PREFACE

This Heritage Management Plan (HMP) has been prepared to meet the requirements of Condition 3.3 of the Cowal Gold Project Development Consent. Where there is any conflict between the provisions of this HMP and the applicable statutory requirements (i.e. licences, permits, consents and relevant laws) the statutory requirements are to take precedence.

In accordance with Development Consent Condition 3.2 this HMP is to be revised/updated at least every five years, or as otherwise directed by the Director-General, in consultation with the relevant government authorities.

Relevant current regulatory guidelines and Australian Standards are appended to this HMP to provide guidance to Barrick employees and its contractors. It is the responsibility of Barrick to ascertain whether these guidelines or Australian Standards have been updated since the production of this HMP, and to conform with any new versions of these guidelines or standards as required by Development Consent Conditions.

Similarly, it is the responsibility of Barrick to refer to the latest versions of statutory instruments or guidelines that are referenced in this HMP, but have not been appended.
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1 INTRODUCTION

The Cowal Gold Project (the Project) is located approximately 38 kilometres (km) north-east of West Wyalong, New South Wales (NSW) (Figure 1). The Project is owned by Barrick Gold Australia Ltd (Barrick).

Development Consent Condition 3.3(a)(i) for the mine and pipeline requires the preparation of the enclosed Heritage Management Plan (HMP). The consent conditions and the corresponding sections of this Plan that address the conditions are outlined below:

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<td>3.3 Heritage Assessment and Management</td>
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<td>The applicant shall prior to commencement of construction works:</td>
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<td>(i) prepare a Heritage Management Plan (HMP) to address non-indigenous cultural heritage issues. The HMP shall be prepared in consultation with Bland District Historical Society, BSC and Lake landholders/residents and to the satisfaction of the Director-General;</td>
<td>Section 3</td>
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In addition:

- Consent Condition 3.2 provides for the preparation, revision and updating, and public availability of required management plans and is addressed in the preface.
- Consent Condition 6.1 requires the preparation of a Dust Management Plan (DMP) and is addressed in Section 5.1.1.2.
- Consent Condition 6.3 requires the preparation of a Blast Management Plan (BLMP) and is addressed in Section 5.1.1.1.
- Consent Condition 8 provides for the preparation, revision and updating, and public availability of monitoring and auditing and is addressed in Section 7.
- Consent Condition 8.3 provides for the monitoring and reporting of air quality and dust and is addressed in Sections 5.1.1.2 and 9.
- Consent Condition 8.4(b) establishes requirements for blasting and is addressed in Sections 5.1.1.1 and 7.
- Consent Condition 8.7 establishes the requirements for a Community Environmental Monitoring and Consultative Committee (CEMCC) and is addressed in Section 8.1.
- Consent Condition 8.8 establishes the requirements for an Independent Environmental Audit (IEA) and an Independent Monitoring Panel (IMP). This condition is discussed in Section 8.3.
- Consent Condition 9.2 establishes environmental reporting requirements as provided and discussed in Section 9.
- Consent Condition 10.1 outlines the requirements for receipt and response to community complaints. This condition is discussed in Section 8.2.
- In accordance with Consent Condition 12.1 the Applicant is obliged to ensure all statutory requirements are fully met.
Conditions of Authority ML 1535

The Department of Mineral Resources (DMR) also has requirements that relate to non-indigenous heritage as detailed in the Conditions of Authority. Relevant Conditions of Authority include:

**Mining, Rehabilitation, Environmental Management Process (MREMP) Mining Operations Plan (MOP)**

25. (4) The Plan must present a schedule of proposed mine development for a period of up to seven (7) years and contain diagrams and documentation which identify:

(g) areas of particular environmental, ecological, archaeological and cultural; sensitivity and measures to protect these areas;

This condition of Authority is addressed in Section 6.

**Annual Environmental Management Report (AEMR)**

26. (1) Within 12 months of the commencement of mining operations and thereafter annually or, at such other times as may be allowed by the Director-General, the lease holder must lodge an Annual Environmental Management Report (AEMR) with the Director-General.

(2) The AEMR must be prepared in accordance with the Director-General's guidelines current at the time of reporting and contain a review and forecast of performance for the preceding and ensuing twelve months in terms of:

(a) the accepted Mining Operations Plan;
(b) development consent requirements and conditions;
(c) Environment Protection Authority and Department of Land and Water Conservation licences and approvals;
(d) any other statutory environmental requirements;
(e) details of any variations to environmental approvals applicable to the lease area; and
(f) where relevant, progress towards final rehabilitation objectives.

(3) After considering an AEMR the Director-General may, by notice in writing, direct the lease holder to undertake operations, remedial actions or supplementary studies in the manner and within the period specified in the notice to ensure that operations on the lease area are conducted in accordance with sound mining and environmental practice.

(4) The lease holder shall, as and when directed by the Minister, cooperate with the Director-General to conduct and facilitate review of the AEMR involving other government agencies and the local council.

This condition is addressed in Section 9.

1.1 OBJECTIVES AND SCOPE

The primary objective of this HMP is to establish a non-indigenous heritage management strategy for the Project that complies with consent conditions by providing:

- a summary of non-indigenous heritage issues which arise in relation to the Cowal Gold Project;
- potential impacts on identified non-indigenous heritage items relating to Project operations;
- management measures for existing non-indigenous heritage items; and
• mechanisms in relation to community consultation and complaints, and reporting regarding non-indigenous heritage.

The Cowal Gold Project Environmental Impact Statement (EIS) (North Limited, 1998) assessed non-indigenous heritage for the Lake Cowal area and found no items of non-indigenous heritage significance that would be impacted by Project activities. Subsequent to the Project EIS and granting of the Development Consent in 1999, five items of non-indigenous heritage items in the Project area have been listed on the Bland Local Environmental Plan (LEP) and are discussed in this HMP.

The HMP is structured as follows:

Section 1: Outlines the objectives of the plan and details relevant consent conditions.
Section 2: Provides a historical overview of non-indigenous heritage in the Lake Cowal area.
Section 3: Discusses proposals to investigate Aboriginal involvement in non-indigenous heritage.
Section 4: Identifies non-indigenous heritage items.
Section 5: Identifies potential impacts on non-indigenous heritage items.
Section 6: Details management measures for non-indigenous heritage items.
Section 7: Presents monitoring requirements for non-indigenous heritage.
Section 8: Presents Stakeholder consultation requirements.
Section 9: Outlines reporting requirements for non-indigenous heritage related issues.

In accordance with consent condition requirements, Bland District Historical Society (BDHS), Bland Shire Council (BSC) and Lake landholders/residents will be consulted during the preparation of this management plan. The HMP will be prepared to the satisfaction of the Director-General of the Department of Infrastructure, Planning and Natural Resources (DIPNR).

2 HISTORICAL OVERVIEW OF NON-INDIGENOUS HERITAGE IN THE LAKE COWAL AREA

2.1 HISTORICAL STUDY

A historical study of the Lake Cowal area was undertaken by the BDHS in 1993 (attached as Appendix A). This study found that the first settlers arrived in the neighbourhood of Wyalong in 1833 and 1834. Following this occupation, a second wave of pioneers arrived in 1842 to the area bringing their wives and families. Apart from pastoral stations settled within the Wyalong district, very little settlement occurred prior to 1885.

Gold mining was prevalent in the Wyalong district and in 1899 it was reported by the government geologist that the Wyalong goldfield was the most productive in the Colony. When the Wyalong goldfield gradually reduced production it was not to the doom of the township, as by 1900 it was evident that wheat growing had become established in the Wyalong district with an area of 11,900 acres sown to cropping and an expected yield of 12 bushels to the acre.
Cowal West (known at the time as Lake Cowal West) was listed as one of the principal properties in the Lake Cowal area and comprised 8,000 acres. For a more detailed account of the non-indigenous heritage of the region, refer to Appendices A and B.

Examination of the LEP was undertaken for the Project EIS (North Limited, 1998) to identify any listed heritage items within the Project Mining Lease (ML). At the time of the EIS preparation (and subsequent granting of Development Consent) the LEP did not list any heritage items of local, regional or state heritage significance within the Project development application area.

The EIS concluded that while no significant items of non-indigenous heritage significance were known, if the construction or development of the Project identified items of non-indigenous heritage significance, appropriate identification and management measures would be employed (North Limited, 1998).

Subsequent to the Project EIS and granting of the Development Consent in 1999, five items of non-indigenous heritage have been listed on the LEP within the vicinity of Lake Cowal. The listed items are located at the Cowal West Homestead Complex, herein referred to as Cowal West (Figures 2 and 3) and Lake Cowal Station.

Following the listing of non-indigenous heritage items (Cowal West) within ML 1535 and outside ML 1535 (Graves at Lake Cowal Station), a heritage archiving project was undertaken to provide a historical record of the listed non-indigenous heritage items. Heritage Management Consultants Pty Ltd (HMC) were commissioned by Barrick to produce a report titled “Cowal Gold Project European Heritage Assessment and Recording of Homestead Complex” (attached as Appendix B) and also to provide an archival graphical record of the listed non-indigenous heritage items. All works for the archival process were conducted in accordance with the Heritage Information Series - How to Prepare Archival Records of Heritage Items (NSW Heritage Office, 1998) and the Heritage Information Series - Guidelines for Photographic Recording of Heritage Sites, Buildings and Structures (NSW Heritage Office, 1994).

2.2 ORAL HISTORY

Oral family histories provided to Barrick relating to the historical occupation of the properties “Cowal West” and “Lake Cowal” in the Lake Cowal area (Figure 2) are repeated below (Note that the property named “Lake Cowal” is not the same property as that referred to as “Lake Cowal Station” at which the graves are located).

2.2.1 Lake Cowal

Prior to 1897 the property named Lake Cowal was owned by Henry Ricketson who died at Caufield, Victoria in 1900. In 1897 Lake Cowal, then occupying 164,000 acres, was purchased from the Ricketson family by Samuel Wilson Snr. From 1885 Samuel Wilson Jnr. managed the property until his death in 1935.
Lake Cowal homestead was built in 1890 and was partly destroyed by fire in 1928. The bricks used in construction of the homestead were made, and the timber cut and milled, on the property. The homestead was 70 squares in area, had cavity walls and had high ceilings of 10-12 ft. The veranda surrounded the house, and was 12 feet wide with a ceiling. The kitchen and staff quarters were separate buildings to the rear of the homestead, constructed in the same period.

Samuel Wilson Snr., on acquiring Lake Cowal in 1987, improved the land and increased the stocking rate from 84,000 sheep to 107,000 sheep. His sheep and wool products were shown at a number of exhibitions and won a gold medal for Lake Cowal wool at an exhibition at Chicago. Samuel Wilson Snr. was the first President of the West Wyalong Show Society and first President of the BSC. His sons, Leslie and Charles, owned the well known properties in the region of “Corran” and “Caloola” respectively and his sister, Mrs MacDonnell, owned “Milly Milly”.

In 1913-14 a large area of the Lake Cowal lease was resumed, contributing to the establishment of the farming centres of Clear Ridge and Blow Clear. 1938 saw the homestead portion of the property sold to HPR (Reg) Coles. HPR Coles held the property for a short time before selling it to WA (Will) Buttenshaw, owner of the neighbouring property “Laurel Park”.

Will Buttenshaw and family commenced occupation of “Lake Cowal” in 1945 and constructed a new homestead that incorporated a number of the original buildings not destroyed by the 1928 fire. Will died soon after in December 1946. The property was run as an estate until 1950 when Will’s son WR (Bill) Buttenshaw purchased the remaining estate shares of other family members.

Some time later the original Lake Cowal woolshed, employing 48 blade-shears, were converted into a machined six-stand shearing shed, one of the earliest sheds in the area to use shearing machines. The woolshed was almost completely demolished by a windstorm in the 1970’s and a new shed was constructed near the bulk electricity lines (constructed in 1961). The Ronaldson and Tippett engine that powered the shearing stand was given to the West Wyalong Historical Society.

Lake Cowal (now comprising 8,000 acres) was managed by Bill Buttenshaw until 2000 when he retired with his wife and daughters from farming and grazing. Since 2000 the property has been leased to Helena and Geoff West of “Lake View”.

2.2.2 Cowal West

Frank Allen occupied the property Cowal West for a number of years until his death in 1904, aged 68. Frank was born in Maine, USA in 1835 and was one of nine children. In 1853 Frank and his older brother departed New York on the ship “Rockland” bound for the Victorian gold rush.

Frank failed to make his fortune in the goldfields and settled at Lambing Flat (now the town of Young). He became partner in a produce business and married his cousin’s widow Annie, who died soon after the birth of their son Charles.

In 1868 Frank married Isabella Clarke from Young. Frank, Isabella and the produce business moved to Grenfell after the finding of gold in that area. Most of their eleven children were born there. Later Frank sold the business and moved his family to Whego Station and then to “Cowal West” where he lived until his death.
3 ABORIGINAL INVOLVEMENT IN NON-INDIGENOUS HERITAGE

In accordance with Section 9.3 of Consent 1467 granted under section 90 of the National Parks and Wildlife Act 1974, a regional cultural heritage study will be completed within 3 years of commencement of construction. The study will identify areas of significance to Aboriginal people including areas within Barrick’s land to be considered for future conservation.

Aboriginal involvement in non-indigenous heritage will be studied within this regional study. The regional cultural heritage study will include the history of contact between Aboriginal people and European settlers (NPWS, pers. comm., 21 May 2003).

4 NON-INDIGENOUS HERITAGE ITEMS

No items of national or state non-indigenous significance will be affected by the construction and operation of the Project. Items of local non-indigenous heritage significance located in the vicinity of the Project are discussed below.

4.1 ITEMS OF LOCAL HERITAGE SIGNIFICANCE UNDER BLAND LOCAL ENVIRONMENTAL PLAN 1993

Development consent for the Cowal Gold Project was granted on 26 February 1999. Subsequent to that date, five items in the Lake Cowal area were listed as heritage items under Bland Local Environmental Plan 1993 (the LEP). The listings were effected by way of an amendment to the LEP which was gazetted in November 1999.

The items are:

- The Cowal West Homestead, Quarters, Sheds and Stables (1890) (Portion 347, Lake Cowal Road, Parish of Corringle) (Figures 2 and 3); and
- Graves on Lake Cowal Station (Newell Highway, 6km north of Marsden on Lake Cowal Station. Note that the graves, situated at the property named “Lake Cowal Station” on the east of Lake Cowal, are not at the property named “Lake Cowal” situated south of Lake Cowal as identified on Figure 2).

The history of Cowal West is detailed in the attached report titled European Heritage and Assessment and Recording of Homestead Complex (HMC, 2003) (Appendix B).

Clauses 21 to 23 of the LEP impose constraints upon development on, or in the vicinity of, items listed as heritage items. However, under the Environmental Planning and Assessment Act 1979 where an existing development consent expressly or by necessary implication authorises the carrying out of development, that development may be carried out notwithstanding constraints imposed later in time by way of a local environmental plan (or any other planning instrument).

In the case of the Cowal Gold Project, two of the four structures comprising the Cowal West homestead (the Stables and the Homestead), are situated within the Project area of disturbance, namely, the north western edge of the Southern Waste Emplacement and the Access Road (Figure 3). Construction of the mine in the manner authorised by the development consent requires the removal of these structures.
The two remaining structures forming part of the Cowal West Homestead [the Quarters (referred to as the Shearer’s Quarters in HMC, 2003) and the Shed] are situated just outside the proposed area of disturbance. Further discussions with stakeholders regarding the future management of these structures will be held during the life of the Project. Any development on or in the vicinity of these structures will take place in accordance with the requirements of clauses 21 to 23 of the LEP (set out below). In the meantime, measures will be undertaken to maintain their local heritage value, as set out in Section 6 of this HMP.

Clauses 21 to 23 of the LEP provide as follows:

21. (1) In respect of a building, work, relic, tree or place that is a heritage item, a person must not-
   (a) demolish or alter the building or work;
   (b) damage or remove the relic, or excavate for the purpose of exposing the relic;
   (c) damage, despoil or destroy the tree or place; or
   (d) erect a building on, or subdivide, land on which the building, work or relic is situated or on the land which comprises the place, except with the consent of the Council.

2. Before granting consent to a development application relating to a heritage item, the Council must consider the impact of the development or adjacent development on the heritage significance of the item.

3. The Council must not grant consent to the demolition of a heritage item unless:
   (a) the Council has notified the Heritage Council of its intention to grant consent; and
   (b) the Heritage Council has no objection to the granting of consent.

4. The Heritage Council is taken to have no objection unless it notifies the Council of its objection not later than 28 days after receiving notice of the Council’s intention to grant consent.

5. The Council may grant consent to partial demolition of a heritage item without further notification, if it considers the partial demolition is of a minor nature and will not adversely affect the item’s heritage significance.

Clause 22 of the LEP discusses development in the vicinity of heritage items:

22. The Council shall not consent to an application for consent to carry out development on land in the vicinity of a heritage item unless it has made an assessment of the effect the carrying out of that development will have on the heritage significance of the item and its setting.

Clause 23 of the LEP discusses conservation incentives relating to heritage items:

23. Nothing in this plan prevents the Council from granting consent to the use for any purpose of a building that is a heritage item or of the land on which that building is erected where, in the opinion of Council –
   (a) the use would have little or no adverse effect on the amenity of the locality; and
   (b) conservation of the building depends on the Council granting consent.
4.1.1 Other Items of Non-Indigenous Heritage

The assessment carried out by Heritage Management Consultants (HMC) on behalf of Barrick also identified buildings, structures and items in the vicinity of the Project that contain a level of local heritage significance, namely:

- Lake Cowal Homestead Complex – located on the southern boundary of Lake Cowal (Figure 2);
- Lake Cowal Woolshed – located approximately 1.4km south of the Lake Cowal Homestead Complex;
- Lake Cowal Shearer’s Quarters – located on Sandy Creek between the Lake Cowal Homestead Complex and the Lake Cowal Woolshed (not to be confused with the Cowal West Quarters listed on the Bland LEP);
- Rattey’s house – located on Lot 38; and
- Survey Markers – located at the junctions of Lots 38, 31 and 37.

All of the above items are located on Barrick owned land outside ML 1535.

The Analysis of Evidence conducted by HMC (2003) describes these items in relation to NSW Historical Themes (Appendix B). A brief description of the items is provided below:

**Lake Cowal Homestead Complex**

The Lake Cowal Homestead complex is directly related to the second generation of pastoral runs in the Lake Cowal region, and together with its woolshed and shearing quarters appears to have historical associations and physical remains of potential heritage significance (HMC, 2003).

**Lake Cowal Woolshed**

The Lake Cowal Woolshed is a large shed that is possibly one of the earliest shed to be converted to mechanical shearing. The shed is in ruin, and is beyond effective conservation, but its recording would salvage potentially important historical and technological evidence of local and regional significance. The original shearer’s quarter were adjacent to the shed and may have left archaeological evidence (HMC, 2003).

**Lake Cowal Shearer’s Quarters**

The Lake Cowal Shearer’s Quarters are of yet unknown age, but appear to be early 20th century in date. They are potentially of greater significant than the Cowal West quarters.

**Rattey’s house**

Rattey’s house is closely associated with a prominent Australian, due to his war record, who also typified small-scale settlement in the Lake Cowal area (HMC, 2003).

**Survey Markers**

The survey marker trees appear related to subdivision of the lake bed blocks in the 1920’s, and are interesting evidence of the survey of the local area (HMC, 2003).
None of the above buildings, structures or items are listed on the LEP or NSW State Register. As such, they were not considered at the time of the EIS (North, 1998) for potential impacts from mining activities or mitigation measures. However, due to the HMC consideration that both the Lake Cowal Woolshed and Lake Cowal Shearer’s Quarters possess a reasonable degree of significance, a heritage assessment will be conducted on these items during the life of the Project to determine their heritage value (HMC, 2003).

5 IMPACTS ON NON-INDIGENOUS HERITAGE

5.1 COWAL WEST

5.1.1 Operational Emissions

Operational emissions that are considered to have the potential to adversely impact on heritage items include blasting (vibration and overpressure) and dust deposition. These emissions are considered to have minimal impacts on the listed heritage items and their impacts and mitigation measures are discussed in the following sections.

5.1.1.1 Blast Emissions - Vibration and Overpressure

Predictions of the level of Project blast emissions at the nearest potentially affected residences was conducted by Richard Heggie and Associates Pty Ltd (Richard Heggie Associates, 1997). The predictions were based on a Maximum Instantaneous Charge (MIC) of 213 kilograms (kg) and a typical Project blast design (Richard Heggie and Associates, 1997). Figures 4 and 5 (Richard Heggie and Associates, 1997) indicate the maximum predicted ground vibration level and the maximum predicted airblast overpressure level for varying distances away from the blast zone.

Cowal West is located approximately 2 km from the blast zone (Richard Heggie and Associates, 1997), and the EIS assessment indicated:

- the maximum predicted ground vibration level of 0.34 millimetres per second (mm/s) at Cowal West was well within the Australian and New Zealand Environmental and Conservation Council (ANZECC) criteria of 5 mm/s and the long-term regulatory goal of 2 mm/s; and
- the maximum predicted airblast overpressure level of 104 decibels (dB) (Linear Peak) at Cowal West was also well within the 115 dB (Linear Peak) criterion.

Australian Standard AS 2187.2-1993 Explosives – Storage, transport and use. Part 2: Use of explosives (AS 2187.2) denotes for heritage buildings that may be susceptible to structural damage, maximum levels of Peak Vector Sum vibration levels and Airblast levels (dB re 20 micropascals $[\mu Pa]$) of 5mm/s, and 133 dB(Linear Peak) respectively. The relevant section of AS 2187.2 is provided as Appendix C.

The predicted levels of 0.34 mm/s and 104 dB (Linear Peak) are well under the set maximum levels for heritage buildings, hence blasting is not predicted to have any significant effects on the Quarters (referred to as the Shearer’s Quarters in HMC, 2003) and the Shed. All blasting will be done in accordance with the BLMP and Consent Conditions 6.3 and 8.4(b).
Figure 4  Peak Vector Sum Ground Vibration

Figure 5  Peak Airblast
5.1.1.2  Dust Emissions

Pavel Zib and Associates (1997) identified potential dust emission sources from mining operations as:

- areas disturbed by construction activities;
- areas disturbed by mining activities, including waste emplacement areas and other portions of the mine site exposed to wind;
- waste rock handling and stockpiling activities (including loading and unloading, spreading and shaping of waste);
- movement of vehicles on unsealed roads for general mining activities;
- topsoil stripping and stockpiling;
- drilling and blasting; and
- crushing, screening, transport and preparation of ore.

The DMP provides a dust management and monitoring strategy for the Project as required by Consent Conditions 6.1 and 8.3 and outlines:

- air quality safeguards and procedures for dealing with dust emissions;
- details on how and when the mine operation is to be modified to minimise the potential for dust emissions; and
- dust monitoring locations and measures to continue baseline monitoring.

The only potential effects of dust deposition on the Quarters (referred to as the Shearer’s Quarters in HMC, 2003) and the Shed (as they will be uninhabited) are considered to be visual impacts as dust builds up over time (HMC, pers. comm., 14 August 2003). Dust deposition is not predicted to have any significant effects on the Quarters and the Shed. Dust mitigation is discussed in Section 6.1.3.

6  NON-INDIGENOUS HERITAGE MANAGEMENT MEASURES

Pending future consultations and discussions with stakeholders regarding the listed Cowal West items, non-indigenous heritage management measures will be described in the Cowal Gold Project MOP post-construction, in accordance with the DMR (DMR, 2002).

