



Member of the Fire Protection Association of Australia

Lot 15, section K, DP 2610, 5 Barrabooka Street Clontarf NSW 2063.

Wednesday, 22 June 2016

Prepared and certified by:	M Willis <i>BPAD –Level 3 Certified Practitioner Certification No: BPD-PA 09337</i>		22/06/2016
Can this proposal comply with AS3959-2009 (inc PBP addendum 3)?	Yes		
What is the recommended AS 3959-2009 level of compliance?	BAL-FZ/40		
Is referral to the RFS required?	Yes		
Can this development comply with the requirements of PBP?	Yes		
Plans by "Architexture" (appendix 1)	24/5/2016		

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Bushfire Risk Assessment

Wednesday, 22 June 2016

Contact

John Athos

Owner

John Athos

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Subject Property

Lot 15, section K DP 2610

5 Barrabooka Street

Clontarf NSW 2063

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2. Executive summary.

Bushfire Planning Services has been requested to supply a bushfire compliance report on lot 15, section K, DP 2610, number 11 Barrabooka Street Clontarf NSW 2063.

The proposal is for the internal alterations and additions to an existing dwelling however includes the replacement of the majority of the windows of the dwelling, see attached plans for details.

Assessment of this proposal using the methodology of AS3959 and Planning for Bushfire Protection has shown this proposal to be within the Flame Zone of the neighbouring vegetation to the West.

The vegetation that is considered to be the hazard to this proposal is on land that slopes downhill away from the proposal and is mapped as a category one bushfire hazard in the councils bushfire prone land mapping. For the purposes of this assessment the vegetation is considered to be forest.

This proposal cannot achieve the required setback from unmanaged vegetation to comply with the deemed to satisfy requirements of AS 3959-2009 and is considered to be in the Flame Zone of the nearby vegetation.

It is my considered opinion that, with the recommendations that are outlined in this report this development can comply, with the use of performance based measures, with the *intent* of the Building Code of Australia, AS 3959-2009 and Planning for Bushfire Protection 2009.

Table 1. The following table summarises the findings of this assessment. Where the wording "N/A" appears, this indicates that this aspect is considered to contain none or only a minor hazard.

Aspect	North	East	South	West
Vegetation	<i>Managed land</i>	<i>Managed land/forest</i>	<i>Managed land</i>	<i>Managed land/forest</i>
Slope	N/A	<i>All upslopes and flat land</i>	N/A	<i>15-20 degrees downslope</i>
Setback within lot 15, section K	N/A	27m	N/A	9m
Offsite setback	N/A	10m	N/A	0m
Total setback	N/A	37m	N/A	9m
BAL level	N/A	N/A	N/A	F/Z

3. General.

This report relates to the proposed alterations and additions to an existing dwelling and its ability to comply with the rules and regulations for building in a bushfire prone area.

The methodology used on this report is based on Planning for Bushfire Protection 2006 (PBP) as published by the New South Wales Rural Fire Service.

Any wording that appears in *blue italics* is quotes from Planning for Bushfire Protection 2006. Some of the measurements used in this report have been taken from aerial photographs and as such are approximate only.

4. Block description.

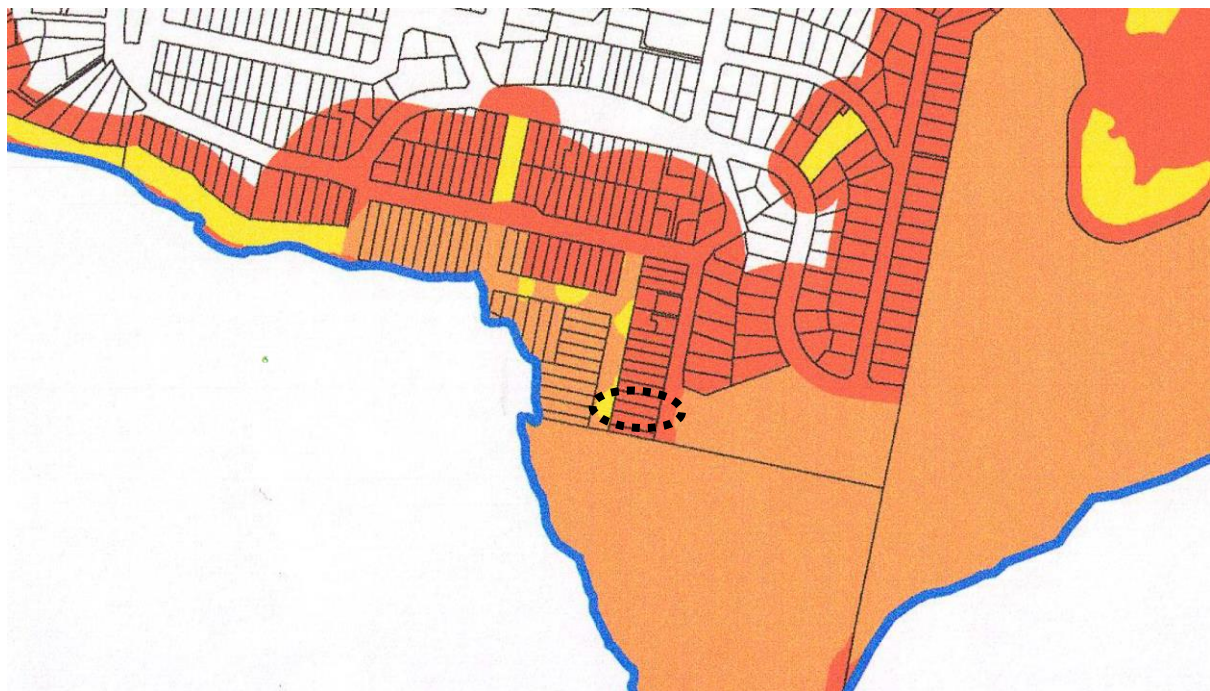
The subject block is located in an established area of Clontarf. The area immediately to the North and South of the subject lot contains existing dwellings and associated gardens or land that is otherwise considered to be managed.

