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FAX 0262774424
House of Representatives,
Select Committee on the Recent
Australian Bush Fires .

Parliament House,
Canberra A C T . 2600 .
Phone 02 62774822 .



Your Ref .
Attention Ian Dundas
 Committee Secretary,
 Correspondence
 Of 14 / 4 /2003 .

R . Dunn B. Arch .

Dear Sir ,

Please find as attached our submission ,

R . Dunn B. Arch . (N.S.W.) Architect . Chartered .
M . Dunn B. Arch , B. Env. Des . (Tas)
Of
M & R Dunn Architects , Glenbrook .
Development and environmental Design Consultants .

R. Dunn B. Arch.
1/6/2003

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1 Background .

1 R. Dunn (Richard) B. Arch. Thesis Major Uni. of N.S.W. 1962 .
Wind on and in relation to buildings .

2 Local work and practice in our Sydney city fringe bush areas on domestic residential development has given us some practical experience in problems associated with Bush fire problems that are basically wind design and fire design conditions for site, building and personnel .

3 A residence in bush , as home (40 years) , in Glenbrook Blue Mountains N.S.W. , adjacent to the national park , with defending and saving home in two major and several lesser fires in that time and background with family local fire protection experience since 1860 /s .

4 Designing with in new N.S.W. current bush fire regulations and code s. in Hawkesbury / (Colo Hts) Blue Mts. (Linden / Valley Hts / Glenbrook) areas , as typical outer fringe urban (Sydney) Bush areas .

All design problems in Residential and tourist development projects .

M. Dunn B. Arch. B. Env. Des. (tas) 2000

Design experience with in the practice , architectural design in problems in fire / pollution and Building since graduation .

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Introduction.

Some recommendations for consideration in designing for bush fire conditions in New and old Works; in Architectural, Town Planning ,Development.

Synopsis:

Currently, The base design guide used by planners ,architects and developers in (N.S.W.) is ,

(A) Planning for Bush-Fire protection 2001, Planning N.S.W. (N.S.W. Rural Fire Service).

Further to this design guide, we recommend a site specific analysis. (Determining Building footprint to asset protection zones.) for lot ,and or for subdivision sections , subdivisions and Town Planning zone areas .(a more flexible code to allow more creative ideas, allow more scope in design compromises , in aesthetics / construction / total street / and area layouts and liberal foot prints. (building / boundary off sets)).

(B) Standards Australia A S 3959- 1999 Construction of buildings in fire prone areas. We see this standard needs base reassessment , more scientific based (and researched) and a major revision ;

together with S A A . H B 36 1993 Building in fire prone areas (Information and advice C S I R O Australia .).All with best science / sample calculations and explicit graphics that are black and white reproducible and content cross indexed .

(C) A more flexible code . for if in (high medium and low) fire exposure positions with resistant construction /design / appropriate . and at different imposed higher building costs , construction as realistic / practical and site allowance made for lesser conditions or special extra works, controls should be variable at town planning (imposed fire asset protection) zone lengths , (not at development level but at and on subdivision level) (Subdivision should not be burdened with 'council 'whims blocking, logical (engineering capable , population pressure driven fringe town development) .

1. Design within fire prone bush-areas is to be for
 - (a). Crown -Fires.
 - (b). Secondary Ground Fires.
 - (c). Cinder / ember Fires ,Spot Fires .

Critical parameters as ,

Spot fires to 5 Km as from base risk area on probable fire path. Are to be in our opinion designed for.

Crown top fires , (on our understanding at the present) (on legal precedents) , N . S . W has design regulations that are required to take maximum conditions for general, crown fire from any direction , this is possibly in error in relation to subdivisions and asset protection distances .and owner site clearing , ground cover controls , in fill development and direct fire front conditions are poorly covered .

Cinder build up / ember fires as against walls or on roof valleys fires, are normally with in high velocity wind and cyclone fire storms , they require detail building design. Design for Crown fires (tree top high wind driven fires) (to 50/60 meter flame lengths around 50 Km velocity wind and gusts velocities 3 or 4 times greater ,firestorm 2 to 3 minutes only duration , is to our experience),

Developments within bush fire prone areas, requires full asset protection when maintaining a total sustainable development full fire resistant / proof ,for building and resistant / recoverable for landscape.; a non combustible , building design and safety design for occupants.

