM is a highly effective approach that minimizes the use of pesticides and maximizes the use of natural processes. Lawn care professionals who use IPM should have a sophisticated understanding of the ecosystem of your turf and the available pest control tactics. Home gardeners can also practice IPM by following the steps outlined in this brochure.

Tips For Using Pesticides

Sometimes, even with good lawn care practices, weather conditions or other factors can cause pest problems to develop. Pesticides can help control many lawn pests. But pesticides have risks as well as benefits, and it's important to use them properly.

The chemicals we call pesticides include insecticides, herbicides, and fungicides. These products are designed to kill or control pest insects, weeds, and fungal diseases. Pesticides can be very effective. But don't be tempted to rely solely on pesticides as a quick-fix solution to any lawn problem. Serious, ongoing pest problems are often a sign that your lawn is not getting everything it needs. In other words, the pests may be a symptom of an underlying problem. You need to correct the underlying problem to reduce the chance that the pest will reappear.

All pesticides are toxic to some degree. This means they can pose some risk to you, to your children and pets, and to any wildlife that venture onto your lawn--especially if these chemicals are overused or carelessly applied. Pesticides can also kill earthworms and other beneficial organisms, disrupting the ecological balance of your lawn.

Store pesticides out of children's reach in a locked cabinet or garden shed.

When Spraying, Protect your skin, your eyes, your lungs

Wash this clothing separately before using it again.

Before Using Any Pesticide, Be Sure To Review These Basic Rules

1. Take safety precautions. Never assume a pesticide is harmless.
 - * Read the entire label and follow its instructions. Use only the amount directed, at the time and under the conditions specified, and for the purpose listed.
 - * Be sure to wear any protective clothing--like gloves, long sleeves, and long pants--indicated on the label. Wash this clothing separately before using it again.
 - * Keep children and pets away from pesticides, and make sure no one goes on a treated lawn for at least the time prescribed by the pesticide label.
 - * Remember to follow any state or local requirements for posting your treated lawn or notifying your neighbors that a pesticide has been applied.
 - * Store and dispose of pesticides properly, according to the label directions and any state and local regulations.
2. Use pesticides to minimize pests, not eradicate them. The latter is often impossible and unnecessary.
3. Be sure you have accurately identified the pest so you can choose the best pesticide for the job and use it most effectively. Obtain professional advice from your county extension agent or a local expert.
4. Spot treat whenever possible. In most cases, it isn't necessary to treat the whole lawn with pesticides if the problem is confined to certain areas. Spraying more than necessary is wasteful and can be environmentally damaging.

If you have questions about a pesticide, call EPA's tollfree National Pesticide Telecommunications Network (1-800-858-7378). For general information on minimizing pesticide risks, call or write EPA for a free copy of the Citizen's Guide to Pesticides. The number to call is 703-305-5017; the address is: EPA, Office of Pesticide Programs, Field Operations Division, H7506C, 401M Street, S.W., Washington, D.C. 20460.

Choosing A Lawn Care Service

Many people choose to hire a professional company to help maintain their lawn. Lawn care companies offer a range of services, from fertilizing and pest control to aerating, mowing, and renovation.

Lawn care companies should follow the same healthy lawn program outlined in this brochure. They should also follow the same precautions for minimizing pesticide risks.

How can you be sure that a service will do these things? Start by asking questions like these:

Q. Is the company licensed?

A. Nearly all states require lawn care companies to be licensed. The qualifications for obtaining a license vary from state to state, but having a license is one indication that the company is reputable and operating legally.

Q. Does the company have a good track record?

A. Ask neighbors and friends who have dealt with the company if they were satisfied with the service they received. Call the Better Business Bureau or the state or local consumer protection office listed in your phone book; have they received any complaints about the company? Determine from the state pesticide regulatory agency if the company has a history of violations.

Q. Is the company affiliated with a professional lawn care association?

A. Affiliation with a professional association helps members to stay informed of new developments in the lawn care field.

Q. Does the company offer a variety of pest management approaches? Does it apply pesticides on a set schedule or only when they are really needed? Does it use integrated pest management, or "IPM"--an approach that often reduces pesticide use by combining it with other, non-chemical methods of pest control?

A. More and more lawn companies are offering integrated pest management (IPM) in response to public concern about pesticides. Be aware that IPM is a general term and that companies may use it to describe a wide range of activities. Find out exactly what a company means if it says it uses IPM.

Q. Is the company willing to help you understand your lawn's problems and the solutions?

A. Lawn services generally apply fertilizers and pesticides. But you may be the one who mows and waters--and poor watering and mowing practices can lead to disappointing results. The company should tell you how it plans to take care of your lawn, and advise you about the work you need to do to keep your lawn in good shape.

Q. Will the company tell you what pesticides it applies to your lawn and why, and what health and environmental risks may be presented by their use?

A. You have a right to this information. If asked, the company should readily supply it. All pesticides sold legally in the United States are registered by EPA, but such registration is not a guarantee of safety. Ask to see a copy of pesticide labels to make sure they bear an EPA registration number, and to review the directions that should be followed. If the company can't answer your questions about the chemicals it uses, call NPTN (1-800-858-7378) for more information.

HOUSE AND BUILDING FIRES

Safety tips

A fire can engulf a structure in a matter of minutes. Understanding the basic characteristics of fire and learning the proper safety practices can be the key to surviving a house or building fire.

BEFORE

Install smoke detectors.

Check them once a month and change the batteries at least once a year.

Develop and practice an escape plan. Make sure all family members know what to do in a fire.

Draw a floor plan with at least two ways of escaping every room.

Choose a safe meeting place outside the house.

Practice alerting other household members. It is a good idea to keep a bell and a flashlight in each bedroom for this purpose.

Practice evacuating the building blindfolded. In a real fire situation, the amount of smoke generated by a fire will most likely make it impossible to see.

Practice staying low to the ground when escaping.

Feel all doors before opening them. If the door is hot, get out another way.

Learn to stop, drop to the ground, and roll if clothes catch fire.

Post emergency numbers near telephones.

However, be aware that if a fire threatens your home, you should not place the call to your emergency services from inside the home. It is better to get out first and place the call from somewhere else.

Purchase collapsible ladders at hardware stores and practice using them.

Install A-B-C type fire extinguishers in the home and teach family members how to use them.

Do not store combustible materials in closed areas or near a heat source.

Cooking

Keep the stove area clean and clear of combustibles such as bags, boxes, and other appliances. If a fire starts, put a lid over the burning pan or use a fire extinguisher. Be careful. Moving the pan can cause the fire to spread. Never pour water on grease fires.

Check electrical wiring.

Replace wiring if frayed or cracked.

Make sure wiring is not under rugs, over nails, or in high traffic areas. Do not overload outlets or extension cords.

Outlets should have cover plates and no exposed wiring.

Only purchase appliances and electrical devices that have a label indicating that they have been inspected by a testing laboratory such as Underwriter's Laboratories (UL) or Factory Mutual (FM).

Contact your local fire department or American Red Cross chapter for more information on fire safety.

DURING

Get out as quickly and as safely as possible.

Use the stairs to escape.

When evacuating, stay low to the ground.

If possible, cover mouth with a cloth to avoid inhaling smoke and gases.

Close doors in each room after escaping to delay the spread of the fire.

If in a room with a closed door.

If smoke is pouring in around the bottom of the door or it feels hot, keep the door closed.

Open a window to escape or for fresh air while awaiting rescue.

If there is no smoke at the bottom or top and the door is not hot, then open the door slowly.

If there is too much smoke or fire in the hall, slam the door shut.

Call the fire department from a location outside the house.

AFTER

Give first aid where appropriate.

Seriously injured or burned victims should be transported to professional medical help immediately.

Stay out of damage buildings.

Return home only when local fire authorities say it is safe.

Look for structural damage.

Discard food that has been exposed to heat, smoke, or soot.

Contact insurance agent.

Don't discard damaged goods until after an inventory has been taken.

Save receipts for money relating to fire loss.

Heating Devices

Heating devices such as portable heaters, wood stoves, and fireplaces demand safe operation. Use portable heaters in well-ventilated rooms only. Refuel kerosene heaters outdoors only. Have chimneys and wood stoves cleaned annually. Buy only approved heaters and follow the manufacturers' directions.