There is an area of undeveloped land adjacent to a small mown strip of grass near the western boundary of the subject lot with another area of undeveloped land across Barrabooka Street to the East.

- Lot; 15, section K
- DP; 2610.
- LGA; Northern Beaches (Manly).
- Area; 486.699m².
- Address; 5 Barrabooka Street , Clontarf.



Map 1; shows the cadastral layout around the subject lot.



Map 2 is an extract from the councils bushfire prone land map. The map shows lot 15, section K to be within the buffer zone of category 1 bushfire vegetation.

5. Vegetation.

The study area for the vegetation is 140m surrounding the subject block.

The vegetation within the study area for this development is considered to be a mix of managed and unmanaged land.

The potential hazard to this development is considered to be the vegetation within an area of undeveloped land to the East and West.

The hazardous vegetation is considered to be;

- “Coastal Sandstone Foreshores Forest.”

For the purpose of this assessment and compliance with AS3959 this area of undeveloped land is considered to be forest and is the hazard to this proposal.



Photo 1 an overview of the vegetation within the general area.



Photo 2 is a closer view of the vegetation in the area.

The following table outlines the vegetation orientation, type and distance from the development area.

Aspect	North	East	South	West
Vegetation	<i>Managed land</i>	<i>Managed land/forest</i>	<i>Managed land</i>	<i>Managed land/forest</i>
Setback within lot 15, section K	<i>N/A</i>	<i>27m</i>	<i>N/A</i>	<i>9m</i>
Offsite setback	<i>N/A</i>	<i>10m</i>	<i>N/A</i>	<i>0m</i>
Total setback	<i>N/A</i>	<i>37m</i>	<i>N/A</i>	<i>9m</i>

It is noted that the vegetation on the western interface of the subject lot and its neighbouring allotments has been incorporated into the yard area of these properties however, as potential future management is in doubt this area has not been incorporated into the Asset Protection Zone calculations for this proposal in accordance with the Rural Fire Service Fast Fact 6/06.

The inclusion of this area will not alter the outcome of this assessment.

6. Known constraints on subject block.

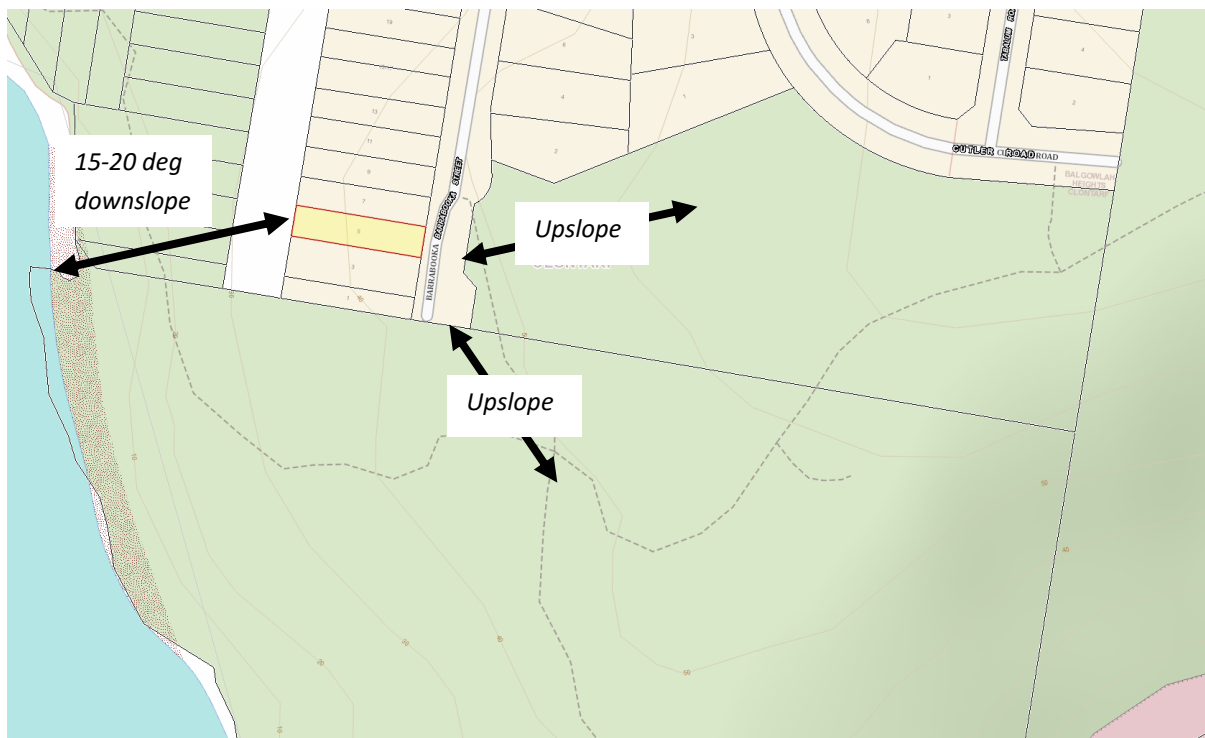
I have not been informed or know of any places of cultural or environmental significance within the boundaries of the subject block.

