

In the Planning and Environment Court
Held at Brisbane

No 3506 of 2011

Between

WALLANGARRA PASTORAL COMPANY PTY LIMITED
(ACN 004 542 269)

Appellant

And

LOCKYER VALLEY REGIONAL COUNCIL

Respondent

And

CHIEF EXECUTIVE AMINISTERING THE *VEGETATION
MANAGEMENT ACT 1999* (FORMERLY THE CHIEF EXECUTIVE,
DEPARTMENT OF ENVIRONMENT AND RESOURCE
MANAGEMENT)

Co-Respondent

JUDGMENT

Before His Honour Judge Searles

Date of Hearing: 15 January 2014

Date of Judgment: 15 January 2014

THIS MATTER HAVING come on for hearing on 15 January 2014 by way of appeal against the decision of the Respondent made 10 August 2011 to refuse, at the direction of the Co-Respondent a development application for a Development Permit for Reconfiguration of a Lot for subdivision (2 lots into 145 lots) made under the *Integrated Planning Act 1997* for land located at 63 Redbank Creek Road Adare more particularly described as Lot 95 on CA311434 and Lot 96 on SP225226 County of Cavendish, Parish of Clarendon

AND UPON HEARING the Solicitor for the Appellant, the Solicitor for the Respondent and the Solicitor for the Co-Respondent

AND UPON READING the Notice of Appeal filed on 12 September 2011; the Affidavit of Danyelle Mary Kelson filed 29 September 2011 and the Affidavit of Kris Krpan filed 20 December 2013

THE COURT IS SATISFIED THAT for the purposes of section 495(2)(b) of the *Sustainable Planning Act 2009* changes to the application on which the decision being appealed is based are only minor changes.

JUDGMENT

Filed on behalf of the Appellant

PEC-7

FINAL ORDER

DibbsBarker

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Ref: LGM:DMK:4063077

AND IT IS ORDERED THAT:

1. The appeal be allowed;
2. The changed application be approved subject to the conditions set out in the Development Approval Package consisting of 129 pages marked "A" and attached to this Judgment;
3. Each party shall bear its own costs of the proceedings.

Filed on 15 / 1 / 2014

Filed by DibbsBarker, Danyelle Kelson
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Registrar-
A DEPUTY REGISTRAR

To: The Respondent
Lockyer Valley Regional Council
Corrs Chambers Westgarth
Lawyers
Level 34, Waterfront Place
1 Eagle Street
BRISBANE QLD 4000

And to: The Co-Respondent
Chief Executive administering the *Vegetation Management Act 1999* (formerly the
Chief Executive of the Department of Environment and Resource Management)
Level 7
400 George Street
BRISBANE QLD 4000



Lockyer Valley Regional Council

That Council resolves to endorse the attached conditions of approval for DA4678 as the basis for the settlement of Planning and Environment Court Appeal – Wallangarra Pastoral Company v Lockyer Valley Regional Council & Anor.

Conditions amended by Council on 14 January 2014 to correct minor errors.

General

1. The site shall be developed generally in accordance with the following plans and drawings included in Schedule 1:
 - (a) Subdivision Plan, Urbis Drawing No. PP01, Rev F, Project No. BA2156, dated 17.07.13;
 - (b) Proposed Infrastructure Plan, Urbis Drawing No PP02, Rev B Project No. BA2156, dated 17.07.13;
 - (c) Covenant Plan, Urbis Drawing No. PP05, Rev D, Project No. BA2156, dated 11.11.13;
 - (d) Staging Plan, Drawing No. PP06, Rev D, Project No. BA2156, dated 17.07.13; and
 - (e) Lot 1 Fire Trail Plan, Yurrah Drawing No.VM.06 Job No. 1109044-7, dated 12.07.13.
2. The development shall be staged over seven (7) stages generally as outlined on the Staging Plan, Urbis Drawing No. PP06, Rev D, Project No. BA2156, dated 17.07.13, and in accordance with the following:
 - (a) the development may, but need not, proceed in the numerical order of the stages shown on Staging Plan;
 - (b) each of the stages may be developed separately or in conjunction with another stage; and
 - (c) the use of each stage may commence upon the completion of the development works in that stage in accordance with all necessary operational works permits and other approvals.
3. For each stage, all conditions relevant for that stage must be complied with or bonds must be lodged prior to the plan of survey being sealed by Council.
4. The relevant period for the development approval is 6 years from the date the approval takes effect.

Works - General

5. No on-site works shall commence for any stage of the development until approval for operational works for the associated stage has been obtained from Council.
6. Prior to undertaking any construction works or clearing on the site, Operational Works documentation in the form of detailed plans, drawings and

calculations must be lodged with Council for review for compliance with the Approval Conditions and Council's general requirements.

Submission of Operational Works documentation will include:

- Plans showing full construction details, layout dimensions and finished surface levels.
 - All drawings must be checked, approved and signed by a current RPEQ with their registration number.
 - Three full sets of the drawings will be submitted in A3 size.
 - Calculations supporting stormwater management proposals are to be included.
 - A copy of the detailed plans and drawings must be provided to the relevant authorities to ensure practical designs for power and telecommunications facilities are possible.
7. For non-standard designs prepared by a private consultant and submitted as part of an application for operational works, a Design Checking Fee (approval of engineering drawings) based on Council's estimated cost of the works shall be payable. The fee is to be paid prior to design approval being given. Refer to Lockyer Valley Regional Council current Fees and Charges for calculation.
 8. Where works associated with this development are to be carried out, the constructing body shall be appointed by the developer as Principal Contractor under the Workplace Health and Safety Act 1995 and all subordinate legislation, and shall comply with all requirements of the same. Completing and returning Form 34 to the Council shall provide evidence of such appointment.
 9. Should any works associated with the development be carried out by agencies other than Council, an Inspection Fee based on Council's estimated cost of the works shall be payable calculated in accordance with the Lockyer Valley Regional Council's Fees and Charges current at the date notice of the works is given to Council. The Inspection Fee will be valid for six months after notice of works is given to Council.
 10. With regards to the construction of Council Infrastructure:
 - A "Certificate of Design" must be submitted by an RPEQ, certifying that the design is in accordance with all relevant engineering standards, Council's requirements and standards, relevant development conditions of approval, and sound engineering practice with appropriate fees payable.
 - All works must be supervised by an RPEQ competent in civil works.
 - A pre-start meeting will be held with the Contractor, the supervising RPEQ Engineer and Council prior to construction commencing.

- Council will inspect the works at critical points during the construction with appropriate fees payable.
 - On completion of all work, Council will inspect the work prior to acceptance 'On maintenance' for twelve (12) months with a maintenance security deposit payable.
 - The Developer will be responsible for the repair of any defects during the maintenance period.
11. All works must be undertaken by a nominated Principal Contractor experienced in the construction of Council Infrastructure. Council reserves the right to request evidence of the Principal Contractor's competency. Should it be deemed by the Director Engineering Services that the contractor does not have the necessary competency or has previously constructed substandard works for Council, Council reserves the right to reject the nominated contractor, alternatively, Council may require an extended Maintenance Period.
 12. Council Infrastructure must be accepted "On Maintenance" prior to commencement of use. A maintenance bond equal to 10% of the construction cost (minimum of \$1,000.00) must be retained by Council for a minimum period of twelve months, or until such time as the works are accepted "Off Maintenance" by Council.
 13. Prior to plan sealing the developer shall provide a letter to Council which evidences compliance or negotiated variation, with each condition of the Reconfiguration of a Lot and Operational Works approvals, e.g. nominates date and receipt number for fees and contribution payments, RPEQ supervision certificates, "as constructed" data and confirms compliance with individual design and construction conditions.
 14. On completion of all infrastructure works and prior to Application for Sealing of the Plan, the Developer is to provide Council with 'as constructed' drawings of infrastructure in digital format compatible with AutoCAD DWG/DXF files. The levels and positions of all infrastructure shall be referenced to GDA 94 (Zone 56) and AHD.
 15. On completion of the works a certificate must be submitted to Council by a RPEQ certifying that the works have been constructed in accordance with Council's construction standards and in compliance with the approved plans and specification. It is expected that the RPEQ will undertake the necessary inspections to make this certification.
 16. All vegetation cleared on the site will be removed and correctly disposed of or mulched on site and reused for tree planting.
 17. Cleared areas on newly created lots and any balance area must be seeded to achieve 80% grass coverage at off-maintenance at each stage.
 18. Adequate permanent survey marks shall be installed in accordance with the requirements of the Department of Natural Resources and Mines (DNRM). The developer shall submit a certificate signed by a licensed surveyor, stating

that after the completion of all works associated with the development, permanent survey marks are in their correct position, in accordance with the plan of survey.

19. Any costs from repairs due to damage caused to Council assets as a result of proposed works undertaken shall be met by the developer. Where pedestrian and vehicular traffic safety is exposed to hazards created from damage, the damage shall be repaired immediately upon associated works being completed.

Excavation and Filling

20. Earthworks must be carried out in accordance with AS 3798-1996 "Guidelines on Earthworks for commercial and residential developments".
21. All batters resulting from earthworks (cut and fill) associated with the development must:
 - (a) be located within the subject land; and
 - (b) have a maximum slope, including table drain batters, shall be 1V:4H, unless otherwise approved. Such approval will only be considered due to site constraints.
22. Any constructed dams on the subject property that will be located within a residential allotment shall be drained and filled. The fill is to be Level 1 standard "controlled fill" in accordance with AS 3798 –"Guidelines on earthworks for commercial and residential developments".
23. A geotechnical assessment report is to be provided prior to sealing the plans for any stage showing that the filled areas are controlled fill and have a site classification under AS2870 "Residential Slabs and Footings-Construction" that is equal to or less reactive than the existing soil classification on the lot/s.

Sediment and Erosion Control

24. The Developer will with the Operational Works Application, submit engineering drawings for establishing, maintaining and inspecting erosion and sediment management devices. The drawings shall show staging of works, where practical in order to limit the risk of the whole site being disturbed at the one time. This will include details of progressive revegetation of disturbed areas.
25. The developer shall be responsible for the installation and maintenance of silt management facilities from the time of commencement of construction until the stage has been released off maintenance by Council. All silt management facilities including diversion drains, sediment basins and energy dissipation structures as necessary are to be designed, constructed and maintained in accordance with 'Best Practice Erosion and Sediment Control' published by International Erosion Control Association Australasia.
26. The Developer will inspect all erosion and sediment control management devices after all significant rain events and where necessary these devices

will be modified, repaired or improved to prevent any erosion or sediment discharge from the Development in future rain events.

27. The developer is responsible for the removal of any silt/sediment that enters the road reserve during the construction phase of the development.

Ecology

28. Public and private open space is to be developed and managed generally in accordance with Covenant Plan, Urbis Drawing No. PP05, Rev D, Project No. BA2156, dated 11.11.13.
29. The requirements of the Department of Natural Resources and Mines as outlined in their Amended Concurrence Agency response to Council dated 8 January 2014 in relation to this proposal shall be complied with (refer Schedule 2).
30. Before sealing the plan of survey for Stages 1, 2 and 4 the developer will enter into an environmental covenant with the Council pursuant to section 97A of the Land Title Act 1994 to ensure the protection and management of the Significant Habitat Trees located on or affecting privately owned lots within that stage of the development, as identified on the Covenant Plan, Urbis Drawing No PP05, Rev D, Project No. BA2156, dated 11.11.13.
31. Prior to or concurrently with the initial operational works application for the development, the developer must submit covenant terms for approval by the Council. The covenant terms shall as a minimum detail the responsibilities, liabilities, measures, remedies and intents necessary to protect the Significant Habitat Trees and will prohibit within the covenant area all earthworks, infrastructure, buildings or structures and any land practices that may cause permanent or significant damage to the vegetation in terms of its health or longevity, unless otherwise approved.
32. The covenant areas for the Significant Habitat Trees will be determined at the time of survey to establish Tree Protection Zones in accordance with AS4970-2009 – Protection of trees on development sites.
33. The environmental covenants must be lodged for registration on the titles of the affected lots at the time the survey plan creating the lots is lodged for registration in the Land Titles Office.

Parkland and Public Open Space Management

34. Parkland is to be progressively dedicated to Council with each stage of the development generally as indicated on the Drawing No. PP06, Rev D, Project No. BA2156, dated 17.07.13 and prepared by Urbis.
35. The developer shall prepare a Public Open Space Management Plan, to be submitted for Council approval prior to or concurrently with the operational works application which:
 - (a) details the segmentation and staged handover of open space in accordance with areas of approved allotments and road constructions;

- (b) is prepared in accordance with relevant Council documentation, guidelines and policies;
 - (c) is prepared in accordance with the conclusions derived from the technical studies carried out for the site;
 - (d) lists components of specific management plans (hydraulic, bushfire, ecological etc.) prepared for the site which relate to the dedication and protection of the public open space areas;
 - (e) defines and sets out parameters for minimum standards for the quality of public open space areas;
 - (f) responds to specific Council Development Codes which influence the protection and use of proposed open space areas;
 - (g) as a minimum, includes details of embellishments, planting and species schedules, materials proposed, car parking design, pedestrian and cycle paths that provide connectivity through the site;
 - (h) provides for the removal of weeds within the public open space network and the progressive rehabilitation of affected areas;
 - (i) provides for the use of locally indigenous trees for plantings in streetscapes or other open spaces affected by the development or requiring active rehabilitation; and
 - (j) will delineate the 1:10 year flood level affecting areas of proposed public open space as confirmed by a registered surveyor.
36. The developer shall comply with the requirements of the approved Public Open Space Management Plan.
37. All edging on public land including road reserves, footpaths, parks etc. shall be constructed of material with suitable longevity properties both in and above ground level. Treated or untreated hardwood or softwood is not to be used.
38. The unconstrained parkland must be above the 1:10 year flood level. The provision of drainage reserve below the 1 in 10 year level will not count as unconstrained parkland. The developer is to show any constrained land clearly within the Public Open Space Management Plan.

Bushfire

39. The estate is to be developed and managed in accordance with the recommendations of the Bushfire Risk Assessment and Mitigation Plan prepared by Bushland Protection Systems Pty Ltd (dated 11.11.13)(refer to Schedule 2).
40. Bushfire trails and asset protection zones are to be established generally as indicated on the Covenant Plan, Urbis Drawing No. PP05, Rev D, Project No. BA2156, dated 11.11.13 and maintained in accordance with the Bushfire Risk Assessment and Mitigation Plan prepared by Bushland Protection Systems Pty Ltd (dated 11.11.13).