Smoke Detectors

Smoke detectors more than double the chance of surviving a fire.

Smoke detectors sense abnormal amounts of smoke or invisible

Home Building for Profit.

This section is designed to help builders and investors in building for profit with some techniques that help maximize your profit and lower your costs.

The Land

The selection of the land and its position is also very important in Investment building. The most common mistake investors make is to select the land as if they are going to build and live in the home themselves. However a little research into the area in which you wish to start usually shows this is incorrect. Buying a home is usually an emotional decision rather than a practical one. For example - most people when asked if they would live on a main road would say no, however statistics show that homes on a main road sold more quickly and more often, The reason for this is - it simply means that the home on the main road is seen by many more people than one in the back quieter streets. Therefore, it gets many more inspection inquiries.

Also when asked, most clients give the impression that they wish to own a large home with lots of rooms and all the modern comforts, however, the statistics show that most people buy a smaller home with intentions of adding to it later. The reason for this is simple - costs and how much you can afford.

So, simply put the 1st time investor or builder chooses a a more expensive block of land in a quiet street and put a larger home and include all the latest features. This will usually put you out of the buyers market and means you are aiming at a minority part of the market. Whereas an experienced investor or builder will aim at the majority part of the market and choose a piece of land that has great drive past traffic and build the size of home that most people can afford.

The most practical method for designing a product that sells quickly is to work backwards.

Example:

- Do local research into what price of home sells the most for your area.
(local real estate agents can help).
- Take off the profit which you would like to achieve.
- Take off the price of the land which has the best exposure.
- Take off costs of selling, advertising and legal fees.

The remaining funds are what you must design the home for to achieve a profit, if you do not have a enough funds left, to design a home to the size that sells the most for your area, then you should not start the project or re-look at the figures or your profit margin.

Profit Margins

One of the greatest mistakes of 1st time investors is to be too greedy or have the wrong impression of how much profit is in building. This usually comes about because they have heard stories of how their friends have made a 'killing' in selling an investment home!

Home Building Design

The design of a home must incorporate your lifestyle, your budget, the shape of your land, the climate and last but not least re-sale value .

The Land:

If you intend to have a distinctive shaped home you should consider purchasing your land first, as this sets the amount of area you can build to as well as set a budget to allow for building.

Lifestyle:

Your lifestyle should be incorporate into the design of the home. For example - if you like to do a lot of entertaining the design can include a large entertainment area that has easy access to the kitchen area. Whereas if you like outdoor entertaining such as BBQ's etc you can design the home more to outdoor living with larger outdoor covered areas. Some people prefer more of a private life and do little entertaining. They can require a more private home front with the house designed towards a relaxed home environment with reading rooms, or a home cinema area with only a minimum of entertainment areas.

Budget:

Design a home to your budget is probably one of the most neglected areas in home design and causes many of the problems in building . You should carefully budget for all the aspects of costs prior to designing the home itself . This will help in choosing many of the features you would like to bring to the design. Very few people have an unlimited budget, so if you do not allow for the finishing items such as landscaping, fencing, pools etc prior to designing the home you tend to build a home that is larger than it should have been and you will have sacrificed finishing off the home. A well designed home completely finished has much more a appeal and re-sale value than a large unfinished home.!

Aspect:

The aspect of the home is very important and easy to design into the home layout . The easiest method is to draw the land shape showing the house as a rectangle on the land. Now show the north/south direction on the drawing. You can draw small boxes in the house area where the position of each room should be in relation to the sun, heat and cold. For example - the ideal position for the kitchen is usually on the eastern side of the home so it gets the morning sun which can incorporate a breakfast or meals area. The garage is most commonly put facing the street but can be utilized to protect the home from hot western sun or simply to block the street noise from a room located behind the garage. When designing this layout you should keep in mind the time the rooms are most used, such as bedrooms - they are mostly used at night and therefore can be placed in the areas of the design that have the most extreme weather conditions in the day time. Whereas areas such as family rooms and lounge rooms are utilized at all times of the day and night and should be given the best position in the design with easy access to kitchen and bathroom areas.

Resale Value:

Resale value is also an important consideration in planning your new home. The best way to keep up the re-sale value is to have a close look at the quality of the suburb in which you are building your new home and do not overcapitalize by building a home too big for your area. Most of the homes in any area tend to sell in the same price range so you should do some research through local real estate agents to establish your ideal end value of the home and design.

Home Building

Safety Tips

Your home. It's much more than a physical structure. It's the place where memories are made, where dreams are shared, where lives are lived. And many of your home's contents-the video of your baby's first steps, grandmother's brooch or old family photos, for instance-simply cannot be replaced. That's why it makes good sense to do everything you can to protect your home from fire and theft. Preventing Fires

According to the National Fire Protection Association, home fires cause more than \$5 billion in property damage each year, and more than 3,000 deaths. That's the bad news. The good news is that most fires are preventable. First, let's look at the top causes of home fires.

- * **Cooking fires.** Cooking fires pose a serious hazard. Always stay near the stove when cooking. Avoid wearing loose sleeves while cooking; they can be ignited by a burner or a grease splatter. You'll also want to keep curtains and other flammable materials well away from the range or oven. And never put water on a grease fire, which can cause the hot grease to splatter, burning you or spreading the fire. Instead, smother it with a lid or another pan, then turn off the burner. Leave the lid in place until it has cooled off completely.
- * **Portable and space-heating equipment.** Wood-burning, kerosene, propane and electric heaters can ignite draperies, clothing and other flammable items. Keep anything that can burn at least 3 feet away from all heating equipment. Shut off a heater before you leave the room or go to bed. When you purchase a heater, make sure it's been tested and approved by a reputable organization such as Underwriters Laboratories (UL) or the American Gas Association (AGA). This information is usually located on the warranty.
- * **Careless smoking.** Cigarettes are the leading cause of fire deaths. Never smoke in bed or in a place where you may fall asleep. Also, use deep ashtrays so a lit cigarette won't roll out and fall onto rugs or furniture. It's also a good idea to run water over an ashtray before emptying it into the trash. A smoldering cigarette butt could set the trash on fire.
- * **Electrical wiring.** You can't see wires hidden inside walls and ceilings, but there are some warning signs of electrical problems. If lights dim or flicker, fuses blow frequently or sparks shoot from receptacles when items are plugged in or unplugged, consult an electrician. Faulty electrical cords can also spark a fire or cause an electrical shock. Never run cords under rugs or heavy furniture. Pressure can crack insulation and break the wires. Don't overload outlets.
- * **Children with matches.** Children playing with matches or lighters are the leading cause of fire deaths for children 5 and under. Keep these items up high, preferably in a locked cabinet, out of the sight and reach of small children. Teach older ones how to handle matches responsibly.

- * Holiday hazards. Decorations and candles are a special concern during the holidays. If you buy a live Christmas tree, choose a fresh one and water it daily. With an artificial tree, make sure it's made of flame-retardant materials. Keep candles well away from anything that can burn and blow them out when you leave the room or go to bed.
- * Fireworks also deserve special mention. They are illegal in many states and endanger life, limb and property. Avoid amateurs who set off fireworks. Instead, attend public displays conducted by trained pyrotechnicians. Even sparklers are hazardous; they burn at 1200 \pm F.

There are some other simple, common sense precautions you can take to decrease your chances of a home fire:

- * Never store or use gasoline in the home. Gasoline is a motor fuel only. Keep small quantities in an approved container designed to store gasoline, and store outside, preferably in a locked, detached shed. Wipe up spills immediately and never refuel motors near heat sources, sparks or cigarettes.
- * Don't overload electrical receptacles.
- * Don't use light bulbs with greater wattages than a fixture can handle.
- * Don't let combustible materials such as newspapers and rags pile up in basements and garages.
- * Leave plenty of air space around appliances and television sets; they can overheat and catch fire.
- * Use outdoor gas and charcoal grills with caution. Keep them away from structures, particularly when in use. Never add materials to the fire.

Fireplace Safety

If your home has one or more fireplaces, special precautions can help to keep home fires burning safely:

- * Never burn charcoal or use a hibachi in your fireplace. Both produce deadly carbon monoxide.
- * Protect against sparks by enclosing a fireplace's opening with glass doors or a sturdy screen.
- * Never close the flue while a fire is still smoldering. Carbon monoxide could build up.
- * Never use gasoline, kerosene or lighter fluid to start a fire. Burn only dry, seasoned hardwood. For extra safety, light fires with long-stemmed matches.