Given the nature of the surrounding land it is considered highly unlikely that anything of significance will be affected by this development.

7. Slope.

The slope of the land that is most likely to influence bushfire behaviour has been estimated by topographical map interpretation to a distance of at least 100m surrounding the identified building envelope.

The following topographical map shows the slope underneath the potential hazard.



The following table shows the slope beneath the nearby hazard.

Aspect	North	East	South	West
Slope	N/A	All upslopes and flat land	N/A	15-20 degrees downslope

Utilities.

Water

The subject block will be serviced by a reticulated water supply. The following map is an extract from Sydney waters hydrant map. A hydrant is identified as a blue circle on a blue line.

As can be seen there is at least one hydrant indicated within close proximity of this proposal.



Electricity

Mains electricity is available to the block.

Gas

It is unknown whether gas will be altered or installed as part of this proposal.

8. Access/Egress.

Access to the development site will be from Barrabooka Street .

Barrabooka Street is a sealed two way street and is considered to be capable of handling small emergency services vehicles.

Pedestrian access is also considered to be adequate.

Analysis of development and recommendation.

9. Compliance with AS 3959-2009.

Based on the development design, vegetation classification, effective slope estimate and setback distance already outlined in this report the subject development will be required to comply with the deemed to satisfy construction requirements of AS 3959-2009 BAL-FZ and the RFS requirements on all fire prone aspects.

The following table is an extract from table 2.4.2 of AS3959-2009. This table is used to calculate the BAL for a proposal in an area with a FDI of 100.

The variables that have already been outlined in this assessment are highlighted in red with the BAL highlighted in yellow.

TABLE 2.4.2

DETERMINATION OF BUSHFIRE ATTACK LEVEL (BAL)—FDI 100 (1090 K)

Vegetation classification	Bushfire Attack Levels (BALs)				
	BAL—FZ	BAL—40	BAL—29	BAL—19	BAL—12.5
	Distance (m) of the site from the predominant vegetation class				
	Downslope >15 to 20 degrees				
A. Forest	<50	50—<61	61—<78	78—<98	98—<100
B. Woodland	<32	32—<41	41—<56	56—<73	73—<100
C. Shrubland	<10	10—<15	15—<22	22—<31	31—<100
D. Scrub	<15	15—<21	21—<31	31—<43	43—<100
E. Mallee/Mulga	<9	9—<13	13—<20	20—<29	29—<100
F. Rainforest	<22	22—<29	29—<42	42—<56	56—<100
G. Grassland	<11	11—<15	15—<23	23—<32	32—<50

For the purpose of this assessment the western aspect has been chosen as the most potentially hazardous aspect due to the effective slope, potential run of fire and the prevailing fire weather of the area.

10. Siting.

There is little opportunity to reposition the proposal and the subject lot is not large enough to change the outcome of this assessment.

Recommendation;

Nil

11. Construction and design.

ALL new work is to be constructed in accordance with the requirements of the BCA, AS 3959-2009 and any other relevant requirement.

The works proposed for the southern aspect of the building will receive considerable shielding from the neighbouring house (see the following photograph) and as such an allowance for this shielding is proposed.



Recommendation; fire prone aspects

- 1) *New construction on the western and northern aspects shall comply with Sections 3 and 9 (BAL FZ) of Australian Standard AS3959-2009 'Construction of buildings in bush fire-prone areas'. However, any material, element of construction or system when tested to the method described in Australian Standard AS1530.8.2 'Methods for fire tests on building materials, components*

and structures Part 8.2: Tests on elements of construction for buildings exposed to simulated bushfire attack—Large flaming sources’ shall comply with Clause 13.8 of that Standard except that flaming of the specimen is not permitted and there shall be no exposed timber. Window assemblies and external doors shall comply with the above or the following:

- 2) Windows shall be completely protected by a non-combustible and non-perforated bushfire shutter that complies with Section 3.7 of AS3959-2009 excluding parts (e) & (f); and the following:*
- 3) Window frames and hardware shall be metal;*
- 4) Glazing shall be minimum 6mm thick toughened glass or the window system shall satisfy the performance criteria of AS1530.8.1 ‘Methods for fire tests on building materials, components and structure – Part 8.1 Tests on elements of construction for buildings exposed to simulated bushfire attack – Radiant heat and small flaming sources’ for BAL 40 except that flaming of the specimen is not permitted and there shall be no exposed timber;*
- 5) Seals to stiles, head and sills or thresholds shall be manufactured from materials having a flammability index no greater than 5; and,*
- 6) The openable portion of the window shall be screened internally or externally with a mesh with a maximum aperture of 2mm, made from corrosion resistant steel or bronze and the frame supporting the mesh shall be metal.*
- 7) External doors (excluding garage doors) shall be completely protected by a non-combustible and non-perforated bushfire shutter that complies with Section 3.7 of AS3959 excluding parts (e) and (f); and shall comply with the following:*
- 8) Doors shall be non-combustible;*
- 9) Externally fitted hardware that supports the panel in its function of opening and closing shall be metal;*
- 10) Where doors incorporate glazing, the glazing shall be toughened glass minimum 6mm or the door system shall satisfy the performance criteria of AS1530.8.1 ‘Methods for fire tests on building materials, components and structure – Part 8.1 Tests on elements of construction for buildings exposed to simulated bushfire attack – Radiant heat and small flaming sources’ for BAL 40 except that flaming of the specimen is not permitted and there shall be no exposed timber;*

- 11) Seals to stiles, head and sills or thresholds shall be manufactured from materials having a flammability index of no greater than 5;
- 12) Door frames shall be metal;
- 13) Doors shall be tight fitting to the doorframe and an abutting door if applicable; and,
- 14) Weather strips, draught excluders or draught seals shall be installed if applicable.

Recommendations, southern and eastern aspects;

- 15) New construction on the aspects shall comply with section 8 (BAL 40) Australian Standard AS3959-2009 'Construction of buildings in bush fire-prone areas' and section A3.7 Addendum Appendix 3 of 'Planning for Bush Fire Protection'. NO TIMBER IS PERMITTED.

Recommendations; entire building

- 16) All roofing valleys and guttering should be fitted with a non-combustible leaf protection to stop the accumulation of debris.
- 17) Any new fencing to be property should be in accordance with Rural Fire Service "Fast Fact 2/06".

Note;

The above recommendations are for guidance only and in our experience are typical of the requirements that will be imposed by the consenting body for a proposal such as this one. The compliance requirements will be stipulated in the DA consent by council.

12. Utilities

Water.

The proposed development will have access to a reticulated water supply. There is at least one hydrant within the required distance from the property.

Recommendation;

- 18) Water is to comply with section 4.1.3 of Planning for Bush Fire Protection 2006.

Electricity and Gas

Recommendation

- 19) Water, electricity and gas are to comply with section 4.1.3 of Planning for Bush Fire Protection 2006.

13. Asset Protection Zone (APZ).

The Asset Protection Zone is *“An area surrounding a development managed to reduce the bushfire hazard to an acceptable level. The width of an APZ will vary with slope, vegetation and construction level”*.

Recommendation;

20) *At the commencement of building works and in perpetuity the entire property shall be managed as an inner protection area (IPA) as outlined within section 4.1.3 and Appendix 5 of Planning for Bush Fire Protection 2006 and the NSW Rural Fire Service's document Standards for Asset Protection Zones.*

14. Landscaping.

Recommendation;

21) *Any new landscaping to the site is to comply with the principles of Appendix 5 of Planning for Bush Fire Protection 2006. In this regard the following landscaping principles are to be incorporated into the development:*

- Suitable impervious areas being provided immediately surrounding the building such as courtyards, paths and driveways;
- Grassed areas/mowed lawns/ or ground cover plantings being provided in close proximity to the building;
- Restrict planting in the immediate vicinity of the building which may over time and if not properly maintained come in contact with the building;
- Maximum tree cover should be less than 30%, and maximum shrub cover less than 20%;
- Planting should not provide a continuous canopy to the building (i.e. trees or shrubs should be isolated or located in small clusters);
- When considering landscape species consideration needs to be given to estimated size of the plant at maturity;
- Avoid species with rough fibrous bark, or which retain/shed bark in long strips or retain dead material in their canopies;
- Use smooth bark species of trees species which generally do not carry a fire up the bark into the crown;
- Avoid planting of deciduous species that may increase fuel at surface/ ground level (i.e. leaf litter);
- Avoid climbing species to walls and pergolas;
- Locate combustible materials such as woodchips/mulch, flammable fuel stores away from the building;

- Locate combustible structures such as garden sheds, pergolas and materials such timber garden furniture way from the building; and
- Use of low flammability vegetation species.

15. Constraints on the subject block.

None known.

Recommendation;

Nil

16. Access.

Barrabooka Street is a sealed two way street that is considered to be able to carry emergency service vehicles.

Pedestrian access onto the site is also considered to be appropriate.