41. The developer must provide a fire trail within proposed Lot 1. The fire trail must be developed generally in accordance with the Lot 1 Fire Trail Plan, Yurrah Drawing No. VM.06, Job No.1109044-7 dated 12.07.13. A lockable gate must be installed at the entrance to the fire trail on Adare Road.
42. The developer shall grant an Easement in favour of the State of Queensland represented by the Department of Community Safety on that Department's standard terms and conditions (Land Titles Office Document 712851620) to permit access for emergency vehicles and a safe evacuation route along the bushfire trail within proposed Lot 1, as indicated on the Covenant Plan, Urbis Drawing No. PP05, Rev D, Project No. BA2156, dated 11.11.13.

Water Supply

43. Water reticulation drawings shall be submitted for approval prior to works occurring.
44. Each allotment shall be connected to reticulated water supply infrastructure.
45. Water supply is to be generally in accordance with the report by Gilbert and Sutherland of 6 November 2013 and the requirements of Queensland Urban Utilities outlined in their advice to Council of 13 January 2014, QUU Reference 119/80/979/189/13 (refer to Schedule 3).

Sewerage

46. Each allotment within the development shall contain an area of approximately 450-520m² with less than 10% slope that is capable of dedication as an effluent disposal area to cater for an on-site aerobic waste water treatment system unless otherwise approved.
47. Any accompanying on site effluent disposal system is to be retained wholly within the lot containing the house it services and is to comply with Australian Standard 1547:12 On-site Domestic Wastewater Management.

Stormwater Management and Control

48. All unlined open drains shall be turfed to a level at least 300mm above the 100 ARI flow level as soon as practicable after construction and regular watering shall occur to ensure required establishment. The proposed schedules of turfing shall be shown on the Works Program. Additional measures to line open drains shall be required if flow velocities exceed the values shown in QUDM Table 9.05.3.
49. The 100 ARI local flood levels and 100 ARI regional flood level (if applicable) shall be determined for the development by an RPEQ with experience in flood modelling. The ground level of all new lots shall be 300mm above both the local and regional flood levels. The local Q100 ARI flood event extents shall be contained within a drainage easement. Council has information on the regional flood levels in parts of Gatton and Laidley. Please liaise with Council's Engineering Assessment Officer to access this information.

50. An RPEQ with experience in flood modelling shall provide a report which details depths of flow, velocities and also provide a flood hazard and risk assessment to assess risk to property and life.
51. The developer must provide all necessary internal and external stormwater drainage infrastructure to service the development. Such drainage works must be designed and constructed in accordance with QUDM and the Gatton Shire Planning Scheme such that the overall drainage system caters for a storm event with an ARI of 100 years.
52. All stormwater drainage structures (surface and underground) and accessories shall be designed and constructed to effectively drain all stormwater falling on and coming to the proposed subdivision to a point of satisfactory legal discharge. The legal point of discharge shall be identified for each drainage path which crosses the development site boundary.
53. All stormwater flows within and adjacent to the developments shall be confined to road reserves, drainage reserves, registered easements or parkland. The registered drainage easements if related to piped drainage shall be centrally located over such underground pipe system and shall not be less than 4m wide. In addition, the easement shall be of suitable width to contain the predicted overland flow from the stormwater event with an ARI of 100 years in that location.
54. No ponding or redirection of stormwater shall occur onto adjoining land.
55. Overland flow paths must be suitably designed to cater for the water from a storm event with an ARI of 100 years. In the case where the piped system is carrying part of the flow, the overland flow paths must be designed to cater for that volume which is represented by the difference between the predicted volume from the storm event with an ARI of 100 years and the capacity of the pipe system, noting the requirements of QUDM.
56. As part of an application for operational works, detailed stormwater management plans will be prepared by a suitably qualified professional generally in accordance with the stormwater management plan prepared by Gilbert and Sutherland titled "Stormwater Management Plan 63 Redbank Creek Road, Adare, Queensland" dated February 2010 including amendments detailed in the letter from Gilbert and Sutherland to Urbis dated 5 October 2012.
57. The developer shall be responsible for obtaining approval and bearing all costs associated with registering in favour of Council all necessary stormwater drainage easements, within and external to the subject land, in order for drainage path to reach a legal point of discharge.
58. The peak rate of stormwater discharge from the site shall not exceed the peak rate of stormwater discharge for the site prior to development for all rainfall events (i.e. 1 year, 2 years, 5 years, 10 years, 20 years, 50 years and 100 year ARI events). This shall be achieved by appropriate detention facilities and WSUD design features, and shall be generally consistent with the SWMP provided as part of the application.

59. Lots which drain to the street shall have a standard galvanised kerb adaptor installed in the kerb at the lowest corner of the lot.
60. Stormwater drainage piping shall have a minimum diameter of 375mm with the exception of rear inter-allotment drainage
61. The developer shall provide all stormwater drainage associated with the Redbank Creek Road frontage of Stage 1, including upgrading of existing cross drainage which shall be designed in accordance with QUDM.
62. The developer shall provide all stormwater drainage associated with the Adare Road frontage of Stage 4, including upgrading of existing cross drainage which shall be designed in accordance with QUDM.
63. The developer shall provide all stormwater drainage associated with the Adare Road frontage of Stage 5, including upgrading of existing cross drainage which shall be designed in accordance with QUDM.
64. The developer shall provide all stormwater drainage associated with the Adare Road frontage of Stage 7, including upgrading of existing cross drainage which shall be designed in accordance with QUDM.

Public Utility Services

65. All above and below ground services potentially affected by the proposed subdivision works shall have alignment and level determined prior to any detailed design or construction works being undertaken. Any conflicts associated with proposed and existing services shall be forwarded to the appropriate controlling authority by the developer for decision.
66. In relation to telecommunication supply for the development:
 - (a) the developer will arrange with the service supplier(s) that operate(s) in the local area for the reticulation of external cable within the development;
 - (b) telecommunication conduits (ducts) and pits, including trenching and design, are to be provided to service the development in accordance with the NBN Co Installing Pit and Conduit Infrastructure – Guidelines for Developers. Documentary evidence shall be provided to Council which confirms the NBN Co requirements have been satisfied and the infrastructure has been installed and are fibre-ready;
 - (c) the developer will submit a 'Certificate of Supply' to Council verifying that telecommunications are available to all proposed allotments or that the developer has entered into a suitable agreement with the relevant authority for the provision of telecommunications to the new lots prior to endorsement of the Survey Plan.
67. In relation to electricity supply for the development:
 - (a) Underground electricity is to be provided to serve all new internal allotments. Overhead power is only acceptable on external roads with an existing overhead supply;

- (b) The developer will submit a 'Certificate of Supply' to Council verifying that electricity supply is available to all proposed allotments or that the developer has entered into a suitable agreement with the relevant authority for the supply of electricity to the new lots prior to endorsement of the Survey Plan.
68. All underground plant installed by public utility providers shall be in accordance with Council's standard detail for Footpath Allocations for Public Utilities as contained in the Council's Planning Scheme.
69. Adequate provision shall be made in all proposed road reserves, access strips and easements to cater for the public utility services to serve the development.
70. The developer will, where practical, arrange trench sharing with relevant authorities.
71. The developer must provide appropriate road crossing conduits and kerb markers shall be installed to identify the location of cross road services e.g. water, electricity and telecommunications.
72. The developer shall grant such easements for public utility services on the terms and conditions of the relevant public utility provider as are necessary to facilitate the provision of those services to the development.
73. The developer shall provide detailed design drawings for both electricity and telecommunications with the drawings approved by the relevant authority at the time of Operational Works.
74. The telecommunication and electricity layouts must also be shown on the water reticulation layout plan, stormwater layout plan and the sewerage layout plan where applicable, and all the plans are to be certified by the relevant authority.

Road Network Infrastructure - General

75. The requirements of Queensland Transport and Main Roads outlined in their Amended Concurrence Agency Response of 14 February 2013 (Reference TMR 13-005392) in relation to this proposal shall be complied with (refer Schedule 3).
76. All roadworks shall be designed and constructed in accordance with Council's standards outlined in LVRC Road Hierarchy Table unless specifically detailed otherwise in other conditions of this reconfiguration approval.
77. All roadworks shall be designed and constructed with regard to the Department of Main Roads Road Planning and Design Manual, Austroad publications and the Institute of Public Works Engineering Association Queensland Standard Drawings.
78. The design and construction of each road or street must ensure that the speed environment, geometry, sight distances, carriageway widths, lighting, bus stops, vehicle movements, on street parking other physical attributes are

consistent with the function and role of the road or street in the transport network.

79. The design and construction of all roadworks is to be in accordance with the nominated design speed in LVRC Road Hierarchy Table and general accordance with Queensland Streets Design Guidelines for "Subdivisional Street Works". Appropriate intersection treatment and geometric design is required to meet this requirement. Such devices shall not restrict service vehicle access.
80. All internal roads within the development shall be sealed to a standard suitable for the designated road type and in accordance with LVRC standards.
81. All street surfacing for new road construction shall consist of an approved asphaltic concrete. Patterned, reinforced concrete, concrete pavers or segmental clay pavers shall only be used in feature areas.
82. The road pavement design details and test results are to be submitted for Council approval. Pavement design shall be undertaken in accordance with Austroads Guide to Pavement Technology Part 2: Pavement Structural Design. The minimum pavement thickness, including 30mm of AC, shall not be less than 300mm. A minimum 30mm AC surfacing is required. The total pavement thickness as determined from the design charts is not to include the thickness of AC surfacing which is deemed to be a wearing surface only unless the AC thickness is greater than 75mm.
83. Where new and old pavements meet, the join shall be of a neat standard with respect to horizontal and vertical alignments. The join shall have no significantly noticeable irregularities in the running surface at or adjacent to the join for the length of the construction. Works may be necessary on the existing pavement for a satisfactory standard to be met.
84. Where kerb and channel is proposed, the developer must establish the location of existing structures and services (including existing kerb and channel and vegetation) and take these into account in the detailed design of the kerb and channel alignment.
85. Where kerb and channel is installed, an 800mm continuous strip of turf with additional filter strips at 5.0m spacing shall be laid behind all new kerb and channel. The remaining unsealed verge area shall be filled, graded and either fully turfed or appropriately grassed seeded to achieve 80% grass coverage at off maintenance.
86. All lots must allow for the provision of vehicular access to the roadway.
87. For any stage of the development involving a battle axe allotment, the developer shall construct a vehicular access driveway from the carriageway to the allotment in accordance with Council's Property Access & Access Crossings: Design, Construction & Maintenance policy prior to the sealing of the plans for that stage. Where possible, the driveway shall join the proposed carriageway at an angle of 90 degrees to provide for suitable vehicular access to and from the allotment. Provision of conduits for underground services being water supply, electricity, telephone cabling or other such utilities is

required as part of the access driveway. Unless the access is constructed in conjunction with Operational Works, a Permit to Undertake Work on a Road Reserve is required.

88. Any terminating roads that may be extended as a part of a later stage must be constructed with a gravel turnaround area with a minimum diameter of 18m, with a two coat bitumen seal. Hazard markers and delineator posts must be erected to define the turn around.
89. All traffic signs and delineation shall be designed in accordance with MUTCD.
90. Street lighting will be designed and installed in accordance with the Australian Standard Code of practice for public lighting, AS1158, with the exception of light spacing. M50 mercury lights, or suitable approved alternatives, will be fitted at each intersection and at any problem areas as determined in consultation with Council. All street lighting will be certified by an RPEQ competent in electrical reticulation design, with the exception of the light spacing.
91. The Developer shall submit to Council a list of preferred street names for any proposed new street for consideration by Council (in accordance with Council's Policy for the naming of new streets). Street names proposed will not be the same or similar to other street names within the Lockyer Valley Regional Council area. Council retains the right to name one street within the Development.
92. The developer shall provide through road priority for the collector street nominated as a potential bus route in the Department of Transport and Mains Roads Concurrence Agency Response 14.02.13 (Schedule 3). The developer shall submit an amended development plan to Council for approval prior to submission of the application for operational works such that the geometry of the road way accommodates the manoeuvre path of the bus identified in the Department of Transport and Main Concurrence Agency Response 14.02.13 (Schedule 3) and is contained within road reserve including all altered intersection priorities.

Road Network Infrastructure – Stage 1 Works

93. Existing roads shall be widened and kerbed for the frontage of subject land, as follows:-
 - Road Name Redbank Creek Road
 - Classification- Collector Street
 - Construction Standard- Road shall be widened on the northern side of Redbank Creek Road including kerb and channel to provide half the total road width required by the Lockyer Valley Regional Council Road Hierarchy Table (minimum 3.75m from road centreline to kerb invert). The treatment shall extend along the full frontage of the subject land from the intersection of Redbank Creek Road, Fords Road and Adare Road to the eastern boundary of Stage 1.

94. Proposed new roads shall be constructed for the entire frontage of subject land, as follows:-
- Lots 108, 109, 116-119 Treatment Type 1
 - Lots 109-111, 116, 120-123, 130-132 Treatment Type 2
 - Treatment Type 1 - Construction Standard. The Road Reserve Width is to be 20.0m and Carriageway Width 7.5m. The road must provide for kerb and channel, or as an alternative, a design that provides for a safe and sustainable solution for stormwater management having regard to slopes and soil types. Any alternative solution must be submitted to and approved by Council prior to construction. No footpath is required.
 - Treatment Type 2 - Construction Standard. The Road Reserve Width is to be 16.0m and Carriageway Width 6.0m. The road must provide for kerb and channel, or as an alternative, a design that provides for a safe and sustainable solution for stormwater management having regard to slopes and soil types. Any alternative solution must be submitted to and approved by Council prior to construction. No footpath is required.

Road Network Infrastructure – Stage 2 Works

95. Proposed new roads shall be constructed for the entire frontage of subject land, as follows:-
- Lots 82-85, 106, 107 Treatment Type 1
 - Lots 82, 86-88, 101-105, 106, 112-115, 134 Treatment Type 2
 - Lots 115, 133, 134 Treatment Type 3
 - Treatment Type 1 - Construction Standard. The Road Reserve Width is to be 20.0m and Carriageway Width 7.5m. The road must provide for kerb and channel, or as an alternative, a design that provides for a safe and sustainable solution for stormwater management having regard to slopes and soil types. Any alternative solution must be submitted to and approved by Council prior to construction. No footpath is required.
 - Treatment Type 2 - Construction Standard. The Road Reserve Width is to be 20.0m and Carriageway Width 6.0m. The road must provide for kerb and channel, or as an alternative, a design that provides for a safe and sustainable solution for stormwater management having regard to slopes and soil types. Any alternative solution must be submitted to and approved by Council prior to construction. No footpath is required.
 - Treatment Type 3 - Construction Standard. The Road Reserve Width is to be 16.0m and Carriageway Width 6.0m. The road must provide for kerb and channel, or as an alternative, a design that provides for a safe and sustainable solution for stormwater management having regard to slopes and soil types. Any alternative solution must be submitted to and approved by Council prior to construction. No footpath is required.