- * Have your fireplace and chimney inspected annually. They should be properly vented and free of blockages. Have cleaned as needed.
- * Protect the top of your chimney with a guard that keeps out birds and small animals and keeps in sparks that could ignite your roof.
- * Keep flammables such as newspapers, magazines, rugs and carpeting well away from the fireplace.
- * Remove holiday decorations from the fireplace and mantle before building a fire to avoid having the decorations ignite.
- * Teach children to stay back from the fireplace.
- * Never leave a fire unattended.
- * Keep a fire extinguisher handy.

If Fire Breaks Out

Smoke detectors greatly increase the likelihood you'll survive a fire. Place at least one on each floor of your home and outside each sleeping area. Install detectors inside bedrooms for added protection. Mount detectors on the ceiling, at least 4 inches away from the wall. Test detectors monthly and replace batteries once a year. To help you remember, plan to install new batteries on an annual event, such as the Fourth of July. Replace smoke detectors after 10 years.

If a fire does break out, take immediate action. Smoke and flames spread rapidly. Get out of the house right away, then call the fire department from a neighbor's house or a cellular phone. Fumes overcome most victims long before flames reach them. Use your safest exit. If you must escape through smoke, get down and crawl low under the smoke, keeping your head about 12-24 inches off the floor.

If you haven't gotten around to conducting a family fire drill, now's the time to do it. And visit your local hardware store or home center to invest in a few fire extinguishers. Extinguishers are classified according to the type of fire they will put out, and you'll find the classification displayed on an extinguisher. A Class ABC extinguisher is multi-purpose and works well against any small, self-contained fire. Keep one in the kitchen, extras in the basement or garage. Contact your fire department to ask about training. Don't attempt to fight a fire unless you know you have the right extinguisher to handle that type of fire, and be sure to keep your back to a safe exit.

Fire Safety Checklist

Take this quick quiz to help you assess your family's fire safety plan:

Do you follow the fire prevention practices outlined in this pamphlet? Pay special attention to safety tips on cooking, smoking, use of heating

equipment, proper storage of flammables and precautions regarding children and matches.

Are your smoke detectors working? There should be at least one on every floor of your home. Test each detector monthly, and replace batteries annually.

Do you hold regular fire drills? Several times a year, have your family practice exiting your home safely and quickly in the event of an emergency. Designate a meeting place for all family members to gather once they are out of the house.

Have you taught your children to "stop, drop and roll"? In the event their clothing catches fire, kids (and adults) should stop, drop to the floor, cover their faces and roll over and over or back and forth to put out the fire. Keep rolling until the fire goes out.

Have you planned an alternate escape route? It's important to have at least two escape routes from each room in your home, often a door and a window. Practice using them now to be sure you could get out in an emergency.

Can you safely exit from the second floor? A chain ladder or other easily accessible ladder can help you escape from the upper stories of your home in the event of a fire.

Do you know how to use your fire extinguishers? Know where your fire extinguishers are kept, and read the instructions for use before you need them.

Do you know the phone number for your local fire department and the location of the nearest phone outside your house? In case of fire, always evacuate your home first, then call for help from a cellular or other nearby phone.

Preventing Theft

Every year, burglars hit more than five million households, stealing more than \$4 billion worth of property.* Determined thieves can break into just about any home, but you can take steps to make entry a lot more difficult for them.

* Source: Protecting Your Life, Home and Property, Capt. Robert L. Snow, Plenum Press, 1995.

Invest in a quality door. Door security begins not with a good lock but with the door itself and the frame it fits into. Weak door assemblies can be broken with a single kick, popped open with a jimmy bar or even pried out-frame and all-from the wall. Strong exterior doors have solid, not hollow, cores; doors that are sheathed in metal are even better.

Install deadbolts. Deadbolt locks provide the best protection for the least amount of money. Ordinary spring-operated locks can be defeated

with a credit card. Intruders can't slip a deadbolt lock because it has a solid metal bar that fits into the door jamb. To be effective, a deadbolt lock should have at least a one-inch throw (meaning the metal bolt extends at least an inch past the edge of the door). Doors with glass panes present a special security problem because a thief can break the pane, reach inside and unlock the door. If state or local laws permit, the solution is a double-cylinder lock-one that must be opened with a key from inside as well as out. But don't defeat the purpose by getting into the habit of leaving the key in the lock on the inside. To exit quickly in case of a fire, keep the key near the door but in a spot that can't be reached from outside. You might want to hang it on a nail near the floor where you can find it easily if fire breaks out.

Don't forget windows. Windows and sliding glass doors also should be secured. Look for locks specifically made for different window styles at your local hardware store or home center. You also can secure a sliding glass door with a broomstick or piece of 1" x 2" lumber laid in the door track when the door is closed.

Light up. Outside flood lighting reduces your risk of burglary by highlighting the exterior of your home at night. You can choose from lights that remain on all night or motion-sensitive lights that come on only when someone approaches your home. Motion-sensitive lights save energy and could catch a would-be thief by surprise. Timers on inside as well as outside lights give the impression that someone is home, even if you're on vacation, out to dinner or visiting the neighbors. Sounding an Alarm For greater peace of mind, consider investing in a professionally installed alarm system. Alarm systems come in many shapes and sizes, at prices that range from a few hundred to several thousand dollars. Many installers also charge monthly monitoring fees, which should be taken into account when you shop for a system. A home alarm system includes some combination of the following components:

Perimeter sensors. These consist of photo cells or magnetic contacts on doors and windows that sound an alarm when an intruder tries to get inside. Perimeter sensors are mounted on two points, such as the door jamb and the door itself. Photo cell sensors are activated when something passes through a beam of light projected between the two points, while magnetic sensors are activated when contact is broken between the two magnetized points.

Heat and motion sensors. You can use heat and motion detectors to protect specific spaces in or outside your home-a bedroom hallway, for instance, or your backyard. Heat detectors respond to body temperatures. Motion sensors detect movement.

Glass break detectors. These devices recognize the sound of breaking glass. They activate the alarm when they sense breaking glass in a window or door.

Keypad. One or more keypads allow you to turn the system on and off.

Audible alarm. A piercing alarm alerts neighbors and the police. And it lets the burglar know he's been detected, meaning he'll probably leave your house in a hurry.

Keep in mind that false alarms can be a problem. In addition to annoying the neighbors and taking the police away from real emergencies, some communities now assess fines for excessive false alarms. The National Burglar & Fire Alarm Association reports that nearly 80 percent of false alarms are caused by user error. Steps to prevent false alarms include regular system maintenance and ensuring that whoever has a key to your house also knows the codes to activate and deactivate your system.

Local police are a good source of information and recommendations regarding security systems. They work with the security services in your area and can tell you what types of break-ins are most common in your community. Or contact the National Burglar and Fire Alarm Association for names of members by calling 301/907-3202 or writing to NBFSA, 7101 Wisconsin Ave., Suite 1390, Bethesda, MD 20814-4805. After you've determined which alarm system is best for you, ask your insurance agent, family or friends for referrals. Get written quotes from at least three companies. Before you obtain an alarm system, investigate a security service's reputation and how long it has been in business. Also ask about warranties and what they cover.

Crime-Stoppers' Checklist

Use this quiz to evaluate the security at your house:

Do you have a dog? Barking dogs attract the kind of attention a burglar doesn't need.

Do you leave a radio or television set on when you're out? The sound of voices will send an intruder elsewhere.

Do you refuse to open doors to strangers? Always ask for identification or check the driveway for a repair or delivery truck. If in doubt, call the utility or business in question to ask if they have sent someone to your home.

Do you have peepholes in all solid doors? Don't rely on chain locks to see who is at the door. They can easily be forced once a door is ajar.

Do you keep your garage door locked? Thieves like attached garages because, once inside, they can unobtrusively force the door to the house.

Are your basement windows secure? These are another popular point of entry for intruders.

Do you keep trees and shrubbery trimmed? Overgrown vegetation gives a burglar more privacy.

Do you have neighbors collect your mail and newspapers while you're away? You can also ask the post office and paper carrier to hold deliveries until you return.

Have you familiarized baby sitters and other outsiders with your safety measures? Show them escape routes and familiarize them with any locks and alarm systems. (See page 12 for a list of emergency numbers to keep by the phone.)