Recommendation

Nil

17. Compliance or non-compliance with the specifications and requirements for bushfire protection measures.

<p style="text-align: center;">APZ</p> <p style="text-align: center;"><i>A defensible space is provided onsite.</i></p> <p style="text-align: center;"><i>An APZ is provided and maintained for the life of the development.</i></p>	<p>Achievable with the implementation of the recommendations contained in section 13 of this assessment.</p>
<p style="text-align: center;">SITING AND DESIGN:</p> <p style="text-align: center;"><i>Buildings are sited and designed to minimise the risk of bush fire attack.</i></p>	<p>Achievable with the implementation of the recommendations contained in section 10 of this assessment.</p>
<p style="text-align: center;">CONSTRUCTION STANDARDS:</p> <p style="text-align: center;"><i>It is demonstrated that the proposed building can withstand bush fire attack in the form of wind, smoke, embers, radiant heat and flame contact.</i></p>	<p>Achievable with the implementation of the recommendations contained in section 11 of this assessment.</p>

<p style="text-align: center;"><i>ACCESS</i></p> <p><i>Safe, operational access is provided (and maintained) for emergency services personnel in suppressing a bush fire while residents are seeking to relocate, in advance of a bush fire, (satisfying the intent and performance criteria for access roads in sections 4.1.3 and 4.2.7).</i></p>	<p>Achievable with the implementation of the recommendations contained in section 16 of this assessment.</p>
<p style="text-align: center;"><i>WATER AND UTILITY SERVICES:</i></p> <ul style="list-style-type: none"> • <i>adequate water and electricity services are provided for firefighting operations</i> • <i>Gas and electricity services are located so as not to contribute to the risk of fire to a building.</i> 	<p>Achievable with the implementation of the recommendations contained in section 12 of this assessment.</p>
<p style="text-align: center;"><i>LANDSCAPING:</i></p> <ul style="list-style-type: none"> • <i>it is designed and managed to minimise flame contact and radiant heat to buildings, and the potential for wind driven embers to cause Ignitions.</i> 	<p>Achievable with the implementation of the recommendations contained in section 14 of this assessment.</p>

18. Conclusions.

Based on the above report and with the implementation of the recommendation contained within this report the consent authority should determine that this development can comply with the intent of the requirements of AS 3959-2009 and 'Planning for Bushfire Protection' guidelines.

The recommendations contained within this report are to be viewed in their entirety. Changing one aspect may have an adverse effect on the rest of the recommendations.

Bushfires are affected by many external influences such as climactic conditions, vegetation type, moisture content of the fuel, slope of the land and human intervention to name a few and are difficult to predict.

This report does not intend to provide a guarantee that the subject property will survive if a bushfire should impact the surrounding area. The purpose of this report is to show the developments level of compliance or in some cases non-compliance with the New South Wales legislation regarding building in bushfire prone areas.

Where non-compliance is found measures will be suggested that should make the building less susceptible to the various attack mechanisms of a bushfire and comply with the performance requirements of the Building Code of Australia.

The opinions expressed in this report are based on the writers experience and interpretation of the relevant guidelines and standards. Notwithstanding the above, these

guidelines and standards are open to interpretation. All care has been taken to ensure that the opinions expressed in this report are consistent with past successful outcomes.

Some of the information used in the compilation of this assessment has been provided by the proponent or the proponent's representatives. While we believe this information to be true and have accepted the information in good faith however this company or its representatives will not accept any responsibility if the provided information is determined to be incorrect.

This document is to assist the consenting authorities with their assessment of this proposal. The conditions of consent for the proposal will be supplied by the certifying authority and may not necessarily be the same as the recommendations of this assessment.

The recommendations in this assessment are for planning guidance only, construction details and compliance with all building requirements are the responsibility of the Architect/Designer, Builder and Certifier.

To avoid confusion it is strongly recommended that once this proposal has been approved that this document is no longer referenced and that only the official conditions of consent as reflected in documentation by the certifying body are used for construction guidance.

If any further clarification is required for this report please do not hesitate to contact me using the details above.

Yours Sincerely

M Willis
Grad Dip Planning for Bushfire Prone Areas
Bushfire Planning Services Pty Limited.

19. References

Australian Building Codes Board

Building Code of Australia

Volumes 1&2

Canprint

NSW Government Environmental Planning and Assessment Act [1979]

Part 79BA – Consultation and development Consent – Certain Bushfire Prone Land

NSW Government Printer

Planning NSW [2006]

Planning for Bushfire Protection

A Guide for Councils, Planners, Fire Authorities, Developers and Home Owners

Ramsay C & Rudolph L [2003]