Road Network Infrastructure – Stage 3 Works

96. Proposed new roads shall be constructed for the entire frontage of subject land, as follows:-
- Lots 89-100, 135-142 Treatment Type 1
 - Treatment Type 1 - Construction Standard. The Road Reserve Width is to be 20.0m and Carriageway Width 6.0m. The road must provide for kerb and channel, or as an alternative, a design that provides for a safe and sustainable solution for stormwater management having regard to slopes and soil types. Any alternative solution must be submitted to and approved by Council prior to construction. No footpath is required.

Road Network Infrastructure – Stage 4 Works

97. Existing roads shall be widened for the frontage of subject land, as follows:-
- Road Name Adare Road
 - Classification- Collector Street
 - Construction Standard- Road shall be widened on the eastern side of Adare Road to provide half the total road width required by the Lockyer Valley Regional Council Road Hierarchy Table (minimum 3.75m from road centreline to edge of bitumen). The treatment shall extend along the full frontage of the subject land from which point the bitumen edge shall taper at a minimum 1 in 10 to join neatly with the existing bitumen edge. Swales must be constructed in accordance with QUDM design standards between Adare Road and each lot fronting onto Adare Road. Constructed crossovers must also be provided for all lots fronting onto Adare Road.
98. Proposed new roads shall be constructed for the entire frontage of subject land, as follows:-
- Lots 43-45, 51, 52, 58, 68-70, 143 Treatment Type 1
 - Lots 39, 46-51, 58, 68, 143 Treatment Type 2
 - Treatment Type 1 - Construction Standard. The Road Reserve Width is to be 20.0m and Carriageway Width 6.0m. The road must provide for kerb and channel, or as an alternative, a design that provides for a safe and sustainable solution for stormwater management having regard to slopes and soil types. Any alternative solution must be submitted to and approved by Council prior to construction. No footpath is required.
 - Treatment Type 2 - Construction Standard. The Road Reserve Width is to be 16.0m and Carriageway Width 6.0m. The road must provide for kerb and channel, or as an alternative, a design that provides for a safe and sustainable solution for stormwater management having regard to slopes and soil types. Any alternative solution must be submitted to and approved by Council prior to construction. No footpath is required.

Road Network Infrastructure – Stage 5 Works

99. Existing roads shall be widened for the frontage of subject land, as follows:-
- Road Name Adare Road
 - Classification- Collector Street
 - Construction Standard- Road shall be widened on the eastern side of Adare Road to provide half the total road width required by the Lockyer Valley Regional Council Road Hierarchy Table (minimum 3.75m from road centreline to edge of bitumen). The treatment shall extend from the intersection of Redbank Creek Road and Adare Road to the northern boundary of stage 5, from which point the bitumen edge shall taper at a minimum 1 in 10 to join neatly with the existing bitumen edge. Swales must be constructed in accordance with QUDM design standards between Adare Road and each lot fronting onto Adare Road. Constructed crossovers must also be provided for all lots fronting onto Adare Road
100. Proposed new roads shall be constructed for the entire frontage of subject land, as follows:-
- Lots 71-73 Treatment Type 1
 - Lots 59-67, 71-77. Treatment Type 2
 - Treatment Type 1 - Construction Standard. The Road Reserve Width is to be 20.0m and Carriageway Width 6.0m. The road must provide for kerb and channel, or as an alternative, a design that provides for a safe and sustainable solution for stormwater management having regard to slopes and soil types. Any alternative solution must be submitted to and approved by Council prior to construction. No footpath is required.
 - Treatment Type 2 - Construction Standard. The Road Reserve Width is to be 16.0m and Carriageway Width 6.0m. The road must provide for kerb and channel, or as an alternative, a design that provides for a safe and sustainable solution for stormwater management having regard to slopes and soil types. Any alternative solution must be submitted to and approved by Council prior to construction. No footpath is required.

Road Network Infrastructure – Stage 6 Works

101. Proposed new roads shall be constructed for the entire frontage of subject land, as follows:-
- Lots 15-17, 18-19, 28-31 Treatment Type 1
 - Lots 19-28, 31-37 Treatment Type 2
 - Treatment Type 1 - Construction Standard. The Road Reserve Width is to be 20.0m and Carriageway Width 7.5m. The road must provide for kerb and channel, or as an alternative, a design that provides for a safe and sustainable solution for stormwater management having regard to

slopes and soil types. Any alternative solution must be submitted to and approved by Council prior to construction. No footpath is required.

- Treatment Type 2 - Construction Standard. The Road Reserve Width is to be 16.0m and Carriageway Width 6.0m. The road must provide for kerb and channel, or as an alternative, a design that provides for a safe and sustainable solution for stormwater management having regard to slopes and soil types. Any alternative solution must be submitted to and approved by Council prior to construction. No footpath is required.

Road Network Infrastructure – Stage 7 Works

102. Existing roads shall be widened for the frontage of subject land, as follows:-
- Road Name Adare Road
 - Classification- Collector Street
 - Construction Standard- Road shall be widened on the eastern side of Adare Road to provide half the total road width required by the Lockyer Valley Regional Council Road Hierarchy Table (minimum 3.75m from road centreline to edge of bitumen). The treatment shall extend from the northern boundary of stage 4 to the northern boundary of stage 7, from which point the bitumen edge shall taper at a minimum 1 in 10 to join neatly with the existing bitumen edge. Swales must be constructed in accordance with QUDM design standards between Adare Road and each lot fronting onto Adare Road. Constructed crossovers must also be provided for all lots fronting onto Adare Road.
103. Proposed new roads shall be constructed for the entire frontage of subject land, as follows:-
- Lots 1-14 Treatment Type 1
 - Treatment Type 1 - Construction Standard. The Road Reserve Width is to be 20.0m and Carriageway Width 7.5m. The road must provide for kerb and channel, or as an alternative, a design that provides for a safe and sustainable solution for stormwater management having regard to slopes and soil types. Any alternative solution must be submitted to and approved by Council prior to construction. No footpath is required.
104. The developer shall provide a cul-de-sac adjacent to proposed lot 1 and at the terminating end of the internal collector street. The cul-de-sac shall be circular head type with a minimum diameter of 18.0m. The developer shall submit an amended development plan to Council for approval prior to submission of the application for operational works such that the cul-de-sac is contained within road reserve with a minimum verge width of 5.0m.

Infrastructure Charges

105. The developer is to pay Infrastructure charges for the proposed development in accordance with the *LVRC Adopted Infrastructure Charges Resolution*. Council will issue Infrastructure Charges Notices for the development. The charges relating to a particular stage of the development are required to be paid prior to plan sealing for that stage and can be obtained from Council at that time. The developer may pay the contributions for any or all of the stages

in advance (for example, it may pay all of the infrastructure contributions for the development upfront). The amount payable will be required at the rate applicable at the time of payment.

Schedules

Schedule 1 Approved Plans and Drawings

- Subdivision Plan, Urbis Drawing No. PP01, Rev F, Project No. BA2156, dated 17.07.13
- Proposed Infrastructure Plan, Urbis Drawing No. PP02, Rev B, Project No. BA2156, dated 17.07.13
- Covenant Plan, Urbis Drawing No. PP05, Rev D, Project No. BA2156, dated 11.11.13
- Staging Plan, Urbis Drawing No. PP06, Rev D, Project No. BA2156, dated 17.07.13
- Lot 1 Fire Trail Plan, Yurrah Drawing No. VM.06, Job No. 1109044-7, dated 12.07.13

Schedule 2 Approved Assessments and Reports

- Bushfire Risk Assessment and Mitigation Plan, Bushland Protection Systems Pty Ltd (dated 11.11.13).
- G&S Reports - Gilbert and Sutherland titled "Stormwater Management Plan 63 Redbank Creek Road, Adare, Queensland" dated February 2010 including amendments detailed in the letter from Gilbert and Sutherland to Urbis dated 05.10.12.
- G&S Water Supply Assessment Letter to DibbsBarker dated 06.11.13.

Schedule 3 Concurrence, Advice and Third Party Responses

- Department of Natural Resources and Mines Amended Concurrence Agency Response dated 8 January 2014.
- Department of Transport and Main Roads Amended Concurrence Agency Response 14.02.13
- Queensland Urban Utilities advice dated 13.01.14.

Advice provided by the Assessment Manager and Referral Agencies

- (a) All works associated with this approval may not start until all subsequent approvals have been obtained, and the conditions attached to these approvals have been satisfied.
- (b) It is considered essential that any consultants engaged to prepare any subsequent reports, plans or applications, liaise with the relevant Council Officers to ensure they are prepared in accordance with the conditions of approval and all relevant standards.
- (c) Any additions or modifications to the approval may be subject to a further application for development approval. To ensure works or activities are not undertaken outside the scope of this approval please contact Council.
- (d) The entities commissioned to undertake all construction activities shall be aware of and comply with the requirements of all relevant State environmental regulations, including those relating to hours of construction.

- (e) Each further development approval required as a result of this approval must be obtained within the relevant period.
- (f) All proposed structures and works should be positioned clear of any services which traverse the subject land. To determine where existing services are located, please contact Council or the owner of the services.
- (g) In accordance with the *Plant Protection Act 1989* and the Plant Protection Regulation 1990, a quarantine notice has been issued for the State of Queensland to prevent the spread of the Red Imported Fire Ant (ant species *Solenopsis invicta*) and to eradicate it from the State.

It is the legal obligation of the land owner or any consultant or contractor employed by the land owner to report the presence or suspicion of Fire Ants to the Queensland Department of Primary Industries on 13 25 23 within 24 hours of becoming aware of the presence or suspicion, and to advise in writing within seven days to:

Director General
Department of Primary Industries
GPO Box 46, Brisbane QLD 4001

It should be noted that the movement of Fire Ants is prohibited, unless under the conditions of an Inspectors Approval. More information can be obtained from the Queensland Department of Primary Industries website: www.dpi.qld.gov.au.

- (h) All persons undertaking works on the land have obligations and responsibilities under the *Aboriginal Cultural Heritage Act, 2003*.
- (i) Under section 23 of the *Aboriginal Cultural Heritage Act, 2003* a person who carries out an activity must take all reasonable and practicable measures to ensure the activity does not harm Aboriginal cultural heritage (the "cultural heritage duty of care").
- (j) Applicants are also encouraged to undertake a search of the Aboriginal Cultural heritage Database and the Aboriginal Cultural Heritage Register, administered by the Cultural Heritage Coordination Unit, Department of Environment and Resource Management. Application forms to undertake a free search of the Cultural heritage Register and the Database may be obtained by contacting the Cultural Heritage Coordination Unit on (07) 3239 3647 or on the DERM Website: http://www.derm.qld.gov.au/cultural_heritage/index.html
- (k) Should the operator discover an item of cultural heritage significance or any evidence of heritage place the Cultural Heritage Act 1992 requires that they immediately contact the Department of Environment and Heritage Protection for direction.
- (l) Evidence of Portable Long Service Leave having been paid is required for projects over \$80,000 in contract value (Submit yellow copy to Council). This is required prior to the issue by Council of the Operational Works approval.

Schedule 1 – Approved Plans and Drawings




- Subdivision Plan, Urbis Drawing No. PP01, Rev F, Project No. BA2156, dated 17.07.13
- Proposed Infrastructure Plan, Urbis Drawing No. PP02, Rev B, Project No. BA2156, dated 17.07.13
- Covenant Plan, Urbis Drawing No. PP05, Rev D, Project No. BA2156, dated 11.11.13;
- Staging Plan, Urbis Drawing No. PP06, Rev D, Project No. BA2156, dated 17.07.13
- Lot 1 Fire Trail Plan, Yurrah Drawing No. VM.06, Job No. 1109044-7, dated 12.07.13

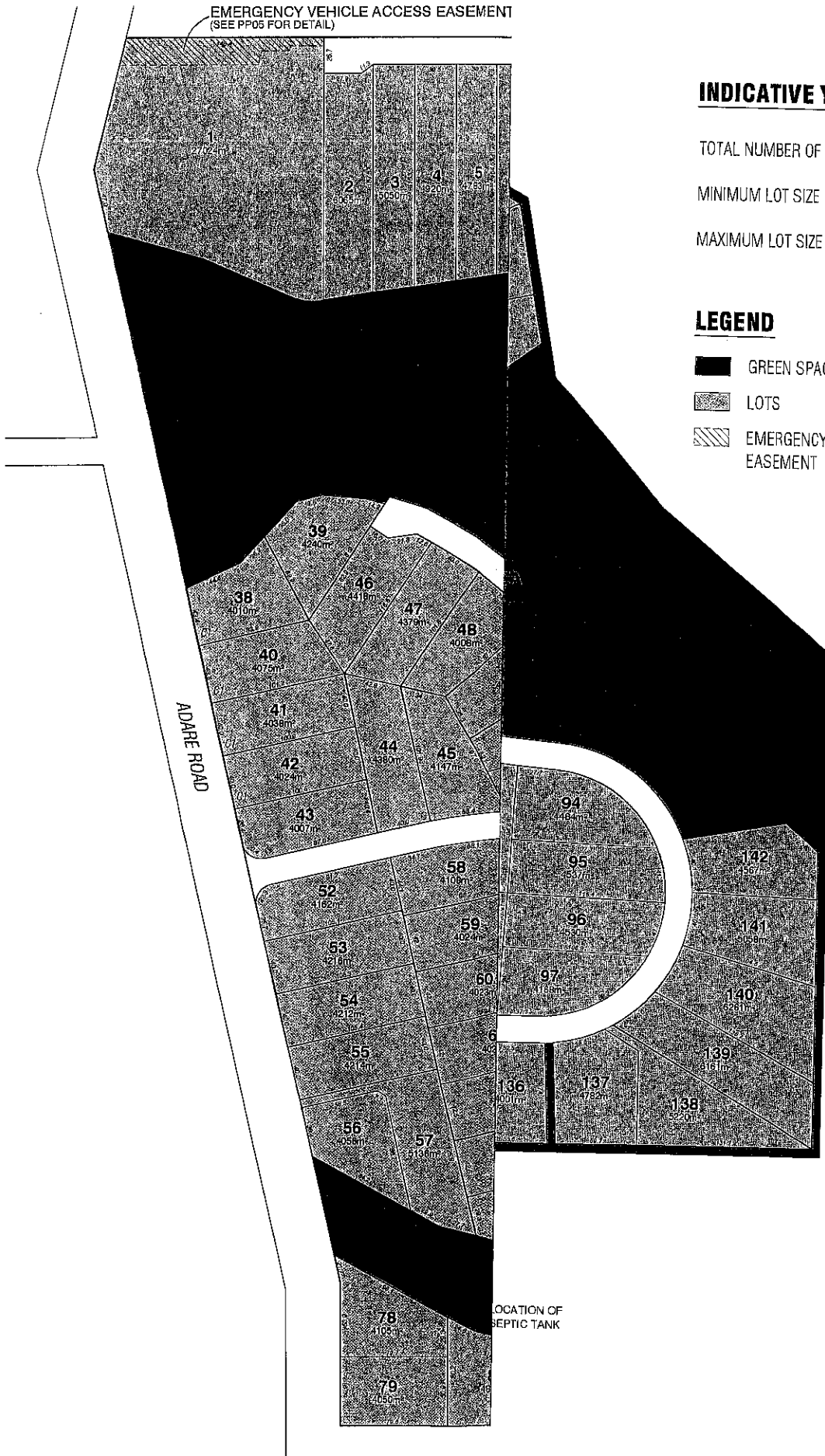
EMERGENCY VEHICLE ACCESS EASEMENT
(SEE PPO5 FOR DETAIL)