All achievable if funds available ,and in a full building architectural design /detailed, / supervision ,environment ,(fixings and anchors can be critical) with building , Implosion /explosion design for 160 Km/h wind and projectiles(roof tiles, roofing walling. Extreme conditions may not be able to be designed for (example , a tree falling ,damaging the structure ,(fire exposed) house subsequently on fire) .

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Ground Fires . Design for ground surface fires / coming after crown fires (and normally approximately to 5 / 10 minutes later , but can precede a fire storm if flame (plasma) (heat sink is hot enough) is controllable to management by home occupants if reduced fuel / ground fuel in asset protected zones, and clearing and fire fighting capacity , is maintained . (on an old residence , in the local area , as on our old family property with about at 10 year cycles of large bush fire histories , and 100/ 150 m clearing on exposure side / s as practiced crown and ground fire fuel reduction , building is still in Glenbrook . (after approximately 100 years Cr 1900) .

Design for cinder fires is building air sealing enclosure , with fire proof materials .
 Reducing ground fuel level to reduce / adding heating to the fire storm .
 Design for partial asset loss / insurance cover or saving shell of structure to allow a minimal cost re construction / rebuild is as local history old wool stores Sydney an option. We do not see this as logical for standard residential design , but in with cellar / disaster bunker basement , in isolated bush or exposed positions with little or no real escape the option, this building strategy has some merit (as it is in some north European countries (for war) and South USA 'tornado belt '(wind) and if in fire design area with gassing protection and extraction systems (from carbon dioxide / smoke build up) .
 Typical standard local construction could be allowed for on current difficult sites allowing Economical urban expansion , at present in N . S . W . stalled or frozen land (rates paid for 140 Years, and no house construction rights ,and no council compensation for zoning or Construction killing code impositions all Government imposed conditions helping force land prices up and exacerbating the building land shortage (Sydney) .
 It is our opinion local council fire controls / construction and 'fire 'codes have been locally Hypocritically used to stymie development at zoning and regulation level.

Design for heat sink / plasma / high radiant heat on structures as normal and with high fire flame exposure times at 5 / to 10 Minutes design duration ,during crown fire conditions which are in our opinion manageable at building construction level, with in current material technology and professional capacity and trade executed design ,the problem is in perceived real estate sales values , building fashion , poor building based design ,shoddy professional / trade education standards (science , technology and university poorly Government funded , supported and the resultant misguided and inappropriate construction .. Steel metal screening and material selection and architectural finish levels are important (as example fire retardant paints or no painting and associated volatile boiling / exploding gas oils to act as a fire accelerent on timber . (i.e. in thin sections in hand rails decks .)
 Design for radiant heat on occupants with Australian bush , current Australian figures by C S I R O (as high watts per square meter) makes only design position for personal safety as advice .

Keep well out of fire exposed positions (100 /150 M) the personal decision ,(the flight not fight option .) but get in a protected area , during a fire storm , in a fire proof / protected structure if in fight mode . (and in appropriate decked out gear for fire fighting (full cover clothing , smoke proof glasses ,sound foot ware /boots).
 Fire Combustible buildings can act as ' temperately bolt holes 'only but as in high risk situations radiant heat is in high levels very dangerous to life and organic material .
 A dangerous ploy to stay if bush fire crown fire roar /fire storm approaches if panic likely to set in from occupants or fire fighters ,as building can and do explode then burn in fire storm conditions .

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1 Design for Bush Fires , Crown fires Ground fires and Cinder fires .

New South Wales has currently base design parameters , for Architects Planners and Developers .
Planning for Bush Fire Protection 2001 (planning N S W .) N S W Rural Fire Service . *"

In conjunction with the associated

Australian Standard A S 3959- 1999 Construction of building in fire prone areas . * Plus .
S.A. A. H B 36 - 1996. Building in bush fire - prone areas - information and advice .