The MOP describes all mining and mining related activities, rehabilitation plans and land use outcomes over the MOP period (maximum 7 years). The MOP must be in a format endorsed by the DMR and must contain plans and text which identify and define the area(s) proposed to be disturbed, mining and rehabilitation method(s) to be used and progressive rehabilitation schedules. The MOP will include details relevant to Condition of Authority 25(4)(g), (Section 1).
6.1 COWAL WEST

*Heritage Regulation* 1999 outlines minimum standards with respect to the maintenance and repair of buildings, works and relics that are listed on the NSW State Heritage Register or within a precinct that is listed on that Register. Standards outlined in the *Heritage Regulation* 1999 relate to the following:

- weatherproofing;
- fire protection;
- security; and
- essential maintenance.

Cowal West is listed in the LEP and not on the NSW State Register. As such, *Heritage Regulation* 1999 does not apply. However, *Heritage Regulation* 1999 will be used as a guide where practicable for any maintenance and repairs conducted on the Quarters (the Shearer’s Quarters in HMC, 2003) and the Shed.

Management measures that will be implemented with regard to the Quarters (referred to as the Shearer’s Quarters in HMC, 2003) and the Shed include:

- Erection of fences around the Quarters (the Shearer’s Quarters in HMC, 2003) and the Shed to minimise potential for damage due to vehicle movements and general machinery movements.

6.1.1 Bland District Historical Society

The BDHS have indicated to Barrick that they have no historical interest in Cowal West and that they are in favour of an archival photographic record for Cowal West (BDHS, pers. comm., 6 May and 24 June 2003).

Subsequent to a meeting between Barrick and BDHS, BDHS forwarded a letter to Barrick on the 24 June 2003 stating that they have “no historical interest in the buildings [Cowal West] at the Mine Site”, and they support any decision that Barrick makes in regards to the items at Cowal West (BDHS letter attached as Appendix D).

6.1.2 Archival Records

An archival record of the items of heritage value at Cowal West was undertaken in May 2003 by Dr Michael Pearson of HMC. HMC advised the Cowal West Complex contained items of local significance, primarily the Shed, and to a lesser degree, the Stables. Subsequently, photographic records were produced for relevant Cowal West structures. All photographic records were conducted in accordance with the *Heritage Information Series - Guidelines for Photographic Recording of Heritage Sites, Buildings and Structures* (NSW Heritage Office, 1994). Prior to removal of the Cowal West Homestead building, a photographic record will be conducted for inclusion into the archival record for Cowal West in accordance with the above-mentioned guidelines.

Storage of the archival records will be conducted in accordance with the *Heritage Information Series - How to Prepare Archival Records of Heritage Items* (NSW Heritage Office, 1998). Storage will include the original copy being lodged with BSC, Bland Shire Library, and Barrick.
6.1.3 Dust Mitigation

Dust deposition upon and within the Quarters and the Shed is not considered to be a significant impact and is a natural process that would continue regardless of mining activities in the immediate surrounds. Dust build up (if considered excessive and/or having the potential to adversely impact on the Quarters and the Shed as deemed by the Environmental Manager) will be mitigated against by the boarding up of any open window frames (in accordance with the *Heritage Information Series – Minimum Standards of Maintenance and Repair* [NSW Heritage Office, 1999]), and the washing down of the Quarters and the Shed with low pressure water or compressed air. Periodic natural cleaning of the Quarters and the Shed by wind action and rainfall events will assist in the prevention of dust build up and it is not foreseen that manual cleaning measures will be required.

Problems associated with the Shed are that it contains a ventilation gap sealed with chicken wire approximately 300mm wide between the roof and the walls, and that ‘sheep shoots’ line the walls of the Shed providing various access for dust into the building. The sealing up of the ventilation gap and the sheep shoots is not proposed as it is considered that this activity will adversely affect the heritage value of the Shed to a greater extent than dust accumulation will (HMC, pers. comm., 14 August 2003).

The proposed management strategy is to visually monitor dust accumulation in the Shed and if dust accumulation is considered to be affecting its heritage value.

7 MONITORING

In accordance with Consent Condition 8.6 the Environmental Manager shall monitor every six months, the effectiveness of management measures outlined in this HMP. Monitoring should were practicable and/or applicable report on the following:

- any maintenance and/or repairs conducted on the Quarters and Shed and the effectiveness of the maintenance and/or repairs;
- condition of fences and gates and around the Quarters and Shed; and
- condition of the Information Plaques at the Quarters and Shed.

In accordance with Consent Condition 8.6 a summary of all non-indigenous heritage monitoring results will be included in the AEMR.

Dust and blast monitoring programmes will be conducted in accordance with Consent Conditions 8.3 and 8.4(b). Dust and blast monitoring programmes are described in the DMP and BLMP respectively. If blasting monitoring indicates that the AS 2187.2 standards for sensitive buildings are being regularly exceeded at Cowal West, a structural assessment of the Quarters and the Shed will be undertaken. The structural assessment will aim to identify potential impacts of the exceedances and propose amelioration measures to maintain the heritage value of those structures. All amelioration measures will be developed in consultation with BSC and BDHS.

In accordance with Consent Condition 8, the non-indigenous heritage monitoring programme will be revised/updated annually, unless otherwise directed by the Director-General, to reflect changing environmental requirements significant changes in technology/operational practices and results from monitoring conducted.
8 STAKEHOLDER CONSULTATION

8.1 COMMUNITY ENVIRONMENTAL MONITORING AND CONSULTATIVE COMMITTEE

A CEMCC will be set up for the Project in accordance with Consent Condition 8.7. The condition is reproduced below:

8.7 Community Consultative Committee

Community Environmental Monitoring and Consultative Committee (CEMCC)

The Applicant shall:

(i) establish a Community Environmental Monitoring and Consultative Committee and ensure that the first meeting is held before the commencement of construction works. Selection of representatives shall be agreed by the Director-General and the appointment of an independent Chairperson shall be to the satisfaction of the Director-General in consultation with the Applicant and BSC. The Committee shall comprise two (2) representatives of the Applicant (including the Environmental Officer), one (1) representative of BSC, one (1) representative of the Lake Cowal Environmental Trust (but not a Trust representative of the Applicant), four community representatives (including one member of the Lake Cowal Landholders Association), to monitor compliance with conditions of this consent and other matters relevant to the operation of the mine during the term of the consent.

Representatives from relevant government agencies (including DUAP) may be invited to attend meetings as required by the Chairperson. The Committee may make comments and recommendations about the implementation of the development and environmental management plans. The Applicant shall ensure that the Committee has access to the necessary plans for such purposes. The Applicant shall consider the recommendations and comments of the Committee and provide a response to the Committee and Director-General.

(ii) The Applicant shall, at its own expense:

a) nominate two (2) representatives to attend all meetings of the Committee;

b) provide to the Committee regular information on the progress of work and monitoring results;

c) promptly provide to the Committee such other information as the Chair of the Committee may reasonably request concerning the environmental performance of the development;

d) provide access for site inspections by the Committee;

e) provide meeting facilities for the Committee, and take minutes of Committee meetings. These minutes shall be available for public inspection at BSC within 14 days of the meeting.

(iii) The Applicant shall establish a trust fund to be managed by the Chair of the Committee to facilitate the functioning of the Committee, and pay $2000 per annum to the fund for the duration of gold processing operations. The annual payment shall be indexed according to the Consumer Price Index (CPI) at the time of payment. The first payment shall be made by the date of the first Committee meeting. The Applicant shall also contribute to the Trust Fund reasonable funds for payment of the independent Chairperson, to the satisfaction of the Director-General.

(ix) By year 5 of mining operations the Applicant shall, in consultation with CEMCC, identify and discuss post mining issues, particularly in relation to reduced employment and consequent impacts on West Wyalong, and develop a plan for the phase out of the mine workforce. The plan will be reviewed during the year of mining operations following the scale down of the year 8 mining operation workforce. The impacts of the year 8 scale down shall be monitored by the Applicant and results used in planning for full mine closure.

(x) The Applicant shall, in consultation with the CEMCC, develop appropriate strategies to support activities which promote special interest tourism related to the co-existence of mining and the Lake Cowal environment.
The CEMCC will comprise representatives of BSC, Lake Cowal Foundation Limited (LCFL), two Barrick representatives and four community representatives including one from the Lake Cowal Landholders Association.

The CEMCC will provide opportunities for members of the community to attend CEMCC meetings to discuss specific issues relevant to them, including dust-related issues. This will be achieved by landholders making a request to the CEMCC regarding a particular issue, or by the landowner registering a complaint in the complaints register. Landowners who register complaints will be invited to join in discussion of the issue at the next CEMCC meeting.

Items of discussion at these meetings will include mine progress, reporting on environmental monitoring, complaints, rehabilitation activities and any environmental assessments undertaken.

8.2 COMPLAINTS REGISTER

A complaints register will be maintained by the Environmental Manager in accordance with Consent Condition 10.1(a). The condition is reproduced below:

10.1 Community Consultation (including Aboriginal community)

(a) Complaints

The Environmental Officer (refer condition 3.1) shall be responsible:

(i) for receiving complaints with respect to construction works and mine operations on a dedicated and publicly advertised telephone line, 24 hours per day 7 days per week, entering complaints or comments in an up to date log book, and ensuring that a response is provided to the complainant within 24 hours; and

(ii) providing a report of complaints received every six months throughout the life of the project to the Director-General, BSC, EPA, DMR, and CEMCC, or as otherwise agreed by the Director-General. A summary of this report shall be included in the AEMR (condition 9.2(a)).

Information recorded in the complaints register with respect to each complaint will include:

- date of complaint;
- name, address and telephone number of complainant;
- nature of complaint; and
- response action taken to date.

An initial response will be provided to the complainant within 24 hours. Preliminary investigations into the complaint will commence within 48 hours of complaint receipt.

In the event that the complainant is not satisfied with Barrick’s response to the complaint an independent investigation will be undertaken.
8.3 INDEPENDENT ENVIRONMENTAL AUDIT

An IEA will be conducted in accordance with Consent Condition 8.8 and will include non-indigenous heritage related issues. The condition is reproduced below:

8.8 Third Party Monitoring/Auditing

(a) An Independent Environmental Audit shall be completed:

- six monthly during construction;
- 12 months after commencement of ore processing;
- then every three years thereafter until decommissioning of the mine and ore processing operations respectively, or as otherwise directed by the Director-General.

The Applicant shall conduct an environmental audit of the mining and infrastructure areas of the development in accordance with ISO 14010 - Guidelines and General Principles for Environmental Auditing, and ISO 14011 - Procedures for Environmental Auditing (or the current versions), and in accordance with any specifications required by the Director-General. Copies of the report shall be submitted by the Applicant to the Director-General, BSC, EPA, DLWC, DMR, NPWS and CEMCC within two weeks of the report's completion for comment.

(i) The audit shall:

a. assess compliance with the requirements of this consent, licences and approvals;

b. in the event of any non-compliance, report on the effectiveness of the environmental management of the mine as it may relate to the area of non-compliance;

c. be carried out at the Applicant’s expense; and

d. be conducted by a duly qualified independent person or team approved by the Director-General in consultation with BSC and CEMCC.

(ii) The Director-General may, after considering any submission made by the relevant government agencies, BSC and CEMCC on the report, notify the Applicant of any requirements with regard to any recommendations in the report. The Applicant shall comply with those reasonable requirements within such time as the Director-General may require.

(b) Independent Monitoring Panel

(i) The Applicant shall at its own cost establish an Independent Monitoring Panel prior to commencement of construction. The Applicant shall contribute $30,000 per annum for the functioning of the Panel, unless otherwise agreed by the Director-General. The annual payment shall be indexed according to the Consumer Price Index (CPI) at the time of payment. The first payment shall be paid by the date of commencement of construction and annually thereafter. Selection of the Panel representatives shall be agreed by the Director-General in consultation with relevant government agencies and the CEMCC. The Panel shall at least comprise two duly qualified independent environmental scientists and a representative of the Director-General.

(ii) The panel shall:

a. provide an overview of the independent audits required by condition 8.9 above;

b. regularly review all environmental monitoring procedures undertaken by the Applicant, and monitoring results; and

c. provide an Annual State of the Environment Report for Lake Cowal with particular reference to the on-going interaction between the mine and the Lake and any requirements of the Director-General. The first report shall be prepared one year after commencement of construction. The report shall be prepared annually thereafter unless otherwise directed by the Director-General. Copies of the report shall be provided to those parties which receive the AEMR (condition 9.2) and shall be made publicly available at Bland Shire Council within two weeks of the report’s completion.
9 REPORTING

An AEMR will be prepared in accordance with the requirements of the DMR (Condition of Authority 26 – Section 1) and Project Consent Condition 9.2 and submitted to the Director-General. Consent Condition 9.2 is reproduced below:

9.2 Environmental Reporting

Annual Environmental Management Report (AEMR)

(i) The Applicant shall, throughout the life of the mine and for a period of at least five years after the completion of ore processing operations, prepare and submit an Annual Environmental Management Report (AEMR) to the Director-General. The AEMR shall review the performance of the mine against the environmental management plans (refer condition 3.2), Mining Operations Plan (refer condition 2.1), the conditions of this consent, and other licences and approvals relating to the mine. To enable ready comparison with EIS predictions, diagrams and tables, the report shall include, but not be limited to, the following matters:

a) an annual compliance audit of the performance of the project against conditions of this consent and statutory approvals;

b) a review of the effectiveness of the environmental management of the mine in terms of EPA, DLWC, DMR, NPWS, NSW Fisheries, and BSC requirements;

c) results of all environmental monitoring required under this consent or other approvals, which includes interpretation and discussion by a suitably qualified person;

d) from results of fauna monitoring, records of any fauna deaths due to mine operations;

e) a listing of any variations obtained to approvals applicable to the subject area during the previous year;

f) the outcome of the water budget for the year and the quantity of water used from water storages and Bland Creek palaeochannel borefield;

g) rehabilitation report;

h) environmental management targets and strategies for the next year.

(ii) In preparing the AEMR, the Applicant shall:

a) consult with the Director-General during preparation of each report for any additional requirements;

b) comply with any requirements of the Director-General or other relevant government agency; and

c) ensure that the first report is completed and submitted within twelve (12) months of this consent, or at a date determined by the Director-General in consultation with DMR.

(iii) The Applicant shall ensure that copies of each AEMR are submitted at the same time to the Director-General, EPA, DLWC, DMR, DSC, NPWS, NSW Fisheries, the BSC and CEMCC, and be available for public information at the BSC within 14 days of submission to these authorities.

The AEMR will report on the following non-indigenous heritage-related issues:

- new items of non-indigenous heritage significance identified by the Environmental Manager within the ML (Section 7.3);

- new listings of non-indigenous heritage significance items on the LEP or NSW State Heritage Register within the ML (Section 7.3);

- a brief overview of maintenance conducted on listed non-indigenous heritage items (Section 6.1); and

- a summary of results from any monitoring, management and maintenance measures undertaken.
The AEMR will be made available to DIPNR, Environment Protection Authority (EPA), Department of Sustainable Natural Resources (formerly Department of Land and Water Conservation), DMR, NSW National Parks and Wildlife Services (NPWS), NSW Fisheries, BSC the CEMCC and any other interested stakeholders on request.

10 REFERENCES

Bland Shire Council (1993) *Bland Local Environmental Plan.*


APPENDIX A

LAKE COWAL HISTORICAL RESEARCH
LAKE COWAL HISTORICAL RESEARCH.

Including a summary of European settlement and activities in the West Wyalong, Marsden, Wamboyne/Burcher, Billys Lookout, Blow Clear and Ungarie areas with emphasis on the mining history and its economic and social contribution to the development of the area.

EARLY HISTORY OF THE DISTRICT.

In 1817 Surveyor General John Oxley was sent by Governor Lachlan Macquarie to discover what happened the Lachlan and Fish Rivers. These rivers caused geographers a problem because they both flowed inland in different directions. In 1817 Oxley established his depot on the Lachlan and in April with Allan Cunningham and ten companions, started down the river.

This journey brought him into the area under discussion and we read in his diary the first recorded description of this area. His description was very unfavourable, which is surprising, because this land eventually became one of the best wheat producing areas in New South Wales.

Whilst in the vicinity of Mt Amyot Oxley said: "It is impossible to fancy a worse country than the one we are now travelling over, intersected by swamps and small lagoons in every direction; the soil a poor clay and covered with stunted useless timber." OXLEY: P 20-21. The timber referred to was the mallee scrub and this district would be north of Lake Cowal.

In the Mt Melville district which on this occasion was more than usually flooded, he said: "I am forced to conclude that in common seasons this whole tract is badly watered. The soil of the country we passed over was poor and cold clay but there were many rich levels which, could they be drained and defended from the inundations of the river, would amply repay cultivation." Oxley concluded that these flats were entirely unsuited for cattle, the grass being too swampy and the good portions mentioned above being overcrowded with bushes, swamps and lagoons. He did not consider it a safe or desirable grazing country.

In the neighbourhoods of Mts Maude, Edwards and Campbell he described the country as "poor and as barren as can well be imagined: the soil a light red sand, acacia scrubs, small box trees and a few miserable cypresses." OXLEY: p.43.

He said from the want of timber, grass and water it would never be inhabited by civilised man. His prophesy was not true for this district, now called Ungarie, north west of the township of West Wyalong, is the centre of one of the greatest wheat producing districts in the State.

The Surveyor General was struck by the physiography of the region. The few hills which the region possessed usually terminated on their westward side in a perpendicular bluff to a height of two or three hundred feet.

It was in this district the Oxley first noticed what was surely gold country! He observed that the hills to the south
Sketch showing part of Leichhardt Murrumbidgee Districts 1847

From Lands Dept. Plan Cat. 5.12 1267
were "curiously composed of pudding stone in very large masses - (granite), the lower stratum being a coarse granite intermingled with pieces of quartz. OXLEY: p52.

Fortunately Oxley's gloomy opinion of this region did not deter the squatters in their westward drive. These squatters "concentrated for a time on the south, and, in a few years, dotted settlements all over the country from the old cedar huts of Illawarra to Lake George and the Lachlan." Roberts: "Squatting Age in Australia" p.3. The Lachlan formed the boundary of the Nineteen Counties. By 1835, the thick black line of the Nineteen Counties remained as solid as ever on the map as the legal limit of settlement, but, actually it had been crossed in all directions." Roberts p5.

Oxley had first explored the Bland in 1817 when he camped for a considerable time near the Weddin Mountains. He tried to explore the Bland Creek but was only able to go as far as Eureka where he was blocked by water. There was so much water about that he considered he had discovered an inland sea and marked his name on a tree at the edge of the water. This tree stood for many years until an unimaginative Free Settler chopped it down and burned it. What Oxley considered as an inland sea was merely the backed up waters of the Lachlan River and Lake Cowal which had filled up the Bland Creek and spread across the plains.

Major Thomas Mitchell (later Sir Thomas) the next Surveyor General of New South Wales set out in 1826 to further explore the Bland country which he called "The Levels". He got as far as where the Bland Road joins Curraburrara and Bland Stations. He camped in a belt of timber halfway between these two stations at a place called Major's Point. He was forced back, as Oxley had been, because of a Lachlan flood which he thought was an inland sea.

The first settlers in the neighbourhood of Wyalong seem to have been a family of Gibson Brothers who took up a run near the Bland in 1833 and Mr Glass who settled on the Bland in 1834. Some of the early settlers were Mr Oakes (Back Creek) - 1835; Mr Myles at Morangorell in 1836 and who sold to Donald McGregor in 1843. John Bray from Crookwell opened Narraburrah in 1836 and Horatio Roberts and Wade also from Crookwell opened Carrumbee in 1836. They sold to John Shourd and John Mason in 1840. Abel Burke opened Bland Creek in 1838 and in the same year John Levitt took up a station near Grogan. He sold to Thomas Burrett of Wentworth Falls in 1839. Moses Beard opened up a run on the Bland Creek opposite Abel Burke in 1840. John Trott opened the Billabong in 1842 and sold it to James Marsden in 1852.

Following the squatting and occupational period of the first settlers who took up pastoral runs about 1842, there came a secondary wave of pioneers, bringing with them their wives
and families. Apart from the pastoral stations very little settlement had taken place within the Wyalong district prior to 1885.

John Rodd had taken up Billabong Pastoral Run in 1842. The Billabong Run extended through Mallee Plains to the area where the twin towns of Wyalong and West Wyalong were later established. Rodd later sold to James Marsden in 1852. The Government Gazette of New South Wales, 1842, included the following lessees in the Lachlan District No 6:

No 3 Lessee William Atkins Run Cowal 16000 acres
No 129 Lessee John Rodd Run Caragabal 26880 acres
No 130 Lessee John Rodd Run Billabong 40000 acres
No 149 Lessee Levi Stonestreet Run Tregalona 25600 acres

In 1849, two years after the Waste Lands Act was passed allowing squatters to take up Runs we find the following names:

Cartwright John Barmedman Run 36000 acres
Burke Abel Back Creek 28400 acres
Gibson Alice Bland 44800 acres
Rodd John Billabong 40000 acres
Stonestreet Levi Tregalona 25600 acres
Walton John Bland 100 square miles
Atkins William Cowal 16000 acres

In 1852 John Regan, brother of Denis Regan who had married Sarah Musgrave commenced exploring back country for station property. In a few years he had caused much of the country to be opened up and shifted the location of the outback from Young to what is now Wyalong. On one occasion John Regan set off with a Mr Wood and after passing the Billabong came to another creek. Their tethered horses wandered off and after finding them had difficulty in finding their camp again. They called the creek 'Humbug' and this simple expression showed the feeling of the two men towards the creek that had so long deluded them.

Mr Wood was impressed with the land and sent Mr Walsh as overseer to take possession of the run until he (Wood) was able to occupy it. Walsh entered into partnership with Wood and called the station Merengreen and stocked it with cattle and horses. This was the farthest outback station in south west New South Wales. In 1859 Thomas and James White explored Humbug Creek, taking up land which they called Ballangama. Mr Woodhouse took up Hiawatha and Thomas and Abraham Wood set up on the Humbug Creek calling their station Wallandry.

The next land explored by John Regan was the Merool now known as Wyalong. The first man on the Merool was an American negro named Sims and known as Black Sims. He took up Coonaparra run in 1859 and was in possession two years before another settler came to the district. His run
reverted to the Crown when he was arrested for cattle stealing and sentenced to ten years imprisonment.

In 1861 William Marshall acquired a large area on The Merool and called it Buddigover and in the same year George Harman took up Quondarry. Moses Beard late of the Bland took up land on the Merool calling the station Merool Creek. Samuel Pawsey of Mandamah was followed by Hamilton Hume, nephew of the explorer at Mandamah West.

By the Land Act 1884 called the Subdivision of Runs Act, the old Runs were converted into Pastoral Holdings. Thus we find that Lake Coval No 701 includes the Clear Ridges, Lower Billabong, Billabong Back and Wombine Runs.

The first major area to be alienated from the original Lake Coval Run was proclaimed in 1885 as Lake Coval No 162. The secondary Lake Coval Station was acquired by John Lloyd Donkin and was situated on the eastern side of Bland Creek, downstream from Marsdens. The homestead was near Fishermans Bend where the Bland Creek turns north-west to empty into Lake Coval. A number of smaller holdings were taken up in the Lake Coval area, along the perimeter extending from Wamboyn through Billies Lookout to Clear Ridge. In the Marsdens district the smaller holdings were mainly situated between the village and the Booberooi Hills fronting the road to Wyalong.