Landscape and Building Design for Bushfire Prone Areas

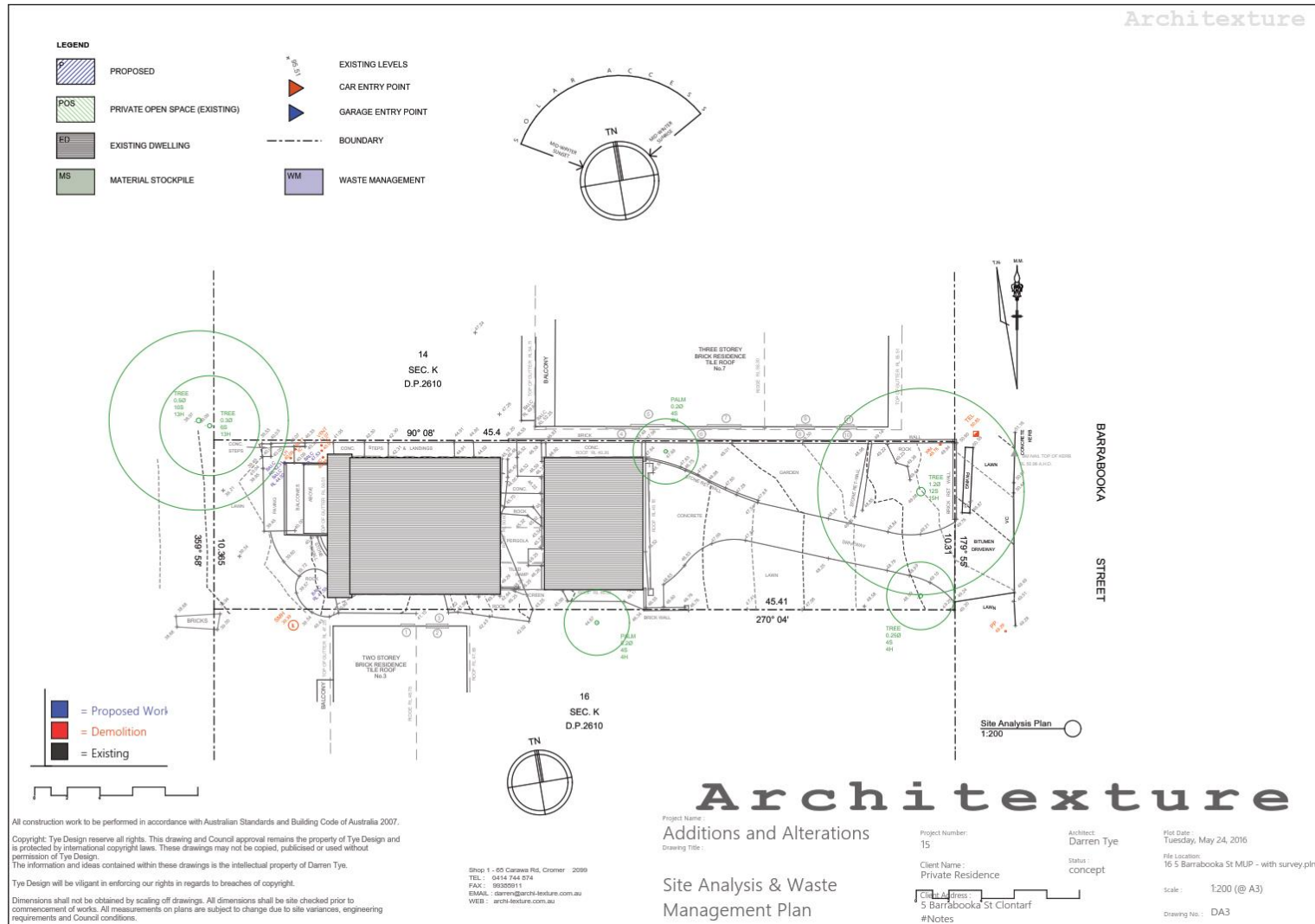
CSIRO Publishing

Standards Australia [2009]