Does your neighborhood have a watch program? If not, check with your local police for information about starting one.

Insuring Against Loss

Homeowners or renters insurance provides money to replace possessions after a fire or robbery. Remember to keep a good inventory of your property, including serial numbers. A quick way to do this is with snapshots or a camcorder. Store your inventory in a safe-deposit box or other location outside your home, and update it every year.

While you're making an inventory of your valuables, consider engraving them with your name or Social Security number. This makes it easier to trace the goods back to you if they're stolen. Many local police departments will loan etching tools.

Most insurers recommend that you insure your property at replacement cost. This reimburses you for what it would cost to replace items today, instead of paying only for their current, depreciated value. You'll pay a little more in premiums for this extra peace of mind, so shop around for the best policy and the best price. Consider only reputable companies and agents. Get at least three quotes. Some companies provide lower rates if you have more than one type of coverage with them, such as auto and home. Review your insurance coverage annually. In Case of Emergency Take a few minutes to look up these numbers and post them by the kitchen phone.

Fire or Crime in Progress _____ 911

Poison Control Center

Alarm Service

Family Physician

Insurance Agent

Neighbor

Babysitter

Safe and Sound

The place where you and your loved ones live, with your possessions and irreplaceable mementos of your past, is well worth protecting. The time, money and attention you devote to securing it will reward you with increased peace of mind and the feeling that your home is indeed a safe haven.

Home Safety Checklist

Safety Equipment

Smoke Alarms

Is there one located on each floor of the home?

If battery operated, do you check the battery periodically and replace it yearly?

If electrical, do you check periodically for proper operation?

Fire Extinguishers

Easily accessible?

Fully charged?

Is it within the expiration date?

Deadbolts

Installed on all exterior doors?

Plumbing

Hoses and Connections

Are the following periodically checked to see if they are secure and leak-free?

Hot water tank

Dishwasher

Washing machine

Icemaker

Electrical

Are extension cords overloaded?

Are extension cords removed from under rugs or furniture?

If older home, is the wiring up to code?

Do you have surge protector bars on air conditioners, entertainment equipment and computers?

Heating System

Is your furnace cleaned and checked annually?

Are the filters changed regularly?

Chimney/Fireplace

Are they cleaned and checked annually?

Is the damper functioning properly?

Are screen/doors in fireplace properly installed?

Frozen Pipe Prevention

Is home heated while on winter vacations?

Do you disconnect the garden hose and shut off outside water faucets when the temperature drops to freezing?

Roof

Is the roof in good condition?

Are gutters cleaned every autumn to help prevent roof leaks?

Miscellaneous

Are all your steps/sidewalks level and intact?

Are there secured railings for your steps?

Is flammable material properly stored? (Example: Be sure clothes are not stored near hot water heater.)

Are surrounding trees healthy?

Is your house clear from any hanging tree limbs?

Is your in-ground pool fenced in?

Are there locking gates on decks connected to swimming pools?

Are matches stored out of the reach of children?

Are all the cabinets in your home child proof (cleansers and sharp objects are out of reach)?

Do you check the safety and condition of your outdoor deck on a yearly basis? (Look for rot; check for stability; treat annually with water sealer.)

Do you repair loose or missing grout or caulking in tub/shower area to prevent deterioration of tiles?

Heating and cooling your home uses more energy and drains more energy dollars than any other item.

Over 40% of most energy bills goes for heating and cooling. Plus heating and cooling systems in the Homes add to global warming. They also produce sulfur dioxide and the nitrogen oxides, the chief ingredients in acid rain.

You can save money and increase comfort by properly maintaining and upgrading your equipment. By combining proper equipment maintenance and upgrades with appropriate insulation, weatherization, and thermostat settings, you can cut your energy bills and your pollution output in half.

Heating Tips

- Set your thermostat as low as is comfortable.
- Clean or replace filters on furnaces once a month or as needed.
- Clean warm-air registers, baseboard heaters, and radiators as needed; make sure they're not blocked by furniture, carpeting, or drapes.
- Bleed trapped air from hot-water radiators once or twice a season; if in doubt about how to perform this task, call a professional.
- Place heat-resistant radiator reflectors between exterior walls and the radiators.
- Use kitchen, bath, and other ventilating fans wisely; in just 1 hour, these fans can pull out a houseful of warmed or cooled air. Turn fans off as soon as they have done the job.
- Keep draperies and shades open on south-facing windows during the heating season to allow sunlight to enter your home; close them at night to reduce the chill you may feel from cold windows.
- Close an unoccupied room that is isolated from the rest of the house, such as in a corner, and turn down the thermostat or turn off the heating for that room or zone. However, do not turn the heating off if it adversely affects the rest of your system. For example, if you heat your house with a heat pump, do not close the vents – closing the vents could harm the heat pump.
- Select energy-efficient equipment when you buy new heating equipment. Your contractor should be able to give you energy fact sheets for different types, models, and designs to help you compare energy usage. Look for the ENERGY STAR® label. The ENERGY STAR® is a program of the U.S. Department of Energy (DOE) and the Environmental Protection Agency (EPA) designed to help consumers identify energy-efficient appliances and products.

Ducts

One of the most important systems in your home, though it's hidden beneath your feet and over your head, may be wasting a lot of your energy dollars. Your home's duct system, a branching network of tubes in the walls, floors, and ceilings, carries the air from your home's furnace and central air conditioner to each room. Ducts are made of sheet metal, fiber glass, or other materials.

Unfortunately, many duct systems are poorly insulated or not insulated properly. Ducts that leak heated air into unheated spaces can add hundreds of dollars a year to your heating and cooling bills.

Insulating ducts that are in unconditioned spaces is usually very cost effective. If you are buying a new duct system, consider one that comes with insulation already installed. Sealing your ducts to prevent leaks is even more important if the ducts are located in an unconditioned area such as an attic or vented crawl space. If the supply ducts are leaking, heated or cooled air can be forced out unsealed joints and lost. In addition, unconditioned air can also be drawn into return ducts through unsealed joints. In the summer, hot attic air can be drawn in, increasing the load on the air conditioner. In the winter, your furnace will have to work longer to keep your house comfortable. Either way, your energy losses cost you money.

Although minor duct repairs are easy to accomplish, ducts in unconditioned spaces should be sealed and insulated by qualified professionals using the appropriate sealing materials. Here are a few simple tips to help with minor duct repairs.

Duct Tips

- Check your ducts for air leaks. First look for sections that should be joined but have separated and then look for obvious holes.
- If you use duct tape to repair and seal your ducts, look for tape with the Underwriters Laboratories (UL) logo to avoid tape that degrades, cracks, and loses its bond with age.
- Remember that insulating ducts in the basement will make the basement colder. If both the ducts and the basement walls are uninsulated, consider insulating the basement walls and the ducts.
- If your basement has been converted to a living area, install both supply and return registers in the basement rooms.
- Be sure a well-sealed vapor barrier exists on the outside of the insulation on cooling ducts to prevent moisture buildup.
- Get a professional to help you insulate and repair all ducts.

Ducts – Out of Sight, Out of Mind

The unsealed ducts in your attics and crawl spaces lose air – uninsulated ducts lose heat, wasting energy and money.

Heat Pumps

If you use electricity to heat your home, consider installing an energy-efficient heat pump system. Heat pumps are the most efficient form of electric heating in moderate climates, providing three times more heating than the equivalent amount of energy they consume in electricity. There are three types of heat pumps: air-to-air, water source, and ground source. They collect heat from the air, water, or ground outside your home and concentrate it for use inside. Heat pumps do double duty as a central air conditioner. They can also cool your home by collecting the heat inside your house and effectively pumping it outside. A heat pump can trim the amount of electricity you use for heating as much as 30% to 40%.

Heat Pump Tips

- Do not set back the heat pump's thermostat manually if it causes the electric resistance heating to come on.

This type of heating, which is often used as a backup to the heat pump, is more expensive.

- Clean or change filters once a month or as needed, and maintain the system according to manufacturer's instructions.

Solar Heating

Using the sun to heat your home through passive solar design can be both environmentally friendly and cost effective.