The land upon which the town of Wyalong now stands was formerly part of Camping Reserve 6387, Parish of Mugga, County of Bland, within the leasehold area of Billabong Holding No 61 held in 1889 by Henry Ricketson and also part of Wyo long (Wyalong) Resumed area No 410. Prior to this the Leasehold area was part of Mugga Swamp Run held in 1866 by McIntosh and Oakes and by H. Ricketson in 1879. The Resumed area part of Upper Wyo long (Wyalong) No 1 Run was held in the same year by E.A. Phillips and P. Besnard and 1879 by J. Cox and M. Callaghan. The present location of West Wyalong lies wholly in the latter run only. HANSON: 1889

There was hardly any other settlement in this locality until 1889. In this year we find the names of holders of Conditional Leases or Conditional Purchases taken up a few miles north and north west of the present township of West Wyalong. The holders were as follows: William, Robert and Elizabeth Gagie, Wilfred Wells Jnr, and William Lange. Then followed in the early nineties a little to the south, John and Phillip Bolte, Donald Rankin and Phillip Ryan. G.W. Neeld came in 1893 and became an important figure in the history of the district.

The gradual falling off of the goldfield did not mean the doom of the two townships as witnessed in other townships for it was found as far back as 1898 that the district was
most suitable for agricultural pursuits and particularly wheat growing. It was evident that wheat growing had become established by 1900 because the estimated area under wheat in the Wyalong district in that year was 11900 acres with an expected yield of 12 bushels to the acre.

At the turn of the century the principal properties in the Lake Cowal area were:

LAUREL PARK: taken up in 1885 by Patrick and Thomas Frost, comprised an area of 4960 acres and was situated on the southern side of Wamboyne Hill. Frost Brothers sold to Henry Buttenshaw in March, 1898 for 17/6 per acre including 3000 well bred sheep.

LAKE COWAL WEST: adjoined the southern side of Laurel Park and was acquired by Frank Allen. It comprised of 8000 acres. Allen sold to Beaufroy Green. After a series of misfortunes, including the homestead being gutted by fire, Green sold to Key Perry. Perry did not reside on the property, but placed it under the management of William McNair, who had come to Billy's Lookout in 1885. Lake Cowal West was sold in the 1920's to William J. Hammond who took up residence with his only son Roy and three younger daughters. The property was subdivided in the late 1920's following the death of William Hammond.

LAKESIDE: Taken up by James H. Palmer, comprised of 4000 acres. Palmer sold to William S. English in 1907 for 10/- an acre. English renamed the property "Weelona".

LAKE VIEW: selected by Charles West in 1888.

PINE GROVE: 2400 acres, selected by Henry Thomas Broadribb in 1887.

HILLSIDE: 800 acres, situated on the eastern side of Billy's Lookout was taken up by Moses (Harry) Fleming who was employed on Lake Cowal.

CORRAN: selected by Samuel Stewart and situated opposite Fellmans and Weelona and fronting the Billy's Lookout Road.

ELLERSLIE: joined Flemings block and a forest lease on the northern boundary, on the west by Girdlers Tank lease and fronting the road leading to the Marsdens-Wyalong Road.

MILLY MILLY: selected by Roderick Charles McDonell and comprised 3000 acres. It was proclaimed as a settlement lease area on 23 January 1904.

CALOOLA: taken up by Mr Rawsthorne, followed by James Hay, and Steve Vinecombe. In 1922 it was acquired by Charles Wilson (second son of Samuel Wilson). It was purchased by
WILSON: SAMUEL.

b. 14 Oct 1863, Geelong.
d. 25 Nov 1935, Ports Point, 72 yrs.
Bd South Head Cemetery.
Son of Samuel Wilson and Margaret Reid.
Married Margaret E. McClean of "Boona West", Condobolin.
Thomas J. Wilson (no relation to Charles) in 1926. Caloola was proclaimed as a settlement lease area on 27 July, 1895 for an annual rental of £40.

Later the forest area between Harry Flemings and Ellerslie was taken up by Samuel Pellow.

Two small blocks were taken up at Billys Lookout by Victor Beazley and Mervyn Whiley. Portion of Beazley's block was situated where Billys Lookout village had been.

GOLD MINING.

Gold occurs in many types of rock in the form of lodes, veins and impregnations, the breaking up of which form surface and alluvial deposits. Pure gold is seldom found in nature; silver, copper, iron, platinum and other metals are found with it.

The geology of Wyalong is difficult to describe, because with the exception of a few widely separated low elevations such as the old hospital hill, standing at the N.E. of Wyalong and Pine Hill and Pine Ridge, the underlying rocks are nowhere visible at the surface.

The underlying beds are concealed by an overcovering of Post Tertiary accumulations of several feet of red soil, so that the geologist must make his observations by an examination of the surface soil or by the use of shafts made by miners in prospecting. The difficulty was increased in the case of Wyalong because of the lack of knowledge of geology of the surrounding districts.

In 1899 the Government Geologist, Mr E.F. Pittman reported that the Wyalong goldfield had been developed so vigorously that it was then the most productive in the Colony. He went on to say: "The altitude of Wyalong is almost 800 feet above sea level, and I think that there must have been during the Tertiary period, well-defined channels through which the drainage of this elevated district found its way to the sea, or to the Tertiary basin, or lake (at least 900 feet thick), which exists near the junction of the Murray and Darling Rivers. In these drainage channels the gold derived from the denudation of the auriferous reefs must have been concentrated."

In the frenzied search for gold in the first years of the goldfield at Wyalong, reports came in of discoveries in the surrounding areas. These included Yalgogrin, Buddigover, Billys Lookout, Hiawatha and Blow Clear and areas in closer proximity to the diggings. Gold was discovered at Hiawatha on Portions 10 and 12 on Good Friday, 1898 by Conway and Ryan and it was traced to the adjoining crown lands. All the
Proclaimed 14th March, 1894

WEST WYALONG

Notified 9th June, 1894

Here, from Sale and Lease other than under the Mining Act, vide Gazette 10th August, 1894.

600 ac

180 ac

540 ac
Geological Map of the Wyalong Goldfield, 1899.
NEELD'S MINE
BACK ROW: ERNEST NEELD: HARRY NEELD:
RICHARD NEELD
FRONT (second from left) MRS RICHARD
NEELD: (5th from left) MRS L HYDE

NEELD'S GOLD MINE AIR DRILL AT WORK
reef at Hiawatha were in granite, which seemed to occupy a large portion of the surrounding country and seemed to be continuous with the Wyalong mass. The reefs struck east and west and dipped to the north in contrast to the Wyalong reefs, which had a general north south trend.

In the neighbourhood of Wyalong, there are roughly two main geological areas which can be readily be distinguished and their boundary line approximately known. The larger of these is occupied solely by granite and it is in this area which possibly contains rocks of much greater age than the granite, is occupied by highly altered sedimentary strata and igneous rocks of intrusive character. J.WATT: "Report on Wyalong Goldfield" p10. The granite extends for miles in a northerly and probably continues without break to Hiawatha - a distance of 8 miles north west from Wyalong. Auriferous reefs have been discovered at Hiawatha. The granite also extends south as well as west to Yalgogrin.

Almost the whole area of the goldfields is occupied by loosely aggregated sandy and clayey materials which are largely the result of the decomposition and disintegration in situ of the underlying granites and diorites. The red colour of the deposits is probably due to the presence of oxide of iron. The iron oxide itself is derived from the biotite and hornblende present in the granite. The decomposition of these minerals sets free the oxide of iron.

The red colour of the surface soils in dry regions such as Wyalong is more characteristic than in most regions for in this latter region "the decaying organic matter has a bleaching effect due to the reduction of the ferric oxide and its partial removal in a soluble form. Part of the oxide of iron has separated out in the form of small ironstone concretions which present rounded pseudo-water-worn appearance due to their mode of origin." J. WATT p. 12

"In the absence of well marked outcrops it was the presence of these fragments that led to the discovery of gold at Wyalong." J. WATT pl. Small rounded particles of quartz were noticeable on the small Mallee flat which extends between the township of Wyalong and Pine Ridge. Although during heavy rain, water evidently flows over this flat, there does not seem to be any depth of deposit there or any accumulation of gravel but the loose rounded stones are weathered irregularly over the surface and through the red soil.

The gold present in the Wyalong goldfield was so fine that it was not readily detected except by aid of a lens.

Mr Neeld Snr had joined his sons, who had come to Wyalong previously. He selected a piece of land and was preparing to use it in the normal way. The ironstone nodules had
naturally attracted his attention because he had experience in the Ballarat and Bendigo goldfields and also in Fiji. The first gold was found in quartz on the Pioneer Claim reef. While Mr Neeld Snr was prospecting the first claim one of his sons located gold-bearing stones just outside the selection and about 10 chains to the east of the former site. The reef from which these stones came was soon located and was afterwards known as the Dead Rabbit Claim and later still as the Easter Gift. Work was considerably impeded by the thick mallee scrub.

The third discovery was made by Harry Neeld on Klink's line of reef and was known as Harry's Find. It remained in the Neeld family and paid large dividends. Discoveries were made on sites known afterwards as Red Flag and the Currajong Mine, but no prospecting was done there. The most important discovery was made towards the end of October when some of the sons discovered gold-bearing rocks in the vicinity of what was known as the Prospecting Claim.

The family decided to peg out claims on 16 December, 1893; firstly the Prospecting Claim, then Harry's Find and thirdly the Pioneer Claim, fourthly the Christmas Gift and lastly the Dead Rabbit. J. WATT: p6.

Men began to arrive from the day the gold was reported and by the end of January 1894 there were about 500 men on the goldfield. It was not until the following March, when the first parcels of ore were crushed at Barmedman and good results shown, that the big rush took place and by the end of that month 10000 had arrived on the goldfield.

The fact that the field was worked so successfully was in no small measure due to the character of the ground, which over all parts of the goldfield could be worked with pick and shovel alone down to at least 150 feet. This made the sinking of shafts very inexpensive. As J. Watt observed (p 7): "As a consequence of this many of the reefs have been profitably worked which, had the ground been hard, would certainly have been abandoned."

By the end of 1894 there were six crushing machines at Wyalong, but these were reduced to four and two chlorination works erected when it was recognised that chlorination was the most suitable process for the treatment of rich ore.

In 1894 the following crushing took place at Barmedman and show varying rich ore:

<table>
<thead>
<tr>
<th></th>
<th>Tons</th>
<th>yielded</th>
<th>oz.</th>
<th>dwt</th>
<th>grs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neeld</td>
<td>13</td>
<td>&quot;</td>
<td>6</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Cassin</td>
<td>12½</td>
<td>&quot;</td>
<td>9</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Neeld No 2</td>
<td>17</td>
<td>&quot;</td>
<td>72</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td>Perry &amp; Party</td>
<td>17</td>
<td>&quot;</td>
<td>42</td>
<td>18</td>
<td></td>
</tr>
<tr>
<td>Conway</td>
<td>22</td>
<td>&quot;</td>
<td>103</td>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>
Keeth " " 28½ " 67 . .
Fraser " " 10½ " 39 6 .
Gorman " " 37 " 77 12 .
Smith " " 6 " 8 14 .
McMahon " " 4 " 10 . .
Lawry " " 14½ " 14 18 .

The greatest drawback to the development of the Wyalong goldfield was the scarcity of water and as there were no large watercourses in the vicinity, the warden had to set aside tanks and have races excavated.

One of the outstanding differences of this goldfield from others in Australia was the almost complete absence of alluvial gold. "The existence of so many rich veins at the surface makes it extremely probable that these veins have suffered denudation to some extent. Had the other circumstances been favourable alluvial deposits would have been formed. In the absence of these deposits we must therefore conclude they have not been so." J. WATT p. 14.

The unfavourable circumstances are:
a. the absence of hills and gullies in this flat country, where natural sluicing operations could take place.
b. The small of rain is another big factor.
c. The extremely fine state of the gold set free would mean that it would be scattered by the action of the wind and rain storms so prevalent in these regions.

As to the question why was this goldfield so long undiscovered, it may be pointed out that this was due to:
i. The absence of alluvial deposits, already explained above.
ii. The level nature of the ground with its almost universal covering of red soil.
iii. The absence of fresh water.
iv. The sparsely settled condition of the surrounding country, and
v. The very fine condition of the gold.

During 1895 the claims were steadily developed although there was some falling off of population, due to the discovery of gold elsewhere in Australia. The scarcity of water retarded an even greater development because water was very necessary in crushing operations. Coupled with this was the refractory nature of the ore/ from below water level. These factors tended to keep down returns. However it was established that the reefs were payable below water level.

The following is a list of mine depths in 1895:
Hildebrands 245 ft White Reef 185 ft
Hidden Treasure 225 Barrier 180
Pressers 210 Bantam 170
Bolte's 193 Currajong 160
Snowden & Party 185 Welcome Stranger 150.
White Reef, Currajong, and Welcome Stranger gave splendid returns.

During 1895 the new large battery of Nicholas and Raymond commenced work and was in constant use. Climo and Co also erected large works at a cost of £8000 for the treatment of tailings. The number of miners engaged was 8600, 500 less than the year before but the Report of the Department of Mines, 1895, hastens to add that the figures would rise again as several mines intended putting on more men.

The record year was reached in 1897 when 34750 oz were obtained. In that year "Wyalong produced more gold than any other mining division in the Colony." J. WATT; p7.

The Wyalong "Argus", dated January 5, 1898 in its editorial was justly proud that "no outside capital had yet come into the Wyalong field....."

In 1900 there was drop in the yield on the Wyalong goldfield because the mines were treating low grade ores which had been accumulating. The number of miners which had been 1600 in 1899 dropped to 1200 in 1900. In 1907 the number of miners fell to 462 and by 1910 only 150 men were employed on the goldfield.

The gold yields for each of the years of production were as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>Tons of Stone</th>
<th>Ounces of Gold</th>
</tr>
</thead>
<tbody>
<tr>
<td>1895</td>
<td>15634</td>
<td>24497</td>
</tr>
<tr>
<td>1896</td>
<td>30750</td>
<td>33900</td>
</tr>
<tr>
<td>1897</td>
<td>30940</td>
<td>34582</td>
</tr>
<tr>
<td>1899</td>
<td>15116</td>
<td>44675</td>
</tr>
<tr>
<td>1900</td>
<td>22387</td>
<td>32425</td>
</tr>
<tr>
<td>1905</td>
<td>10555</td>
<td>24708</td>
</tr>
<tr>
<td>1910</td>
<td>9000</td>
<td></td>
</tr>
<tr>
<td>1915</td>
<td>3800</td>
<td></td>
</tr>
<tr>
<td>1920</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In 1920 the Department of Mines Report stated that "Gold mining has almost ceased in this division." Thus a most important period in the history of Wyalong came to an end. Anyone interested in the progress of Wyalong during the first quarter century must have rejoiced that Wyalong had indeed found its staple, not the golden metal, but the golden grain.

Gold had been found in the Wyalong district long before it was found in Wyalong itself, in such places as Temora (or Bakers) 1879, Barmedman 1882, and later Reefton in 1895.

Before finishing the history of the Wyalong Goldfield we pause to remember the tragedy of the Barrier Mine disaster which took place on Saturday, 13 January, 1912, when five
miner lost their lives, through an inrush of carbon dioxide gas. Those who died were Frank McGuire, Jack Mulhall, Bert Navin, Jack Navin, and Rupert Nicholson.

Because of the conditions at the "Main Camp" (White Tank) the establishment of a township was considered to be an urgent necessity. Surveyor J. Richmond was given instructions in February, only two months after the discovery of gold to lay out a township for the new goldfield. He selected a site about one and three quarter miles east of the Main Camp. His reasons for selecting this site so far from the mining field were that: "It was necessary to keep off the area of the gold deposits; its suitability from a sanitary viewpoint; its proximity to the main Barmedman Road and its generally healthy location." Richmond completed the survey of the first four sections by 6 March, but this was considered insufficient it was extended to fourteen sections.

The whole of the township of Wyalong proper is mainly situated on a farm selected by the Need family, while the town of West Wyalong is built on farms owned by George Bolte and John Ryan. The whole of the township of West Wyalong is built on the farm of John Ryan, while the northern boundary of George Bolte's property extended from about Paul Meagher's residence to Central Railway Station and south to include Pig Tank. The farms of Need, Bolte and Ryan were resumed by the Government for mining purposes.

Joining Bolte's property on the west, south and south-east were the farms of Con Ryan, Philip Bolte, John Bolte and Donald Rankin. On the northern side of the goldfield were Robert Gagie and Sons, William Lange, Jacob Haub, Christopher Haub, Niel Nielsen, Conrad Hildebrand, E.T. Clark, Jacob Rootes and Sons, Wilfred Wells and Donald Fraser.

Wyalong, the original name of the old run and Parish, was decided upon as the name of the new township after consultation with the Mining Wardens, who also approved the street names. Most of the streets bear the names of the pioneers of the field or officials connected with its early history.

Early in March, 1894 there were no buildings whatever on the ground, but by 3 May, 120 to the value of £20 each had been erected. By the police returns the total population within 5 miles of Wyalong Courthouse, including both townships was, at the end of 1894, 4215 of which 3825 were males and 390 females, exclusive of children. Dept of MINES RECORD, 1894 p25. Wyalong was proclaimed a Village on 23 June, 1894 having obtained the necessary approval from Governor Duff on 19 June 1894.
The demand for allotments at West Wyalong continued, and the expected transfer of residential population or business activities from Main Camp to the Government Township did not occur. A huge population soon gathered round the White Tank "and notwithstanding my warning and advice an irregular narrow street was formed on the very quartz claims whereby the Main Camp or Wyalong West became an established fact". DEPT OF MINES REPORTS, 1894. p25. The warden was unable to lay a street 99 feet wide with cross streets of the same width in a position not likely to be auriferous, in accordance with allotments in the already surveyed town 2½ miles distant.

Finally, after much agitation Surveyor Richmond was instructed on 6 April, 1895 to survey the occupied area at West Wyalong (late Main Camp) and to prepare a design plan with the Main Street 66 feet wide.

The final survey of Main Street was carried out by Surveyor V.F. Tozer on 28 December, 1895 and the many irregularities and encroachments were at last straightened out.

The White Tank, an outpost of Wyalong No I Station and water supply for the goldfields in 1894.

"A Peg in a Gold Mine."—In the Fourth Level, Neida's Mine. A real old-timer, west.
MARSDENS.

Following the progress of the squatters and settlers to the inland of the Colony, small villages sprang up.

One of these was Marsdens (later Marsden), the name being derived from James Marsden who "took up" Lake Cowal Station in 1852 and also acquired the Billabong Run. The name Marsdens persisted until it was changed to Marsden in 1912.

The original village, thought to have commenced about 1866 was situated two miles along the eastern side of the Forbes Road from the location known as the crossroads and it was apparently a scattered hamlet.

Robert Butler and Thomas Williams were the first innkeepers with the first hotel being erected possibly before 1866. There were two butchers, a saddler and a school. The police station - a structure with a shingle roof - was situated adjacent to the police paddock, further upstream on the eastern side of the Bland Creek. A senior officer, a constable and a black tracker were attached to the station. Next was the "Pig and Whistle" conducted by Mr and Mrs Thomas Williams. About four miles along the Forbes Road was a roadside shanty which mainly sold bottled liquor. This shanty was reputed to have been visited several times by members of Ben Hall's bushranging gang. James Marsden established a dairy on the Bland Creek and sent butter to Forbes during the gold rush getting up to three shillings per pound for it.

A Post Office was established in 1866 and Lands Department records show that the township of Marsdens on the Bland Creek was surveyed in November, 1875. The design was approved by the Department on 30 May, 1877 and mention was made that a bridge was required over the creek. The Marsdens Post Office was flooded during the heavy November rains of 1878.

The Post Office was connected by telegraph to Morangorell and Young in 1875, the poles for this line being carted by Mr William Hughes (1830-1916) of Thuddungra.

By this time the Police Station was erected, but it was not until 21 July, 1879 that the first Court of Petty Sessions was established at Marsden, with Stipendiary Magistrate Mr S. Robinson.

With the evolvement of the cross roads intersection two miles south of the original village and following the outbreak of the Wyalong goldfields in 1894, the road to the goldfields and further afield became a very busy route.

Early in 1886 a reserve adjacent to the cross roads was
surveyed for a Government Township. The site was marked out for the two principal streets - Bimbella Street running north and south and Grenfell Road running east and west. Buildings of a more substantial nature and more modern in appearance were erected at the new site. The Police Station had a court room where Petty Sessions were held and there was a lock-up and stables. The Police Station closed on 20 April, 1931.

Other public buildings and business premises were: Marsden Hotel, Royal Hotel (rebuilt after a fire in 1882 and owned by Michael Curry), Post Office, School of Arts, blacksmith's shop, general stores conducted by Mr Thomas, W.J. Dempsey, and Collins and Hunter. Cobb and Co had a coach house and stables. There was Jenkins the saddler, and Samuel Pawsey's butchery and slaughter yards. Sam Flood had a Chinese garden to which he brought water by means of a water wheel from the creek. The race course and sports grounds and the Marsden Hall were all well patronised until the mid-twenties when the population began to decline.

Names of some of the families living in Marsdens before 1880 were John MacPherson, Charles Smith, William Meldren, Henry Meldren, Mrs E. Moriset, R. Rainey, James Ritchie, and Michael and Minnie Curry. Michael, who died 1899, aged 45 years, is believed to be the brother of Mrs Patrick Walsh Snr and is buried in the Walsh tomb in Grenfell Cemetery. The discovery of gold in 1894 and the beginning of a town at Wyalong made Marsden less important as a centre. With motor cars being introduced into the district about 1909 and with the improvement in roads and people shopping in larger centres helped in the decline of the town. Also the fact that the railway line had been built from Stockinbingal to Caragabal in 1916 rather than through Marsden again took away from the town.
The first mine put down in the district was in 1902 on the Trig Hill in Quinlan's "Nerang Cowal State Forest". The Mines Department paid £1 per foot to have the shaft sunk by the Ellis Brothers but there was no gold.

Gold was found in 1905 by Harry Kaiser in what is now the Burcher district, formerly Wamboyne (County of Gipps, Parish of Bena, Portion 4, No on Map 136). The workings went to a depth of eight metres long and three metres wide. H.F. Fitzgerald and party worked the mine in 1941. Up to 1967, 270 grams of gold worth $288 was produced.

There was quite a rush for a while and Kaiser's Hill was a hive of activity. Harry and Alf Nelson put down a shaft on "Wilga Vale" (No 177 on Map) and Harry Leadbitter Snr sank a shaft on top of the hill, but there was no gold in either. Leadbitter went to a big gully on Mark Fitzgerald's "Uplands". He struck a little gold at fifty feet, but went down to ninety feet and all he found was pipe clay. This came in handy for people for the whitening of their fireplaces - they came for miles around in order to obtain some.

Kaiser was on a good reef, but it was never a bonanza. The ore was carted to West Wyalong by Bullock teams to be crushed. The carriers were Jim Hughes and Herb Beazley. This mine petered out about 1909. The Wyalong Advocate, 18 May 1906 reported that Keyser (sic) was down 30 feet on a new reef with 10 tons at grass which was to be treated at the Billys Lookout Battery. It was also reported that Nelson, Leonard, Easdale and a couple of others had not discovered anything.

The Wamboyne Gold Mine (County of Gipps, Parish of Coringle, Portion 12, No 133 on the Map) was first worked in 1907. Later in 1935 G.W.J. Murray and party and in 1939 this was worked by H. Whiley. The average grades of 3 grams/ton of gold were found but the total production is unknown.

Another mine at County of Gipps, Parish of Bena, Portion 6, No 134 on map) was worked in about 1907 and again about 1970 but the amount produced is not recorded.