INDICATIVE YIELD

TOTAL NUMBER OF LOTS	143
MINIMUM LOT SIZE	4,000m ²
MAXIMUM LOT SIZE	27,024m ²

LEGEND

-  GREEN SPACE / CONSERVATION
-  LOTS
-  EMERGENCY VEHICLE ACCESS EASEMENT



urbis
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Level 7, 123 Albert Street
Brisbane QLD 4000
1 07 3007 8800
Urbis Pty Ltd ABN 50 105 256 228

WALLANGARRA
SUBDIVISION PLAN

Copyright by Urbis Pty Ltd. This drawing or parts thereof may not be reproduced for any purpose without the consent of Urbis Pty Ltd.
This plan is conceptual and is for discussion purposes only. Subject to further detail study, Council approval, engineering input, and survey. Cadastral boundaries, areas and dimensions are approximate only. Figured dimensions shall take preference to scaled dimensions. No reliance should be placed on this plan for any financial dealings of the land.

PROJECT NO: BA2156
DATE: 17.07.13
DRAWING NO: PPO1
REV: F

LEGEND

ected vegetation and conservation areas on the site are comprised of a mix of private and publicly owned land as follows:

PRIVATE LAND

COVENANT AREAS ON PRIVATE LAND

avenants to be adopted within these areas will ensure the protection of existing ecological values and features.

Conservation Block Covenants to protect areas which are considered important for maintaining ecosystem function. Metes and bounds of covenant areas are to be determined generally in accordance with this plan and recorded as covenant areas on the relevant survey plan. Vegetation Protection Covenants shall be entered into with the State of Queensland on the terms nominated by the Department of Natural Resources and Mines as appropriate in the circumstances.

Significant Habitat Tree Covenants to protect individual hollow-bearing trees which have been identified as having notable or significant habitat values. Individual trees identified on this plan will be protected by covenant areas the metes and bounds of which shall be based on Tree Protection Zones (TPZs) established in accordance with AS4970-2009- Protection of trees on development sites determined at time of survey and recorded as covenant areas on the relevant survey plan. Significant Habitat Tree covenants shall be entered into with the Council on terms agreed between the parties prior to the sealing of the plan of survey.

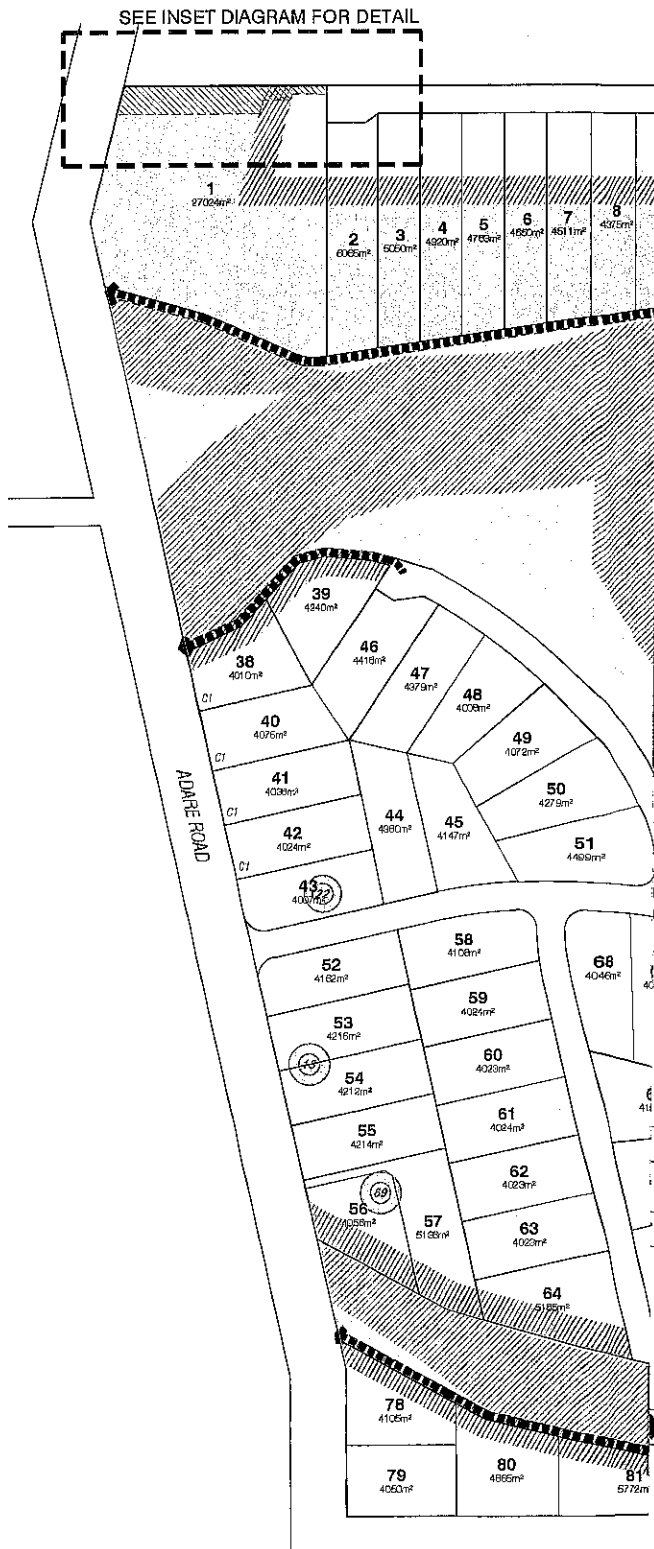
Lots which subject to site specific survey and vegetation assessment may be subject to covenants to preserve vegetation and habitat values and preserve connectivity to the remnant vegetation present on the opposite side of Adare Road.

Asset Protection Zones (20m radiation zone for fire protection) to be established and managed in accordance with the Bushfire Risk Assessment and Mitigation Plan prepared by Bushland Protections Systems Pty Ltd.

Fire trail and emergency access on private land

Emergency Vehicle Access Easement in favour of the State of Queensland represented by the Department of Community Safety on that Department's standard terms and conditions.

Existing buildings to be retained on site



PUBLIC LAND

Public open space areas will be dedicated progressively to Council in stages and will be subject to an Open Space Management Plan prepared at the operational works stage. The Open Space Management Plan will provide an overarching management tool for Council to follow when managing the public open space areas on the site.

Core Conservation Areas contain land that maintains high ecological values and features. It is intended that these areas will remain largely in their natural state. Maintenance by Council will include periodic removal of fuel loads for bushfire mitigation, the management of the understorey to encourage further growth and ensure adequate habitat is provided and some supplementary or habitat planting to augment and enhance ecological values.

Buffer Conservation Areas are intended to support the Core Conservation Areas and include areas identified as General Use Zones.

General Use Zones are located within the Buffer Conservation Areas are intended to operate as a public park facility for the local residential community. General Use Zones may contain community facilities such as a gazebo, picnic tables or seating areas for passive recreation. On-going maintenance such as mowing, emptying of bins and periodic repair and maintenance of infrastructure will be required. General Use Zones are generally indicated on this plan but their exact location and function will be defined in future stages of the development.

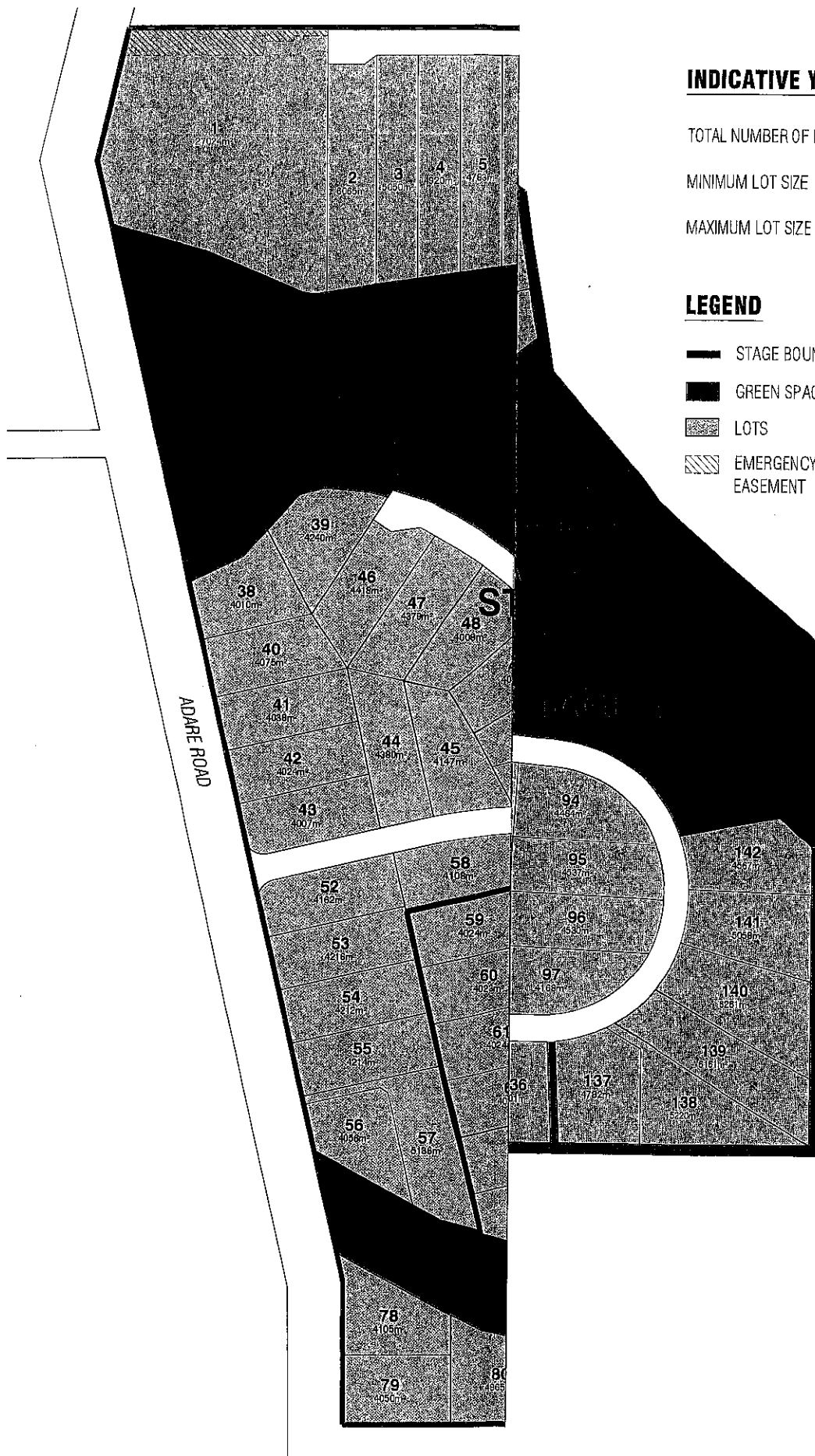
Bushfire Trails are 6 metre wide trails located on public land established and maintained in accordance with the Bushfire Risk Assessment and Mitigation Plan prepared by Bushland Protections Systems Pty Ltd.