Standards Australia , C S } R O Australia . *"

Particularly of interest in relation to firestorm wind fire , cinder/ ember fire building attacks. and
building footprint , limits and distances of asset protection zones .

We are of the opinion fire path history , should be more important in building aspect fire design and
in lot and subdivision , lot inner and outer fire protection zones distances , and in , in fill development.

Subdivision , development , out of direct fire path history , locally normal down to initially 150 to
120M could be , as was given on 'worst case scenario 'out of fire history path , but exposed to high
down slope , as was given to us , on one project to .70 M after discussion / argument .

These publication are in need of revision , and detail assessment.

Bush fire planning has , 1. Asset protection , as building total or partly protected .

2. Occupant protection and safety .

3. Environs protection / lot / street / area / landscaping .

Bush fires usually have a reoccurring destructive impact problem to assets , residential development
Tragic results for life / people , and hence a problem amenable to a design for a minimum fire loss
strategy .

Bush Fires design problems are due to ,

(A) Crown Fires

(B) Ground Fires .

(C) Cinder Fires and spot fires (embers .)

(D) Radiant heat problems / smoke problems .

(A) Crown fires .

Crown fires as introduction discussed are the major bush fires to have on average been a problem
since white settlement in our area , city fringe Sydney .

Australian bush can survive if as at present occurring , approximately 10 years fire cycles , but over
long term forest bush fire can change the balance of bush as well as the bush to grass/ fern ratios . and
have the following associated sheet erosion / pollution problems . .

Bush fires historically have been farm winter grass burn off , (for spring fresh feed) burn 'offs' gone
wrong / 'got out of hand.' and early indigenous aboriginal bush burning was for ease in animal
hunting . , our current early landscape is a result of this long term fire practice (and possible lightning
caused fires) .

Current major bush fires are probably arson caused with some minor camp accident or careless
cigarette fires .

Fire destructive intensity in bush fire , is due to weather / dry high velocity from inland (local north
westerly) winds as on December/ January last (Sydney) , had low humidity / high fuel ground
cover , with little physical practical ability for defense preparation with deep forest fires . .

. The large urban and fringe city development with in the last 50 years , have seen losses due to bush
fires , to be come greater problems financial and tragic in asset and life due to outer fringe city
expansion . Problems (deliberate in our area) poor Town Planning . practice politics before strategic
or regional or national interests . Development due to low density residential growth / population
/immigration , and resulting (high city cost driven) building expansion .

Crown Fires are tree top fires high wind driven (to 50 Km , gusting 3 or 4 times this / 200 Km / Hr)
 , and super in posed heat chimney up draft crown and or fire storm fire induced fire cyclones .

Design for this type of fire , a fire storm of duration 2 to 3 minutes (60 Mph is 88 ft / second / 100 Km
/hr is 60 Mph) . It is in our opinion , design for 5 to 10 minutes total fire , basic fire protection , this in
our experience seems a logical design compromise . (in high and medium fire exposure areas) and
160 Km/h cyclone winds and to the SAA Design wind code

The high heat intensity levels are only for a short duration, with design of building having fire Materials and structure with high flash points (paints / and there composed vehicles /and oils)or better no paint to timber . Steel and not low melting point metals (aluminum)or plastics .
 Crown fires building design is materials structure element selection , brick / concrete , walls screened windows / doors , steel shutters draft proof / openings vents cinder /spark proof .
 Wind proof to (50 Kp/h low 100 Km/h medium and 160Km/h) minimum and rely on 4times safety factor in structure inertia ,(cinder proof close fitting angled frames . All steel Screens multi function ,security and fly / insect proof) and storable , but easy made operative .
 Crown bush fire , fire storm design is base first level structure design wind loading and detail fixing /materials design , the final safety very much depends on supervision.
 Crown bush fire exposure design in relation to subdivisions ,could as given by and in N S W . Rural Fire Service ,(booklet Planning for bush fire protection **) include more land slope fire conditions and flexibility for out of historical fire path .
 State input has seen in the late 90 ,s minimum loss of life and property being due to effort and large Government support . This has helped existing development but Colo / Hawkesbury 2000 fires I understand if weather had not changed had the potential to put at risk 2000 odd homes Hornsby / Ku Ring Gai / north shore area Sydney .