In 1927 a decision was made to build a railway line from Wyalong to Wamboyne. Rather than end the line at Wamboyne which was landlocked the Government pushed it on for a further four miles and named the terminus Eulgo. Seven years later the name was changed to Burcher, possibly called after Charles Burcher one time owner of Eulgo Station.
Billy's Lookout Post Office - reconstructed at Wyalong by Mr and Mrs Beckett.
BILLYS LOOKOUT.

Billys Lookout was between Wamboyn and Lake Cowal, and it experienced a gold rush just after Wyalong goldfields were discovered, although gold had been mined there intermittently between 1873 and 1894.

The name Billys (Billies) Lookout is said to have originated from a tragedy that occurred in the area. A young man named Billie and an older man were droving cattle in the area for Samuel Wilson, when Billie's horse bolted, and he was struck by an overhanging limb of a tree. When they returned to the station to report the accident he was in a state of shock, and kept repeating, "I said 'Billie, lookout.'"

The Town and Country Journal, dated 2 June, 1894 states that: "The old mining camp at Billie's Lookout had lately quite a new lease of life and seems likely to become a permanent township. Two stores have been built and are in full swing and other business places are being erected.

There are about 300 men here and prospecting is being carried out very energetically. There are a few parties on gold but not to any great extent - simply tucker and a few shillings."

Neil White Snr and Ned Harris played a prominent part in the discovery of gold at Billys Lookout. At the beginning of April, 1895 a report stated that in addition to the initial claims, three more claims had bottomed on the run of gold. The whole valley was pegged out and other gullies were vigorously prospected and there were four or five reefs with fair gold. Neil White and party were working a promising reef 18 inches to 2 feet wide. One shaft was down 90 feet to water level and others were down 70 feet and 30 feet. The three shafts were being sunk to the same level when connecting drives were put in and the stopping of water commenced. About 50 tons of fair stone had been brought to the surface.

From the workings at County of Gipps, Parish of Coringle, No 132 on Map, $2240 worth of gold was found (value in 1967). At least 2.17 kg of gold was found at an average of 9 grams/ton. There were shafts drives and shallow pits for a length of 400 metres by 100 metres wide. The sedimentary soils were silt, clay, sand, granite sediment, quartz pebbles and boulders. The alluvial gold was derived from unworked veins in the surrounding hills.

In the mine known as the Billys Lookout Reef (County of Gipps, Parish of Coringle, Portion 53, No 130 on the Map), shafts and drives were driven for a length of 200 metres and width of 30 metres. In 1894 the major primary materials were reported to be gold and pyrite, and the minor primary
material was galena. Cowthorns and party were working this reef.

Other mines in the Parish of Coringle (Nos 127 and 128 on the Map) also produced some gold but the amounts are unknown.

Billys Lookout had a hall and business houses, and social life included concerts, dances and cricket matches with the neighbouring teams at Marsdens and Wamboyn. Messrs Wilson and Stewart of Lake Cowal Station were President and Vice-President of the Billys Lookout Cricket Club.

On 16 August, 1895, there was a concert at Billys Lookout to celebrate the erection of a hall for the Miners' Club. This was followed by a dance "with an excellent supper". Dancing continued until 8 a.m. Following the concert Mr Morris, President and an old identity, and Mr Neil White addressed a large crowd of members and residents in the hall, which had been decorated by "ladies and gentlemen of the township".

In November, 1895 the Department of Education made a grant of £5 to the Billys Lookout Progress Association for the erection of a bark school house and furniture. Edward Morrison was the first teacher to be appointed on 13 April, 1896.

Although approximately 1000 miners and gold seekers congregated at the Billys Lookout goldfields, the period of winning gold was shortlived. Numerous shallow shafts - or diggers holes - were sunk at various other sites within the locality. However no further signs of gold bearing stone were discovered.

Robert Brenner operated a battery on the field and also conducted the only licensed hotel - which was closed in 1903. There were possibly a number of shanties on the goldfield because it is recorded that on a Saturday night in September 1895 there was a raid by the Marsdens police. Some liquor was seized and one person was arrested. He appeared at the Marsdens Police Court and was fined £30 or six months in Forbes gaol.

Some of the timber from Robert Brenner's Hotel was later used to build a shed on Mr Harry Bodel's farm at nearby Clear Ridge. Mr Clarke, who was Mrs Neil White's father, moved his hotel from Marsden to Billys Lookout.
The township of Ungarie derives its name from the pastoral holding held in 1866 by one Roger Frehilly. Its native meaning means "thigh". The area of the pastoral station was 29440 acres with a grazing capability of 1000 head of cattle. A small settlement began to rise to the east of the present township and in 1892 it consisted of two general stores, a Post Office, a hotel, a blacksmith's shop, a shop and a boarding house. R.M. Mackrell ran the Post Office and one store. The other store was run by D.A. Colbert.

An application was made on 30 November, 1891 for the establishment of a village. Surveyor Maitland reported that a village should be surveyed on the south bank of the Humbug Creek. Nothing was done about it until Surveyor Roberts reported in December, 1892 that a suitable site could be found on the northern side of the Humbug Creek opposite the present town. Surveyor Maitland surveyed the village on this site in September, 1893 and this was gazetted as the village of Ungarie on 31 March, 1894.

When the Wyalong-Lake Cargellico Railway line was constructed the surveyors placed the railway station on the side of the creek opposite the village. A suggestion to extend the boundaries of the gazetted township were approved and duly gazetted on 27 July, 1917.
BLOW CLEAR.

The Wyalong Advocate dated 8 August 1903 stated that a discovery of gold bearing stone had taken place at Blow Clear some 20 miles north of Wyalong by scrub cutters. The stone was found on the surface and further investigations went to show that a quartz reef is running north and south about twelve inches wide. Samples have prospected so satisfactorily that Brian McNamara and others have bought two shares in the prospective Eldorado for the sum of £20. The stone is of sugary, white quartz quality and said to contain gold freely.

Further Mining Intelligence in the Wyalong Advocate dated 19 August, 1903 stated: The prospectors, Clarke and party are down 20 feet on a 12 inch reef of white sugary quartz, and have commenced to put a crushing together. Stewart and party, No 1 North, are on a reef about the same width, but distinct from the prospectors reef. It is composed of flesh coloured quartz, opalised, and containing ironstone, and is assayed at the rate of 1 oz 14 dwt gold to the ton. A good deal of prospecting is going on in the surrounding country, which is also Crown Land. There is no outcrop to guide the prospector and most of the work consists of trenching or coteening. Altogether there are about 40 men working at the new find and the adjacent country and there is plenty of water.

On 19 September we read that Clarke and party, Stewart and party, Leadbitter and party all have a tidy parcel of stone paddocked.

On 7 October it was reported that John Thompson had struck a reef at the depth of three feet about a mile south of the prospector's claim and gold was said to be showing freely in the reef.
LAKE COWAL.

The Geological Survey of New South Wales has very little data available relating to the geological history of Lake Cowal. Many speculative theories have been suggested as to what might have occurred during the centuries gone by. There has been no official theory as to how the large number of trees had grown to such proportions on the bed of the lake during some period of the past. The trees - mainly red gum with well developed trunks and limbs, had been dead for a long period of time before white men first set foot in the area. The only logical conclusion that the Geological Survey can assume is that for a long time the waters held in the lake maintained a degree of purity, and later the water could have reached a level of salinity that the trees could not tolerate. This theory is only speculative, but most of the underground water in the catchment areas of the lake at a shallow level contains a high degree of salinity. The wet seasonal period of 1916–1917, when large volumes of water overflowed from the Lachlan River to Lake Cowal, provoked graziers concerned to bank off the low lying areas along the river to prevent flooding of their properties. Very little water has flowed to the lake from the river since that period. Major volumes of flood waters flow to the southern end of Lake Cowal from extensive catchment areas from which the principal flow is carried by Bland Creek. The upper reaches of the Bland Creek extend to the foothills of the Nimbooran Range, which is situated southwest of the town of Cootamundra.

Other creeks that empty into Lake Cowal are the Barmedman, Back and Duck Creeks. The upper reaches of the Barmedman Creek extend to southwest of the Barmedman township. The Duck Creek rises west of the town of Temora and continues along the eastern foothills of the Tungley ranges, joining the Barmedman and Back Creeks at a point four miles upstream from the Wyalong–Quandialla Road. From there the creek becomes Back Creek which empties into the Bland Creek in the vicinity of the former village of Marsden.

The flood waters that flow from the localities on the southern and south western side of Wyalong–Barmedman Road all converge into Back Creek in the vicinity of the Wyalong–Quandialla Road. From the areas north of Wyalong and Mallee Plains the waters meet Back Creek near the crossing on the Back Creek Road. The waters from Clear Ridge, mainly by way of Clear Ridge (or Sandy) Creek, run directly to the southern end of Lake Cowal near the station homestead.

From the eastern areas, mainly from Piney Range near the west side of Weddin Mountain and the Caragabal district, flood waters run directly to the lake, principally through the Marsden area. The run-off from these extensive areas
Lake Cowal abounds in wildlife.
all move northwards towards their natural basin — which is Lake Cowal. The natural fall of the terrain still continues on down the Lachlan to the Murrumbidgee River. From there it continues to the Murray River and thence to the South Australian coast near Murray Bridge. The waters from the Bland can really flow a long, long way.

The main bed of Lake Cowal comprises an area of approximately 90 square miles. Lying north to south, the length of the bed is about 16 miles, with an average width from five to six miles.

During the period 1916-1917, large numbers of water birds and fowl flocked to the lake. Thousands of the various species of wild ducks and large numbers of black swans, pelicans, gulls — including sea gulls, cranes and numerous varieties of smaller birds. The dry trees in the waters of the lake provided excellent perches for the birds. It was during this period that Lake Cowal was declared a bird sanctuary. No open season for the shooting of birds was allowed. The declaration of the sanctuary became a controversial subject, especially when two years later, the waters of the lake were rapidly drying up again.


1946 Dry. Useful grazing in summer and early autumn, but cut out badly in winter.

1947 Useful grazing, with small floods, about ½ country covered in December.

1948 Good grazing, summer and autumn, about 2/3 covered in June — receding at end of year with excellent grazing. Some fence repairs.

1949 Good grazing, about ½ full of water in spring.

1950 Country inundated to highest flood level in March.

1951 Only a little grazing along fringe of water.

1952 Flood level again in April.

1953 Still 2/3 covered at end of year.

1954 Small flood early in year, but only about ½ covered at end of year.

1955 Quite a few miles of fence renewed. Flood rains again in March, covering most of the country.
1956  Filled to record level again in April.
1957  Only fringe benefits, ¼ full at end of year.
1958  Useful grazing, water receding fast in summer, and
country inclined to scald.
1959  About ½ covered in March, water getting away quickly
by end of the year.
1960  Completely dry and refenced by end of autumn.
completely covered by water again in August.
1961  Not much use. Some grazing in summer.
1962  Filled again in January. No use through winter.
1963  Filled again in winter.
1964  Some flooding in spring, practically covering all the
country.
1965  Useful grazing in spring with water getting away.
1966  All dry and fenced by end of autumn. Complete renewal
of fencing. Splendid grazing.
1967  Good all year.
1968  About 500 to 600 acres flooded in June with further
flooding in August - covering about ½ the country.
Good grazing on flooded country in summer.
1969  Started to flood in March and continued till it filled
completely in June.
1970  Had not receded much and filled again in June from
Bland Creek.
1971  Not much use throughout the year.
1972  Water started to move back in dry spring, with cross
fence dry and back to Channel near lignum by end of
year.
1973  Lake useful in autumn and winter and a bit too good in
spring with terrific growth of trefoil. Country about
½ covered but wet conditions in November covered most
of it and forced us to shift sheep.
1974  Gradually filled right up and running out Manna Creek
2/8/74.
1975 Still flooded and more flood rains in October caused river water to overflow Lake and run Manna Creek early November.

1976 Manna Creek again a banker after flood rains in January. River water again reached lake in spring running Manna Creek with small flow - dry at end of year, but lake virtually full.

1977 Not much use, but back to cross fence in lignum by end of year with some restricted grazing.

1978 Lake promising but big winter rains again flooded big Lake with small overflow to little lake early October.

1979 Not much except fringe benefits, but back to cross fence at end of year and receding fast in dry conditions.


1981 High stocking rates and dry conditions took toll and lake not carrying many stock through autumn. Approx. 600 acres grain sown Deepwater sump and nicely away when minor flood in July took water to Bolte's fence and ruined the crop. Wimmera Rye responded well, also barley grass, but large numbers again carried till end of year. Lignum paddock dry and Deepwater almost dry by end of year. Most of the country scalded except where cane grass growing thicker than ever.

1982 Lake running fair number of sheep early in year - mainly on dry Wimmera Rye grass. Flash local flooding after big rains in March caused water to reach Bolte's and presented problems and arduous work in getting out with minimal losses. Big numbers in Spring and lake completely dry by end of November.

1983 Local storm early January flooded approx. 800 acres Deepwater and Plain, with minor flooding in Lignum. Splendid response from couch grass, a great relief under extreme drought conditions with about 4000 sheep on Branhope. With winter rains water into Bolte's by August and almost to Roy Wood's end October.

1984 Big summer rains early in year with local and Bland flooding caused the big lake to overflow about 1st February and running out Manna Creek by 11th February. Of no use for most of year. Little lake also full.
1985 Big Lake of very little use for year with a fresh
towards end of year, virtually filling big Lake again.
Little Lake quite useful, especially W.J.'s and drying
fast.

1986 Water receded quickly in Little Lake, with good
stocking rates. Also allowed opportunity crop to be
sown with tremendous results. A fresh in Big Lake
during the winter spoilt hopes of useful spring, but
water getting away fast at end of year and becoming
useful. For the record we lost about 70 of Mrs
E.'s wethers in long paddock (Narara) due to poison
attributed to algae in water.

1987 Bland Creek had run during year but minimal effect on
Lake. Some light fringe grazing in late spring and
water well back by end of the year.

1988 Lake dry by end of March but with lack of any showers
no response of feed on deeper country. Fair amount of
crop sown, but it did not survive a fresh in Lake
which put the water into Bolte's. Good grazing.

1989 Lake dried out early in year and preparations made for
sowing but water won the race. Turned very wet, with
some flooding from River in early winter, with Lake
about half full.

1990 Flood rains in autumn with the Lake overflowing from
Bland and River waters and running out Manna Creek by
about 1st May. Ceased running about end of the year.

1991 Little Lake almost dry by end of year, but big Lake
had not receded much, except fringe benefits late
spring and early summer.
ABORIGINAL DATA.

When the first settlers arrived at Lake Cowal there appeared to be ample evidence that the area had been inhabited by numbers of Aborigines of tribal proportions. The Bland had been referred to as a meeting place of the tribes of the Lachlan and Murrumbidgee Rivers.

Many of the old gum trees on the western banks of the lake showed extensive carvings on their trunks. The custom of carving a trunk of a tree near a burial plot could be proof that numbers of aborigines had been buried in the sandbanks surrounding the shores of the Lake.

In parts of the dense mallee areas of the district it was apparent that gunyahs had been erected. Practically all the hill areas bore signs of habitation by our first inhabitants. During the early days of Marsdens an aboriginal camp was situated along the eastern banks of Lake Cowal between the village and the Lake.

Samuel Wilson wrote in the RAHS Journal and Proceedings Volume III-1923 p. 374 that aborigines had large camps on the site of the present Lake Cowal station homestead, and numerous middens were found there.

Mrs. Sarah Musgrave, a pioneer of this district, wrote that the Bland was a famous battleground of the Lachlan and Murrumbidgee aborigines. She had remembered an occasion when two aborigines were killed by the same spear and another had his head knocked off by a boomerang. They had their sex initiation ground somewhere in the neighbourhood where they initiated their young men. John Regan discovered the area one day. This was on the site of the future Wyalong. The area was not used again because the aborigines said it was desecrated.
TOPOGRAPHY, GEOLOGY AND CLIMATE.

The eastern area of the Bland Shire, is included in the south-western slopes for rainfall reports and it is mostly flat, whilst the western part included in the Central western plains has many hills. The dividing line runs between the towns of Wyalong and West Wyalong.

East and north of West Wyalong the region is generally flat whilst the south and west are more undulating and have some sizable hills with high peaks.

An interesting physical feature is the line of hills which runs from North Yalgogrin across to Earnedman and these hills form a watershed. The streams rising on the northern side eventually flow into the Lachlan River and the various creeks have been listed elsewhere.

The topography of an area influences plant life in various ways. The types that grow on the hills are often quite different from those of the lower country. For example, Hill Red Gum (Eucalyptus dealbata) prefers hilly areas. Waterways, especially those subject to flooding and causing wet or damp conditions for considerable periods, are bordered by plants which can withstand these conditions where others such as the River Red Gum (Eucalyptus camaldulensis) would perish.

Plants depend largely on the soil for their food. Soil is derived from broken down rocks. Rocks differ considerably in the amount of plant food which they contain. Thus a brief geological survey has some importance when studying the native flora of any given area.

In the Bland Shire there is a noticeable variation in the geology. It varies in age from the Upper Ordovician (the rocks of that period would have been formed hundreds of millions of years ago) to what is geologically known as Recent. Some of the rocks are Sedimentary and were made from the sediments of older rocks and laid down under water, mainly sandstone and shale. Then there are Igneous rocks. These have been formed from molten magma intruding into other rocks and cooling down, such as granite and dolerite. We also have Metamorphic rocks in the Bland Shire – the name changed form. These rocks were either sedimentary or igneous to begin with and then, because of the great stresses and strains, acccompanied by heat and chemical charge, they become something different, as in slate and quartzite. Slate was originally shale and quartzite was sandstone.

The following igneous rocks occur in this shire: granite, granophyre, grano-diorite, rhyolite, porphyry, norite, and dolerite. Among the local sedimentary rocks are sandstone,
shale, conglomerate (pudding stone), and travertine (a limestone). The metamorphic group is represented by such rocks as slate, quartzite, schist and phyllite.

Very ancient rocks, probably belonging to the Silurian period, occur towards the eastern end of the shire. They are sheared conglomerates, sandstone, shale, schist and phyllite. The largest area includes Wamboyne and the railway sidings of Corringle, Lake Cowal and Clear Ridge. The Bocberoi Hills which cross the Marsden Road about eight miles from Wyalong belong to this period. Evidence of tremendous pressure is seen here as the rock strata instead of being flat are just about vertical. Much of this rock is talc schist, a lightish grey colour.

Large areas of granite type rocks occur in the Bland Shire. It was from the quartz veins of these rocks that gold was obtained in the local mines. The rock from the mines is granodiorite, a black and white rock.

The granite belt stretches northward from West Wyalong and includes Wyrra, Calleen, Girral and areas north and south of Ungarie. There is a long strip going south east from Walgogrin through Buddigower, another area includes Wargin, and another area lies between Thulloo and Kikoir, but does not include those places.

The only other area is very small, but very interesting. It is at Wyalong and about two miles north and south of it. Chinese market gardeners are excellent judges of soil and so for many years they produced excellent vegetables from the rich soil of Wyalong. The soil of Wyalong is more fertile than that of West Wyalong, much of which is covered by ironstone gravel over clay. There is an outcrop of conglomerate, sandstone, quartzite, siltstone and shale probably of Upper Devonian age on the north west edge of Lake Cowal.

Practically the whole of the Shire east of Wyalong is covered by Tertiary to Recent deposits. They include alluvial clay, silt, sand and sandstone. On the whole the resulting soil is fertile and provides good plant food.

Bland Shire lies within a region of uncertain rainfall and its variability has a big influence on the vegetation. Plants have to adapt themselves to long dry periods and then cope with wet seasons as well. Taking the Shire as a whole, there is not much difference in the average annual rainfalls. It is the variability of the temperatures which influence plant life rather than the average. For example, between 1951 and 1956 Wyalong had an average maximum temperature of 18.18 degrees Celsius and a minimum average of 9.4 degrees Celsius, but this information does not reveal the heatwaves when the temperature reached over 43 degrees
Celsius in the shade and the cold frosty nights when the thermometer fell to zero or less.

Another important factor with regard to plant life is the absence of clouds on so many days of the year and the high rate of evaporation. The average annual evaporation for West Wyalong is about 57 inches compared with the average annual rainfall of about 19 inches.

The relative humidity for the area is low. There is a good deal of calm weather, particularly in the autumn and winter. Probably the most prevalent wind is that from the south west and when it is not moisture laden it is a particularly drying wind. The softer easterlies are not common. Those from other quarters make the temperatures soar in the summertime.
KEY TO MINES AS SHOWN ON EXTRACT OF THE FORBES METALLOGENIC MAP included in these notes.

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<td>&quot; &quot; Deep leads</td>
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**Geological Reference:**

- Fault
- Anticline
- Syncline
- Approximate
- Concealed

**General Reference:**

- Major Roads
- Railways
THE FLORA

by Late Mrs Anne Mitchell R.Sc.
(as printed in "West of the Bland" - a History of the Wyalong District.

It is fortunate that our early explorers were also botanists or took botanists with them on their expeditions. After Blazeland, Lawson and Wentworth crossed the Blue Mountains in 1813, Convoy Lachlan Macquarie sent various expeditions into the interior of New South Wales. The headwaters of the Macquarie and the Lachlan Rivers were discovered but no one knew where the streams went. It was thought that they might flow into a large inland sea, so, on 6th April, 1817, Surveyor John Oxley's exploration party, which included the botanist, Allan Cunningham, left Bathurst to trace the course of the Lachlan.

About three weeks later they reached the Lachlan and followed it for some weeks. Then, to their surprise, although no rain had fallen in that area, the river began to rise and the water rose above its natural bed. Fearing they would be caught and drowned by the rising waters, Oxley decided to leave the river at a point not far south of where Yarralumla today is day before leaving as they planned a flat surface on the large scale of a cartographer and left the following notes: J. Oxley, G. W. Evans, A.T. May 17th 1817. After leaving the river the explorers turned south-west, hoping to reach the neighbourhood of Cape Northumberland. (This cape is situated in the extreme south-east corner of South Australia).

It was during this stage of the journey that the party traversed a portion of what is now known as the Blad Shire. They probably passed east of the present Ungarie about 21st May and were also close to the sites of Yalgogrin and Weetahle before reaching Mt. Alton (now known as The Peak) on 26th May - a distance of about 100 miles. They continued south-west until they reached Mt. Broughen, (now called Mt. Binya). An inscribed monument at this point bears extracts from Oxley's journal. From there they travelled in a northerly direction on the western side of Cocoparra Range which they named Peel Range. No doubt in part of their journey they went close to where Rainbow Springs now stands.

The explorers reached the Lachlan River again on the 23rd June and followed it until for 14 miles with the Murraybridge (although they did not cross it) with the Murray. They turned back and in early August crossed the river near the northern end of the Gooboberry or Bolloon Range. A monument marking the spot can be seen on the Lake Cargelligo-Condobolin Road.

From there they travelled overland to the Macquarie River and thence to Bathurst after an absence of four months.

Oxley's report of New South Wales states that they went over country "of the most miserable description. He doubted that "these desolate plains would ever be visited by civilized man." On 20th May Allan Cunningham noted in his journal: "Continued our course due S.W. over a most sterile, dry, scrubsby flat country, notorious for the uniformity of its productions being the same as passed yesterday" (Cypress Pine, Boree, Bullock or Belah) "and spreading shrubs and thistles which we have seen all day.

Oxley also gave an unfavourable report of the Lachlan River, saying that it was probably a flooded marsh in winter and a chain of ponds in summer. Cunningham's journal indicates that 1817 was a very dry year and this area was in the grip of a drought. The weather observation were very similar to those of the year 1967, exactly 150 years later (i.e. for May and early June), Oxley's party left the dangerous waters of the Lachlan only to endure the ravages of drought. No rain fell and much time was spent looking for water which was often stagnant and foul. Their horses suffered from the lack of feed and water and most of them died. The men's provisions were so low that they ran out while they were near Binya they would have pushed on and found the Murray. They were about 30 miles farther south and thence to the Murray. However, that was not to be and to save his men Oxley turned towards the north again to get back to the Lachlan.