Brisbane
Level 7, 123 Albert Street
Brisbane QLD 4000
1 07 3007 3800
Urbis Pty Ltd ABN 50 105 256 228

WALLANGARR
COVENANT PLAN

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PROJECT NO: BA2158
DATE: 11.11.13
DRAWING NO: PP05
REV: D



INDICATIVE YIELD

TOTAL NUMBER OF LOTS	143
MINIMUM LOT SIZE	4,000m ²
MAXIMUM LOT SIZE	27,024m ²

LEGEND

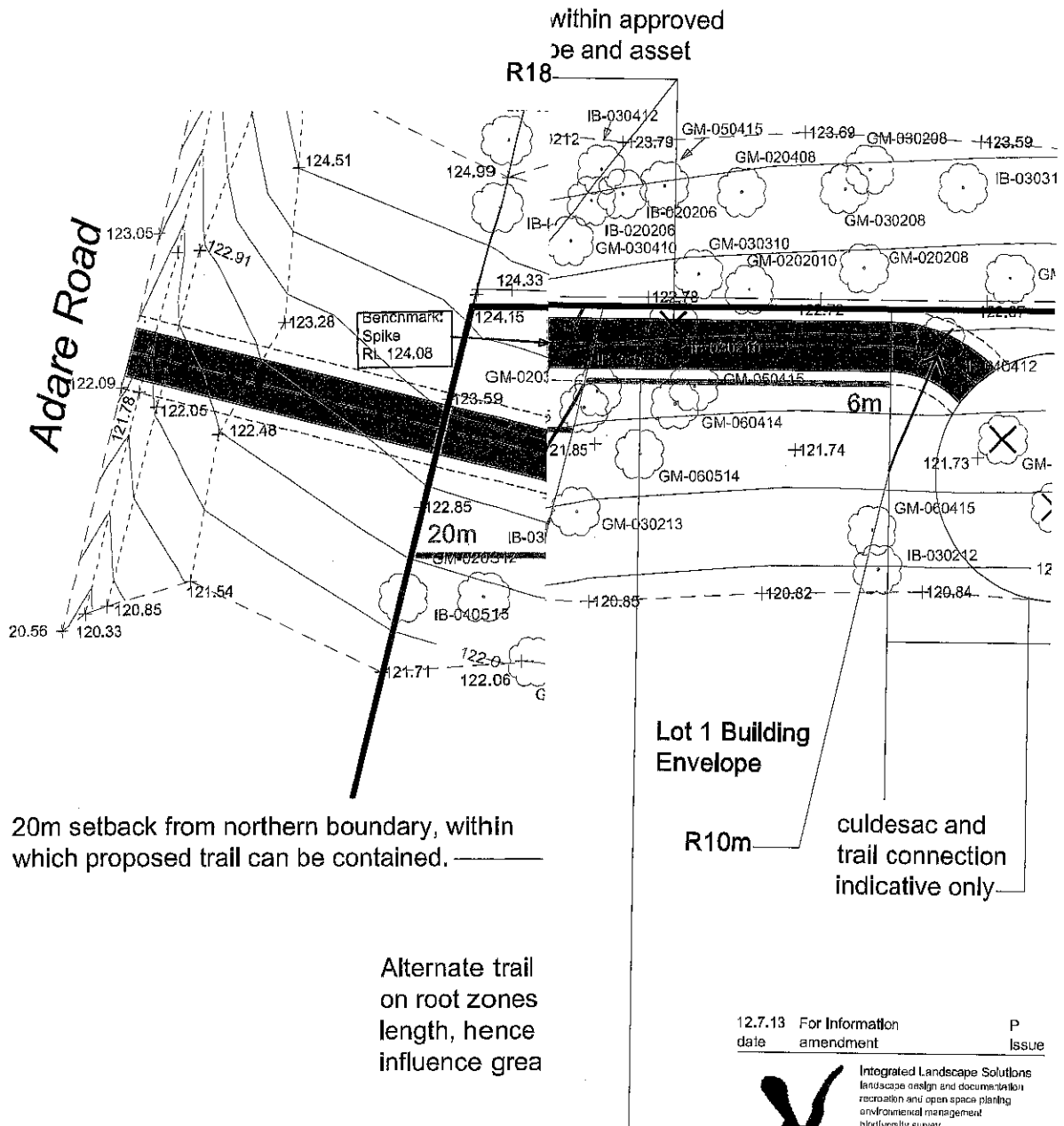
- STAGE BOUNDARIES
- GREEN SPACE / CONSERVATION
- LOTS
- EMERGENCY VEHICLE ACCESS EASEMENT

urbis
 Brisbane
 Level 7, 123 Albert Street
 Brisbane QLD 4000
 t 07 3007 3800
 Urbis Pty Ltd ABN 60 106 256 228

WALLANGARR
 SUBDIVISION PLAN AND

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PROJECT NO: BA2156
 DATE: 17.07.13
 DRAWING NO: PP08
 REV: D



NOTES:

Fire Trail Design Guide:

- Minimum Trail Width: 4m (shown brown)
- Minimum Cleared Width: 6m (dashed)
- (Approximately 6m at 3 locations shown)
- Maximum longitudinal grade: 25%
- Maximum cross-fall: 5%
- Minimum turning circle: dia. 20m
- Existing at-grade crossfall under track approximately 1:12, resulting in a maximum depth cut to fill (av. 25mm: very minor scraping) or up to 100mm depth fill with medium (av. 50mm) where in vicinity

Resources:

- Base Survey by DTS
- Lot Layout overlay by Urbis
- Fire Trail design brief by BPS

12.7.13 For Information
date amendment P
Issue



Integrated Landscape Solutions
landscape design and documentation
recreation and open space planning
environmental management
biodiversity survey
urban design
Yurrah Pty Ltd 08 95 097 061 068
14 Creek Rd Winton
PO Box 20034 Winton QLD 4030
Tel 3857 3477
email mail@yurrah.com.au
web yurrah.com.au

project
Proposed Residential Subdivision
for
Wallangarra Pastoral Company

at
63 Redbank Creek Road, Adare

drawing
Draft Lot 1 Fire
Trail Plan

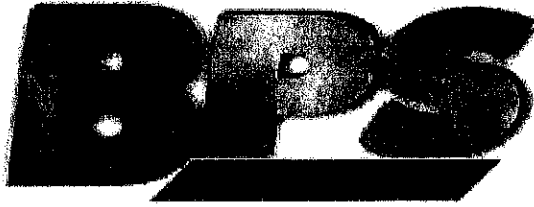
drawn by Yurrah chkn NP north
job # 1109044-7
date as above
scale 1:500 at A3
dwg #
VM.06



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Schedule 2 – Approved Assessments and Reports

- Amended Bushfire Risk Assessment and Mitigation Plan, Bushland Protection Systems Pty Ltd dated 11.11.13
- G&S Reports - Gilbert and Sutherland titled “Stormwater Management Plan 63 Redbank Creek Road, Adare, Queensland” dated February 2010 including amendments detailed in the letter from Gilbert and Sutherland to Urbis dated 05.10.12
- G&S Water Supply Assessment Letter to DibbsBarker dated 06.11.13



**Bushland Protection
Systems Pty Ltd**
Specialising in
**BUSHFIRE HAZARD
PLANNING & MITIGATION**

ACN 109 667 101 ABN 97 782 336 595 Phone: 07 5546 7933 Fax: 07 5546 7988 PO Box 40, Ormeau, Qld, 4208
E-mail: admin@bpsfire.com.au

**UPDATED
BUSHFIRE HAZARD ASSESSMENT
AND MITIGATION PLAN**

ON

**LOT 95 CA311434 AND LOT 96 SP225226
NO. 63 REDBANK CREEK ROAD,
ADARE**

PREPARED BY

BUSHLAND PROTECTION SYSTEMS

COMMISSIONED BY

URBIS

FOR

WALLANGARRA PASTROL COMPANY

DATE: 11th November, 2013.

1. Background

A Bushfire Mitigation Plan is designed to identify and minimise the potential bushfire risk to a given property and to help property owners to minimise bushfire risk to themselves, their property and their neighbours, it will not completely eliminate that risk. Ultimately it is a community responsibility to protect the environmental values, life and property in their area.

This plan is produced in accordance with the State Planning Policy 1/03, *Mitigating the Adverse Impacts of Flood, Bushfire and Landslide*, under the Queensland Sustainable Planning Act 2009 and the Gatton Shire Planning Scheme – Part 5, Division 3 – Potential Bushfire Risk Code.

This updated plan is produced to incorporate some minor amendments including a change in lot numbers from the Original Bushfire Risk Assessment and Mitigation Plan, produced by Bushland Protection Systems, dated 2/2/2010, and is consistent with the intent of that plan.

The development proposal is for Lots 95 & 96 of the property and does not include lot 101 in the north. This plan is based on the following material supplied by Urbis and the site inspection carried out, with the property owner, on 6th January, 2010.

- 1.1. A copy of the Covenant Plan, showing lot layout, and bushfire mitigation infrastructure, produced by Urbis, drawing no. PP05, Revision D, dated 11/11/13, is included as Appendix 1.

2. Site Description

At the time of inspection the property was heavily grazed by cattle, consisting of pasture grasses with scattered mature eucalypts and re-growth eucalypts. There were also some areas of lantana growth. The topography is generally level with slopes ranging up to 5%. There is no evidence of past fire history on the property.

For the development site itself in its current condition, the severity of bushfire hazard as calculated in accordance with appendix 3 of the State Planning Policy 1/03 (SPP1/03) would assign a vegetation score of 5 (open woodland), a slope score of 1 (plain >0%-5%) and an aspect score of 0 (all land under 5% slope), equating to a severity of bushfire hazard score of 6 medium (see table 1). With development, parts of the site would reduce to a low rating with the only hazard being from retained bushland corridors and external exposures.

Existing Lot 101 to the north of the proposed development, in its current condition also has a Potential Bushfire Hazard (PBH) rating of 7 medium. However if the property were to become neglected and over grown, the vegetation score could rise to 8 (eucalypt forest) and the overall hazard score rise to 9 medium PBH. A 20 metre road separation is proposed for lots 2-15 and a minimum 20 metre separation by fire trail and setbacks are proposed for lots 1, 18 and 20-25. Any buildings constructed within 50 metres of the medium hazard on Lot 101, will have a medium PBH rating, in accordance with the inclusions zones as outlined in section A3.24 and table A3.5 of the SPP 1/03 Guideline.

Properties to the east and northeast that are being used as part of a nursery or for orchards, in accordance with appendix 3 of the State Planning Policy 1/03 (SPP1/03), would be assigned a vegetation score of 2 (orchards), and therefore would be given a PBH rating of 0 low, in accordance with table A3.1 and section A3.14 of the SPP 1/03 and the SPP 1/03 guideline - errata. These neighbouring allotments would not provide a bushfire risk in their current condition.

The lots adjoining the southeast corner of the proposed development, consist of eucalypt forest. The severity of bushfire hazard as calculated in accordance with appendix 3 of the State Planning Policy 1/03 (SPP1/03) would assign a vegetation score of 8 (eucalypt forest), a slope score of 1 (plain 0-5%) and an aspect score of 0 (land under 5% slope), equating to a severity of bushfire hazard score of 9 medium (see table 1). A minimum 20 metre separation by fire trail and setbacks are proposed for lots 129, 130 and 132-142. Any buildings constructed within 50 metres of the medium hazard on the adjoining lots, will have a medium PBH rating, in accordance with the inclusions zones as outlined in section A3.24 and table A3.5 of the SPP 1/03 Guideline.

To the south of the site is road frontage to Redbank Creek Road. On the opposite side of the roadway are established well maintained rural residential allotments with the exception of a small managed portion of Council parkland. There is no bushfire hazard from the south.

To the west is road frontage with Adare Road. On the opposite side of Adare Road are a number of rural properties. There is a grazing property to the northwest which consists of open grazed grassland. The open maintained grassland areas, in accordance with appendix 3 of the State Planning Policy 1/03 (SPP1/03), would be assigned a vegetation score of 2 (grazed/slashed grass), and therefore would be given a PBH rating of 0 low, in accordance with table A3.1 and section A3.14 of the SPP 1/03 and the SPP 1/03 guideline - errata. This allotment would not pose a significant bushfire risk in its current condition. The properties to the southwest of the proposed development consist of eucalypt forest and would have a PBH rating of 9 medium. These lots are a bushfire hazard, however road separation is already in place with the presence of Adare Road. Any buildings constructed within 50 metres of the medium hazard on the opposite side of Adare Road, will have a medium PBH rating, in accordance with the inclusions zones as outlined in section A3.24 and table A3.5 of the SPP 1/03 Guideline.

As shown in appendix 1, parkland has been proposed to create core conservation and buffer conservation areas. These park areas will provide a bushland exposure to neighbouring proposed lots. The severity of bushfire hazard as calculated in accordance with appendix 3 of the State Planning Policy 1/03 (SPP1/03) would assign a vegetation score of 8 (eucalypt forest), a slope score of 1 (plain 0-5%) and an aspect score of 0 (land under 5% slope), equating to a severity of bushfire hazard score of 9 medium (see table 1). A minimum of 20 metres separation from these areas is proposed by either roadway or fire trail and setbacks. Any buildings constructed within 50 metres of the medium hazard in the parkland areas, will have a medium PBH rating, in accordance with the inclusions zones as outlined in section A3.24 and table A3.5 of the SPP 1/03 Guideline.

Conservation lots are proposed (see appendix 1) within the estate that contribute to the buffer conservation areas. These lots allow for a minimum of 20 metres separation by radiation zone between the proposed building envelopes and the retained bushland and a 6 metre wide fire trail along the rear boundary. Due to the retained bushland within the allotments, the lots will have a medium PBH rating.

A summary of PBH ratings for each lot is shown in appendix 5 of this report.

Table 1

TOTAL HAZARD SCORE	SEVERITY OF BUSHFIRE HAZARD
13 or greater	High
6 to 12.5	Medium
1 to 5.5	Low

3. Roads, Fire Trails & Driveways.

3.1. Roads

The proposed road network allows for two entry/exit points, one to Redbank Creek Road and one to Adare Road. With the many maintained properties along Redbank Creek Road it is considered unlikely the access/egress would be denied during a local bushfire event. Part of Adare Road consists of bushland and could be restricted for brief periods of time, however the likelihood of access/egress being denied is limited.

3.2. Fire Trails

A fire trail is proposed along the rear of lots 129, 130, 132, 133 and 135-142. This trail is to be outside the lots with connection to Redbank Creek Road and to the proposed roadway at lot 142. A connection trail is to be located between lots 136 & 137 for access back to the proposed roadway.

A fire trail is proposed along the rear boundaries of lots 18 and 20-27. This trail is to be outside the lots with connection to the proposed roadway at lot 18 and lot 27. A connection trail is to be located between lots 24 & 25 for access back to the proposed roadway.

A fire trail is proposed along the rear of lots 78 and 80-81. This trail is to be outside the lots with connection to the Redbank Creek Road and Adare Road.

A fire trail is proposed along the northern boundaries lots 38 & 39. This trail is to be outside the lots with connection to the Adare Road and the proposed roadway at lot 39.

A fire trail is proposed along the southern boundaries of lots 1-14 and 17. This trail is to be outside the lots with connection to the proposed roadway at lot 17 and to Adare Road. A connection trail is to be located between lots 9 & 10 for access back to the proposed roadway.

A fire trail/Emergency Egress is to be provided from the cul-de-sac at Lot 1, through Lot 1, to Adare Road as shown in Appendix 1. This trail is only to be used under the direction of Emergency Services.

The fire trails are to be 6 metres in width with 4 metres formed. All fire trails would be low impact preferably with a mowed or slashed surface which would minimise disturbance or erosion, appendix 4B on fire trails is included in this report as a guide on establishing and maintaining fire access trails. Maintenance of fire trails outside allotments will be the responsibility of Council, once off maintenance.

The fire trail network assists in providing separation for lots without road separation and also provides access to parkland areas for vegetation management and fire suppression and mitigation activities. Fire trails are to be provided with gated access with Council Locks and keys provided to the local Fire Brigade.

3.3. Driveways

The majority of driveways will be relatively short and direct, with most houses located close to roadways. Driveways to dwellings are to be designed and constructed to ensure access by large two wheel drive tankers of approximately 20 tons with a minimum 4 metres vertical clearance. Appendix 4A is included in this report to assist owners in their efforts to ensure quick and timely access to their properties in an emergency.