In many cases, you can cut your heating costs by more than 50% compared to the cost of heating the same house that does not include passive solar design. Passive solar design techniques include placing larger, insulated windows on south-facing walls and locating thermal mass, such as a concrete slab floor or a heat-absorbing wall, close to the windows. However, a passive solar house requires careful design, best done by an architect for new construction or major remodeling.

Solar Tips

- Keep all south-facing glass clean.
- Make sure that objects do not block the sunlight shining on concrete slab floors or heat-absorbing walls.
- Consider using insulating curtains to reduce excessive heat loss from large windows at night.

Fireplaces

When you cozy up next to a crackling fire on a cold winter day, you probably don't realize that your fireplace is one of the most inefficient heat sources you can possibly use. It literally sends your energy dollars right up the chimney along with volumes of warm air. A roaring fire can exhaust as much as 24,000 cubic feet of air per hour to the outside, which must be replaced by cold air coming into the house from the outside. Your heating system must warm up this air, which is then exhausted through your chimney. If you use your conventional fireplace while your central heating system is on, these tips can help reduce energy losses.

Fireplace Tips

- If you never use your fireplace, plug and seal the chimney flue.
- Keep your fireplace damper closed unless a fire is going. Keeping the damper open is like keeping a 48-inch window wide open during the winter; it allows warm air to go right up the chimney.
- When you use the fireplace, reduce heat loss by opening dampers in the bottom of the firebox (if provided) or open the nearest window slightly – approximately 1 inch – and close doors leading into the room. Lower the thermostat setting to between 50° and 55°F.
- Install tempered glass doors and a heat-air exchange system that blows warmed air back into the room.
- Check the seal on the flue damper and make it as snug as possible.
- Add caulking around the fireplace hearth.
- Use grates made of C-shaped metal tubes to draw cool room air into the fireplace and circulate warm air back into the room.

Gas and Oil Heating Systems

If you plan to buy a new heating system, ask your local utility or state energy office for information about the latest technologies available to consumers. They can advise you about more efficient systems on the market today. For example, many newer models incorporate designs for burners and heat exchangers that result in higher efficiencies during operation and reduce heat loss when the equipment is off. Check the appliance card in the back of this booklet for additional information on how to understand heating system ratings.

Look for the ENERGY STAR® label.

Air Conditioners

It might surprise you to know that buying a bigger room air-conditioning unit won't necessarily make you feel more comfortable during the hot summer months. In fact, a room air conditioner that's too big for the area it is supposed to cool will perform less efficiently and less effectively than a smaller, properly sized unit. This is because room units work better if they run for relatively long periods of time than if they are continually, switching off and on. Longer run times allow air conditioners to maintain a more constant room temperature. Running longer also allows them to remove a larger amount of moisture from the air, which lowers humidity and, more importantly, makes you feel more comfortable.

Sizing is equally important for central air-conditioning systems, which need to be sized by professionals. If you have a central air system in your home, set the fan to shut off at the same time as the cooling unit (compressor). In other words, don't use the system's central fan to provide circulation, but instead use circulating fans in individual rooms.

Cooling Tips

- Whole-house fans help cool your home by pulling cool air through the house and exhausting warm air through the attic. They are effective when operated at night and when the outside air is cooler than the inside.
- Set your thermostat as high as comfortably possible in the summer. The less difference between the indoor and outdoor temperatures, the lower your overall cooling bill will be.
- Don't set your thermostat at a colder setting than normal when you turn on your air conditioner. It will not cool your home any faster and could result in excessive cooling and, therefore, unnecessary expense.
- Set the fan speed on high except in very humid weather. When it's humid, set the fan speed on low. You'll get better cooling, and slower air movement through the cooling equipment allows it to remove more moisture from the air, resulting in greater comfort.
- Consider using an interior fan in conjunction with your window air conditioner to spread the cooled air more effectively through your home without greatly increasing your power use.
- Don't place lamps or TV sets near your air-conditioning thermostat. The thermostat senses heat from these appliances, which can cause the air conditioner to run longer than necessary.
- Plant trees or shrubs to shade air-conditioning units but not to block the airflow. A unit operating in the shade uses as much as 10% less electricity than the same one operating in the sun.

Programmable Thermostats

You can save as much as 10% a year on your heating and cooling bills by simply turning your thermostat back 10% to 15% for 8 hours. You can do this automatically without sacrificing comfort by installing an automatic setback or programmable thermostat.

Using a programmable thermostat, you can adjust the times you turn on the heating or air-conditioning according to a pre-set schedule. As a result, you don't operate the equipment as much when you are asleep or when the house or part of the house is not occupied. (These thermostats are not meant to be used with heat pumps.) Programmable thermostats can store and repeat multiple daily settings (six or more temperature settings a day) that you can manually override without affecting the rest of the daily or weekly program. When shopping for a programmable thermostat, be sure to look for the ENERGY STAR® label.

Nighttime Heating

Using a programmable thermostat, you can automatically turn down your heat at night or when you are not at home.

Nighttime Cooling

In the summer, you can save money by automatically turning your air-conditioning up at night.

Windows

Windows can be one of your home's most attractive features. Windows provide views, daylighting, ventilation, and solar heating in the winter. Unfortunately, they can also account for 10% to 25% of your heating bill. During the summer, sunny windows make your air conditioner work two to three times harder. If you live in the Sun Belt, look into new solar control spectrally selective windows, which can cut the cooling load by more than half.

If your home has single-pane windows, as almost half of U.S. homes do, consider replacing them. New double-pane windows with high-performance glass (e.g., low-e or spectrallyselective) are available on the market. In colder climates, select windows that are gas filled with low-emissivity (low-e)coatings on the glass to reduce heat loss. In warmer climates,select windows with spectrally selective coatings to reduce heat gain. If you are building a new home, you can offset some of the cost of installing more efficient windows because doing so allows you to buy smaller, less expensive heating and cooling equipment.

If you decide not to replace your windows, the simpler, less costly measures listed below can improve the performance of your windows.

Cold-Climate Window Tips

Install exterior or interior storm windows; storm windows can reduce your heat loss through the windows by 25% to 50%. Storm windows should have weatherstripping at all moveable joints; be made of strong, durable materials; and have interlocking or overlapping joints. Low-e storm windows save even more energy.

Repair and weatherize your current storm windows, if necessary.

Install tight-fitting, insulating window shades on windows that feel drafty after weatherizing.

Close your curtains and shades at night; open them during the day.

Keep windows on the south side of your house clean to maximize solar gain.

Cold-Climate Windows

Double-pane windows with low-e coating on the glass reflect heat back into the room during the winter months.

Warm-Climate Window Tips

Install white window shades, drapes, or blinds to reflect heat away from the house.

Close curtains on south- and west-facing windows.

Install awnings on south- and west-facing windows.

Apply sun-control or other reflective films on south-facing windows to reduce solar gain.

Warm-Climate Windows

In the summertime, the sun shining through your windows heats up the room. Windows with spectrally selective coatings on the glass reflect some of the sunlight, keeping your rooms cooler.

Buying New Windows

New windows are long-term investments that have a large impact on your home's energy systems. Today, there are many new window technologies available that are worth considering. Glazing materials now come with a variety of selective coatings and other features; frames are available in aluminum, wood, vinyl, fiber glass, or combinations of these materials. Each type of glazing material and frame has advantages and disadvantages.

Shopping Tips

- When you're shopping for new windows, first, look for the National Fenestration Rating Council (NFRC) label; it means the window's performance is certified.
- Remember, the lower the U-value, the better the insulation. In colder climates, a U-value of 0.35 or below is recommended. These windows have at least double glazing and low-e coating.
- In warm climates, where summertime heat gain is the main concern, look for windows with double glazing and spectrally selective coatings that reduce heat gain.
- Select windows with air leakage ratings of 0.3 cubic feet per minute or less.
- In temperate climates with both heating and cooling seasons, select windows with both low U-values and low solar heat gain coefficient (SHGC) to maximize energy benefits.

For more information about windows, contact:

American Architectural Manufacturers Association (AAMA),

(847) 303-5664

ENERGY STAR®,

(888) STAR-YES (782-7937)

National Fenestration Rating Council (NFRC),

(301) 589-6372

National Wood Window and Door Association,

(800) 223-2301

Owens Corning Customer Service Hotline,

(800) GET-PINK (438-7465)

U.S. Department of Energy's

Energy Efficiency and Renewable Energy Clearinghouse

(EREC), (800) DOE-EREC (363-3732), and Network

(EREN).