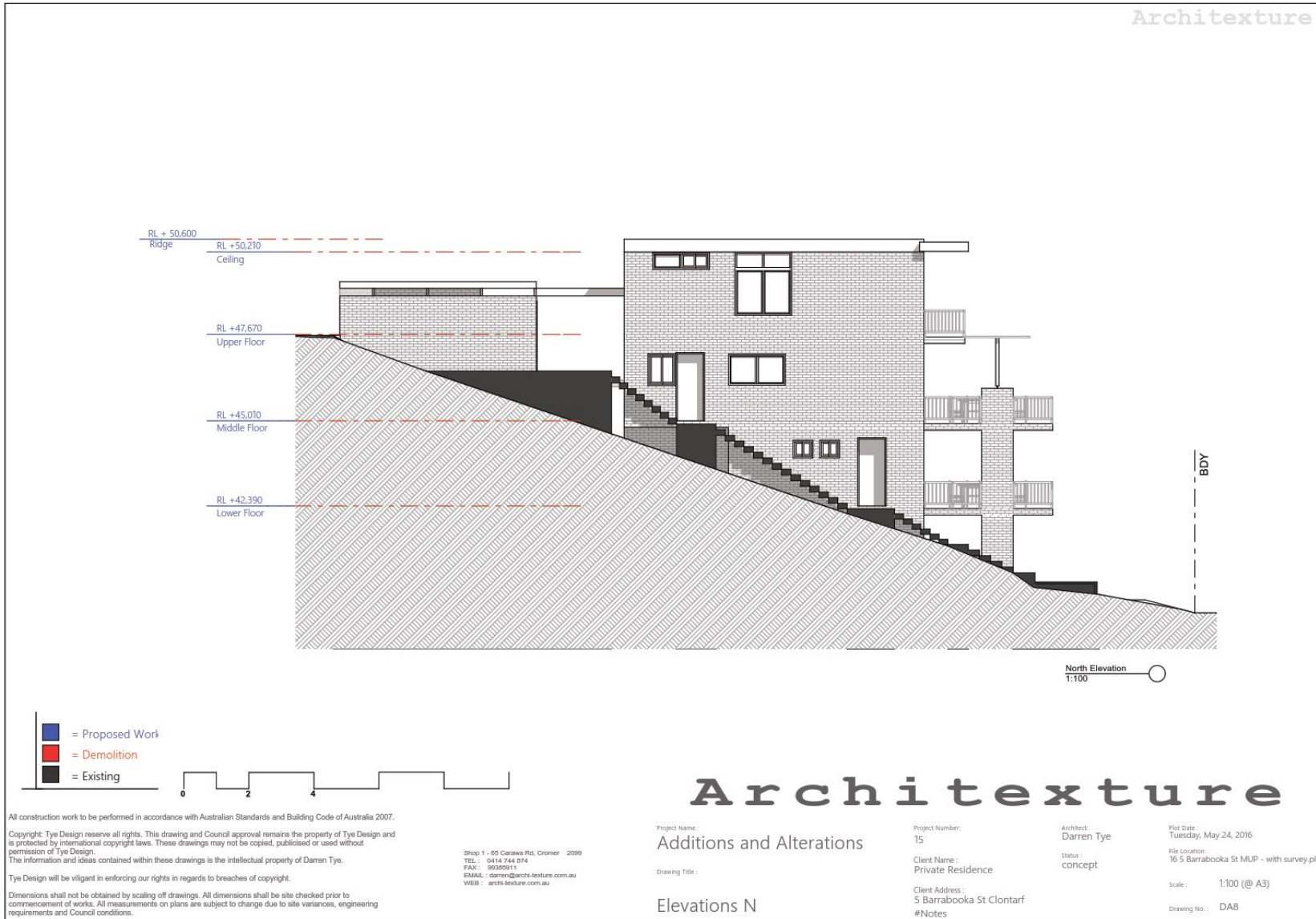
Australian Standards 3959

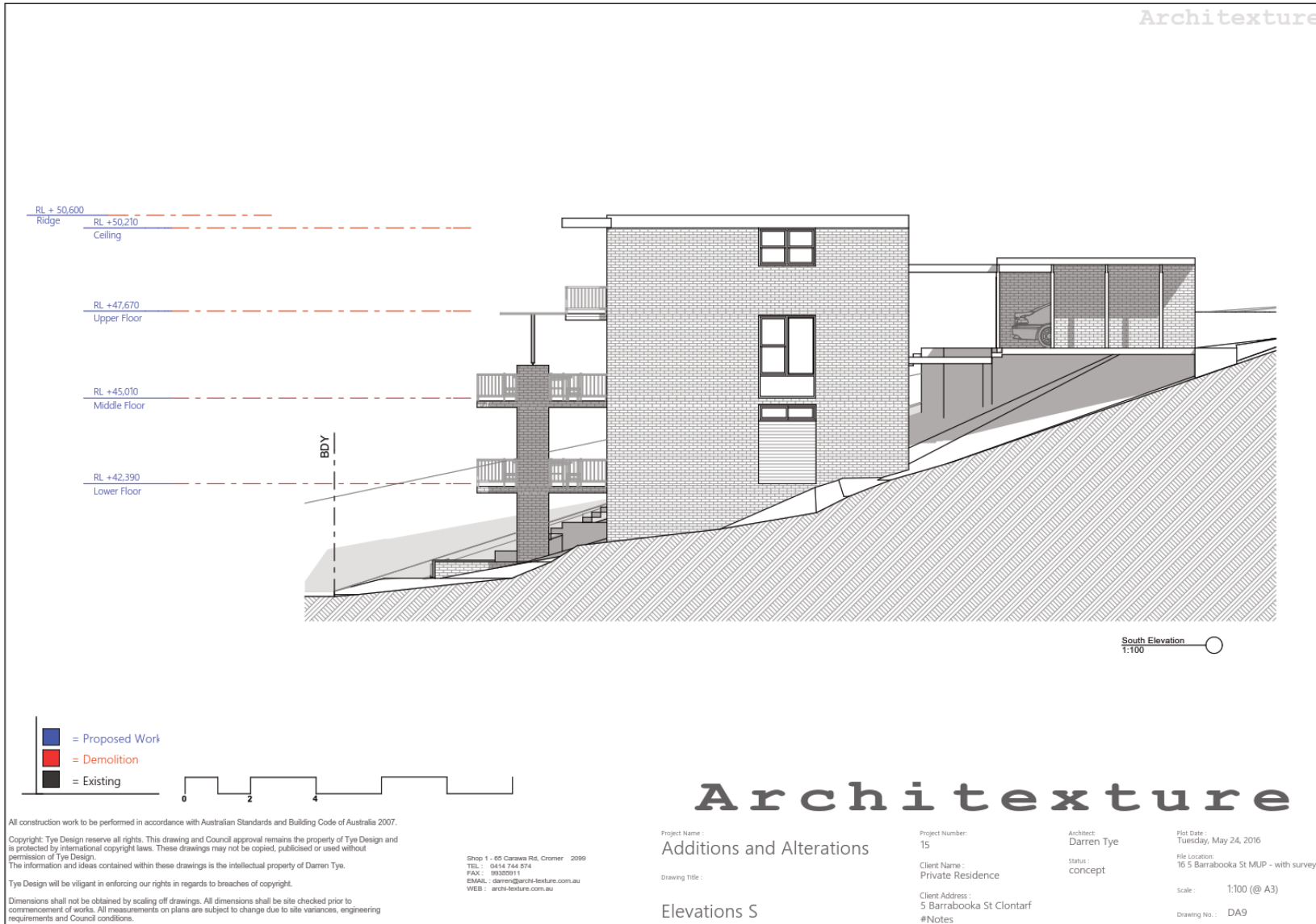
Australian Building Code Board

20. Appendix 1, Plans

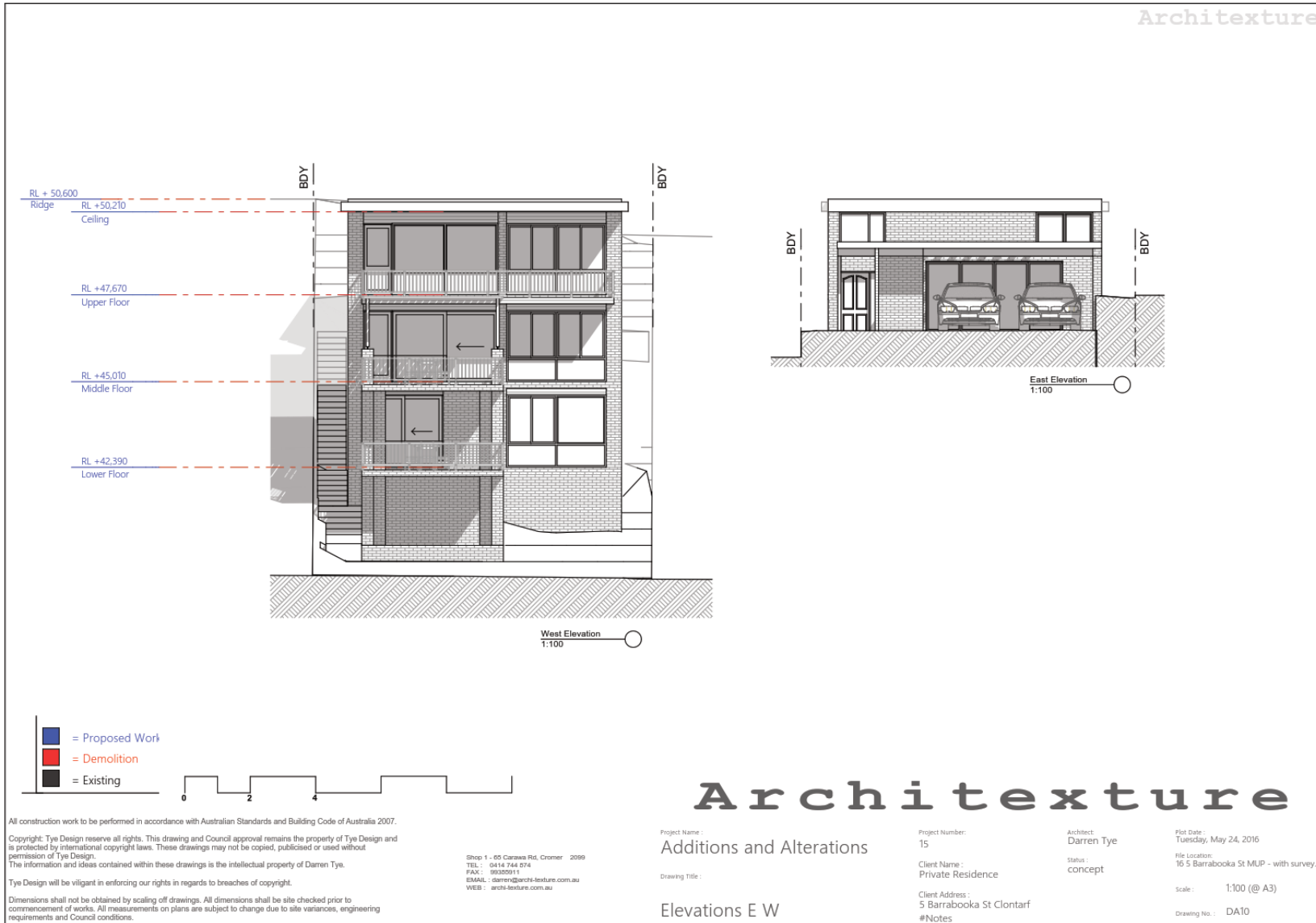


Architecture





Architecture



All construction work to be performed in accordance with Australian Standards and Building Code of Australia 2007.
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Architexture

Project Name : Additions and Alterations
 Drawing Title : Elevations E W

Project Number : 15
 Client Name : Private Residence
 Client Address : 5 Barrabooka St Clontarf
 #Notes

Architect : Darren Tye
 Status : concept

Plot Date : Tuesday, May 24, 2016
 File Location : 16 5 Barrabooka St MUP - with survey.plt
 Scale : 1:100 (@ A3)
 Drawing No. : DA10