4. House Site Location.

Where proposed allotments adjoin bushland (i.e. northern and eastern boundaries and retained internal parkland), building envelopes are to be established on each lot that will provide for appropriate setbacks from boundaries to allow the implementation of radiation zones of a 20 metre minimum between housing and the bushland areas. These radiation zone requirements are outlined in section 6 of this report. Fire trails and roadways can be included when measuring radiation zones, e.g. 6 metre wide fire trail plus 14 metre setback equals 20 metres separation.

Dwellings on conservation lots are to have a minimum separation of 20 metres from the conservation bushland areas.

Dwellings should be located as close to roadways as practical, to provide short direct access.

5. Building Construction.

The bushfire provisions of the Building Code of Australia (BCA) are applied to Class 1, 2 & 3 buildings in designated bushfire prone areas. Bushfire Prone Areas are designated by the local government through their planning scheme.

The Gatton Shire Planning Scheme V.2, June 2007, Division 4, section 5.14 provides the following definition: "*A Potential Bushfire Risk Area is defined as High and Medium Risk Areas defined on the applicable Overlay.*"

Appendix 5 of this report summarises which allotments have a low or medium PBH rating and if assessment under AS3959-2009 is required.

Under the Gatton Shire Planning Scheme V.2, June 2007, Division 4, section 5.14, a site with a low PBH rating does not require assessment under the Building Code of Australia or under the Australian Standard (AS3959) for *Construction of Buildings in Bushfire Prone Areas* and therefore no specific level of construction would be required in relation to bushfire for the proposed allotments with a low PBH rating.

For the proposed lots with a medium PBH rating, the Gatton Shire Planning Scheme V.2, June 2007, Division 4, section 5.14 requires the Building Code of Australia (BCA) and where relevant the Australian Standard for Construction of Buildings in Bushfire-Prone Areas (AS3959) to be addressed

P2.3.4 of the BCA requires:- "A Class 1 building or a Class 10a building or deck associated with a Class 1 building that is constructed in a designated bushfire prone area must be designed and constructed to reduce the risk of ignition from a bushfire while the fire front passes."

Section 3.7.4.0 of the BCA states:- "*Performance requirement P2.3.4 is satisfied for a Class 1 building or a Class 10a building or deck associated with a Class 1 building, located in a designated bushfire prone area if it is constructed in accordance with AS 3959*".

In accordance with AS3959-2009 – Table 2.4.5 '*Determination of Bushfire Attack Level (BAL)-FDI 40 (1090K)*', the vegetation class is woodland and slope is 0-5 degrees. The distance between the building and unmanaged bushland will determine the standard of construction required for medium PBH allotments. With the implementation of radiation zones and the presence of road separation all proposed dwelling should have a minimum 20 metre separation already provided.

- If the distance between the unmanaged bushland and the building is between 16 - 23 metres, the Bushfire Attack Level for the proposed dwelling will equate to BAL-19. A BAL-19 level requires section 3 and 6 of AS3959-2009 to be applied.
- If the distance between the unmanaged bushland and the building is between 23 - 50 metres, the Bushfire Attack Level for the proposed dwelling will equate to BAL-12.5. A BAL-12.5 level requires section 3 and 5 of AS3959-2009 to be applied.
- If the distance between the unmanaged bushland and the building is greater than 50 metres, then the building would have a low PBH rating and assessment under AS3959-2009 would not be required. (Section A3.24 and table A3.5 of the SPP 1/03 Guideline).

Section 3.5 of AS3959-2009 states "*The construction requirements for the next lower BAL than that determined for the site may be applied to an elevation of the building where the elevation is not exposed to the source of bushfire attack.*" Therefore elevations of buildings facing away from the bushland, sheltered by the rest of the building, can be discounted one BAL level, (e.g. The rural residential lots 134-136 would have the east elevation discounted). The BAL for sheltered elevations can not be discounted to less than BAL-12.5.

These levels of construction are reliant on the recommendations of this report being implemented and maintained.

6. Clearing and Landscaping.

As a minimum all dwellings should be provided with a 10 metre inner radiation zone around the building as outlined in appendix 2 of this report, with a further 10 metre outer radiation zone where ground fuel is managed and mid storey fuel is thinned. Radiation zones can overlap with neighbouring radiation zones where housing is located close enough to provide each other protection. Fire trails and roadways can form part of a radiation zones.

Quality trees and habitat trees can be retained or planted within these buffer zones provided they do not provide a continuous canopy cover or pose a threat to persons or property.

Non-endemic grass and weed growth should be managed over the entire allotment, including conservation lots, to ensure low ground fuel levels.

Driveways are to be maintained with low ground fuel to minimise the potential for localised bushfire hindering access or egress. Low branches along driveways should be removed to a height of 2 metres to assist in preventing fire from climbing into treetops. Branches overhanging driveways should be removed to a minimum height of 4 metres to ensure access by medium and heavy fire vehicles. Appendix 4A on long driveways will assist owners with the maintenance of their driveways to prevent delays in attending to an emergency by fire services.

All timber, foliage and rubbish previously cleared or accumulated as a result of the implementation of this report would need to be removed from the site or mulched and not simply moved to one side as this would result in a concentrated area of fuel loading which would increase the PBH from that direction.

Owners of land with covenanted areas are to maintain the covenanted area by the removal of non-endemic grass and weed species within the covenanted area to reduce the risk of bushfire damage to their properties or the local ecosystems.

Added protection from bushfire can be achieved by establishing green fire breaks which include green lawns, trees arranged to create a shield to catch sparks or fire brands or the expanding of rainforest species. Trees and shrubs not subject to drought stress will cope better during bushfires. The higher the moisture content in the plant the slower it burns. Therefore by keeping the surrounding area green and low in dry ground fuel, the intensity of an approaching fire will be reduced and the risk of spot fires minimised. Waste water may possibly be utilised to achieve this outcome.

Parkland areas should be managed by the removal of non-endemic grass and weed species within the parkland to reduce the risk of bushfire damage to properties or the local ecosystems.

If the development is to take place in stages, care should be exercised to ensure the developed stages are not threatened by bushfire from the undeveloped stages, by providing a minimum 20 metre managed vegetation buffer.

7. Water Supplies.

The proposed development is to be serviced by reticulated water supplies. However the reticulated water supply will be a trickle feed system providing a minimum 10 metre pressure and 8 litres per minute, with onsite tank storage. This does not meet the minimum requirement for fire fighting water supply.

Therefore it is recommended that a permanent reserve of 5000 litres per dwelling be retained at each dwelling at all times to provide a water supply in the event of a structural or bushfire. This can be achieved by either drawing day to day water from a higher point in the tank or a dedicated tank for fire fighting purposes with fittings suitable for connection to fire appliances. The standard fitting is a 50mm male camlock fitting and should be located at a point remote from structures to ensure accessibility in the event of a structural fire and within 4 metres of a hardstand area or the driveway turnaround. With the trickle feed top up system, this should be ample water supply for fire fighting purposes and meets the requirements of Acceptable Solution 1.3 of the State Planning Policy 1/03 Guidelines.

This remote water access point may take the form of a galvanised pipe suitably supported to provide a stand pipe with the appropriate 50mm male camlock fitting and stop cock attached. This stand pipe should be fed water from the storage system via piping that is buried or suitably protected against flame or radiant heat damage and be clearly visible or appropriately signed to make it readily identifiable to attending fire suppression agencies. Water tanks with a direct exposure to bushland should be constructed of a non-combustible material.

In areas where domestic water pressure is supplied by electrically powered pressure systems consideration should be given to the loss of water pressure or supply due to a failure in the electrical power supply.

8. Provision of Fire Fighting Infrastructure.

Where a house may have a direct exposure to an approaching bushfire it should have external hose cocks and hoses that are positioned so water supply is capable of reaching to all parts of the building. All water lines are to be covered by at least 300mm of soil. Residents should maintain good access around their homes for fire suppression activities by fire authorities.

The possible acquisition of a motor driven fire fighting pump (or generator to power the electrical pump) with a suitable length hose, nozzle and connections would ensure water supply in the event of an electrical power failure.

9. Local Fire Brigades.

The subject property is currently in the Gatton Springdale Rural Fire Brigade district and they would be responded on a 000 emergency call. Urban fire appliances would be responded in the event of a structural fire or specialised structural protection being required.

10. Improved Community Awareness.

Minimising ground fuel and regrowth is the easiest way of reducing bushfire hazard on rural lots. Owners can assist in the mitigation of these bushfires by the removal of ground fuels prior to the bushfire season.

It would be recommended that a copy of the fire management plan be placed on display at any sales office, and a copy of the plan including appendix 3 be given to the purchasers of lots to provide them with the necessary information required for the management of their property and the building application process.

A copy of the plan should be retained by residents and passed on to future residents including Appendix 3 on "being prepared" to assist them in minimising the risk of bushfire damage. It is recommended that regular liaison with the local fire brigade takes place as a way of being informed of danger periods.

The Bushland open space is a very sensitive ecosystem and could be altered drastically if not cared for properly. Residents can assist in maintaining this fragile ecosystem by preventing unwanted fires from encroaching into the parkland, ensure that dumping of rubbish does not degrade the area and that exotic plant species do not invade the bushland. Hot fires on a regular basis will degrade the bushlands biodiversity.

It would be recommended that residents prepare a 'Bushfire Survival Plan', which is available from the Queensland Rural Fire Service website at www.ruralfire.qld.gov.au. The 'Bushfire Survival Plan' document provides information on Bushfire Danger Ratings, Community Warning Information, how to prepare your property, what to do in the event of a bushfire and what to expect. The Bushfire Survival Plan should be updated annually. Further information is also available through the Prepare•Act•Survive brochure also available on the Rural Fire Service website. For further information contact your local Fire Brigade for assistance or phone 1300 369 003.

11. Summary of Recommendations.

- The fire trails are to be 6 metres in width with 4 metres formed. All fire trails would be low impact preferably with a mowed or slashed surface which would minimise disturbance or erosion.
- Driveways to dwellings are to be designed and constructed to ensure access by large two wheel drive tankers of approximately 20 tons with a minimum 4 metres vertical clearance.
- Where proposed allotments adjoin bushland (i.e. northern and eastern boundaries and retained internal parkland), building envelopes are to be established on each lot that will provide for appropriate setbacks from boundaries to allow the implementation of radiation zones of a 20 metre minimum between housing and the bushland areas.
- Dwellings on conservation lots are to have a minimum separation of 20 metres from the conservation bushland areas.

- Dwellings should be located as close to roadways as practical, to provide short direct access.
- Appendix 5 of this report summarises which allotments have a low or medium PBH rating and if assessment under AS3959-2009 is required.
- As a minimum all dwellings should be provided with a 10 metre inner radiation zone around the building as outlined in appendix 2 of this report, with a further 10 metre outer radiation zone where ground fuel is managed and mid storey fuel is thinned.
- Non-endemic grass and weed growth should be managed over the entire allotment, including conservation lots, to ensure low ground fuel levels.
- Driveways are to be maintained with low ground, low branches along driveways should be removed to a height of 2 metres and branches overhanging driveways should be removed to a minimum height of 4 metres.
- All timber, foliage and rubbish previously cleared or accumulated as a result of the implementation of this report would need to be removed from the site or mulched.
- Owners of land with covenanted areas are to maintain the covenanted area by the removal of non-endemic grass and weed species within the covenanted area.
- Added protection from bushfire can be achieved by establishing green fire breaks which include green lawns, trees arranged to create a shield to catch sparks or fire brands or the expanding of rainforest species. Trees and shrubs not subject to drought stress will cope better during bushfires. The higher the moisture content in the plant the slower it burns. Therefore by keeping the surrounding area green and low in dry ground fuel, the intensity of an approaching fire will be reduced and the risk of spot fires minimised. Waste water may possibly be utilised to achieve this outcome.
- Parkland areas should be managed by the removal of non-endemic grass and weed species within the parkland.
- If the development is to take place in stages, care should be exercised to ensure the developed stages are not threatened by bushfire from the undeveloped stages, by providing a minimum 20 metre managed vegetation buffer.
- The area of the proposed development is to be serviced by reticulated water supplies with the inclusion of fire hydrants for fire fighting purposes. These services are to comply with the relevant standards as required by the local authorities.
- Where a house may have a direct exposure to an approaching bushfire it should have external hose cocks and hoses that are positioned so water supply is capable of reaching to all parts of the building. All water lines are to be covered by at least 300mm of soil. Residents should maintain good access around their homes for fire suppression activities by fire authorities.

- It would be recommended that a copy of the fire management plan be placed on display at any sales office, and a copy of the plan including appendix 3 be given to the purchasers of lots to provide them with the necessary information required for the management of their property and the building application process.
- A copy of the plan should be retained by residents and passed on to future residents including appendix 3 on "being prepared" to assist them in minimising the risk of bushfire damage. It is recommended that regular liaison with the local fire brigade takes place as a way of being informed of danger periods.

12. Conclusion.

With the appropriate radiation zones as outlined in appendix 2 and section 6, adequate water supply, good access provisions and minimising of ground fuels, the risk of bushfire damage can be managed and improve the safety of residents and fire services in attending to a bushfire threat.


This bushfire Risk Assessment and Mitigation Plan complies fully with the intent and objectives of the SPP 1/03 Guidelines

An individual lot assessment and building constraints required is included as Appendix 5 in this report for use in building application assessment.

This plan should remain current for a period of 5 years, until 2018, at which time it should be subject to review to take account of changing land use and vegetation patterns. Any major bush fire event affecting the subject site should also trigger a review in order to determine effectiveness of protection measures and annual hazard reduction initiatives.

Ultimately, persons living in a bushfire prone area must take the precautions necessary to protect themselves, their families and their homes if Brigades are stretched and are unable to attend immediately.

If you require any further assistance please do not hesitate to contact this office.



C. L. Bain
Principal Consultant.

LEGEND

Protected vegetation and conservation areas on the site are comprised of a mix of private and publicly owned land as follows:

PRIVATE LAND

COVENANT AREAS ON PRIVATE LAND

Covenants to be adopted within these areas will ensure the protection of existing ecological values and features.

Conservation Block Covenants to protect areas which are considered important for maintaining ecosystem function. Mets and bounds of covenant areas are to be determined generally in accordance with this plan and recorded as covenant areas on the relevant Survey plan. Vegetation Protection Covenants shall be entered into with the State of Queensland on the terms nominated by the Department of Natural Resources and Mines as appropriate in the circumstances.

Significant Habitat Tree Covenants to protect individual hollow-bearing trees which have been identified as being of significant natural values. Individual trees included in the plan will be protected in accordance with the terms of the relevant Survey plan. Tree Protection Zones (TPZ) established in accordance with AS4753:2009. Factors for the development sites determined at time of survey and recorded as covenant areas on the relevant survey plan. Significant Habitat Tree covenants shall be entered into with the Council on terms agreed between the parties prior to the sealing of the plan of survey.

lots which subject to site specific survey and vegetation assessment may be subject to covenants to preserve vegetation and habitat values and preserve connectivity to the remnant vegetation present on the opposite side of Adare Road.