The first step to taking a whole-house energy efficiency approach is to find out which parts of your house use the most energy. A home energy audit will show you where these are and suggest the most effective measures for reducing your energy costs. You can conduct a simple home energy audit yourself, you can contact your local utility, or you can call an independent energy auditor for a more comprehensive examination.

How We Use Energy In Our Homes (based on national averages)

The largest portion of a utility bill for a typical house is for heating and cooling.

Energy Auditing Tips

- Check the level of insulation in your exterior and basement walls, ceilings, attic, floors, and crawl spaces.
- Check for holes or cracks around your walls, ceilings, windows, doors, light and plumbing fixtures, switches, and electrical outlets that can leak air into or out of your home.
- Check for open fireplace dampers.
- Make sure your appliances and heating and cooling systems are properly maintained.
- Study your family's lighting needs and use patterns, paying special attention to high-use areas such as the living room, kitchen, and exterior lighting. Look for ways to use daylighting, reduce the time the lights are on, and replace incandescent bulbs and fixtures with compact fluorescent lamps or standard fluorescent lamps.

Formulating Your Plan

After you have identified places where your home is losing energy, assign priorities to your energy needs by asking yourself a few important questions:

- How much money do you spend on energy?
- Where are your greatest energy losses?
- How long will it take for an investment in energy efficiency to pay for itself in energy savings?
- Can you do the job yourself, or will you need to hire a contractor?
- What is your budget and how much time do you have to spend on maintenance and repair?

Once you assign priorities to your energy needs, you can form a whole-house efficiency plan. Your plan will provide you with a strategy for making smart purchases and home improvements that maximize energy efficiency and save the most money.

Another option is to get the advice of a professional. Many utilities conduct energy audits for free or for a nominal charge. For a fee, a professional contractor will analyze how your home's energy systems work together as a system and compare the analysis against your utility bills. He or she will use a variety of equipment such as blower doors, infrared cameras, and surface thermometers to find inefficiencies that cannot be detected by a visual inspection. Finally, they will give you a list of recommendations for cost-effective energy improvements and enhanced comfort and safety.

When searching for a contractor, you should:

- Start with the Yellow Pages
- Focus on local companies
- Look for licensed, insured contractors
- Get three bids with details in writing
- Ask about previous experience
- Check references
- Inquire with the Better Business Bureau

Keeping cool indoors when it is hot outdoors is a problem. The sun beating down on our homes causes indoor temperatures to rise to uncomfortable levels. Air conditioning provides some relief. But the initial costs of installing an air conditioner and the electricity costs to run it can be high. In addition, conventional air conditioners use refrigerants made of chlorine compounds, suspected contributors to the depletion of the ozone layer and global warming. But there are alternatives to air conditioning. This publication provides some common sense suggestions and low-cost retrofit options to help you "keep your cool"- and save electricity.

Staying Cool

An alternative way to maintain a cool house or reduce air-conditioning use is natural (or passive) cooling. Passive cooling uses non-mechanical methods to maintain a comfortable indoor temperature.

The most effective method to cool your home is to keep the heat from building up in the first place. The primary source of heat buildup (i.e., gain) is sunlight absorbed by your house through the roof, walls, and windows. Secondary sources are heat-generating appliances in the home and air leakage. Specific methods to prevent heat gain include reflecting heat (i.e., sunlight) away from your house, blocking the heat, removing built-up heat, and reducing or eliminating heat-generating sources in your home.

Reflecting Heat Away

Dull, dark-colored home exteriors absorb 70% to 90% of the radiant energy from the sun that strikes the home's surfaces. Some of this absorbed energy is then transferred into your home by way of conduction, resulting in heat gain. In contrast, light-colored surfaces effectively reflect most of the heat away from your home.

The most effective method to cool your home is to keep the heat from building up in the first place.

Installing a radiant barrier

Radiant barriers are easy to install. It does not matter which way the shiny surface faces - up or down. But you must install it on the underside of your roof - not horizontally over the ceiling, and the barrier must face an airspace.

For your own comfort while in the attic, install the radiant barrier on a cool, cloudy day. Use plywood walk boards or wooden planks over the ceiling joists for support. Caution: Do not step between the ceiling joists, or you may fall through the ceiling.

Staple the foil to the bottom or side of the rafters, draping it from rafter to rafter. Do not worry about a tight fit or small tears in the fabric; radiant transfer is not affected by air movement. The staples should be no more than 2 to 3 inches (5 to 8 centimeters) apart to prevent air circulation from loosening or detaching the radiant barrier. Use a caulking gun to apply a thin bead of construction adhesive to the rafters along the seams of the foil barrier. This will make the installation permanent.

Roofs

About a third of the unwanted heat that builds up in your home comes in through the roof. This is hard to control with traditional roofing materials. For example, unlike most light colored surfaces, even white asphalt and fiberglass shingles absorb 70% of the solar radiation. One good solution is to apply a reflective coating to your existing roof. Two standard roofing coatings are available at your local hardware store or lumberyard. They have both waterproof and reflective properties and are marketed primarily for mobile homes and recreational vehicles. One coating is white latex that you can apply

over many common roofing materials, such as asphalt and fiberglass shingles, tar paper, and metal. Most manufacturers offer a 5-year warranty.

A second coating is asphalt based and contains glass fibers and aluminum particles. You can apply it to most metal and asphalt roofs. Because it has a tacky surface, it attracts dust, which reduces its reflective somewhat. Another way to reflect heat is to install a radiant barrier on the underside of your roof. A radiant barrier is simply a sheet of aluminum foil with a paper backing. When installed correctly, a radiant barrier can reduce heat gains through your ceiling by about 25%. (see box for information on installing a radiant barrier.)

Walls

Wall color is not as important as roof color, but does affect heat gain somewhat. White exterior walls absorb less heat than dark walls. Light, bright walls increase the longevity of siding, particularly on the east, west, and south sides of the house.

Windows

Roughly 40% of the unwanted heat that builds up in your home comes in through windows. Reflective window coatings are one way to reflect heat away from your home. These coatings are plastic sheets treated with dyes or thin layers of metal. Besides keeping your house cooler, these reflective coatings cut glare and reduce fading of furniture, draperies, and carpeting.

Two main types of coatings include sun-control films and combination films. Sun-control films are best for warmer climates because they can reflect as much as 80% of the incoming sunlight. Many of these films are tinted, however, and tend to reduce light transmission as much as they reduce heat, thereby darkening the room.

Combination films allow some light into a room but they also let some heat in and prevent interior heat from escaping. These films are best for climates that have both hot and cold seasons. Investigate the different film options carefully to select the film that best meets your needs. Note: do not place reflective coatings on south-facing windows if you want to take advantage of heat gain during the winter. The coatings are applied to the interior surface of the window. Although you can apply the films yourself, it is a good idea to have a professional install the coatings, particularly if you have several large windows. This will ensure a more durable installation and a more aesthetically pleasing look.

Landscaping is a natural and beautiful way to shade your home and block the sun.

Blocking the Heat

Two excellent methods to block heat are insulation and shading. Insulation helps keep your home comfortable and saves money on mechanical cooling systems such as air conditioners and electric fans. Shading devices block the sun's rays and absorb or reflect the solar heat.

Insulation

Weatherization measures - such as insulating, weather stripping, and caulking - help seal and protect your house against the summer heat in addition to keeping out the winter cold. The attic is a good place to start insulating because it is a major source of heat gain. Adequately insulating the attic protects the upper floors of a house. Recommended attic insulation levels depend on where you live

and the type of heating system you use. For most climates, you want a minimum of R-30. In climates with extremely cold winters, you may want as much as R-49.

Wall insulation is not as important for cooling as attic insulation because outdoor temperatures are not as hot as attic temperatures. Also, floor insulation has little or no effect on cooling.

Although unintentional infiltration of outside air is not a major contributor to inside temperature, it is still a good idea to keep it out. Outside air can infiltrate your home around poorly sealed doors, windows, electrical outlets, and through openings in foundations and exterior walls. Thorough caulking and weather stripping will control most of these air leaks.

Shading

Shading your home can reduce indoor temperatures by as much as 20°F (11°C). Effective shading can be provided by trees and other vegetation and exterior or interior shades.