It is our opinion any new development with adjacent or with in bush areas is subject to crown fire Building design , with areas being under 10 /20 year revision for design imposed conditions, on less risk greater distance less conditions .

2 Wind cyclones .

Bush fires as crown tree top fires are , fire ,heat driven ,updraft chimney type 'infirmos' ; as fire cyclones driven by local weather high speed dry (low humidity) winds and with accelerated velocity by the bush fire as the heat engine ,all combining to produce a fire storm .

Crown fires , are heat exasperated by ground cover fire or linking smaller ,connecting forward spot fires .

Fire and its momentum is maintained by its fuel type and its load .

Stopped by physical barriers as rock walls , rivers , rail road or set fire brakes ,as back burns and traditional fuel reducing fire fighting methods .

Slowed by ground friction , be it trees / bush , houses or topography and traditional fire fighting Strategy.(with water and low to no ground cover) .

Wind gradients at ridges and through opening gaps in hill lines (valleys gorges) and between two buildings , can give two and three times or more velocity (subject to width and gradient of wind velocity) , this can increase bush fire heat , the blow torch effect , and with extra heat at impact , (I have seen brick edges that melted in a local fire storm at the top of a ridge and in a gap .)

A sonic wind noise effect is some times audible on sharp corners on buildings at normal high wind storm levels , this can be an indication that the wind at ground level can be quite high velocity and in building design detailing or landscaping , slowing bush fire/wind by barriers , slowing with increased friction at ground level (berms at 1m. plus on low side of structures, could deflect fire storm wind) , even consumable wind brake ,fire (retardant) bush ,metal fencing , solid balconies ,all as walls of this nature can deflect wind upwards or away from building ,and so reduce flame /fire impact .

The bush fire cyclone width is normally the local sectional fire front , for design ,a small fire or a large fire . (on a 'side pas 'bush fire ('back yard 'bush burns are common in ridge town development) with radiant heat being prime fire problem , if building is out the direct fire front (line of fire)and then a side passing (front or back) fire some consideration should be given to staged / reduced stringent requirements / conditions / codes / and cost/ construction standards ..

3 Building materials . construction .

Bush fire Architectural design requires non ready consumable , low flash point , low combustion index , materials . Steel brick concrete stone fundamentally a short list ., and most other products as paints have problems / oil bases paints on radiant heat boil /gas ignites /explode and has added problems, most plastics are toxic gas burners (cyanide). Charring fillers paints / foaming products as hole stopper products are used as fire stoppers in concrete floors to 1/ 1.5 hour fire rating .positions.

Construction building over long time , has found the trade cost of labour and light cover materials are often more expensive than first traditional systems , as the use of concrete , cement products ,brick ,(ceramics) steel in fire resistant / fire proof construction

They are traditional for fundamental practical reasons including fire resistance , structure , weathering and as the base are our preferred bush fire area building materials ..

Some dry walling as (plaster) has use internally in dry areas but in bush fire applications is not up to scratch (.if it can get wet , reliance on paint to save a fire problem 10 years down the track is not in our opinion good building economics)

It is our opinion that the structure, and detailed construction may differ for different exposures to bush fire , but exterior fire exposed areas should be brick, ceramics ,steel, cement products or stone old large balk size timber as structure has if design size plus 50 mm(a charcoal cover) has been a good design strategy in early Sydney ware house / wool storage buildings , when fire brigades may have been scarce on the ground , after fire partial loss design in building and building materials , a large cost problem as well as a materials supply problem and a base storage / a cellar/ a live in bunker to return to ,in traditional domestic residential construction , I believe has merit ,but to work, the 'anti- 'granny flat code at state level planning restrictions need change .

4 Screens fire screens.

Building in fire prone areas and 'worrying' about the leaves in the gutter at council level is like losing the boat for a 'pennith' of tar. The same as plastic fly screen or even steel fly screen expected to hold a full fire storm over openings as door ways and windows.