Asset Protection Zones (20m radiation zone for the protection) to be established and managed in accordance with the Bushfire Risk Assessment and Mitigation Plan prepared by Bushland Protection Systems Pty Ltd.

Fire trail and emergency access on private land

Emergency Vehicle Access Easement in favour of the State of Queensland appassented by the Department of Community Safety on that Department's standard terms and conditions.

Existing buildings to be retained on site

PUBLIC LAND

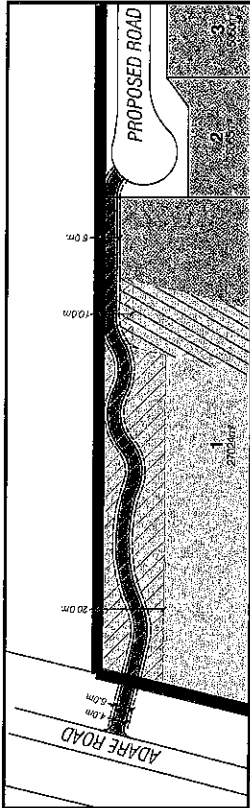
Public open space areas will be dedicated progressively to Council in stages and will be subject to an Open Space Management Plan prepared at the operational works stage. The Open Space Management Plan will provide an overarching management tool for Council to follow when managing the public open space areas on the site.

Care Conservation Areas consist of high ecological values and habitats. It is intended that these areas will remain largely in their natural state. Maintenance for Council will include periodic removal of fuel loads for bushfire mitigation, the management of the understorey to encourage further growth and ensure adequate habitat is provided and some supplementary or habitat planting to augment and enhance ecological values.

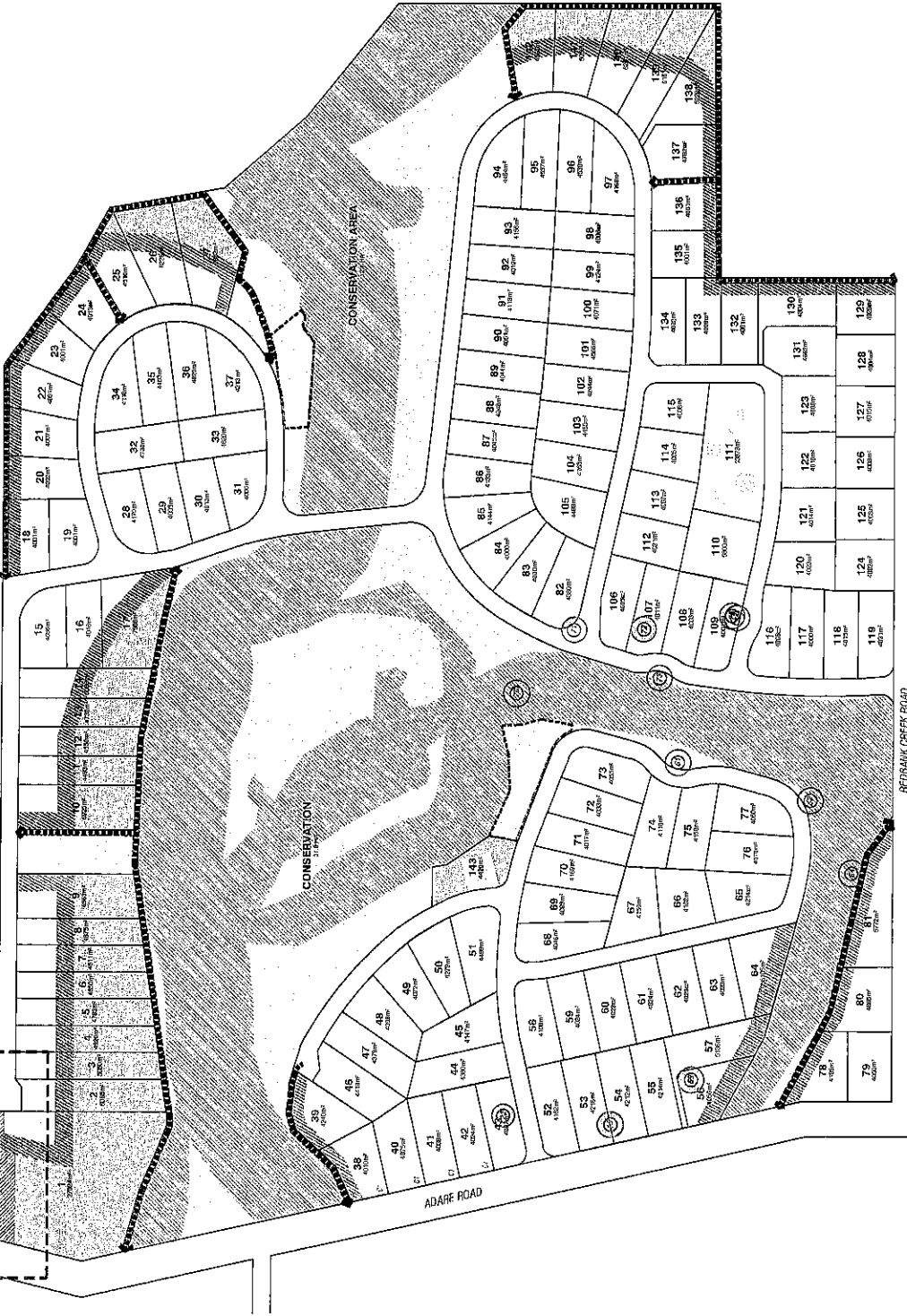
Buffer Conservation Areas are intended to support the Care Conservation Areas and include areas identified as General Use Zones.

General Use Zones are located within the Buffer Conservation Areas are intended to operate as a public park facility for the local residential community. General Use Zones may contain community facilities such as a gazebo, picnic tables or seating areas for passive recreation. Ongoing maintenance such as mowing, emptying of bins and periodic repair and maintenance of infrastructure will be required. General Use Zones are generally indicated on this plan for their exact location and function will be defined in later stages of the development.

Bushline Trails are 6 metre wide trails located on public land established and maintained in accordance with the Bushfire Risk Assessment and Mitigation Plan prepared by Bushland Protection Systems Pty Ltd.



DETAIL OF EMERGENCY ACCESS
1:1,500 @ A3



WALLANGARRA

COVENANT PLAN

Brisbane
Level 7, 123 Albert Street
Brisbane QLD 4000
Urbis Pty Ltd ABN 50 105 296 280



PROJECT NO: 034155
DATE: 11.11.15
DRAWING NO: PFC
REV: D

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APPENDIX 2

Fire Radiation Zones

Appendix 2 on Radiation Zones is included in this report as a guide for owners on how to implement and maintain radiation zones, however the dimensions required for these zones are those stipulated in the report, not the generalised examples stated in this appendix.

Buildings located in medium and high Potential Bushfire Hazard Areas would require the establishment of an inner and outer fire radiation zones around the buildings.

Radiation Zones is the terminology that has been applied to the recommended area separating a building from an area of identified potential bushfire hazard.

A building's Radiation Zone is generally separated into two sections 'Inner Fire Radiation Zone' & 'Outer Fire Radiation Zone'.

The management of fuel levels within these zones is designed to reduce the intensity of wild fires before they impact on assets such as buildings and property. The correct and continued maintenance of fuel levels within a buildings radiation zones may result (depending on factors such as terrain, fuel types and climatic conditions) in reduced flame height, a slowing of the rate of spread of the fire and a reduced risk of direct or radiant heat attack on building and other property assets.

The accepted methods of fuel level reduction within a property's radiation zones are;

- hand or mechanical removal of fuel and litter,
- slashing and mulching of under-growth,
- selective clearing of the tree understorey and saplings,
- strategic removal of selected hazardous trees.

The dimensions of a property's Radiation Zones are the result of the property's aspect (compass direction), and the slope of the surrounding terrain keeping the building as a central point.

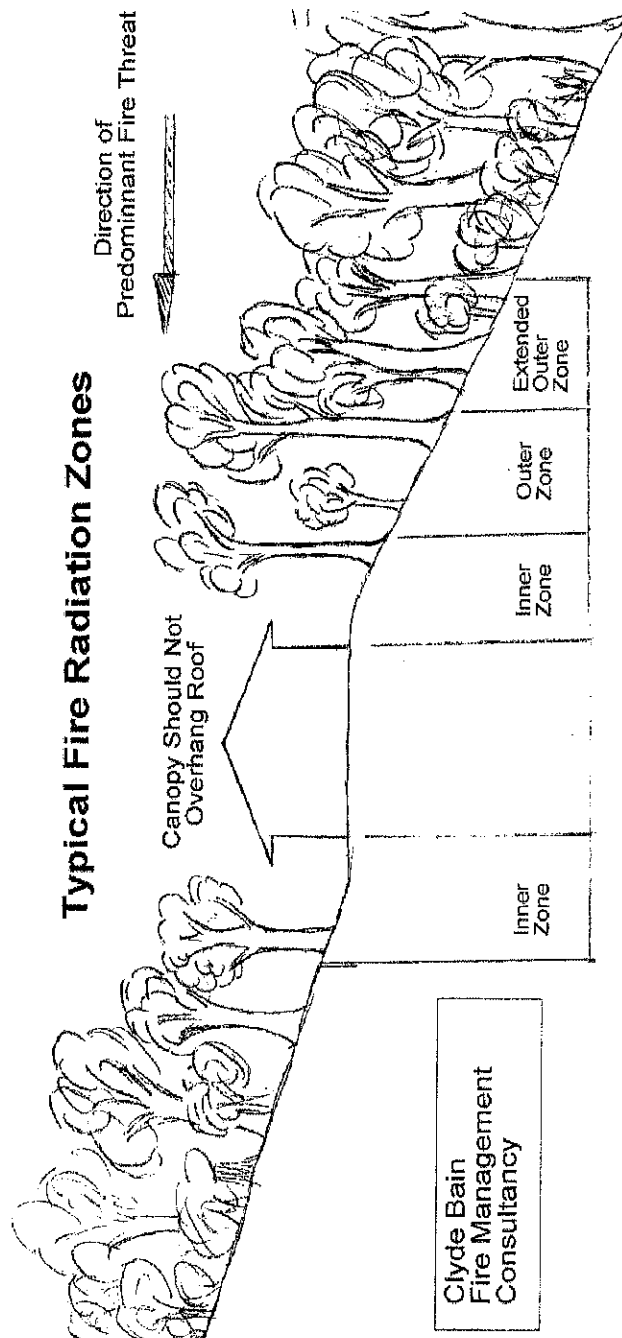
A general rule of thumb is a 10metre wide Inner Radiation Zone, where ground fuel levels are kept low so as not to be able to support a ground fire. Mature quality trees may be retained within the inner radiation zone provided they do not form continuous canopy coverage. Low branches should be removed to a height of 2 metres above ground level and hanging bark and accumulated debris should be removed prior to fire season. Dead or hazardous trees that may pose a threat to life and property or could trap and accumulate air-bourn embers should be removed.

The establishment of lawns and the use of fire retardant species in landscaping are recommended within inner radiation zones.

Outer Radiation Zones should be a further 10metres in width where low ground fuel is maintained and mid-storey saplings are thinned-out. A property's outer radiation zone should be increased an extra metre of width for every degree of down-slope of the property.

The area recommended for a buildings radiation zones may vary with regard to the direction of the perceived potential bushfire hazard.

For example : A building may require a 10metre inner radiation zone completely around the structure however the outer radiation zone may only be required in a semi-circular direction with respect to the potential bushfire hazard from that direction. This outer radiation zone may also be extended in width taking into consideration the slope of the subject property.



APPENDIX 3

Being Prepared

Knowing how to prepare your property for bush fire, both pre-fire and during a fire, can assist in protecting people and property. It can also alleviate a lot of the stress and panic and the feeling of helplessness that is commonly felt by the inexperienced and by the ill prepared.

It is generally accepted that South East Queensland does not experience the same degree of extreme fire conditions as the southern states of New South Wales, Victoria and South Australia. Having said this it is also accepted that this States bushland experiences a relatively regular fire regime. From time to time conditions may occur that will institute a serious and potentially destructive fire. These conditions can be recognised and precautions taken. It must be remembered that during extreme fire conditions the fire services may be stretched to the limit and may not be able to respond immediately to your particular emergency. So it would be desirable to be as prepared and self-reliant as possible to protect yourself, your family and your assets. It is not difficult, and the following information is provided to be of some assistance.

1. Conditions of Serious Fire:

- 1.1. Higher than average air temperatures for prolonged periods.
- 1.2. Large and very dry fuel loads.
- 1.3. Prolonged dry spell with little or no rain resulting in low soil moisture content.
- 1.4. Very low relative humidity, ie. there is very little moisture in the air.
- 1.5. Strong and gusty winds, usually from the north through to the west contribute to increased fire hazard. The longer these winds continue the drier the conditions become, and the higher the risk of serious fire.

Observation of local weather conditions past and present will give the best indication of the potential intensity of a fire at any given time or place.

2. Fire Intensities.

Having some idea of what a fire is likely to do in your local area, will help you make the right decisions and give you the confidence to deal with an approaching fire if necessary. Following are some basic fire behaviours.

- 2.1. Fire will travel faster and hotter uphill. The steeper the slope the faster the rate of spread, allowing little time to react.
- 2.2. Fire will travel relatively slow down hill even with reasonably high fuel loads, which will give more time to prepare.

2.3. A fire will generally travel faster and at higher intensities with a wind behind it. Again the stronger the wind faster the rate of spread. While a fire will slow considerably when burning against the wind in some cases may even go out.

2.4. The fire will usually burn at a higher intensity and spread faster during the hottest times of the day and tend to slow down considerably as the evening approaches and air temperatures drop.

2.5. The greater the supply of dry ground fuel available to the fire, ie. grass, dry leaf litter, hanging bark and twigs, the greater the intensity of the fire. If the ground fuel is minimised the intensity of the fire reduces considerably and so does the personal risk and the potential for damage.

2.6. If the ground fuels are kept relatively low the chances of a fire progressing into the treetops (crown fire) would be considerably reduced within the Queensland coastal bushlands.

3. Preparing for the bushfire season.

Most cases of damage to property are caused by radiated heat, direct flame contact or most commonly by burning debris or sparks landing in, on, or around buildings and starting small spot fires which if not attended to may destroy the property long after a fire front has passed. There are many steps that should be taken prior to the onset of a fire season to help protect your property.