Oxley noted of Cunningham was impressed with wattle which covered the river flats in the vicinity of the Lachlan. Cunningham wrote on the 15th May: "The soil of these flats is of a tenacious soft clay quality. The Cupressus glauca (White Cypress Pine) is frequent, forming small timber trees scarcely exceeding 25 feet, and the many deep red and coppery Eucalyptus are sufficient to account for the coldness and sterility of the soil." On 18th May when they left the River and turned south-west "the country became exceedingly brushy and assumed a greasy gloominess in consequence of the great numbers of Acacia pendula (Boree) and Rhapodia dilatata (a Salt bush) which were the two predominant shrubs. The soil is a loose red earth with a large proportion of sand." As they continued south-west, trees such as Eucalyptus micrantha (Snappy Gum) and Cypress pine were passed - also Kurrajongs and Yarran interspersed with Boree.

As they drew nearer to where Ungarie is now, Cunningham wrote "Continued on our course due S.W. over a most sterile, dry, scrubby flat country notorious for the uniformity of its productions, being of the same as passed yesterday." The taller timber was white Cypress pine and the smaller Bullock or Belah and Boree. Farther on they saw Native Cherries and a "beautiful tree up to 30 feet of very spreading habit, with branches very slender and pendulous." (This could have been a Wilga). Hop bushes were also in evidence. The next day they continued the S.W. journey and passed through "the melancholy Acacia pendula." Today we think the Boree a very attractive tree if not marred by an insect pest. On the sides they saw Ironbarks and Cypress pines and a number of shrubs such as Tea Tree, Green and Mallope (?), White Malope, Paper Bark and a tree the men called Snakewood, with rough and scaly bark. Mistecoe was common on the trees. The vegetation they encountered on 23rd, and 24th May was the same as that found today on the virgin areas from West Wyalong to the Murray. The plants previously mentioned are the most common but our Blue gobies (both red and white), Goodenias, Eriostemon, Metaleuca (one of which was probably our Broom-bush), Blue daisy bush, Clover bush and the twining Mallope Vine. The last evening they spent in our area they disturbed a large emu and two young kangaroos who were feeding upon the trifling herbage, which the sterility of the country can only produce in small patches."
PLANTS SEEN BY ALLAN CUNNINGHAM WHILST EXPLORING THROUGH WHAT IS NOW THE BAND SHIRE, FROM 18TH TO 23TH MAY, 1817

(A comprehensive but incomplete list).

Cypressus glauca (White Cypress Pine) now called Callitris huggingi (C. glauca), Acacia pendula (Boree), Rhagodia dilatata (A Salt-bush), Eucalyptus microcarpa (Bastard Box) now called Eucalyptus maculata, Pimelea colorata (Snappy Gum), Atriplex polycarpa, Atriplex gracilis, Arthrotrichie angustifolia, Ziera pulchella (pulchella means pretty). Extrozia rugosa, Sida species (Paddys Lucerne), Atris decurrent now called Olearia decurrenta (a Daisy-bush), Sarticulata heterophylla, now called Brachiton populneum (Kurrajong), Asclepiadaceae (Crepe Myrtle), Podocarpus on small Cypress, Eucalyptus sideroxylon (Western Ironbark), Casurina (could be Bullroak or Belah), Lantana filiformis, now called Amyema probably linifolia (Mistletoe), Zygopogon (Twin-leaf), Daviesia (Pea-flower), Lophostemon sp. (Tea-tree), Eucalyptus acacoides, Eucalyptus prunus (White Malley), Melaleuca sp. (probably Broombush), Goodenia bifolia (could be present C. Ovalis), Eriostemon rhombifolium (a Wax-flower) now E. disformis, Prostanthera nivea (White Mint-bush), Prostanthera coccinea, now called Prostanthera aequalithoides, (Placer Mint-bush), Myoporum gracile (belonging to the Booballia group), Melaleuca sp. (a Paper-bark), Cassytha (Malley Vine or Devil's Twize), Shrubby Aster (probably an Olearia), Goodia lolyfolia (Clover-bush or Golden Tip), Erodium (Crowfoot), Aster oculatus, now called Akearia ramosa (Twygg Daisy-bush), Syngonia (a Daisy of some kind), Westringia triflora, now called Westringia cremnola (Australian Rosemary), Bignonia okezie, now called Pendorea pandorana sub species okezieyi (Western Wonga Vine), Pentaandria monogynia (Rutaceae). Extremely likely that this is now called Geeria parviflora (Wilga), Dodonea cunninga (Wedge-leaf Hakea), Pultenaea (Native Berry), A "superstities" tree from its description was very likely, Heteroderadmir oleifolia (Rosewood).

It is impossible to decipher some of the plant names recorded in the journal. Also some of the names have been altered, partially or completely.

Cunningham does not mention grasses. No doubt they were included in the "tilling herbs" that had been eaten by animals or whitened by drought, leaving no means of identification. Obviously the explorers did not come close to the site of West Wyalong for Cunningham would certainly have observed our Blue Malley. (Eucalyptus fruticorum). It is not possible to tell whether he observed Bulloaks or not, or both. He merely states "Casuarina." Bulloaks are Casuarina luchmanii and Belahs are Casuarina cristata, both of which grow in this area. He does not appear to be interested in the fauna of the region, especially for kangaroos, emus and snakes, and that interest was not scientific. The Aborigines described their tolerance of the explorer for some time. Time and time again we read of finding their recently vacated camps, of hearing them and members of the party seeing them. The natives would never have seen a white man before. With their common sense bushcraft they easily could have wiped out this expedition. It is sad to think that the white man's coming would have led to the destruction of various kinds for this geographic area.

Our native flora looked after itself very well for thousands of years and even the advent of the Aborigines 20,000 years ago did not disturb it unduly, as they were neither pastoralists nor agriculturists. They did not dominate the plants, but lived with them using this and that, such as Nardoo (Marahina drummondii) and Yarn (Mircocarya acapetra).

Now the white man is here and much of the native flora has disappeared, either by clearing; by pests such as rabbits, or being replaced by weeds; among them, Cape Weed (Cystostemma calendula) and Skeleton Weed (Chondrilla juncea). The growing interest in our native plants in the last few years should lead to action to preserve our unique flora from extinction while there is yet time.

To get water and retain it has been the greatest need of our plants and they have developed methods of doing so. One striking example is the way in which some of the leaves of eucalyptus. On a hot day the oil volatileises and the leaves have a protective layer between them and the sun, thus keeping down loss of water.

Some wattles (acacias) have finely divided leaves, such as the Wyalong Wattle (A. cardilobata), many of them, through sad, have gone and have scattered their leaves. The leaf-stalks, or phyllodes, act as leaves. They are tougher and give off less moisture than a leaf. As seedlings, all wattles have pinnate leaves. If it is the phylophyle type, such as the western Black Wattle (A. bakoides), the transition stage can be seen as it gradually changes. When grown in the wetter climate of Melbourne the leaves of the "long Wattle" are much larger. In the Casuarinas, among them the Bull Oak and Belah, the leaves are reduced to scales and the wiry branchlets act as leaves.

There are numerous other examples of the adaptation of the plants to dry conditions. In the drier areas it does not seem to be the quality of the soil which is the governing factor in the distribution of plants, but rather its ability to retain water. Some plants are more adaptable than others and occur throughout the shire, while others are localised. There are at least 18 different species of eucalyptus in the area. Malleses usually occur on solonized brown soils, but those around West Wyalong are on decomposed granite. The best known is the Blue Malley (eucalyptus fruticorum). The Broad-leaved Malley Box (E. behraea) is called Bull Malley locally. It grows naturally only in the Wyalong district. Other malleses are Malley Gum (E. gracilis), Green Malley (E. viridis), White Malley (E. dumosa) and Red Malley (E. olorea) and Narrow-leaved Red Malley (E. fuscunda).

On stoney ridges with poor shallow soils Ironbark (E. sideroxylon), Hill Red Gum (E. dealbata) and Hill Gum (E. dewera) thrive where others would die. Currawong (Acasia cunneata) and Black Pine (Callitris endlicheri) are often associated with them. At Narrab, Drooping She Oak (Casuarina stricta) also occurs.

Coral Box (Eucalyptus woodiana) is scattered through the shire on red soils, whereas the Western Grey Box (E. microcarpa) prefers good heavy soils. The Box with the roundish shining fruit, Bimble Box (E. populnea) is drought resistant and is found mostly on poor still clay soils. The presence of Yellow Box (E. melliodora) is considered in indication of good soil, usually heavy alluvial. It is our best honey tree.
River Red Guns (E. caesaldinula) thrive where there is an abundance of water and occur at Lake Cowal and along the creeks. Black or Flooded Box (E. largiflorum) lives on heavy alluvial soils subject to flooding and occurs in the Lake Cowal area. Fuzzy Box (E. conica) occurs on low land along straights. Narrow-leaved Ironbark (E. crebra) often grows in forests with cypress pines. It occurs in the Burcher area.

Other district trees are the Kurrajong (Brachychiton populneum). It is both handsome and useful. Where there is Belah (Casuarina eristata) the soil is heavy, and the same is true of Boree or Myall (Acacia pendula). Bull Oak (Casuarina lochmannerii) is found on a variety of soils. White Cypress Pine (Callitris bigelovii) is widespread in the district on good sandy loams which are well drained. It is a valuable timber tree and is white and resistant. Many of the forest areas have been cut out to fulfil the demands for timber.

The Mallee Pine (Callitris preissii) occurs in the Westall area. Its common name is apt as it has several stems and is small. The Wilga (Geijera parviflora) is usually found on the heavier soils. It is a very attractive tree and can be used for shelter.

Other trees which grow in the shire are Rosewood or Beirigan (Heterodendrum oleifolium), Quandong (Eucarya acuminata).

Butter Bunck or Western Pittosporum (Pittosporum phylliraeoides) is also known as Beirigan. The hard fruit is yellow and opens to show sticky orange-red seeds.

Warrior Bush or Carrant Bush (Aphyophyllum anomalum) is a small tree with almost leafless branches. It has an air of great antiquity about it. Budda (Eremophila michellii) is a small tree with graceful light green foliage and white or purplish bell-shaped flowers. It is sometimes called Sandalwood. Emu Bush (Eremophila longifolia) often only a shrub, occurs on a variety of soils. It has short tubular flowers that are pink and long, and is sometimes called Beirigan. Sugarwood (Myoporium platycarpum) occurs chiefly on sandy loams in mallee country. It exudes a sweetish resin, and is also known as Dogwood and Sandalwood.

Yarran (Acacia homalophylla) is fairly widely distributed on a variety of soils. Native Cherry (Exocarpus cerasiformis) is an attractive tree, looking rather like a plum. It seems as if the tree is outside its fruit. In reality the “fruit” is the enlarged berry-like, bright-red stalk and the “seed” is the real fruit, a small nut. The Joined Cherry (Eucarpus aphyllos) has the same type of fruit, but is not attractive. It is leafless with cros-crossed hard, almost thorny, branches and is usually a large shrub. Moonah (Melaleuca pubescens) grows in sandy soil—a small spreading tree with two-inch white “bottlebrush” flowers. It is sometimes called Black Tea Tree.

Broom Brush (Melaleuca uacintata) is usually a shrub in this area. It contains oil which was sometimes extracted from it in the early days. Needlewood (Stakea cephalosperma) has a fairly wide range, and the needle-like leaves are about two inches long. The woody fruit opens and trees two dark, winged seeds.

Of hybrid Eucalyptus trees which have not been mentioned there are at least 40 different species within the shire. With the exception of the hybrids it is likely they would have all been here when Oxley and Cunningham passed this way in 1817.

So far 21 different wattle species have been identified in the area. No doubt there are more. The most famous is the Wyalong Wattle (Acacia cardiophylla). It occurs in the Booborare Forest, and a few miles west of West Wyalong. It favours the banks of dry watercourses. It is a beautiful free-flowering shrub, with rich yellow flowers and bipinnate leaves, the leaflets being very small. Nurseriesmen prize its beauty in their catalogues. It should not be confused with Deanes Wattle (A. deanei) which is much more common. In this species the leaflets are larger and not such an attractive green. The young leaves and branches are usually tinged with yellow and the flowers are paler than those of the Wyalong Wattle.

Western Black Wattle (A. halicoidea) is common in the district. Its “leaves” are up to five inches long and half as much wide. The flowers are bright red. Other wattles are: Knife Wattle (A. cultriformis), Showy Wattle (A. decora), Needle Wattle (A. rigens), Kangaroo Thorn (A. arnata), Grey Mulga (A. brachybotrya), Dogwood-leaved Wattle (A. rigidophylla), Streaked Wattle (A. latifolia), Millet (A. oswaldii), Buany Bush (A. rotundifolia), Also A. Trimeura, A. aspera, A. schepholia, A. densiflora and A. flexiloma. The last named flowers in July and brightens the landscape.

Among the most beautiful of our shrubs is the Purple Mist Bush (Prostanthera ovalifolia). Its colouring varies from lavender to purple. Some plants bear white or pink flowers. It seems to favour hillsides and occurs at such places as the Booborare Hills, Mt. Narrish and hillsides in the Alleena area. The Scarlet Mist Bush (Prostanthera aspalthoides) has a wide distribution. It grows about three feet has tiny bright green leaves and bright red flowers.

Austral Indigo (Indigofera Australis) is another beautiful shrub with blue-grey pinnae leaves and long sprays of rosy-mauve flowers. There are seven different species of Hopbush (Dodonaeas) all of which are attractive when bearing their hips. The Wax Flowers (Eriostemon) are represented by the Long-leaved Wax Flower (E. myoporoides) in the south of the shire and by E. densiflora, which has plum little aromatic leaves and is covered with white starry flowers. The Goblin Grevillea (G. floribunda) with its intriguing yellow and brown flowers grows in similar areas to the Purple Mist Bush. Grevillea anethifolia, a smallish shrub with highly perfumed white flowers occurs at Gubbunga. Around Westall is another Grevillea with red flowers, as yet unnamed. Desert Cassia or Native Daphne (Cassia eremophila) is described as one of our most beautiful shrubs. It is widespread in the area. The local Tea Tree (Leptospermum trivalve) is a lovely sight in the spring when covered with small white flowers. Two hardy attractive shrubs are the Common Fringe Myrtle (Laytirix tetragon) and the Fringed Heath Myrtle (Micromyrtus ciliata).
Among the smaller plants there are many underbrush, including Daisy buttox, everlasting, pea plants, orchids, rushes, herbs and bulbs. The Rock Fern (t. heimeliasis heinolosia) is widespread. The Nardo (Maranta drummondii) which looks rather like a clover in the ghillias, is also common. Among the climbers are False Sarsaparilla (Hardenbergia violacea), Western Wonga Vine (Pandorea pandorana oxleyi), Clematis (C. microphylla), Parasite eucalyptus with highly perfumed mustard-coloured flowers, sweet apple-berry (Billardiera cymosa) a shrubby climber rare in N.S.W. and Glycine canescens, with sprays of small pea flowers.

Many overseas grasses have become naturalised here, but among the original native grasses are Corkscrew or Variable Spear Grass (Stipa verisibalis), Liverpool Plains Grass (S. aristilimma), Soft Spear Grass (S. mollis), Feather Spear Grass (S. elegantisissima), Warrego Grass (Parapaludalis jubilorum), Slender Panic (Panicum constrictum), Hairy Panic (P. auffertum), Wallum Panic (P. xanthicola), White-top or W草坪panic (R. caudata), Brusht Wire Grass (Arista behriana), and the Wire Grasses of "Number 9." (Arista ramosa, A. jericobasis, and A. Calyceena), Umbrella Grass (Chloris truncata), Purple Love-grass (Eragrostis tasmanica), Clustered Love-grass (E. elongata), Grey \"sand\" Grass (Amphipogon carinatus), Button Grass (Dactylis glomeratus) and Spinale (Spinale paradoxum).

The native trees were put to many uses by the early settlers, who proved themselves adept at improvising from what materials were available. They built and roofed houses, built fences and sheds, made bullock yokes, and even cooked kurrangoe leaves as vegetables.

The Grey Box proved to be a very useful tree. Box bark was used for roofing houses, bushes, and sheds by the early settlers and miners. Sometimes even the walls of box bark. The bark was attached to a frame of White Cypress Pine. The settler would choose a big tree with good, straight bark. The operation had to be carried out when the tree was living, possibly after a good rain, as the bark then peeled off in large sheets, varying from half to an inch in thickness.

To remove the bark one scarf was cut low down on the tree and another higher up, according to the length of the sheet required. The strips were laid lengthways up the tree. A curved stick with a wedge-shaped point was used to pry the bark off the tree.

The curved sheets had to be flattened, and this was usually done by placing weights on the bark, but sometimes a small fire was lit underneath to straighten it out. The bark sheets were placed on the framework in the same way as galvanised iron is today, and were then kept in place by timber being laid across them and secured. These bush roofs shed the rain and were comparatively cool in summer. They lasted many years. The Grey Box was sometimes used as fencing posts and the timber was also used to some extent in brick kilns and bakers' ovens, but Cypress Pine was preferred.

Box and ironbark were used extensively for making charcoal, which was used for large work by blacksmiths and farmers. A pile of wood, arranged in layers, was covered over with earth and sods at both ends. A fire was lit at one end and the draught carried it through to the other end. When properly alight and the logs reduced to charcoal the pile was thoroughly sealed off and left for several days to cool down. This procedure prevented the coals from turning to ash. Box was the chief timber used for firing the boilers in the mines.

Ironbark fencing posts lasted a long time. They were fairly resistant to white ants and resistant to fire. The bark from ironbark was used extensively for heating steel tyres, prior to fitting them on to wagon and sulky wheels. Once the tyres were in place on the wheels cold water was applied to make the metal shrink and fit tightly.

White Cypress Pine had, and still has, many uses. One of its great advantages is that it is white-ant resistant. Pine was used in the construction of houses and was also used for lining roofs. Posts were used for rafters and battens. Fencing posts were sometimes made of pine. It was easy to split and saw and was straight, but it was not fire resistant. Young round pine rails, not less than four inches at the small end, were used extensively for underground mine props. Brick kiln owners used pine almost exclusively, as it provided a quick hot fire. It was also popular for bakers' ovens. Rabbit pits were lined with White Pine. Big pine trees were preferred to small ones for the building work. Some rafters in an old local shearing shed were over 30 feet long and without a knot in them.

Bull Oak was used for rails and firewood. It makes a very hot fire. Sometimes it was used to make bullock yokes, but they were not as good as those made of Kurrangoe.

Kurrangoe was splendid material for bullock yokes and one skilled man could make a yoke for two bullocks in two hours. There were four holes in the wood for the iron bows to pass through. Red hot rods were put through these to toughen the wood. Kurrangoe leaves were valuable fodder in dry times.

Beleg provided good fodder. Boree also yielded fodder and fencing posts. Posts from old Boree trees are hard, and last a long time. There are some very old ones on a property near Yalgongia.

Other trees that provided fodder of some value were Wilga, Rosewood and Warrior Bush. Mallee Vine, also known as Devils Twist, was useful as cattle fodder. Locally this plant is semi-parasitic on mallee trees.

The fruits of Quandong were used for jams, sauces and tart fillings. The wood of Noddlewood provided material for horse-made pipes and walking-sticks. The Currawong was said to be used for shoulder poles by the Chinese who lived in the district. At the turn of the century Blue Mallee was being treated for eucalyptus and other valuable products. Most of the trees mentioned and mallee roots were used for firewood in ovens and open fires.

Rabbit Pits were made of White Cypress Pine. The pits were sunk along the wire netting boundary fences, about one or two miles apart, depending on the nature of the country. Rabbitts were always more plentiful in sandy country, because of the ease with which they could find their warren, a feet square would be sunk directly underneath the wire netting. Sawn rough timber slabs of pine were then placed
side by side in an upright position along one side of the hole. Then a 4 inch by 2 inch plank was placed horizontally to support the slats and another one was pegged down at the bottom. The other sides of the hole were treated the same way. The pit was then covered over with boards. Among them were four balanced pieces of board. As an incoming rabbit would tilt a board and drop into the pit, the board would then swing back into its original position. A wire-netting wing, one chain long, ran from each corner of the pit, making a sharp angle with the fence. This arrangement "herded" the rabbits towards the pit.

Every day or so a man would kill the rabbits and clear the pit. Other animals, too, would fall into the pits especially ants-eaters, foxes, cats, and occasionally snakes also met their doom that way. When the rabbits were plentiful, as in 1907, there could be 300 rabbits a night in one pit. The average was 150 rabbits. Fourpence per pound was paid for rabbit skins in those days. In winter seven and in summer nine skins went to the pound. They were bought by the local Chinese.

A Dog-Leg Fence was usually made of Cypress Pine. Two round posts were erected, and crossed rather like an open pair of scissors. They were supported by an 11 inch block of wood six to eight inches in diameter. This process was repeated and then a pine log, with branches still attached, was placed in the V's of the crossed posts. By this means a fairly good sheep-proof fence could be constructed.

For a Check and Log fence, any large available timber was used, Box, Ironbark, and especially Cypress Pine. Green timber was easier to cut and work, and the longer poles were better for the purpose. A check of wood two feet long and 9 to 12 inches was placed flat on the ground. A scarf was then cut out of the centre of the top side. A log was placed in the scarf. Then another check was scarfed on both sides to fit over the first log and placed in position to receive another log on top. This process was continued until the desired height was reached. Logs along the top finished off the fence. Only the bottom check needed to be two feet long. The scarf could be shorter and do a satisfactory job.

For a Post and Rail fence, Ironbark posts were used if possible. It is good straight splitting timber and lasts a long time. It is also easier to adze out than Box, Bullock, Box and old Belah were used as rails. The timber was used green and both posts and rails were split lengthwise. A morticing axe was used to cut oblong holes in the upright posts. The rails were trimmed to fit snugly in the holes. As a rule three or four rails were used in each panel.

Slip Rails were used in place of gates. One method of making them was to pluck rails loosely in holes in the uprights so that they could be removed quickly to allow passage through. They were made of any available timber. Box rails were satisfactory, but Pine was too brittle and liable to break under pressure from stock. Another type of slip rail was made with slots cut in the posts to allow the poles to be dropped in. To remove one would require both a lifting and a pulling movement. This made the "gate" more secure where stock were concerned. Later on U-shaped round iron, or large used horseshoes, were driven into the posts and the rails were slipped into these. Wire twitches were also used.

Some landholders believed that timber growing on the spot and used as fencing material lasted longer than other timber. One local property had a paddock fenced with Box, another with Pine, and so on. Another had assorted fence posts with Pine, Mallon, Ironbark and others alternating. As one would expect, the Ironbark outlasted the other timber.

Belah had to be old when used, as the young stuff rotted quickly. However, the timber had to be green when bored for fence posts otherwise the bits on the brace-and-bits would be broken. Yarraan timber was used for fence posts and in the erection of stock and shebyards. It lasted for years. Yarraan wood makes a fire with great heat and burns to an ash, its heat causing buckling and destruction in the fire-bars in stoves.

Black Pine was used to make bullock whip handles, and Quondong timber was used to make bullock yokes. Kooringa leaves were sometimes cooked; kooringa leaves were the most tender leaves coming from the top of the tree. The introduced plants, such as marshmallow and nettles, were also cooked as "great."