The 'code' has S A A H B 36 1993 " " some suggestions which come back in council restrictions for weep holes, decks etc but in heat (heat sink) fire storm wind cracks / breaks glass easy, fire inside a structure is disaster. (fly screen steel can reduce wind and so flame (light may be 5% / so radiant heat in same order %) (embers held till load reaches fine wire melt under wind load to possibly / 1 to 2 minutes).

Fly screens are not the option for bush fire satisfactory Building protection.

The position is, if at a minimum all the bush fire prone construction, had fire screens / and other fire proof technology we have at present available is intelligently government funded so fringe development could give and can help solve this fire fringe urban house loss and development problem.

Steel removable fire wall / screens could be incorporated at design level with or without normal steel (s/s fly screens) or / with security screens, for all openings (site assessed) on bush fire exposed building areas.

A government initiative in this area, tax off / G.S.T. off / Insurance rebate, (all aimed to give zero cost to the home owner) is what we think the best retro fit, the best new development, the best first effective fire storm house saving action.

A design bush fire building saving option that is available.

5 Pool and water storage.

It is our opinion and others local, swimming pools 'drain-able' from air (helicopter) have not proved a beneficent, in emergency, later, at the pool home site when the fire front arrives or at mop up stage. .

On site storage water is recommended possibly three fire exposure categories, (High 10000 L Medium 5000 L and Low 500 L). Available to local or street fire fighting units. If water storage is integrated into a roof / deck / paving, water return spray system (metal rotary garden sprays, copper metal pipes) later or on design, a worth while and effective, building fire fighting home water drenching system is in place, if maintained / (a secondary use is as lawn / garden sprays using rain water, (independent of street mains, but needing a pump (diesel due to fuel petrol flash point explosion problems) (no tax / no G S T, / and insurance concessions, would help in this area).

6 Local street fire fighting capacity.

This state government N S W program is good, as local street level fire fighting capacity trained and as first level back up to rural bush fire units and out of area help which in the last local fires has shown a problem being solved with funds / government / and community effort.

The last N S W 2001/2, fires exposed large areas of Northern Sydney from Colo / Hawkesbury area out of control bush / forest / park fires. (the weather wind change helped potential exposed, 2000 houses and the then shortage of fire tanker / units in the Sydney area, (a tailor, / a 1000 L or 500 L mobile unit / with pump / fitting compatible with fire service equipment held on site, 3 or 4 houses to 1 unit and backed with each house fire defense system when the power is off, and no water in the main due to pumping); we think these local units idea good.)

7 Local / state rural bush fire fighting / structure / 'tankers' / units .

The current rural bush fire fighting capacity local to our area has seen , major expansion in Compatible communications , up graded units and major equipment since the last two major fires. From a design position and at subdivision / building level we do not have input to this area . Bush fire ring road to subdivision is a factor that has been abused by a local council in its ability to up costs.. Normal cost for a rural 1/3 grade maximum (1/6 maximum optimum) dirt road construction as is alternate escape for equipment and personal safety and bush access.(rural dirt road standard construction has a massive onus unwarranted cost increase , it did not in engineering and our professional opinion need a near full concrete / bitumen main road standard for a once in 10 year use . (a 15/20 ton design) .

Our suggestion in this area is , rural bush fire fighting capacity is not the design problem, Government rules , that can not be abused if set in place is needed . .

Local street units should be fully supported at all levels of government as for rural fire , a detailed manual or rules sheet as uniform practical standards is required , as for local street units , and village fire units as well as design fire conditions for side fire path development in subdivisions , fire roads etc. all in with town planning / building recommendations / regulations . .

8 Personal Protection , fire fighting equipment .

As mentioned synopsis / and item 1 bush fires above , personal protection is (A) position in safe area when with crown fire and while high radiation levels but (B) (smoke glasses (swimming goggles) , full cotton / (light wool insulation as socks) clothing, boiler suit , good boots, scarf to wet , hard hat , garden gloves and light woolen / cotton under gear)

base personal minimum fire fighting protection gear , equipment as a 'nap sack' water spray unit is essential for all home fire fighters.(after and spot fire on building or landscaping 'mop up fire fighting) After fire storm personal equipment for defending assets with street fire fighting unit should give better than average safety to personal as well as after main fire property protection .