3.1. Keep ground fuel cleared from around buildings such as long dry grass, branches, dead leaves, hanging bark and thick undergrowth.

3.2. Firebreaks checked and maintained, even a well-watered lawn can be an effective firebreak.

3.3. Flammable material around buildings should be kept well clear, such as firewood piles, plant pots, patio and garden furniture.

3.4. Making sure that rainwater gutters are kept clear of leaf litter build-up. Maybe a method of blocking off down pipes so gutters can be filled with water during a fire to extinguish sparks landing in gutters.

3.5. Make sure that the roofing is well secured, as winds created during a fire may lift roofing and allow the entry of burning embers into the roof space. Also clear any leaf litter or debris build-up from roof areas.

3.6. All windows and vents should be screened with fine wire mesh and all roof areas closed in to prevent entry by sparks.

3.7. Gas tanks are vented away from the house.

3.8. Make sure of reserve water supplies. Power frequently fails during a fire. If petrol or diesel pumps are available make sure they and associated hoses and fittings are in good working order.

4. Green Fire Breaks

Added protection from bushfire can be achieved by establishing green fire breaks which include green lawns, trees arranged to create a shield to catch sparks or fire brands or the expanding of rainforest species. Excess rainwater or tertiary treated waste water could be stored and used for this purpose during dry periods to maintain the green fire breaks. Trees and shrubs not subject to drought stress will cope better during bushfires. The higher the moisture content in the plant the slower it burns. Therefore by keeping the surrounding area green and low in dry ground fuel, the intensity of an approaching fire will be reduced and the risk of spot fires minimised.

5. Personal Protection

5.1. If you plan to evacuate, make sure you do so early, long before the fire front arrives. People remaining to fight the fire need to be physically and mentally fit to do so.

5.2. Those staying to protect the property should make sure they protect themselves from radiant heat, flying embers, smoke and most importantly heat stress. Protection measures should include the following:

- Long trousers and long sleeve shirt made of wool or cotton (no synthetics)
- Woollen socks and good leather boots for foot protection
- Goggles for eye protection
- A good pair of gloves to protect hands
- A handkerchief to tie over nose and mouth
- A wet towel can also be helpful hung around the back of the neck, this will lower the risk of heat stress.
- Have plenty of drinking water available to protect against dehydration (not refrigerated as this can cause cramping).

5.3. During the fire

When a fire is approaching and given that you have already carried out your pre-fire precautions, and established the degree of risk to your property, protection from the actual fire should be relatively straightforward.

5.3.1. Dress in the appropriate clothing and be sure to drink water regularly

5.3.2. Fill up bathtubs, sinks, buckets, laundry tubs etc. in case of blackouts.

5.3.3. Close doors, windows and curtains.

5.3.4. Close gaps under doors and windows with wet towels.

5.3.5. Block up down pipes, wet down roof, walls and gardens, paying particular attention to the side the fire is approaching from.

5.3.6. Have a battery-powered radio on hand to listen for information about the fires progress from local radio stations.

5.3.7. Patrol your property while the fire is approaching and for many hours after it has passed, to ensure that any spot fires or smouldering debris does not get a chance to develop into a major fire, paying particular attention to the roof cavity of your buildings. Smouldering embers have been known to start fires hours or even days after the original event.

6. Want to know more?

The local fire brigade is a good source of local district knowledge, they also have pamphlets and literature produced by the Queensland Fire and Rescue Service available. Most brigades will also be happy to advise local residents.

APPENDIX 4A

Recommendations for a long driveway

Long and/or steep driveways can pose a number of problems in relation to access for fire services or the evacuation of residents when a bushfire threatens. Steep sites can be difficult for large fully loaded tankers to negotiate in a timely manner during an emergency, which may occur at any time of the day or night. Therefore some consideration to the requirements of emergency services needs to be implemented during the planning and construction stages of long, winding or steep driveways.

- 1.1. Driveways should preferably be constructed to a minimum of 4 meters wide, be able to be negotiated by up to a 20 ton, 2 wheel drive vehicle, with relatively low ground clearance.
- 1.2. To assist access for urban fire appliances in the event of a structural fire, gradients should be no greater than 1 in 8, 12.5%, which may increase to 1 in 5 20% over a maximum distance of 50m at a time. The driveway should have a maximum cross slope of 3%. Where a driveway gradient exceeds 1 in 5 (20%), a bitumen or concrete surface should be used. These are Queensland Fire and Rescue Service, Southeast Region guidelines only, and Queensland Streets is the official criteria.
- 1.3. A clearance height from overhanging trees or other obstacles should be at least 4 meters.
- 1.4. The ground fuel should be kept to a minimum along each side of the driveway in particular on the down slope side, to minimise the risks posed to services trying to access your property during an emergency situation. Ideally ground fuel should be reduced for a minimum of 3 metres to the down slope side of the driveway and 2 metres to the upslope side. This fuel reduction zone should be maintained within the property boundary.
- 1.5. If the driveway is especially long, clear areas for passing should be established at a maximum of 200 metre intervals and at the top and bottom of any steep slopes.
- 1.6. Turning areas should be established at the residence. A minimum turning circle should have a 20 metre diameter or equivalent Y, T or hammerhead area for the steeper or restricted sites where a turning circle is not possible.
- 1.7. Good access and safety areas around buildings should be established, for use in the event of driveway access and egress being denied during a fire event.
- 1.8. Driveways of a long nature should also be well identified and kept in good condition, as time saved in an emergency may save lives.
- 1.9. Where emergency water supplies are located on a property, uninterrupted access should be maintained at all times and be clearly marked for quick identification by fire services in times of emergency.
- 1.10. Care should be exercised in the construction of driveways to prevent erosion as this may restrict the movement of heavy vehicles.

APPENDIX 4B

Recommendations for Fire Trails

Fire trails can be a very effective tool in the management of bushland, for weed control, hazard reduction requirements, prescribed burns and fire suppression activities. A good well maintained trail network can effectively enhance and maintain desired ecosystems, while providing added safety for the protection of life and property. The following is some ways in which fire trails can be constructed and maintained to improve their viability.

1. Fire trails should preferably be constructed to a minimum width of 4 metres, be able to be negotiated by light and medium 4 wheel drive fire appliances.
2. They should preferably have a maximum gradient of 25%, a maximum cross slope of 5%, avoid large cut and fill and avoid sharp corners.
3. Fire trails up to 25% can be of compacted earth surface designed with water shedding devices, such as pipes under trail, woa boys or change of gradients, to prevent washouts or gouging of slopes. It would also be advantageous in some cases if grass coverage can be established, which with periodic slashing or mowing will assist in preventing washouts.
4. Fire trails should have access at each end and multiple access/egress points where possible.
5. Fire trails are to have passing and turn around areas at maximum intervals of 400 metres.
6. Periodic management of ground fuel levels along the edges of fire trails should be implemented to at least one metre each side to improve accessibility during a fire event.
7. Trees alongside fire trails should have low branches removed to a height of 2 metres to assist in preventing fire from climbing into treetops. Branches overhanging fire trails should be removed to a minimum height of 4 metres to ensure access by fire vehicles.
8. Fire trails should be inspected each year prior to fire season, to ensure their condition and carry out remedial work if required.
9. Dead or dying trees that are close to fire trails and may pose a risk to fire services should be removed.
10. Fire trails should not be seen as fire breaks. They are an aid in the management of fuel levels and fire suppression activities.
11. Fire trails should be identifiable to land managers and fire services by signage and map records. Where a fire trail network exists, intersections should also be identifiable.

APPENDIX 5 Individual Lot Assessment

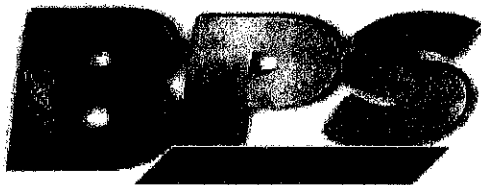
Lot No.	PBH Rating	AS3959-2009 Required Y/N
1	Medium PBH	YES
2	Medium PBH	YES
3	Medium PBH	YES
4	Medium PBH	YES
5	Medium PBH	YES
6	Medium PBH	YES
7	Medium PBH	YES
8	Medium PBH	YES
9	Medium PBH	YES
10	Medium PBH	YES
11	Medium PBH	YES
12	Medium PBH	YES
13	Medium PBH	YES
14	Medium PBH	YES
15	Medium PBH	YES
16	Medium PBH	YES
17	Medium PBH	YES
18	Medium PBH	YES
19	Low PBH	NO
20	Medium PBH	YES
21	Medium PBH	YES
22	Medium PBH	YES
23	Medium PBH	YES
24	Medium PBH	YES
25	Medium PBH	YES
26	Medium PBH	YES
27	Medium PBH	YES
28	Low PBH	NO
29	Medium PBH	YES
30	Medium PBH	YES
31	Medium PBH	YES
32	Low PBH	NO
33	Medium PBH	YES
34	Low PBH	NO
35	Low PBH	NO
36	Low PBH	NO
37	Medium PBH	YES
38	Medium PBH	YES
39	Medium PBH	YES
40	Medium PBH	YES
41	Medium PBH	YES
42	Medium PBH	YES
43	Medium PBH	YES
44	Low PBH	NO
45	Low PBH	NO

Lot No.	PBH Rating	AS3959-2009 Required Y/N
46	Medium PBH	YES
47	Medium PBH	YES
48	Medium PBH	YES
49	Medium PBH	YES
50	Medium PBH	YES
51	Medium PBH	YES
52	Medium PBH	YES
53	Medium PBH	YES
54	Medium PBH	YES
55	Medium PBH	YES
56	Medium PBH	YES
57	Medium PBH	YES
58	Low PBH	NO
59	Low PBH	NO
60	Low PBH	NO
61	Low PBH	NO
62	Low PBH	NO
63	Low PBH	NO
64	Medium PBH	YES
65	Medium PBH	YES
66	Low PBH	NO
67	Low PBH	NO
68	Low PBH	NO
69	Low PBH	NO
70	Medium PBH	YES
71	Medium PBH	YES
72	Medium PBH	YES
73	Medium PBH	YES
74	Medium PBH	YES
75	Medium PBH	YES
76	Medium PBH	YES
77	Medium PBH	YES
78	Medium PBH	YES
79	Medium PBH	YES
80	Medium PBH	YES
81	Medium PBH	YES
82	Medium PBH	YES
83	Medium PBH	YES
84	Medium PBH	YES
85	Medium PBH	YES
86	Medium PBH	YES
87	Medium PBH	YES
88	Medium PBH	YES
89	Medium PBH	YES
90	Medium PBH	YES

Lot No.	PBH Rating	AS3959-2009 Required Y/N
91	Medium PBH	YES
92	Medium PBH	YES
93	Medium PBH	YES
94	Medium PBH	YES
95	Medium PBH	YES
96	Low PBH	NO
97	Low PBH	NO
98	Low PBH	NO
99	Low PBH	NO
100	Low PBH	NO
101	Low PBH	NO
102	Low PBH	NO
103	Low PBH	NO
104	Low PBH	NO
105	Low PBH	NO
106	Medium PBH	YES
107	Medium PBH	YES
108	Medium PBH	YES
109	Medium PBH	YES
110	Low PBH	NO
111	Low PBH	NO
112	Low PBH	NO
113	Low PBH	NO
114	Low PBH	NO
115	Low PBH	NO
116	Medium PBH	YES
117	Medium PBH	YES
118	Medium PBH	YES
119	Medium PBH	YES

Lot No.	PBH Rating	AS3959-2009 Required Y/N
120	Low PBH	NO
121	Low PBH	NO
122	Low PBH	NO
123	Low PBH	NO
124	Low PBH	NO
125	Low PBH	NO
126	Low PBH	NO
127	Low PBH	NO
128	Low PBH	NO
129	Medium PBH	YES
130	Medium PBH	YES
131	Low PBH	NO
132	Medium PBH	YES
133	Medium PBH	YES
134	Medium PBH	YES
135	Medium PBH	YES
136	Medium PBH	YES
137	Medium PBH	YES
138	Medium PBH	YES
139	Medium PBH	YES
140	Medium PBH	YES
141	Medium PBH	YES
142	Medium PBH	YES
143	Medium PBH	YES

For allotments requiring assessment under AS3959-2009, please refer to section 5 of this report.



**Bushland Protection
Systems Pty Ltd**
Specialising in
**BUSHFIRE HAZARD
PLANNING & MITIGATION**

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Fire is a part of nature. Its effects can be catastrophic and fire can never be totally eliminated, however there are steps that can be taken to reduce the chances of uncontrolled fires occurring and the risk to life, property and the environment, in the event of uncontrolled fires. This is what we concentrate on, how the threats from bushfire can be minimised. There are many methods to do so, however deciding which method/s is best to use can be a complex decision to make. There are so many factors to consider such as ecological values, biodiversity, fire history, availability of resources, cost effectiveness and public awareness just to name a few. No guarantees can ever be given when dealing with Mother Nature, with ever increasing complexities it has now become a specialist field to be able to create plans to try and minimise the risk from bushfire. Ultimately it is a community responsibility to protect the environmental values, life and property in their area

COMPANY PROFILE

Bushland Protection Systems Pty Ltd (BPS) is a leading Bushfire Management Consultancy firm in Queensland, with many clients, ranging from private landowners to multi-national companies and government bodies.

BPS consultants began operating as Bushfire Management Consultants with the introduction of the Gold Coast Bushfire Management Strategy in 1998 and spread their operations across the state with the implementation in 2003 of the State Planning Policy for mitigating the adverse impacts of flood, bushfire and landslide.

During that time over 1900 projects have been successfully completed, including large residential estates such as Coomera Waters, Spring Mountain, Pacific Pines, Coomera Springs, Highland Reserve & Delfin Woodlands as well as commercial or Government project sites such as Paradise Country, Wacol Police Academy, Numinbah Correctional Facility, Silkwood Steiner School, Canon Hill Community Links Project & Griffith University. Clyde Bain, the Principal Consultant, is also one of the two most highly sought after expert witnesses for Land and Environment Court Appeals, in Queensland, having worked as the Bushfire Expert for several Regional and City Councils throughout the state on a number of various projects before the Land and Environment Court.

With a strong background in bush fire fighting and involvement with numerous industry bodies, Bushland Protection Systems continues to deliver realistic and cost effective advice, solutions to provide higher levels of safety for the community, improve wildfire suppression and mitigation options for emergency services and land managers, while maintaining and improving environmental values for the future. All our Consultants are members of the Rural Fire Association of Queensland.