The best meat blocks, both for homestead and butchers' use, were made from Kooringa stumps. The wood was spongy, and slits made by cleavers closed up again. A few still in use are greatly valued by owners. Sometimes settlers erected lofts in a corner of the stockyard, near a dam or water-hole. Men would hide in this until the kangaroos came for a drink, when they would shoot the unsuspecting animals.

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FORESTRY DEPARTMENT

Of the 28 State Forests in the West Wyalong Sub-district the present Cypress Pine forests are by far the most important, not only because they produce the bulk of the sales of logs, poles and fencing timber, but because a considerable amount of grazing is available in them. The main Cypress Pine forest areas are in the Booboroo Hills, east of Wyalong, Yarranberry, south of Ariah Park and along the Rankins Springs Road, south of Lake Cargelligo.

The Hardwood forests were of great consequence when they were dedicated, as they were the source of supply of such products as railway sleepers, fencing timber and firewood. Demand has since fallen off considerably and only a small amount of fencing timber and firewood is now sold. Twenty of the forests carry predominantly Cypress Pine timber and eight carry Hardwood (Iron Bark and Box). There are 25,500 acres in the pine forests and 14,000 acres in the hardwood forests. One forest carries a considerable amount of Blue Eucalypt, which is cut periodically for the distillation of eucalyptus oil.
The West Wyalong Sub-district of the Forestry Commission extends about 110 miles in a N.W./S.E. direction and averages about 30 miles across. West Wyalong is the administrative centre of the sub-district, and with the sub-districts of Grenfell, Forbes and Condobolin, comprises the Forbes Forestry district. The sub-district boundary is roughly, Temora, Bland Creek, Lake Cowal, Burcher, Bena, Ungarie, Tullibigeal, Lake Cargelligo, Willandra Weir, Narathara, Tallebana, Sandy Creek, Ardlethan, Wallaroo, Mimosa and Temora.

Personnel in the sub-district are a forester and an office assistant engaged on administrative duties, and a forest foreman and another employee, who are engaged on field work. Work done by the commission consists mainly of the maintenance of assets, including roads, fences and water supplies, killing of useless Hardwood competing with Pine, supervision of timber operations and rabbit eradication. All these are done by local employees, with the exception of road maintenance, for which a grader unit comes from Forbes periodically, to grade the 216 miles of roads through local forests.

There are seven sawmillers in the sub-district, one of whom regularly buys logs from State Forests. A sawmiller from Grenfell also buys an annual quota of logs from this area. Sales from State Forests and other Crown areas are also periodically made to other millers. Most sawmillers are able to obtain the bulk of their log input from privately owned land. Miscellaneous sales of timber, poles, firewood, sand and gravel are made under licence and licences are issued to apiarists to allow them to place their hives in State Forests. Honey production is usually from those forests carrying Ironbark.

A considerable amount of grazing under permit is being done on local forests. Grazing was suspended on many forests about 1955, in order to encourage the germination and growth of Cypress Pine seedlings. These responded so well that grazing by cattle was introduced on many forests from 1964, and grazing by sheep, which eat small seedlings, is now being considered on some forests.

Grazing in the West Wyalong district forests has the desirable effect of removing much of the dry grass that creates a serious fire hazard each summer. Fires in the forests of the sub-district are rare. There have been only two in the last 12 years, burning a total of 13 acres.

BULLOCK YOKE MADE BY EARLY SETTLERS.
ON FAUNA

Early settlers in the Bland Shire have told of a small animal that lived in mallee trees, which they knew as a native bear. This gives credence to the listing of Koalas by the National Parks and Wild Life Service as being in the district, although rare.

A marsupial about half the size of a kangaroo, grey in colour with splashes of white, was a common sight. It was known as the paddy-melon. The burrowing of another marsupial, the bilby, caused a crater-like Warren; Rabbits took over the warrens and the bilbies disappeared. Clearing of the land for wheat-growing and grazing has led to the extinction of dingoes and native cats that were common in the closing years of the nineteenth century.

The keen observer will find many species still living in the bushlands of the shire. Listed as uncommon in the monotremes is the platypus, but the spiny anti-eater is still fairly common.

Common marsupials are the yellow-footed marsupial mouse, the fat-tailed shrew, bush-tailed possum and the grey kangaroo. Uncommon marsupials are the feather-tailed glider, the squirrel glider, the ring-tailed possum, bushy-tailed possum, pigmy possum and the red kangaroo. Mammals extinct in the district are rabbit-eared bandicoot, brush-tailed rat kangaroo, brown hare-wallaby and the briddle nail-tailed wallaby. Tiger cats have been seen on rare occasions in the Westallie district.

Of native rats and mice the Eastern water rat is still common. The allied rat and the long-haired rat are uncommon, and the extinct species are the Eastern possum-rat, the white-footed rabbit-rat, and Mitchell's hopping mouse. Rats are uncommon to rare, but the district has been at times inhabited by the Eastern house-shoe bat, the greater long-eared bat, the little brown bat, Gould's whistled bat, the belt-winged bat, yellow-bellied free tail bat, white striped mastiff bat and the little mastiff bat. Flying foxes are rare visitors.

Introduced mammals are the European rabbit, the European hare, the dingo, red fox, Feral pig, Feral cat, goat, rat and mouse.

Of the snakes the carpet snake, common brown snake, tiger snake, mulga snake, red-bellied black snake, myall snake and the bands-bandy are the most common. Seldom seen now are the red-naped snake, yellow faced whip snake and death adder. A snake expert who visited the district in recent years is said to have been of the opinion that taipans could be here, but no reports have been received. Copper-heads are reputed to be present. The bush is inhabited by a number of lizards and skinks. These include the common, stella, legless lizard, jacky lizard, bearded dragon, goanna, striped skink, Cunningham's skink, shingle-back skink, blue tongue, copper-tailed skink, water skink and grass skink. Seldom seen are the thorny Devil, goanna, scaly-foot, and Gould's goanna.

In the years of good rainfall when the waters of Lake Cawal spread over the north eastern countryside of the shire, black swans and numerous other water birds are seen. Seagulls have found their way to the lake, and on rare occasions have been seen over West Wyalong.

Flocks of galahs and colourful parrots are more plentiful in the wheat season than at any other time, but, unless steps are taken to conserve larger areas of the suitable habitat of the more rare types their chances of survival are slight.

Among the birds seen in the shire are the emu, brown goshawk, wedge-tailed eagle, peregrine falcon, brown hawk, lance-tailed wren, peaceul dove, common bronzingwing, crested pigeon, Major Mitchell's cockatoo, galah, cockatoo, ringnecked parrot, red-rumped parrot, blue-boneet, mulga parrot, pallid cockatoo, tawny frogmouth, owlet nightjar, laughing kookaburra, rainbow bird, black-faced cockatoo-shrike, southern scrub robin, rheu, quail, shrike-thrush, white-browed babbler, brown songlark, black-backed wren, purple-backed wren, western wren, little thornbill, chestnut-tailed thornbill, yellow-tailed thornbill, brown weebill, mallock heath wren, red-capped robin, hooded robin, southern yellow robin, grey fantail, willie wagtail, restless flycatcher, golden whistler, rufous whistler, red-backed shrike, Gilbert's whistler, grey shrike-thrush, crested bellbird, striated pardalote, yellow-tailed pardalote, striped honeyeater, white-eared honeyeater, yellow-plumed honeyeater, brown-headed honeyeater, white-fronted honeyeater, spiny-cheeked honeyeater, peewee, white-winged chough, spotted bird, pied butcher-bird, grey butcher-bird, black-backed magpie, Australian raven, little raven, pelican, spoonbill, blue crane, white ibis, bab chick, wood duck, teal, black duck black swan, green leaf parrot, finches, seagulls, swallows, eastern stone curlew, spur-winged plover, quail, drier, shell parrot (budgerigar), little core, eastern rosella, brolga, mistletoe bird, turquoise parrot, noisy miner, little wattle bird, masked wood swallow (blue martin), dusky wood swallow, pied currawong, collared sparrow hawk, braved plover, kingfisher (several species), eastern shrike-tit, diamond dove.

THE KELPIE

The Wyalong district has played its part in the development of the Kelpie sheep dog which has been so invaluable to the pastoral industry in this country.

The early 1800's were an era when transport and handling of stock, other than by droving was virtually unknown. The hundreds of counties through England and Scotland all had stock of one sort or another, and with the stock went the shepherds and their dogs.

When Australia was opened the sheep dog was brought to Australia, so were shepherds and their dogs to care for them. This was necessary for the stock to be "folded" or yarded every night to protect them from the dingoes and Aborigines and to stop them from straying.
With the rapid increase in stock numbers there was an increasing demand for a "mustering" type worker to replace the "shepherding" type dog. There is little doubt that by the mid 1800's a great number of different strains and types of workers had been imported. One of the first to successfully make a name for themselves was the Rutherford strain of North County Collies which immediately proved ideally suitable to Australian conditions. Several younger members of the Rutherford family had migrated to Australia, and one of these was supplied with dogs by their Scottish relatives. Mr. J. Rutherford purchased Yarrawonga from the Humen family, where he bred the black dog, Moss, which later became the property of Mr. Jack Gleeson.

Mr. Robert Tully, a well known breeder in the Murray and Darling River areas, was also a strong supporter of the Rutherford strain collie and all his stock were claimed to have carried this blood.

The dog which gave the Kelpie breed its name was Gleeson's Kelpie which was bred, as far as we know, on Worrock station in Victoria. Mr. John D. (Jack) Gleeson came into possession by swapping a horse for the pup, which had been bred by Mr. G. Robertson from imported collie parents. Gleeson's Kelpie is described as a black and tan with semi-crest ears and who had a reddish tingie to her coat when seen in the sun.

Mr. Gleeson left the district shortly after acquiring Kelpie and stayed for a short time at Albury, where he married Miss Mary Ryan, a daughter of Mr. Lionel Ryan of Wallandoo station. Two other daughters, Kate and Grace, married Harry King and Pat Cox, sons of the owners of Yalaggorin and Wollongough stations respectively. In crossing the Murumbidgee, on his way to take up a position on Bolero (North Belair) he met an old friend, Mr. Mark Tully, brother to Mr. Robert Tully, who gave him the black dog, Moss, who had been bred at Yarrawonga from dogs imported from the Rutherford kennels in North Scotland.

Kelpie was mated twice to Moss; the first litter he whelped was shortly after arriving at Bolero and a pup was given to Mr. T. Keogh. The second litter by Moss was born on North Yalaggorin and a pup from this litter was given to Mr. Steve Appo, who was on Merringa.

About this time, 1870, Mr. Arthur Robinson brought out from Scotland a pair of black and tan, Brutus and Jenny for Mr. Elliott of the firm of Elliott and Allen of Geraldton station. They had been mated together in the way out and the bitch, Jenny, whelped shortly after arrival. Both Brutus and Jenny are described a smooth-coated black and tan with semi-crest ears. One of the pups from the first litter, Caesar, was given to Mr. John King who was on Narribri at the time. Caesar was mated to Gleeson's Kelpie and the most famous of all kelpies was the result. When the litter arrived a black and tan female pup named Young Kelpie later Kelpie the Second then King's Kelpie was given to Mr. C. T. W. King and she became famous in the early 1870's when she won the first sheep dog trial ever held in Australia. Her performance at Forbes on this occasion was so outstanding it resulted in the naming of the breed.

For a short time the name, Kelpie, applied to the progeny of King's Kelpie only, although more properly it should have been applied to Gleeson's Kelpie for without her there would never have been a breed so named today. From the mass of records to hand it appears that it was not long before all dogs of similar appearance were being described as Kelpies. In the entry of 35 dogs at the Sydney Sheep Dog Trials in 1896 only two dogs were entered as collies.

Gleeson took up a selection on Bolero, being portion 20 Parish of Yalaggorin, 40 acres, in March 1878. When leaving North Yalaggorin to take up a position at Lake Cowal West, he left Kelpie with his friend Mr. T. J. Garr, and Moss with Mr. P. J. Cox of Merringa. Kelpie developed a canine strain and type of worker which had to be destroyed, ending her days at Wollongough, Ungarie. Old Moss, which Mr. Cox had lent to Mr. C. T. W. King for stud purposes, was found dead on the chain one morning at Gainhil, Lake Cargelliga, which property Mr. King was managing at the time. While living at Lake Cowal West, Gleeson had an accident with a horse and died at Wagga Wagga.

THE MOUSE PLAGUE

Almost incredible stories have been told of the mice plague of 1916. Early in the winter hordes of mice appeared from nowhere, to invade the fields, the homes and business places. They destroyed haystacks and grain, ate the produce and foodstuffs in stores, and in the houses they even got into bed mattresses. Many of the houses were filled with heasant, which was covered with wallpaper. The mice ate the paper and heasant, and the nights were disturbed by their scamporing up and down the walls. The stench was everywhere.

Mr. Jack King was working at Mr. Charles O'Donnell's farm at Buddigower and he recalls that the men walked around the haystacks at night, carrying a tin tub containing water. With a stick they knocked the mice into the tub. The mice ate stacked bagged wheat until the heaps collapsed, and, as 1916 was a wet year the damage was considerable. In 1917 Mr. N. Cona, of Quandialla, was pulling down a shed, when he noticed there were no lead washers on the screws. Close examination showed that the mice had eaten away all the lead, but could not bite into the iron in the screws. In 1917 there was another plague, but it was on a smaller scale.
BIBLIOGRAPHY.

JOURNAL OF JOHN OXLEY.
Journals of two expeditions into Interior of N.S.W. 1817-1818. This provides the earliest description of this area.

SQUATTING AGE IN AUSTRALIA. 1835-1847. by Stephen H. Roberts 1935.
Professor Roberts has given us an excellent account of the taking up of land and the struggle of the Squatters for their rights with Burke and Gipps.

This book written by the first white girl born in the Young district, gives an interesting but unchecked account of the early history of Wyalong.

N.S.W. GOVERNMENT GAZETTE - 1840.
This supplies the list of Runs and Names of owners in the Wyalong area of the Lachlan District.

SQUATTING ON CROWN LANDS IN N.S.W. by J.F. Campbell. - Royal Australian Historical Journal Vols XV, XVII.
Mr J.F. Campbell has given us a list of Runs extant in 1849. The author makes quite clear the reasons for the attitude adopted by Governors Bourke and Gipps against the rapacity of the Squatters.

This book gives details of Name of Run, Holder, Size etc of the Pastoral Runs. It gives a detailed description of the area under discussion.

PASTORAL POSSESSION OF N.S.W. William Hanson, 1889.
Gives vital information about the Pastoral Holdings which usually consisted of an agglomeration of runs. The document supplies the important information of the area, annual rental and holder of Leasehold Area and Resumed Area.

NATIVE NAMES OF SOME OF THE RUNS IN THE LACHLAN DISTRICT. - F.W. Woolrych L.S. Paper read before the Royal Society of N.S.W. 4 June, 1890.
Information is given regarding the origin of names of early Runs in the Wyalong area. It also supplies an early map of the district.

MANUSCRIPTS held by the Lands Department contain information about names of Runs and Holders in the Bland about 1847.


WYALONG - A THESIS written by BROUGHTON THOMAS M.A. - UNPUBLISHED. Copy held by BLAND HISTORICAL SOCIETY.
This gives the condition of the field—the amount treated and the yield.
These reports continued until the goldfield ceased as a gold supplier in 1920.

RECORDS OF GEOLOGICAL SURVEY—Vol Iv Part 2, 1894.
This document gave the Geological origin of the field.

GEOLOGICAL STRUCTURE OF THE WYALONG GOLDFIELD Vol IV, Part II, 1894. E.F. Pittman A.R.S.M.
The author points out that the easy nature of the working of the goldfield was due to the decomposition of the granite. He pays a great tribute to the Neeld family in opening up the field.

REPORT ON THE WYALONG GOLDFIELD—J.A. Watt M.A, B.Sc. 1899.
This document gave details of the geological formations on the Wyalong Goldfield and an accurate description with diagrams of each important mine.

WYALONG ARGUS. — 1898
This newspaper gives accurate information regarding the needs of the mining population—namely water and a railway.

The author visited Wyalong just as the mining era was closing and the population was turning to wheat cultivation.

The author pays tribute to the pioneers who strove against the prophesies of the explorers. He points out how the population was attracted by the gold but remained when the district settled down as a flourishing wheat area.


TOWN AND COUNTRY JOURNAL 2 June, 1894 and 16 Jun3, 1894.

Published by the Bland District Historical Society, in association with the Wyalong 75th Anniversary Committee, 1969.

AROUND THE COWAL — by William J. English.
Information about Marsden, Lake Cowal, Billy’s Lookout and Clear Ridge districts.

WHERE THE LINE ENDS. by Mark Fitzgerald.
Published for Burcher’s Golden Jubilee Celebrations 1929-1979.
Lake Cowal Gold Project

Appendix I

LAKE COWAL HISTORICAL RESEARCH

by

Bland Historical Society

for

North Mining Limited
1 Macquarie Place, Sydney NSW 2000
Australia

1993
EN MEMORY OF

MISS Una Wilson

A TRUE PIONEER

No eye has seen,
No ear has heard,
No man has entered
into the human mind
to conceive what things God
has prepared for those
who love Him.  

1 Cor. 2:9
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EARLY HISTORY OF THE DISTRICT.

In 1817 Surveyor General John Oxley was sent by Governor Lachlan Macquarie to discover what happened the Lachlan and Fish Rivers. These rivers caused geographers a problem because they both flowed inland in different directions. In 1817 Oxley established his depot on the Lachlan and in April with Allan Cunningham and ten companions, started down the river.

This journey brought him into the area under discussion and we read in his diary the first recorded description of this area. His description was very unfavourable, which is surprising, because this land eventually became one of the best wheat producing areas in New South Wales.

Whilst in the vicinity of Mt Amyot Oxley said: "It is impossible to fancy a worse country than the one we are now travelling over, intersected by swamps and small lagoons in every direction; the soil a poor clay and covered with stunted useless timber." OXLEY: P 20-21. The timber referred to was the mallee scrub and this district would be north of Lake Cowal.

In the Mt Melville district which on this occasion was more than usually flooded, he said: "I am forced to conclude that in common seasons this whole tract is badly watered. The soil of the country we passed over was poor and cold clay but there were many rich levels which, could they be drained and defended from the inundations of the river, would amply repay cultivation." Oxley concluded that these flats were entirely unsuited for cattle, the grass being too swampy and the good portions mentioned above being overcrowded with bushes, swamps and lagoons. He did not consider it a safe or desirable grazing country.

In the neighbourhoods of Mts Maude, Edwards and Campbell he described the country as "poor and as barren as can well be imagined; the soil a light red sand, acacia scrubs, small box trees and a few miserable cypressess." OXLEY: p.43.

He said from the want of timber, grass and water it would never be inhabited by civilised man. His prophesy was not true for this district, now called Ungarie, north west of the township of West Wyalong, is the centre of one of the greatest wheat producing districts in the State.

The Surveyor General was struck by the physiography of the region. The few hills which the region possessed usually terminated on their westward side in a perpendicular bluff to a height of two or three hundred feet.

It was in this district the Oxley first noticed what was surely gold country! He observed that the hills to the south
were "curiously composed of pudding stone in very large masses - (granite), the lower stratum being a coarse granite intermingled with pieces of quartz. OXLEY: p52.

Fortunately Oxley's gloomy opinion of this region did not deter the squatters in their westward drive. These squatters "concentrated for a time on the south, and, in a few years, dotted settlements all over the country from the old cedar huts of Illawarra to Lake George and the Lachlan." Roberts: "Squatting Age in Australia" p.3. The Lachlan formed the boundary of the Nineteen Counties. By 1835, the thick black line of the Nineteen Counties remained as solid as ever on the map as the legal limit of settlement, but, actually it had been crossed in all directions." Roberts p5.

Oxley had first explored the Bland in 1817 when he camped for a considerable time near the Weddin Mountains. He tried to explore the Bland Creek but was only able to go as far as Eureka where he was blocked by water. There was so much water about that he considered he had discovered an inland sea and marked his name on a tree at the edge of the water. This tree stood for many years until an unimaginative Free Settler chopped it down and burned it. What Oxley considered as an inland sea was merely the backed up waters of the Lachlan River and LakeCowal which had filled up the Bland Creek and spread across the plains.

Major Thomas Mitchell (later Sir Thomas) the next Surveyor General of New South Wales set out in 1826 to further explore the Bland country which he called "The Levels". He got as far as where the Bland Road joins Currawurrara and Bland Stations. He camped in a belt of timber halfway between these two stations at a place called Major's Point. He was forced back, as Oxley had been, because of a Lachlan flood which he thought was an inland sea.

The first settlers in the neighbourhood of Wyalong seem to have been a family of Gibson Brothers who took up a run near the Bland in 1833 and Mr Glass who settled on the Bland in 1834. Some of the early settlers were Mr Oakes (Back Creek) - 1835; Mr Myles at Morangorell in 1836 and who sold to Donald McGregoor in 1843. John Bray from Crookwell opened Narraburra in 1836 and Horatio Roberts and Wade also from Crookwell opened Carrumbee in 1836. They sold to John Shourd and John Mason in 1840. Abel Burke opened Bland Creek in 1838 and in the same year John Levitt took up a station near Grogan. He sold to Thomas Burrett of Wentworth Falls in 1839. Moses Beard opened up a run on the Bland Creek opposite Abel Burke in 1840. John Trott opened the Billabong in 1842 and sold it to James Marsden in 1852.

Following the squatting and occupational period of the first settlers who took up pastoral runs about 1842, there came a secondary wave of pioneers, bringing with them their wives
and families. Apart from the pastoral stations very little settlement had taken place within the Wyalong district prior to 1885.

John Rodd had taken up Billabong Pastoral Run in 1842. The Billabong Run extended through Mallee Plains to the area where the twin towns of Wyalong and West Wyalong were later established. Rodd later sold to James Marsden in 1852. The Government Gazette of New South Wales, 1842, included the following lessees in the Lachlan District No 6:

| No 3 | Lessee     | William Atkins | Run Cowl | 16000 acres |
| No 129 | Lessee | John Rodd | Run Caragabal | 26880 acres |
| No 130 | Lessee | John Rodd | Run Billabong | 40000 acres |
| No 149 | Lessee | Levi Stonestreet | Run Tregalona | 25600 acres |

In 1849, two years after the Waste Lands Act was passed allowing squatters to take up Runs we find the following names:

| Cartwright | John | Barmedman Run | 36000 acres |
| Burke | Abel | Back Creek | 28400 acres |
| Gibson | Alice | Bland | 44800 acres |
| Rodd | John | Billabong | 40000 acres |
| Stonestreet | Levi | Tregalana | 25600 acres |
| Walton | John | Bland | 100 square miles |
| Atkins | William | Cowl | 16000 acres |

In 1852 John Regan, brother of Denis Regan who had married Sarah Musgrave commenced exploring back country for station property. In a few years he had caused much of the country to be opened up and shifted the location of the outback from Young to what is now Wyalong. On one occasion John Regan set off with a Mr Wood and after passing the Billabong came to another creek. Their tethered horses wandered off and after finding them had difficulty in finding their camp again. They called the creek 'Humbug' and this simple expression showed the feeling of the two men towards the creek that had so long deluded them.

Mr Wood was impressed with the land and sent Mr Walsh as overseer to take possession of the run until he (Wood) was able to occupy it. Walsh entered into partnership with Wood and called the station Merrengreen and stocked it with cattle and horses. This was the farthest outback station in south west New South Wales. In 1859. Thomas and James White explored Humbug Creek, taking up land which they called Ballangama. Mr Woodhouse took up Hiawatha and Thomas and Abraham Wood set up on the Humbug Creek calling their station Wallandry.