Landscaping

Landscaping is a natural and beautiful way to shade your home and block the sun. A well-placed tree, bush, or vine can deliver effective shade and add to the aesthetic value of your property. When designing your landscaping, use plants native to your area that survive with minimal care. Trees that lose their leaves in the fall (i.e., deciduous) help cut cooling energy costs the most. When selectively placed around a house, they provide excellent protection from the summer sun and permit winter sunlight to reach and warm your house. The height, growth rate, branch spread, and shape are all factors to consider in choosing a tree. Vines are a quick way to provide shading and cooling. Grown on trellises, vines can shade windows or the whole side of a house. Ask your local nursery which vine is best suited to your climate and needs.

Besides providing shade, trees and vines create a cool microclimate that dramatically reduces the temperature (by as much as 9°F [5°C]) in the surrounding area. During photosynthesis, large amounts of water vapor escape through the leaves, cooling the passing air, and the generally dark and coarse leaves absorb solar radiation. You might also consider low ground cover such as grass, small plants, and bushes. A grass-covered lawn is usually 10°F (6°C) cooler than bare ground in the summer. If you are in an arid or semiarid climate, consider native ground covers that require little water. For more information on landscaping, see the EREC fact sheet *Landscaping for Energy Efficiency*.

Planning Your Planting

Placement of vegetation is important when landscaping your home. The following are suggestions to help you gain the most from vegetation.

- * Plant trees on the northeast-southeast and the northwest-southwest sides of your house. Unless you live in a climate where it is hot year-round, do not plant trees directly to the south. Even the bare branches of mature deciduous trees can significantly reduce the amount of sun reaching your house in the winter.
- * Plant trees and shrubs so they can direct breezes. Do not place a dense line of evergreen trees where they will block the flow of cool air around or through them.
- * Set trellises away from your house to allow air to circulate and keep the vines from attaching to your house's facade and damaging its exterior. Placing vegetation too close to your house can trap heat and make the air around your house even warmer.

- * Do not plant trees or large bushes where their roots can damage septic tanks, sewer lines, underground wires, or your house's foundation.
- * Make sure the plants you choose can withstand local weather extremes.

Shading Devices

Both exterior and interior shades control heat gain. Exterior shades are generally more effective than interior shades because they block sunlight before it enters windows. When deciding which devices to use and where to use them, consider whether you are willing to open and close them daily or just put them up for the hottest season. You also want to know how they will affect ventilation. Exterior shading devices include awnings, louvers, shutters, rolling shutters and shades, and solar screens. Awnings are very effective because they block direct sunlight. They are usually made of fabric or metal and are attached above the window and extend down and out. A properly installed awning can reduce heat gain up to 65% on southern windows and 77% on eastern windows. A light-colored awning does double duty by also reflecting sunlight.

Maintaining a gap between the top of the awning and the side of the house helps vent accumulated heat from under a solid-surface awning. If you live in a climate with cold winters, you will want to remove awnings for winter storage, or by retractable ones, to take advantage of winter heat gain.

A properly sized awning is an effective exterior shading device.

Roughly 40% of the unwanted heat that builds up in your home comes in through windows.

The amount of drop (how far down the awning comes) depends on which side of your house the window is on. An east or west window needs a drop of 65% to 75% of the window height. A south-facing window only needs a drop of 45% to 60% for the same amount of shade. A pleasing angle to the eye for mounting an awning is 45°. Make sure the awning does not project into the path of foot traffic unless it is at least 6 feet 8 inches (2 meters) from the ground.

One disadvantage of awnings is that they can block views, particularly on the east and west sides. However, slatted awnings do allow limited viewing through the top parts of windows.

Louvers are attractive because their adjustable slats control the level of sunlight entering your home and, depending on the design, can be adjusted from inside or outside your house. The slats can be vertical or horizontal. Louvers remain fixed and are attached to the exteriors of window frames.

Shutters are movable wooden or metal covering that, when closed, keep sunlight out. Shutters are either solid or slatted with fixed or adjustable slats. Besides reducing heat gain, they can provide privacy and security. Some shutters help insulate windows when it is cold outside.

Rolling shutters have a series of horizontal slats that run down along a track. Rolling shades use a fabric. These are the most expensive shading options, but they work well and can provide security. Many exterior rolling shutters or shades can be conveniently controlled from the inside. One disadvantage is that when fully extended, they block all light.

Solar screens resemble standard window screens except they keep direct sunlight from entering the window, cut glare, and block light without blocking the view or eliminating air flow. They also provide privacy by restricting the view of the interior from outside your house. Solar screens come in a variety of colors and screening materials to complement any home. Although do-it-yourself kits are available, these screens will not last as long as professionally built screens.

Although interior shading is not as effective as exterior shading, it is worthwhile if none of the previously mentioned techniques are possible. There are several ways to block the sun's heat from inside your house.

Draperies and curtains made of tightly woven, light-colored, opaque fabrics reflect more of the sun's rays than they let through. The tighter the curtain is against the wall around the window, the better it will prevent heat gain. Two layers of draperies improve the effectiveness of the draperies' insulation when it is either hot or cold outside.

Venetian blinds, although not as effective as draperies, can be adjusted to let in some light and air while reflecting the sun's heat. Some newer blinds are coated with reflective finishes. To be effective, the reflective surfaces must face the outdoors. Some interior cellular (honeycombed) shades also come with reflective mylar coatings. But they block natural light and restrict air flow.

Opaque roller shades are effective when fully drawn but also block light and restrict air flow.

Ventilated attics are about 30°F (16°C) cooler than unventilated attics

Removing Built-Up Heat

Nothing feels better on a hot day than a cool breeze. Encouraging cool air to enter your house forces warm air out, keeping your house comfortably cool. However, this strategy only works when the inside temperature is higher than the outside temperature.

Natural ventilation maintains indoor temperatures close to outdoor temperatures and helps remove heat from your home. But only ventilate during the coolest parts of the day or night, and seal off your house from the hot sun and air during the hottest parts of the day. The climate you live in determines the best ventilation strategy. In areas with cool nights and very hot days, let the night air in to cool your house. A well-insulated house will gain only 1°F (0.6°C). By the time the interior heats up, and the outside air should be cooler and can be allowed indoors.

In climates with day time breezes, open windows on the side from where the breeze is coming and on the opposite side of the house. Keep interior doors open to encourage whole house ventilation. If your location lacks consistent breezes, create them by opening the windows at the lowest and highest points in your house. This natural "thermosiphoning," or "chimney," effect can be taken a step further by adding a clerestory or a vented skylight.

In hot, humid climates where temperature swings between day and night are small, ventilate when humidity is not excessive. Ventilating your attic greatly reduces the amount of accumulated heat, which eventually works its way into the main part of your house. Ventilated attics are about 30°F (16°C) cooler than unventilated attics. Properly sized and placed louvers and roof vents help prevent moisture buildup and overheating in your attic.

Reducing Heat-Generating Sources

Often-overlooked sources of interior heat gain are lights and household appliances, such as ovens, dishwashers, and dryers. Because most of the energy that incandescent lamps use is given off as heat, use them only when necessary. Take advantage of daylight to illuminate your house. and consider switching to compact fluorescent lamps. These use about 75% less energy than incandescent lamps, and emit 90% less heat for the same amount of light.

New, energy efficient appliances generate less heat and use less energy.

Many household appliances generate a lot of heat. When possible, use them in the morning or late evening when you can better tolerate the extra heat. Consider cooking on an outside barbecue grill or use a microwave oven, which does not generate as much heat and uses less energy than a gas or electric range.

Washers, dryers, dishwashers, and water heaters also generate large amounts of heat and humidity. To gain the most benefit, seal off your laundry room and water heater from the rest of the house.

New, energy efficient appliances generate less heat and use less energy. When it is time to purchase new appliances, make sure they are energy efficient. All refrigerators, dishwashers, and dryers display an energy guide label indicating the annual estimated cost for operating the appliance or a standardized energy efficiency ratio. Compare appliances and buy the most efficient models for your needs.

Saving Energy

Using any or all of these strategies will help keep you cool. Even if you use air conditioning, many of these strategies, may not be enough. Sometimes you need to supplement natural cooling with mechanical devices. Fans and evaporative coolers can supplement your cooling strategies and cost less to install and run than air conditioners.