Personal protection has radiation heat as the design danger , the 100/150M Fire danger zone the 60 M Flame zone . .

9 Self help .

From above item personal gear and equipment (8) a personal self help psychological and physical position and a protected designed fire proofing building , a non 'panic' stricken confident house fire fully kited and equipped fighting team has on our experience , a high chance of success. This team can be fully the other side of the design equation essential to rural or / fringe urban bush fire fighting . It should not be lost that any bush city area is subject to dangerous bush fire but not the major problem Of fire storms.

Self help in our opinion is the 'only way to go' for owner individual home fire fighting defense strategy. Government action in reducing any financial impediments on start up family / fringe owner developers Should be made . (tax zero on equipment as pumps etc .)

10 Design /bush fire / architectural .

Architectural design in our opinion in building in isolated or fringe fire prone areas should have no Professional technical problems on current experience , only bureaucratic, and available finance . Major increase in construction costs , an alternate construction system , a 'fire proof' to N S W class 3 Code or better , a cost increase in the order of 20/ 30 % cost (\$150000 to \$180000/ \$20000)if society wants ,this current, fire prone urban fringe , city sprawl and 'mega' cities . Town ,planning as regional and decentralization ,fully serviced economic and social residential development as residency follows work (industry) . It is our suggestion to solve , putting control in regional town planning and management . In place ,this is a root cause of the urban / fringe fire problems . This if a national economic regional based decentralization could help solve , environment degradation , give potentially better living conditions, save on transport , worker traveling time losses, be financial economic and better manageable as smaller exposure fire problems. Control (fixed towns , fixed green belts/ buffers mean fixed fire control / and fire controllable manageable bush areas /(fire barriers) . .

If Government were serious about sustainable environment development then a total package in town planning architecture finance is required . (not like Bathurst / orange N S W 1960's) poorly funded transport / communication to our observations meant project disaster, a too hard basket job . This approach would relieve pressure on urban fringe bush development and so the bush fire and cost problems .

11 Costing / structure .

The bush fire design conditions to be effective will cost in our estimation 20 % to 30 % extra , On construction , a loss of site development potential and sites , help push higher to the \$ glass ceiling of maximum budget home buyer capacity , and a future burden on the first home buying 'outer' area attempt for the Australian dream the 1/4 acre desirable urban or bush family residential development . (a fast lost goal) but family and school age children 's social development should not be in our opinion, in concrete jungles , a break in the social / aesthetic poverty of inner city , the green close to nature ,(organic or country) open environment is needed .

In general a mind set change in construction has to happen to solve sustainable city fringe fire prone urban development .

Screen s particularly as a design element removable , should help maintain existing design living / residential formats .

The building structure is the area of greatest cost increase ,design , fire proof construction and detailing with building / engineering and detailed supervision , will all make an impact on budget . Special hopefully, funding packages are required . The finance structure might have to drop interest rates to match standard urban rates in repayments , concessions on revision say at 10 / 15 year area reassessed ,with tax G S T and special insurance relief .

On track record Government has not got a happy record in this area , with a history of zero action and large talk.

The final burden as with university fees on the next generation ..

12 Financing extra building costs ,

Costs are not only the increase house construction cost (the 20% / 30%)but the final economic / social cost . human cost . The Insurance loss as is ,town development reestablishment , services, transport , the tax imposed burden , the test of government , its comparative efficiency % . The final security , standard of living and wealth of all its people .

Options (A) marginal fringe home seekers /developers and for city life style escapes to bear the full impact cost . As city and country equally need each other for long term survival , so bush fire prone land needs societies full support to maintain bush fire defense ..

A society only survives if total structure is safe , economic and socially sound .

(B) If Government decentralizes ,out of major urban areas (greater than 1m population) and has economic regional(water based)and fully serviced , total planned , satellite cities

, (centered on existing infrastructure) ,bush fire planning can be long term and effective

(C) If Government is to patch fix the bush fire loss problem it needs to ,

1 to fund more research . To fund , C S I R O / University , education (especially post graduate university in pure and applied ,areas not as is at present rate , or mind set user pay, in the nations future in basics as education ,(university should not be working on a ' shoe string ' level budget and have short term hand in mouth existence these to us are markers of a declining culture ..