The next land explored by John Regan was the Merool now known as Wyalong. The first man on the Merool was an American negro named Sims and known as Black Sims. He took up Coonaparra run in 1859 and was in possession two years before another settler came to the district. His run
reverted to the Crown when he was arrested for cattle stealing and sentenced to ten years imprisonment.

In 1861 William Marshall acquired a large area on The Merool and called it Buddigover and in the same year George Harman took up Quondarry. Moses Beard late of The Bland took up land on the Merool calling the station Merool Creek. Samuel Pawsey of Mandamah was followed by Hamilton Hume, nephew of the explorer at Mandamah West.

By the Land Act 1884 called the Subdivision of Runs Act, the old Runs were converted into Pastoral Holdings. Thus we find that Lake Cowal No 701 includes the Clear Ridges, Lower Billabong, Billabong Back and Wombine Runs.

The first major area to be alienated from the original Lake Cowal Run was proclaimed in 1885 as Lake Cowal No 162. The secondary Lake Cowal Station was acquired by John Floyd Donkin and was situated on the eastern side of Bland Creek, downstream from Marsdens. The homestead was near Fishermans Bend where the Bland Creek turns north-west to empty into Lake Cowal. A number of smaller holdings were taken up in the Lake Cowal area, along the perimeter extending from Wamboynie through Billys Lookout to Clear Ridge. In the Marsdens district the smaller holdings were mainly situated between the village and the Booeroi Hills fronting the road to Wyalong.

The land upon which the town of Wyalong now stands was formerly part of Camping Reserve. 6387, Parish of Mugga, County of Bland, within the leasehold area of Billabong Holding No 61 held in 1889 by Henry Ricketson and also part of Wyalong (Wyalong) Resumed area No 410. Prior to this the leasehold area was part of Mugga Swamp Run held in 1866 by McIntosh and Oakes and by H. Ricketson in 1879. The Resumed area part of Upper Wyalong (Wyalong) No 1 Run was held in the same year by E.A. Phillips and P. Besnard and 1879 by J. Cox and M. Callaghan. The present location of West Wyalong lies wholly in the latter run only. HANSON: 1889

There was hardly any other settlement in this locality until 1889. In this year we find the names of holders of Conditional Leases or Conditional Purchases taken up a few miles north and north west of the present township of West Wyalong. The holders were as follows: William, Robert and Elizabeth Gagie, Wilfred Wells Jnr, and William Lange. Then followed in the early nineties a little to the south, John and Phillip Bolte, Donald Rankin and Phillip Ryan. G.W. Neeld came in 1893 and became an important figure in the history of the district.

The gradual falling off of the goldfield did not mean the doom of the two townships as witnessed in other townships for it was found as far back as 1898 that the district was
most suitable for agricultural pursuits and particularly wheat growing. It was evident that wheat growing had become established by 1900 because the estimated area under wheat in the Wyalong district in that year was 11900 acres with an expected yield of 12 bushels to the acre.

At the turn of the century the principal properties in the Lake Cowal area were:

LAUREL PARK: taken up in 1885 by Patrick and Thomas Frost, comprised an area of 4960 acres and was situated on the southern side of Wamboine Hill. Frost Brothers sold to Henry Buttenshaw in March, 1898 for 17/6 per acre including 3000 well bred sheep.

LAKE COWAL WEST: adjoined the southern side of Laurel Park and was acquired by Frank Allen. It comprised 8000 acres. Allen sold to Beaufroy Green. After a series of misfortunes, including the homestead being gutted by fire, Green sold to Key Perry. Perry did not reside on the property, but placed it under the management of William McNair, who had come to Billys Lookout in 1885. Lake Cowal West was sold in the 1920's to William J. Hammond who took up residence with his only son Roy and three younger daughters. The property was subdivided in the late 1920's following the death of William Hammond.

LAKESIDE: Taken up by James H. Palmer, comprised of 4000 acres. Palmer sold to William S. English in 1907 for 10/- an acre. English renamed the property "Weelona".

LAKE VIEW: selected by Charles West in 1888.

PINE GROVE: 2400 acres, selected by Henry Thomas Broadribb in 1887.

HILLSIDE: 800 acres, situated on the eastern side of Billys Lookout was taken up by Moses (Harry) Fleming who was employed on Lake Cowal.

CORRAN: selected by Samuel Stewart and situated opposite Fellmans and Weelona and fronting the Billys Lookout Road.

ELLERSLIE: joined Flemings block and a forest lease on the northern boundary, on the west by Girdlers Tank lease and fronting the road leading to the Marsdens-Wyalong Road.

MILLY MILLY: selected by Roderick Charles McDonell and comprised 3000 acres. It was proclaimed as a settlement lease area on 23 January 1904.

CALOOLA: taken up by Mr Ravsthorne, followed by James Hay, and Steve Vinecombe. In 1922 it was acquired by Charles Wilson (second son of Samuel Wilson). It was purchased by
Thomas J. Wilson (no relation to Charles) in 1926. Caloola was proclaimed as a settlement lease area on 27 July, 1895 for an annual rental of £40.

Later the forest area between Harry Flemings and Ellerslie was taken up by Samuel Pellow.

Two small blocks were taken up at Billys Lookout by Victor Beazley and Mervyn Whiteley. Portion of Beazley's block was situated where Billys Lookout village had been.

GOLD MINING.

Gold occurs in many types of rock in the form of lodes, veins and impregnations, the breaking up of which form surface and alluvial deposits. Pure gold is seldom found in nature; silver, copper, iron, platinum and other metals are found with it.

The geology of Wyalong is difficult to describe, because with the exception of a few widely separated low elevations such as the old hospital hill, standing at the N.E. of Wyalong and Pine Hill and Pine Ridge, the underlying rocks are nowhere visible at the surface.

The underlying beds are concealed by an overcovering of Post Tertiary accumulations of several feet of red soil, so that the geologist must make his observations by an examination of the surface soil or by the use of shafts made by miners in prospecting. The difficulty was increased in the case of Wyalong because of the lack of knowledge of geology of the surrounding districts.

In 1899, the Government Geologist, Mr E.F. Pittman reported that the Wyalong goldfield had been developed so vigorously that it was then the most productive in the Colony. He went on to say: "The altitude of Wyalong is almost 800 feet above sea level, and I think that there must have been during the Tertiary period, well-defined channels through which the drainage of this elevated district found its way to the sea, or to the Tertiary basin, or lake (at least 900 feet thick), which exists near the junction of the Murray and Darling Rivers. In these drainage channels the gold derived from the denudation of the auriferous reefs must have been concentrated."

In the frenzied search for gold in the first years of the goldfield at Wyalong, reports came in of discoveries in the surrounding areas. These included Yalgogrin, Buddigover, Billys Lookout, Hiawatha and Blow Clear and areas in closer proximity to the diggings. Gold was discovered at Hiawatha on Portion 10 and 12 on Good Friday, 1898 by Conway and Ryan and it was traced to the adjoining crown lands. All the
reef at Hiawatha were in granite, which seemed to occupy a large portion of the surrounding country and seemed to be continuous with the Wyalong mass. The reefs struck east and west and dipped to the north in contrast to the Wyalong reefs, which had a general north south trend.

In the neighbourhood of Wyalong, there are roughly two main geological areas which can be readily be distinguished and their boundary line approximately known. The larger of these is occupied solely by granite and it is in this area which possibly contains rocks of much greater age than the granite, is occupied by highly altered sedimentary strata and igneous rocks of intrusive character. J. WATT: "Report on Wyalong Goldfield" p10. The granite extends for miles in a northerly and probably continues without break to Hiawatha - a distance of 8 miles north west from Wyalong. Auriferous reefs have been discovered at Hiawatha. The granite also extends south as well as west to Yalgogrin.

Almost the whole area of the goldfields is occupied by loosely aggregated sandy and clayey materials which are largely the result of the decomposition and disintegration in situ of the underlying granites and diorites. The red colour of the deposits is probably due to the presence of oxide of iron. The iron oxide itself is derived from the biotite and hornblende present in the granite. The decomposition of these minerals sets free the oxide of iron.

The red colour of the surface soils in dry regions such as Wyalong is more characteristic than in most regions for in this latter region "the decaying organic matter has a bleaching effect due to the reduction of the ferric oxide and its partial removal in a soluble form. Part of the oxide of iron has separated out in the form of small ironstone concretions which present rounded pseudo-water-worn appearance due to their mode of origin." J. WATT p. 12

"In the absence of well marked outcrops it was the presence of these fragments that led to the discovery of gold at Wyalong." J. WATT pl. Small rounded particles of quartz were noticeable on the small Mallee flat which extends between the township of Wyalong and Pine Ridge. Although during heavy rain, water evidently flows over this flat, there does not seem to be any depth of deposit there or any accumulation of gravel but the loose rounded stones are weathered irregularly over the surface and through the red soil.

The gold present in the Wyalong goldfield was so fine that it was not readily detected except by aid of a lens.

Mr Neeld Snr had joined his sons, who had come to Wyalong previously. He selected a piece of land and was preparing to use it in the normal way. The ironstone nodules had
naturally attracted his attention because he had experience in the Ballarat and Bendigo goldfields and also in Fiji. The first gold was found in quartz on the Pioneer Claim reef. While Mr Neeld Snr was prospecting the first claim one of his sons located gold-bearing stones just outside the selection and about 10 chains to the east of the former site. The reef from which these stones came was soon located and was afterwards known as the Dead Rabbit Claim and later still as the Easter Gift. Work was considerably impeded by the thick mallee scrub.

The third discovery was made by Harry Neeld on Klink's line of reef and was known as Harry's Find. It remained in the Neeld family and paid large dividends. Discoveries were made on sites known afterwards as Red Flag and the Currajong Mine, but no prospecting was done there. The most important discovery was made towards the end of October when some of the sons discovered gold-bearing rocks in the vicinity of what was known as the Prospecting Claim.

The family decided to peg out claims on 16 December, 1893; firstly the Prospecting Claim, then Harry's Find and thirdly the Pioneer Claim, fourthly the Christmas Gift and, lastly The Dead Rabbit. J. WATT: p6.

Men began to arrive from the day the gold was reported and by the end of January 1894 there were about 500 men on the goldfield. It was not until the following March, when the first parcels of ore were crushed at Barmedman and good results shown, that the big rush took place and by the end of that month 10000 had arrived on the goldfield.

The fact that the field was worked so successfully was in no small measure due to the character of the ground, which over all parts of the goldfield could be worked with pick and shovel alone down to at least 150 feet. This made the sinking of shafts very inexpensive. As J. Wait observed (p 7): "As a consequence of this many of the reefs have been profitably worked which, had the ground been hard, would certainly have been abandoned."

By the end of 1894 there were six crushing machines at Wyalong, but these were reduced to four and two chlorination works erected when it was recognised that chlorination was the most suitable process for the treatment of rich ore.

In 1894 the following crushings took place at Barmedman and show varying rich ore:

<table>
<thead>
<tr>
<th></th>
<th>Tons</th>
<th>yielded</th>
<th>oz.</th>
<th>dwt</th>
<th>grs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neeld</td>
<td>13</td>
<td></td>
<td>6</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Cassin</td>
<td>12½</td>
<td></td>
<td>9</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Neeld No 2</td>
<td>17</td>
<td></td>
<td>72</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td>Perry &amp; Party</td>
<td>17</td>
<td></td>
<td>42</td>
<td>18</td>
<td></td>
</tr>
<tr>
<td>Conway</td>
<td>22</td>
<td></td>
<td>103</td>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>
Keeth " " 28½ " 67 . .
Fraser " " 10½ " 39 6 .
Gorman " " 37 " 77 12 .
Smith " " 6 " 8 14 .
McMahon " " 4 " 10 . .
Lawry " " 14½ " 14 18 .

The greatest drawback to the development of the Wyalong goldfield was the scarcity of water and as there were no large watercourses in the vicinity, the warden had to set aside tanks and have races excavated.

One of the outstanding differences of this goldfield from others in Australia was the almost complete absence of alluvial gold. "The existence of so many rich veins at the surface makes it extremely probable that these veins have suffered denudation to some extent. Had the other circumstances been favourable alluvial deposits would have been formed. In the absence of these deposits we must therefore conclude they have not been so." J. WATT p. 14.

The unfavourable circumstances are:

a. The absence of hills and gullies in this flat country, where natural sluicing operations could take place.
b. The small amount of rain is another big factor.
c. The extremely fine state of the gold set free would mean that it would be scattered by the action of the wind and rain storms so prevalent in these regions.

As to the question why was this goldfield so long undiscovered, it may be pointed out that this was due to:
i. The absence of alluvial deposits, already explained above.
ii. The level nature of the ground with its almost universal covering of red soil.
iii. The absence of fresh water.
iv. The sparsely settled condition of the surrounding country, and
v. The very fine condition of the gold.

During 1895 the claims were steadily developed although there was some falling off of population, due to the discovery of gold elsewhere in Australia. The scarcity of water retarded an even greater development because water was very necessary in crushing operations. Coupled with this was the refractory nature of the ore from below water level. These factors tended to keep down returns. However it was established that the reefs were payable below water level.

The following is a list of mine depths in 1895:

<table>
<thead>
<tr>
<th>Mine</th>
<th>Depth</th>
<th>Other Mine</th>
<th>Depth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hildebrands</td>
<td>245 ft</td>
<td>White Reef</td>
<td>185 ft</td>
</tr>
<tr>
<td>Hidden Treasure</td>
<td>225</td>
<td>Barrier</td>
<td>180</td>
</tr>
<tr>
<td>Pressers</td>
<td>210</td>
<td>Bantam</td>
<td>170</td>
</tr>
<tr>
<td>Bolte's</td>
<td>193</td>
<td>Currajong</td>
<td>160</td>
</tr>
<tr>
<td>Snowden &amp; Party</td>
<td>185</td>
<td>Welcome Stranger</td>
<td>150.</td>
</tr>
</tbody>
</table>
White Reef, Currajong, and Welcome Stranger gave splendid returns.

During 1895 the new large battery of Nicholas and Raymond commenced work and was in constant use. Climo and Co also erected large works at a cost of £8000 for the treatment of tailings. The number of miners engaged was 8600, 500 less than the year before but the Report of the Department of Mines, 1895, hastens to add that the figures would rise again as several mines intended putting on more men.

The record year was reached in 1897 when 34750 oz were obtained. In that year "Wyalong produced more gold than any other mining division in the Colony." J.WATT: p7.

The Wyalong "Argus", dated January 5, 1898 in its editorial was justly proud that "no outside capital had yet come into the Wyalong field....."

In 1900 there was drop in the yield on the Wyalong goldfield because the mines were treating low grade ores which had been accumulating. The number of miners which had been 1600 in 1899 dropped to 1200 in 1900. In 1907 the number of miners fell to 462 and by 1910 only 150 men were employed on the goldfield.

The gold yields for each of the years of production were as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>Tons of stone</th>
<th>Ounces of gold</th>
</tr>
</thead>
<tbody>
<tr>
<td>1895</td>
<td>15634</td>
<td>24497</td>
</tr>
<tr>
<td>1896</td>
<td></td>
<td>33900</td>
</tr>
<tr>
<td>1897</td>
<td>30750</td>
<td>34582</td>
</tr>
<tr>
<td>1898</td>
<td>30940</td>
<td>44675</td>
</tr>
<tr>
<td>1899</td>
<td>15116</td>
<td>32425</td>
</tr>
<tr>
<td>1900</td>
<td>22387</td>
<td>24708</td>
</tr>
<tr>
<td>1905</td>
<td>10555</td>
<td>9000</td>
</tr>
<tr>
<td>1910</td>
<td></td>
<td>3800</td>
</tr>
<tr>
<td>1915</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1920</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In 1920 - The yield had practically ceased.

In 1920 the Department of Mines Report stated that "Gold mining has almost ceased in this division." Thus a most important period in the history of Wyalong came to an end. Anyone interested in the progress of Wyalong during the first quarter century must have rejoiced that Wyalong had indeed found its staple, not the golden metal, but the golden grain.

Gold had been found in the Wyalong district long before it was found in Wyalong itself, in such places as Temora (or Bakers) 1879, Barmedman 1882, and later Reefton in 1895.

Before finishing the history of the Wyalong Goldfield we pause to remember the tragedy of the Barrier Mine disaster which took place on Saturday, 13 January, 1912, when five
miner lost their lives, through an inrush of carbon dioxide gas. Those who died were Frank McGuire, Jack Mulhall, Bert Navin, Jack Navin, and Rupert Nicholson.

Because of the conditions at the "Main Camp" (White Tank) the establishment of a township was considered to be an urgent necessity. Surveyor J. Richmond was given instructions in February, only two months after the discovery of gold to lay out a township for the new goldfield. He selected a site about one and three quarter miles east of the Main Camp. His reasons for selecting this site so far from the mining field were that: "It was necessary to keep off the area of the gold deposits; its suitability from a sanitary viewpoint; its proximity to the main Barmedman Road and its generally healthy location." Richmond completed the survey of the first four sections by 6 March, but this was considered insufficient it was extended to fourteen sections.

The whole of the township of Wyalong proper is mainly situated on a farm selected by the Neeld family, while the town of West Wyalong is built on farms owned by George Bolte and John Ryan. The whole of the township of West Wyalong is built on the farm of John Ryan, while the northern boundary of George Bolte's property extended from about Paul Meagher's residence to Central Railway Station and south to include Pig Tank. The farms of Neeld, Bolte and Ryan were resumed by the Government for mining purposes.

Joining Bolte's property on the west, south and south-east were the farms of Con Ryan, Philip Bolte, John Bolte and Donald Rankin. On the northern side of the goldfield were Robert Gagie and Sons, William Lange, Jacob Haub, Christopher Haub, Niel Nielsen, Conrad Hildebrand, E.T. Clark, Jacob Rootes and Sons, Wilfred Wells and Donald Fraser.

Wyalong, the original name of the old run and Parish, was decided upon as the name of the new township after consultation with the Mining Wardens, who also approved the street names. Most of the streets bear the names of the pioneers of the field or officials connected with its early history.

Early in March, 1894 there were no buildings whatever on the ground, but by 3 May, 120 to the value of £20 each had been erected. By the police returns the total population within 5 miles of Wyalong Courthouse, including both townships was, at the end of 1894, 4215 of which 3825 were males and 930 females, exclusive of children. Dept of MINES RECORD, 1894 p25. Wyalong was proclaimed a Village on 23 June, 1894 having obtained the necessary approval from Governor Duff on 19 June 1894.
The demand for allotments at West Wyalong continued, and the expected transfer of residential population or business activities from Main Camp to the Government Township did not occur. A huge population soon gathered round the White Tank "and notwithstanding my warning and advice an irregular narrow street was formed on the very quartz claims whereby the Main Camp or Wyalong West became an established fact". DEPT OF MINES REPORTS, 1894. p25. The warden was unable to lay a street 99 feet wide with cross streets of the same width in a position not likely to be auriferous, in accordance with allotments in the already surveyed town 2½ miles distant.

Finally, after much agitation Surveyor Richmond was instructed on 6 April, 1895 to survey the occupied area at West Wyalong (late Main Camp) and to prepare a design plan with the Main Street 66 feet wide.

The final survey of Main Street was carried out by Surveyor V.F. Tozer on 28 December, 1895 and the many irregularities and encroachments were at last straightened out.

The White Tank, an outpost of Wyalong No I Station and water supply for the goldfields in 1894.
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**WEST OF THE BAND**
TYPHOID FEVER

TYPHOID FEVER is a preventable disease, the infection of which is always derived from a previous case of the same nature, though possibly a long interval of time may elapse between the occurrence of the first and of subsequent cases. The type of the disease may be mild or severe, but all cases are capable of importing infection to others.

The infection is conveyed in the excreta of the typhoid patient (bowel discharges and urine), and any article contaminated by such excreta may serve as a vehicle of infection.

It is not known precisely how long the infectious material may retain its vitality and its power of doing harm, but there is reason to believe that under favourable circumstances, e.g., in a cesspit or in some soil, this may be many months, and possibly years.

The infection is most commonly distributed by food or drink, and may obtain access to these in a variety of ways. As examples, the following may be mentioned:

1. Water supplies may be infected from adjacent leaky cesspits.
2. Milk and other foods may be infected through being handled by patients, or those in attendance on patients, or through the use of cases or vessels that have been washed in infected water.
3. Articles of food may be infected by dust or flies carrying minute particles of excreta that have been improperly disposed of.

PREVENTION.

TYPHOID FEVER is most prevalent, as a rule, in Summer and Autumn, and at these seasons especially every person should take precautions against infection.

Clean up all premises, and keep them clean and free from accumulations of dirt and rubbish which may shelter and foster the Typhoid microbe. Clean up cesspits and cesspits. If there is any suspicion that any house or yard is already infected, disinfect it freely with Chloride of Lime solution.

Be careful that food and drink are not exposed to risk of infection. Boil all milk and all water before drinking. Guard food and drink as well as possible from dust and flies.

Every case of TYPHOID FEVER should be regarded as a possible source of danger, and special precautions should be taken to render harmless all excreta, and all articles in the least degree soiled with excreta, by DISINFECTION.

DISINFECTION may be accomplished either by heat or by chemicals.

I. Heat—Boiling is the most reliable domestic method of applying heat. Excreta and infected slop waters may be boiled in the open air with little or no nuisance if burning or charring of the substances be avoided. These matters are thus rendered non-infectious—a most important matter. Clothes also are readily disinfected by boiling.

II. CHEMICALS—(1) For excreta (bowel discharges and urine) the following may be used—

Chloride of Lime... 5 per cent. solution, made by mixing 1 lb. of fresh chloride of lime with 1 gallon of water.

Carbolic Acid 5 per cent. solution.

The chemical disinfectant must be in bulk equal to or greater than the amount of excreta to be disinfected, and must be intimately mixed with the excreta and remain in contact for at least one hour. The common practice of sprinkling on antiseptic so as merely to produce an odour of the chemical is of no value.

(2) For clothing—Carbolic Acid in the above strength, the clothes to remain in soak for an hour.

ISOLATION.—Unless complete isolation and skilled nursing is obtainable at home every endeavour should be made to transfer the case to Hospital. This is advisable in the interests not only of the patient but also of other members of the household who run serious risk of becoming infected.

DISPOSAL OF EXCRETA.—Where a special barrel is provided the excreta should be placed in this after disinfection by boiling or chemicals, and removed to the appointed depot.

Where such a service is not available extreme care should be taken to thoroughly disinfect by boiling all excreta before disposing of them by burial.

On no account should infectious excreta be buried or cast out on any premises. This practice has frequently led to infection of other persons living on the same or even on neighbouring premises, and tends moreover to perpetuate the disease and cause a yearly recurrence in the Typhoid season.

Sydney, Sept. 7, 1903. (By Order) G. H. KING, Secretary.
20.

LAND BOARD OFFICE,

FORBES.....25th MARCH.....1953

Telephone No. 17 P.O. Box 129

In reply, address the District Surveyor and give this number.

R.D.S.B.H.P.
L.B. 50-572.

T.J. Wilson Esq.,
"Caroola",
Clear Bridge,
via WYALONG.

1

Dear Sir,

Special Lease application 50-11 Wyalong has been lodged by V.G. Beazley over the red edged area on accompanying diagram which includes R.62447 from sale for Public Recreation Notified 16th January, 1931- green tint on diagram.

It has been reported that together with yourself the following have been appointed trustees of such reserve on the dates indicated:-

Charles West, appointed 28-10-32.
Clive West
William Arthur Buttenshaw
Patrick Hetherington, 18-9-36.

It is asked that you please advise the trustees in attitude to the proposed Special Lease application. A field officer of this Department has reported that the area has never been used for the notified purpose.