Ceiling fans make you feel cooler. Their effect is equivalent to lowering the air temperature by about 4°F (2°C). Evaporative coolers use about one-fourth the energy of conventional air conditioners.

Many utility companies offer rebates and other cost incentives when you purchase or install energy saving products, such as insulation and energy efficient lighting and appliances. Contact your local utility company to see what it offers in the way of incentives.

Cooling Strategies Checklist

- lighten roof and exterior wall color
- replace/coat roof with bright white or shiny material
- install a radiant barrier
- add reflective coatings to windows
- insulate attic and walls
- caulk and weatherstrip to seal air leaks
- add shade trees, bushes, or vines
- add exterior awnings and shades
- add interior drapes and shades
- ventilate attic
- increase natural ventilation
- isolate heat-generating appliances
- replace heat-generating appliances
- replace light bulbs with energy-efficient fluorescent's

Although new appliances, more efficient windows, wall, floor and ceiling insulation and other expensive alterations all contribute, making your home energy-efficient doesn't have to be expensive. Follow along as we take a tour through such a home.

Turn down the temperature at the water heater 10 degrees and save 10 percent annually on water heating bills. And, you might find that there is absolutely no loss in temperature or comfort in the shower or bath as a result. Try it. You can always turn the temperature back up if it proves otherwise.

Annual cleaning of your water heater tank can save another 5 percent on the water heater bill. Most folks are willing to insulate a water heater because it is fairly easy to do and inexpensive-less than \$30. Equally important is insulating hot water lines beneath the floor. In most homes the hot water lines can be insulated for under \$100 -and in one afternoon.

Modern American homes are required to have setback thermostats, but some are complicated and difficult to operate. A setback thermostat can switch the furnace on when heat is needed and turn it down to a lower temperature when everyone is snuggled in for the night. The same thermostat also can be programmed to shut the furnace off completely when no one is home. Also, it can turn the heat on again before anyone gets home. Call your local utility company to find out if they offer free instruction in the use of thermostats. Even if you have to pay a heating contractor to teach you how to use yours, the savings on your heating bill in one winter alone probably would cover the cost.

Heat rises, and most folks who have tried to clean a ceiling during the winter know that this is a job for a person in a bathing suit. (Talk about feeling the full effect of your furnace's output.) You wouldn't think that heat from the ceiling could make its way back down to the floor and out through the fireplace - but it can and does. Air currents in the home increase when the damper in a fireplace is left open allowing the warmth that exists to be drawn up the chimney.

Caulking and gasketing are two of the least expensive methods of reducing home-energy waste. Every duct, wire or pipe that penetrates a wall, ceiling or floor is a potential energy waster. Penetrations and gaps in floors, ceilings, windows and doors should be sealed with an appropriate caulking, foam sealant, gasket or weather stripping. An electric wall switch, for example, costs about 15 cents to insulate with a pre-cut gasket which can be purchased at most home improvement centers. Plumbing vents begin below the floor and end above the roof. The holes through which these pipes pass should be sealed with foam to prevent cold air from entering the house through the floor and attic. Penetrations made for electric wires create the same problem. They also should be sealed above and below.

The refrigerator uses more energy than any other home appliance. Make sure that the door gaskets are in premium condition and that the motor is operating at peak efficiency. A door gasket can be purchased and installed for less than \$35.

Low-flow shower heads save water and in so doing reduce water heating costs, not to mention water costs, by as much as half. There is a new low-flow shower head on the market that has a scald-guard feature.

Most heat loss occurs in the attic, since heat rises and the attic is the highest point. Even if your attic is insulated, it makes sense to add another layer, if you can afford it. You can't over insulate and the attic is the easiest and least expensive area to attack.

Source List

There are hundreds of groups that can provide you with more information on natural cooling strategies. The following organizations are just a few that can assist you in keeping your cooling costs down.

American Council for an Energy Efficient Economy (ACEEE)
1001 Connecticut Avenue, NW , Suite 801
Washington, DC 20036
(202) 429-8873

ACEEE provides general and technical information on energy efficiency.

American Solar Energy Society (ASES)

2400 Central Avenue, Unit G-1

Boulder, CO 80301

(303) 443-3130

ASES is a professional society that fosters the exchange of information about solar energy technologies.

Florida Solar Energy Center (FSEC)

300 State Road 401

Cape Cavaveral, FL 32920

(407) 783-0300

FSEC is a research and education center that provides technical services and information on passive cooling strategies for hot and humid climates.

Passive Solar Industries Council (PSIC)

1511 K Street, NW, Suite 600

Washington, DC 20005

(202) 628-7400

PSIC provides practical information on energy-conscious, passive solar design and construction to the u.s. building industry.

For information about these energy efficiency topics contact:

The Energy Efficiency and Renewable Energy Clearinghouse

(EREC)

PO Box 3048

Merrifield, VA 22116

(800) 363-3732

EREC provides free general and technical information to the public on the many topics and technologies pertaining to energy efficiency and renewable energy. You may also contact your state and local energy offices as well as your local solar energy association for regional specific information on natural cooling.

Reading List

The following publications provide further information on natural or passive cooling. This list does not cover all the available books, reports, and articles on passive cooling, nor is the mention of any publication a recommendation or endorsement.

To obtain the publications in this bibliography, contact your local library, bookstore, or the publisher.

Check the prices

through your bookstore or the publisher before placing an order.

Books, Pamphlets, and Reports

Cooling Our Communities: A guidebook on tree planting and light-colored surfacing, Government Printing Office, stock

NO. 055-000-00371-8, 1992.

Insulation, available from EREC (see source list), DOE/CE- 0180, 1988.

Landscape Planning for Energy Conservation,
G.O. Robinette And C. McClennon (eds.), Van Nostrand Reinhold
CO, 1983.

Low Energy Cooling, D. Abrams, Van Nostrand Reinhold Co.,
1986.

"Measured Cooling Savings From Vegetative Landscaping," A.
Meier, proceedings of 1990 summer study on energy efficiency
in buildings, available from ACEEE (see source list), pp.
4.133-4.144, 1990.

"Measured Savings in Air Conditioning From Shade Trees &
White Surfaces," H. Akbari et al., proceedings of ACEEE 1992
summer study on energy efficiency in buildings, available
from ACEEE (see source list), pp. 9.1-9.10, 1992.

Radiant Barriers: A Question and Answer Primer, Iegies," Consumers Digest, (31:38) p. 2,
May/June 1992.

"Keeping Cool: Natural Cooling and Air Conditioning,"
D.Johnson, Family Handyman, (40:3) p. 30 September 1990.

"Passive Cooling in a Hot, Arid Climate," H.W. Arch Solar
Today, (5:2) pp. 15-17, March/April 1991.

"Strategic Planting," Energy Auditor & Retrofitter, A. Meier
and J. Friesen, (4:4) pp. 7-12, July/August 1987.

The People involved in Construction.

Architect

The Architect is the designer of the home usually in conjunction with the home owner or builder.

Draftsman

Also gets involved in designing the home and is mostly employed by Builders or Architects to do the drawing of the home in detail so it is ready for construction.

The Interior Designer

They are usually responsible for the interior selections and color co-ordination so the home blends throughout.

The General Contractor or Builder

He/She is mainly the Manager of the building construction and co-ordinates the design, sub-contractors and suppliers, Councils and home-owners throughout the project to its completion.

The Sub-Contractor

The Sub-Contractor works directly for the Builder and does the work specific to his trade e.g the carpenter completes the carpentry work throughout the home at an agreed price with the Contractor.

Licensed Trade People

Some of the trades have to be licensed to comply with Laws. Example- plumbers and electricians have to be licensed before they can work on any site.

Material Supplier

This is the supplier of the various materials in the home. Most material suppliers specialise in a particular material.

For Example -the Plumbing fixtures. Suppliers mainly stay in their own areas and do not supply materials such as timber. However some suppliers do stock many of the materials used in a house, such as the hardware. Some suppliers may supply the majority of the products in the home.

Equipment Supplier

Specialise in Equipment - such as heavy equipment used in earthworks as well as items such as scaffolding planks etc.

Inspectors

Councils and Government departments have inspectors to check that the work is in accordance with the Building Act and State and Federal Laws.

Thank you



New Designs coming this month.

Please visit our website

<http://www.AustralianFloorPlans.com>