2 Patch as at best can (add hock) , town planning ,city development , fringe development and fire

prone town planning / building / fire and codes regulations and zonings at a state / commonwealth combined level . . (not at local council level)

3 Fund or at best help re establish effectively bush fire loss victims.

4 fix finance burden at new and homes loss victim level.

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REPORT

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13 Interest rates and impact .

The basics as land tenure , home ownership, costs should not unfairly impact on any one section of society . Vital to this is interest rates , if agriculture cannot reinvest with \$ rates over 4%/5% likewise bush fire design defense in town planning local state , regional , strategic and in national planning can not give long term positive impacts .

Home ownership interest rates should be stable . Fringe bush fire development should be government helped , tax off sets (building costs up 30% interest down 7 % on bases 50 % land / building ie ,

rates drop as 2003/ 6% to 5.58%) no GST tax on fringe area redevelopment ,or no infra structure costing penalty on services ,(as Sydney water charges) and redevelopment , Insurance concessions / ('true' cost reductions) could make living in urban fringe more equitable (help reduce spiraling local land prices . .

14 Some recommendations .

Government can make a worth while mark in managing , assisting in regulations, and funding . For exposed fire prone areas finance , for fire prone area development and redevelopment .

- (A) managing the Regulation process , code reassessment, data properly researched and rationally funded and well presented with no imposition financial on knowledge . Technical data taxed (user pays philosophy is flawed in this area) and is not a setting for saving in production design or building .
- (B) assisting in regulation , code and public data dissemination , design and product information .
- (C) Funding assistance to bush fire loss , victims and fire prone high cost construction in designated risk areas .

15 History / old wool store fire design philosophy .

Early Sydney wharf areas have examples of design for fire loss building but base timber structure saved . Traditional stone gothic churches were designed on similar principals (as the church fire loss at Parramatta) All allowing a re roofing ,and refurbishing at minimum cost . We suggest this philosophy applied to fire prone development , and over coming the cellar as the granny flat regulations .

This philosophy of a secure base and expendable balance building to us seems if cash strapped owners an easy government option , at regulation level if problems with full house fire design is not the preferred approach .

16 Design / local bush fire and some current design problems .

Locally some land zoned for building (acreage) , with rates paid over 100/to 140 years ,is effective ' unbuildable' ;

Due to council regulations/ conditions , as to fire and restrictive footprints etc. procrastination indecisive and lack of education , obstruction attitudes from a philosophy and not law position . . (The easy option , 'The court makes the approval ' ,they don't have the costs, and still a time waste , community costly, home builder heavy burdened .

Project and interest over budget ,a staff fundamental negative attitude to city housing pressure falling in fire prone areas , and so the associated building problems ;

The staff still in high pay and in undisturbed warm seats , from a community cost and our opinion a possible quick retirement would make good business , and money saved .

Decisions . . It is our opinion that a major restructuring ,by reducing the areas of in put , as bush fire problems and town planning at base level, regional / strategic level , should be able to be at state and federal level ,to be implemented .

Local council to have as few areas of discretion as possible .

17 Pressure on fringe city areas.

On our observations the crisis in land lots for building , and land prices in local Sydney , will Exacerbate the pressure on fringe city fire prone land . It is in Government interest to long term solve the problem .

Regional strategic planning , will help fire prone land development pressure ,city containment ,orderly maintenance of buffers of open space , fire control planning .

Total town planning could mean urban town planning fire design a success and not disaster if with decentralization ..

18 Town planning and costing / regional town planning and decentralization

The long term cost for typical land lot (as in organized serviced development) , infrastructure. Can match lot development sale costs . fringe fire prone normally bush difficult ridge development around Sydney exceeds this average cost . Urgent measures are required to solve this problem economically.

Government in expecting commercial interest rates up to 10% / 12% on off site / major works , we suggest are unrealistic and unsustainable long term .

A bold psychological initiative . in regional decentralization combined with a bold water scheme as Pumping Sydney effluent / treated sewage (500 FT / 300M) up and in land to Bathurst catchment is (technically tunneling feasible with current equipment . after Sydney Water 60 Km Blue Mountains exercise) pumped on waste excess power station electricity at about (I understand from data I have seen a \$2 B / 2002 \$ project cost)

This could be fundamental and solve a host of problems as local first stage decentralization , as ; Bush fire fighting and town planning development parameters are set , permanent containment , town planning ,etc. problems, this can help economics and direction less Australian current 'psychic ',in relation to major long term economic sustainable national development the old 'can do ',can build , can achieve ethos in national resource sustainable development ..

19 Government .

The role of Government or the lack of it may have been instrumental with lack of funding , equipment assets and associated planning with a number of traditional disaster elements coming together (relative humidity very low, high velocity dry winds and massive fire front, to the effects of late Canberra bush fires .

. More street fire fighting units , more equipment and personal in earlier , bigger fire containment lines and defenders defending homes from safe areas and with such as suggested item 4 (door/ window fire screens)would probably reduce ground fire and so crown fire and heat intensity hence fire wind cyclone , and the last A T C devastation and \$ 1. 2 b loss .

20 Local government .

It is from our experience that bush fire town planning at local government level (in local building sections) may not be the best administrations for fair implementation of complex variables on and in bush fire building design assessment (at development application , or as in the required details of specialist supervision) .

If professional design for fire cyclone fire is required high wind loading s design / fixings Etc . have to be factored as professional documentation / supervision . not a local government job

21 Some of local experiences / regulations / codes N.S.W.

Building conditions for bush fire as for fire regulations should be in the (building) Australia Code . Local experience gives as a fire design authority, as separate from local council, for effective fair implementation. of codes and regulations ..

22 Wind design building parameters .

The important parameters in bush fire loss prevention is design for,

- 1 high wind loadings to structural code suggest three level (low 50 Kp/h medium 100 Kp/h and high 160 Kp/h)
- 2 fixings with wind loadings taken to footings .
- 3 sealing structure / from sparks / embers (screens / wall / roof vents / openings / weep holes / chimneys (spark proofed)
- 4 fire landscape design and wind friction design to reduce fire storm wind / fire impact .
- 5 Selection of appropriate building materials and construction systems .

23 Flight and or fight .

An important position decision in bush fire prone areas is one of defending or retreat on fire attack . . This flight or fight decision can only be made early . At retro building stage / design stage the defense strategy is in motion . .

We believe that in fire prone areas , fire proof / proofed , development , staged or full initial project is with current trade and technology , possible at increased construction cost around the (20 % / 30 %).

This solution dose not need to be full house under ground or steel tank bunker .

The flight or fight decision should be made after base fire building standards have been met .

(the knock on building burning destroying the next door property has to be considered)

The final decision should be a personal one for the defenders if basically equipped . .

The small street tanker scheme to us is a good idea .

24 Design codes .

The codes for development in bush fire areas , which is any city bushed area need to be by Government re assessed , areas and exposure risk degrees staged , scientifically defined , codes changed all in the light of the last major fire losses (fire losses in the order of \$ 1.2 / 2 B in A.T.C. alone .)

Appropriate Town Planning put in place , state and federal and staged if necessary and after sound data review on , structures , design , loads , wind (sub / low velocity , to 300 km/h fire building and cyclone aerodynamics) best practice building fire protection , bush fire path history should be incorporated in the equation, and on a properly funded fundamental research program (at C S I R O university Level)

Conclusion / action / summary

We supply this exercise in bush fire loss problems suggesting residential development need not be lost if , The will , the equipment , the appropriate action is in place , by government or home owner.

The town planning , the exposure / building codes all in place with review assessments on going and able to take amendments .

Town planning , urban planning , regional and strategic the root problem industry placement , water Availability in a dry desert country . This industry placement should be federal / regional based not petty state rival politics.

Decentralization with less pressure on fringe urban fire prone areas for development would help solve and reduce the future impact , the cost on population the on going fire loss high insurance burden . .



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