If possible any statement supplied should be signed by all of the trustees.

Yours faithfully,
C.E. ELPHINSTONE,
District Surveyor.
Per: J.A.
21.
LAKE COWAL.

The Geological Survey of New South Wales has very little data available relating to the geological history of Lake Cowal. Many speculative theories have been suggested as to what might have occurred during the centuries gone by. There has been no official theory as to how the large number of trees had grown to such proportions on the bed of the lake during some period of the past. The trees — mainly red gum — with well developed trunks and limbs, had been dead for a long period of time before white men first set foot in the area. The only logical conclusion that the Geological Survey can assume is that for a long time the waters held in the lake maintained a degree of purity, and later the water could have reached a level of salinity that the trees could not tolerate. This theory is only speculative, but most of the underground water in the catchment areas of the lake at a shallow level contains a high degree of salinity. The wet season period of 1916-1917, when large volumes of water overflowed from the Lachlan River to Lake Cowal, provoked graziers concerned to bank off the low lying areas along the river to prevent flooding of their properties. Very little water has flowed to the lake from the river since that period. Major volumes of flood waters flow to the southern end of Lake Cowal from extensive catchment areas from which the principal flow is carried by Bland Creek. The upper reaches of the Bland Creek extend to the foothills of the Nimboor Range, which is situated southwest of the town of Cootamundra.

Other creeks that empty into Lake Cowal are the Barmedman, Back and Duck Creeks. The upper reaches of the Barmedman Creek extend to southwest of the Barmedman township. The Duck Creek rises west of the town of Temora and continues along the eastern foothills of the Tungley ranges, joining the Barmedman and Back Creeks at a point four miles upstream from the Wyalong-Quandialla Road. From there the creek becomes Back Creek which empties into the Bland Creek in the vicinity of the former village of Marsden.

The flood waters that flow from the localities on the southern and southwestern side of Wyalong-Barmedman Road all converge into Back Creek in the vicinity of the Wyalong-Quandialla Road. From the areas north of Wyalong and Mallee Plains the waters meet Back Creek near the crossing on the Back Creek Road. The waters from Clear Ridge, mainly by way of Clear Ridge (or Sandy) Creek, run directly to the southern end of Lake Cowal near the station homestead.

From the eastern areas, mainly from Piney Range near the west side of Weddin Mountain and the Caragabal district, flood waters run directly to the lake, principally through the Marsden area. The run-off from these extensive areas
all move northwards towards their natural basin - which is Lake Cowal. The natural fall of the terrain still continues on down the Lachlan to the Murrumbidgee River. From there it continues to the Murray River and thence to the South Australian coast near Murray Bridge. The waters from the Bland can really flow a long, long way.

The main bed of Lake Cowal comprises an area of approximately 90 square miles. Lying north to south, the length of the bed is about 16 miles, with an average width from five to six miles.

During the period 1916-1917, large numbers of water birds and fowl flocked to the lake. Thousands of the various species of wild ducks and large numbers of black swans, pelicans, gulls - including sea gulls, cranes and numerous varieties of smaller birds. The dry trees in the waters of the lake provided excellent perches for the birds. It was during this period that Lake Cowal was declared a bird sanctuary. No open season for the shooting of birds was allowed. The declaration of the sanctuary became a controversial subject, especially when two years later, the waters of the lake were rapidly drying up again.

REPORT OF BRAMHOPE LAKE BLOCK - 3237 ACRES.

1946 Dry. Useful grazing in summer and early autumn, but cut out badly in winter.

1947 Useful grazing, with small floods, about ½ country covered in December.

1948 Good grazing, summer and autumn, about 2/3 covered in June - receding at end of year with excellent grazing. Some fence repairs.

1949 Good grazing, about ½ full of water in spring.

1950 Country inundated to highest flood level in March.

1951 Only a little grazing along fringe of water.

1952 Flood level again in April.

1953 Still 2/3 covered at end of year.

1954 Small flood early in year, but only about ½ covered at end of year.

1955 Quite a few miles of fence renewed. Flood rains again in March, covering most of the country.
1956  Filled to record level again in April.
1957  Only fringe benefits, ½ full at end of year.
1958  Useful grazing, water receding fast in summer, and country inclined to scald.
1959  About ½ covered in March, water getting away quickly by end of the year.
1960  Completely dry and refenced by end of autumn. Completely covered by water again in August.
1961  Not much use. Some grazing in summer.
1962  Filled again in January. No use through winter.
1963  Filled again in winter.
1964  Some flooding in spring, practically covering all the country.
1965  Useful grazing in spring with water getting away.
1966  All dry and fenced by end of autumn. Complete renewal of fencing. Splendid grazing.
1967  Good all year.
1968  About 500 to 600 acres flooded in June with further flooding in August - covering about ½ the country. Good grazing on flooded country in summer.
1969  Started to flood in March and continued till it filled completely in June.
1970  Had not receded much and filled again in June from Bland Creek.
1971  Not much use throughout the year.
1972  Water started to move back in dry spring, with cross fence dry and back to Channel near lignum by end of year.
1973  Lake useful in autumn and winter and a bit too good in spring with terrific growth of trefoil. Country about ½ covered but wet conditions in November covered most of it and forced us to shift sheep.
1974  Gradually filled right up and running out Manna Creek 2/8/74.
1975  Still flooded and more flood rains in October caused river water to overflow Lake and run Manna Creek early November.

1976  Manna Creek again a banker after flood rains in January. River water again reached lake in spring running Manna Creek with small flow - dry at end of year, but lake virtually full.

1977  Not much use, but back to cross fence in lignum by end of year with some restricted grazing.

1978  Lake promising but big winter rains again flooded big Lake with small overflow to little lake early October.

1979  Not much except fringe benefits, but back to cross fence at end of year and reeding fast in dry conditions.


1981  High stocking rates and dry conditions took toll and lake not carrying many stock through autumn. Approx 600 acres grain sown Deepwater sump and nicely away when minor flood in July took water to Bolte's fence and ruined the crop. Wimmera Rye responded well, also barley grass, but large numbers again carried till end of year. Lignum paddock dry and Deepwater almost dry by end of year. Most of the country scalded except where cane grass growing thicker than ever.

1982  Lake running fair number of sheep early in year mainly on dry Wimmera Rye grass. Flash local flooding after big rains in March caused water to reach Bolte's and presented problems and arduous work in getting out with minimal losses. Big numbers in Spring and lake completely dry by end of November.

1983  Local storm early January flooded approx. 800 acres Deepwater and Plain, with minor flooding in light. Splendid response from couch grass, a great relief under extreme drought conditions with about 4000 sheep on Bramhope. With winter rains water into Bolte's by August and almost to Roy Woods' end October.

1984  Big summer rains early in year with local and Bland flooding caused the big lake to overflow about 1st February and running out Manna Creek by 11th February. Of no use for most of year. Little lake also full.
1985 Big Lake of very little use for year with a fresh
towards end of year, virtually filling Big Lake again.
Little Lake quite useful, especially W.J.'s and drying
fast.

1986 Water receded quickly in Little Lake, with good
stocking rates. Also allowed opportunity crop to be
sown, with tremendous results. A fresh in Big Lake
during the winter spoilt hopes of useful spring, but
water getting away fast at end of year and becoming
useful. For the record we lost about 70 of Mrs
E.'s wethers in long paddock (Narara) due to poison
attributed to algae in water.

1987 Bland Creek had run during year but minimal effect on
Lake. Some light fringe grazing in late spring and
water well back by end of the year.

1988 Lake dry by end of March but with lack of any showers
no response of feed on deeper country. Fair amount of
crop sown, but it did not survive a fresh in Lake
which put the water into Bolte's. Good grazing.

1989 Lake dried out early in year and preparations made for
sowing but water won the race. Turned very wet, with
some flooding from River in early winter, with Lake
about half full.

1990 Flood rains in autumn with the Lake overflowing from
Bland and River waters and running out Manna Creek by
about 1st May. Ceased running about end of the year.

1991 Little Lake almost dry by end of year, but Big Lake
had not receded much, except fringe benefits late
spring and early summer.
LAKE COWAL - AN EPHEMERAL LAKE.

Lake Cowal is a natural depression approximately 14,600 ha in area. It is approximately 26 kms in length and averages 6 to 7 kms in breadth. The Lake is formed of two portions separated by a low saddle and a hill known as Bogeys Island. The northern and smaller portion is known as Nerang Cowal (or the Little Lake) and the larger and deeper southern section is called Lake Cowal.

Inflows to Lake Cowal occur due to flood waters which escape from the Lachlan River downstream of Jemalong Gap and Wyldes Plains Irrigation District. These inflows enter Lake Cowal immediately south of Bogeys Island. Additionally inflows occur from Bland Creek, which enters the Lake at its southern extremity.

Overflows from the Lake system discharge over a bar located at the northern end of Nerang Cowal and flow down Manna Creek and thence via Bogandillon Swamp, Wallamundry and Wallaroi Creeks to the Lachlan River.

When filled to capacity up to the level of the northern outlet bar, the total volume of water stored in both Lakes is about 194,000 ML of which 162,000 ML is retained in Lake Cowal at a maximum water depth of 4.2 metres. The remaining 32,000 ML is stored in Nerang Cowal at a depth of about 1.5 metres. At capacity storage, the surface area of Lake Cowal and Nerang Cowal is 10,800 ha and 3,800 respectively.

The Lake area is owned by private landholders under freehold tenure. The Shires of Jemalong, Weddin and Bland meet in the centre of the Lake. The area is fenced, including lands that become submerged and it is used for cropping and grazing as flood waters recede.

Once filled to capacity the Lake takes from 2 to 3 years to empty by evaporation and seepage, provided that no further inflows occur. During this period, wind driven waves often cause temporary inundation of land recently exposed by evaporation, thus creating a natural irrigation, watering and improving the abundant growth of valued pasture for grazing.

Records of flooding from the Lachlan River and Bland Creek commence in 1870. However most of this data is scanty and open to differences of opinion, consequently the flooding history of Lake Cowal is not altogether clear. Studies show that the Lake was dry between 1904 and 1931. A series of floods in the Lachlan brought water into Lake Cowal for periods between 1950 and 1960 and a substantial portion of the Lake was dry between 1967 - 68 and 1984 - 1988. More recently Lake Cowal has filled in 1990 and 1993.

Whilst Bland Creek floods can occur independently of, or in conjunction with, flooding in the Lachlan, Lake Cowal is most commonly filled by inflows from floods in the Lachlan. Flood events in Bland Creek alone are rarely of sufficient significance to fill Lake Cowal or Nerang Cowal and carry
The above data would indicate that over the years man's intervention has altered the character of the Lake, clearing the land for farming, building dams - irrigation, levies to protect some areas from flood with little consideration being given to the resulting effect on neighbouring properties resulting in many landholders feeling that they have been disadvantaged due to the flood protection being received by others. Now however an awareness of damage to self and others is making people look to their farming practices and accept that any action which either diverts water to neighbouring land, or increases the volume of water in neighbouring locations is unacceptable.

With few exceptions the land around the Lake has been owned continuously and successfully managed by the same families for three and four generations creating, within those groups a valuable knowledge of successful farming and grazing practise and a deep attachment to the very unique area in which they live. While, in this dry continent water is a valued asset to the farmer it also provides an aesthetic value to those who are fortunate to live in the area. It is interesting to note that early settlers, where possible, built their homes near water and many farmers dwelling near Lake Cowal, the Creeks and surrounding area benefit from this. What could be more beautiful than the moon making a silver path across the water or an early morning sunrise and in dry times the view of an abundant crop or fattening stock.

Flora and Fauna too numerous to mention abound in the area and create a constant fascination to all who are interested in observing nature. It is one of the most significant waterbird concentration areas in NSW. It is an important site for migratory birds and contains a diverse breeding waterfowl population of 79 species, numerous other birds are found there and several rare and endangered species are known to inhabit and breed in the Lake.

It is important to note that it is essential that the Lake has its dry periods, for when the Lake dries up, vegetation grows - the land is used for farming and grazing - native animals appear, then the Lake floods and a rich biological explosion occurs - food is plentiful - aquatic life is generated and birds appear. It can also be noted by those familiar with the area that bird numbers are greater when the bed of the Lake is only partly submerged, they enjoy "pottering about" the shallow water.

Lake Cowal supports commercial fishing based mainly on golden perch, redfin, and yabbies. The wetlands are a popular site for duck hunting (though not all landowners are sympathetic to this activity). A reserve on the western side administered by the National Parks and Wildlife Service allows public access to the Lake.

The major enterprises on the dryland area are sheep and cattle grazing and cropping of winter cereals such as wheat, oats and barley. The wetland areas are grazed and cropped opportunistically as moisture and market conditions permit.
productive than the surrounding dry lands for several years after flood recession. High crop yields can often be obtained from recently flooded land and an abundance of stock feed can provide ideal conditions for grazing stock. It can be noted that farmers cropping the wetland areas run the risk of inundation by flood before harvest - this has been particularly noted since 1950 - however the excellent return can make the gamble worth the risk. Grazing is of course more reliable and of value to landholders particularly in times of drought when an abundance of feed grows as water recedes, the necessity of storing large quantities of fodder for dry times is not so great when the bed of the Lake is available for grazing. Lake Cowal is known as some of the most productive agricultural land in the state.

In 1992 Lake Cowal was listed on the Register of the National Estate.
Comment about Lake Cowal would not be complete without some reference to snakes.

Snakes are reptiles and are numerous in Australia. There are 110 species of land snakes in Australia, they can be grouped into four families. They are the Elapidae, which are front fanged; the Pythons, which are constrictors; the Colubridae, which are harmless rear fanged snakes; and the burrowing blind snakes (family Typhlopidae).

Most of the Australian species and all the dangerous ones, are ELAPID or front fanged. The danger presented by a particular snake's bite depends on both the potency of its venom and the quantity it is capable of injecting. If both of these factors are considered, the most dangerous land snakes are, in order: the Taipan, the Death Adder, the Tiger Snake, the Eastern Brown Snake, the Western Brown Snake, the Copperhead, the Mulga Snake, the Red-bellied Black Snake and the Rough Scaled Snake.

Some snakes to be found at Lake Cowal are: Yellow-faced whip snake, White-lipped snake, Red-naped Snake, Eastern Tiger Snake, King Brown Snake, Spotted Black Snake, Eastern Brown Snake, Curl Snake, Black-headed Snake and Sandy-bandy. So it can be seen that while interest may centre on the Tiger Snake there are other snakes worthy of mention.

The Eastern Tiger Snake is common at Lake Cowal and active each year between spring and autumn. This reptile is found on the ground and in trees, some of which may be standing in water up to two kilometres from the shore. They live on a variety of chicks, eggs, mice, frogs, spiders, grasshoppers, beetles and ants. A study has shown that Tiger Snakes have a preference for young birds although frogs generally constitute a substantial part of their diet. It is interesting to note however that Tiger Snake remains have been found in food of several remains of birds in the Lake Cowal area including Sacred Ibis, Whistling Kite, Brown Goshawk, Swamp Harrier, Kookaburra and Pied Butcher-bird. So while the snake is hunting it too is being hunted.

Snakes only pose a threat if disturbed, basic common sense must be observed in the Lake area. Naturally if the Lake is partly dry and a reasonable distance from dwellings and daily activity there will be less likelihood of coming across a snake though snakes can be found a considerable distance from water. If the Lake has a reasonable quantity of water bringing it in closer then extra care needs to be taken. Protective clothing such as boots or shoes and long trousers should be worn, avoid walking through long grass and disturbing logs etc. Snakes will shelter on a hot day, the ground is too hot for them to move about but they will come out at night. People learn to live with nature all over the world, they are not constantly confronting dangerous animals nor perishing from extremes in climate.

Lake Cowal has been, over the years, a place of interest to many naturalists among them Eric Worrell, who during his lifetime did much to extend public knowledge of Australian
Reptile Park near Gosford NSW and was awarded the MBE in 1970 for his contribution to the development of anti-venenes.

George Cann was a regular visitor to Lake Cowal, he was known as a Master Snake Man who feared not the bite of the Tiger Snake or Death Adder. He and his wife Essie settled at La Perouse and established what became known as possibly Australia's longest running snake show. Their sons George Jnr and John still visit Lake Cowal and continue on with the show at the newly landscaped and aptly named Cann Park at La Perouse.

John Edwards was another man who developed an interest in reptiles at a young age and became a regular visitor to the area - at one time he had an educational exhibition of snakes and spiders on tour around the schools.

One purpose in catching snakes is to milk their venom which is supplied to the Commonwealth Serum Laboratories where antivenenes are made for the treatment of snake bite. In most Australian States snakes are protected by law, including the venomous species. A dangerous snake may only be killed if it is near a house, or is an immediate threat.
Flora and Fauna abound at Lake Cowal, it would be impossible to make a complete list.

Two keen, world travelled, bird enthusiasts camped for two days on the shores of the Lake during September 1989. They were delighted with their sightings and also commented that in all their travels they had not seen anything more beautiful than the sunrise over the Lake.

Their list:

- Great crested grebe
- Hairy headed grebe
- Pelicans
- Large pied cormorant
- Little pied cormorant
- Little black cormorant
- White necked heron
- Straw necked ibis
- Yellow billed spoonbill
- Black swan
- Australian shelduck
- Black duck
- Grey teal
- Wood duck
- Whistling Kite
- Little eagle
- Masked yapwing
- Silver gull
- Crested pigeon
- Galah
- Eastern rosella
- Red rumped parrot
- Pallid cockoo
- Bookbook owl
- Kookaburra
- Welcome swallow
- Tree martin
- Black faced cookoo shrike
- Grey shrike thrush
- Willy wag tail
- Grey crowned babbler
- Rufous songlark
- Noisy friarbird
- Noisy miner
- White plumed honeyeater
- Striated pardalote
- House sparrow
- Common starling
- White winged chough
- Apostle bird
- Magpie lark
- Pied butcher bird
- Australian magpie
- Australian raven

Bird song provides constant music, especially in the spring when so many birds enjoy the blossom of the trees.
Some trees to be found are the Belah, Wilga, River red-gum, Bimble box, Yellow box, Black box, Grey box, Rosewood, Weeping myall, River cooba, Pine, Kurrajong.

Flowers are a delight, especially in the spring and if there has been rain it is a joy to discover numerous small, but very beautiful flowers; Bulbine lily, nodding blue lily, Grasland lily, plain sun orchid, mistletoe, native lilac, pink bindweed, bugle flower, tall bluebell, rock isotome, mulla-mulla, numerous daisy flowers, yellow, mauve, pink, blue and white and billy-buttons.
Lake Cowal Records

Mr. S. Wilson, of Lake Cowal Station, Mareeda, writes:

I enclose herewith our registered rainfall for the first six months of each year, from 1st January, 1888, also the total rainfall for each year. It will be seen that the first six months of this year is only the eighth driest, but as the major part of the rain fell in January, viz. 1.77 inches, and the next good rain of 1.91 inch only came on December, which is too late for much evaporation on clay soil, it has resulted, up to date, in a very bad season.——Yours etc., S. WILSON.

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Lake Cowel abounds in wildlife.
Lake Cowal Better Drained Than Held For Storage

By Alan Buttershaw, Cowra, West Wyalong

An inexpensive drainage system on Lake Cowal that would work would be a better proposition than a much more costly buffer storage scheme, almost certainly doomed to failure.

The use of Lake Cowal as a buffer storage for the Lachlan River, as outlined by Mr. J. Ridley, of Pine Hills, Forbes, in the “Herald” of May 8, caused both interest and surprise. Interest because I am a landholder in that area, surprise because Mr. Ridley is a member of the Lake Cowal Flood Mitigation and Drainage Association and is fully aware of the association’s strong objections to its use for buffer storage.

Storage Plan Rejected

In 1952, after floods which began in 1930, Mr. Cowdroy, district engineer for Water Conservation and Irrigation Commission, Forbes, in answer to requests for some feasible flood mitigation scheme for that town investigated the possibilities of Lake Cowal as a water dumping ground and/or possible storage for water.

A thorough investigation by the commission revealed it was entirely unsuitable for storage. Consequently the plan was rejected.

Lake Cowal ranges from approximately 3ft to 12ft, only when completely full. In the main, it would require a lot of walking to get into 3ft of water. Being a shallow pan, evaporation occurs at a high level and in view of the size, wind use must be much of the water.

Mr. Ridley’s mention that Mr. T. H.· Ralston, V.C., was settled on lake country and indicated it was considered of reasonable value. This implies that a suitable drainage system would be a worthy solution to difficulties. Buffer storage could not possibly help him.

Meetings were held in re-

wood firm representing the vendor for that day.

Prices obtained for surplus sheep have been at least on a par and, in most cases, ahead of many other sales in the surrounding districts.

Some landholders who have cattle in the Lake Cowal area are renowned for the quality prime stock they produce. Wheat crops, yielding over 13 bags an acre, have been grown.
"LAKESIDE"

My association with Lake Cowal began in 1922, when my father Harold Bolt won this block in a civil ballot. 3,000 acres on the NorthWestern edge of the 35,000 known as the "Big" Lake. The only improvements on the block were one fence and one dam. My father lived alone in a tin hut for 7 years. He cut carted and hand bore many fence posts before putting up miles of new fences. He and his brothers built the woolshed and all the other farm buildings.

He married and had the farmhouse built. My wife and I still live in that house. Our family is the only one of the original owners who drew blocks, still holding our portion. Owning a farm in a lake has its ups and downs. But the good times have outweighed the bad. Probably the most difficult thing being the fencing.

In 1988 we gained first prize in the local then zone, then the regional crop competition with some Vulcan wheat grown in the lake bed. It went 26 bags to the acre. We used no fertilizer and only worked it up once.

We have at one time grazed 6,000 sheep and 100 cattle — some belonging to neighbours — at the one time the feed was so lush.

Many duckshooters from near and far have camped and become friends over the 'wet' years. We have had up to 1200 camped on our place alone one year. And despite the loss of our grazing land when the lake is full, the magnificent water birds nesting in their thousands almost makes up for it. The National Geographic Magazine have featured the rare Royal Spoonbills nesting here.

Lake Cowal is famous for its tiger snakes and we have had them in the house and even at this moment have 2 frozen in the deep freeze to show interested visitors. Our two sons) made quite a hit on separate occasions with frozen 'tigers' at school.

One unique feature of this property is the family graveyard. The ashes of my Grandfather and Father are buried on a quiet hill overlooking the lake bed.

This is just a brief picture of life on a lake farm. The years of 'wet' droughts and good years when everyone else is experiencing a dry drought have certainly been worth the different farming practises needed to own "Lakeside".

Trevor King Bolte.
RUNS AND STATIONS - LAKE COWAL.

NEW SOUTH WALES GAZETTER. 1866.

CROSBIE'S CREEK: (Co. King). is an eastern tributary of the Boorowa River, rising in the Yass Plains, and flowing west about 10 miles.

COWAL LAKE: (Co. Gipps) is a large swampy lagoon, formed by the waters of the Yeo-Yeo and Manna Creeks. It is about 18 miles in length and 6 miles in width, and in wet weather expands into a large shallow lake. The hollow or valleys in which it lies is about 40 miles S.E. of Condobolin, on the Lachlan River, and is well grassed and abounds in salisaceous plants. Pliocene tertiary.

COWAL STATION: (Lachlan district), occupier T.J. Atkins, area 16000 acres; grazing capacity, 600 head of cattle. The nearest post town is Forbes. The old charges were Thirteen pound; the recently appraised rental is Seventyfive pounds.

COWAL NO. 2 STATION: (Lachlan district), occupier, T.J. Atkins, area 16,000 acres; grazing capability 640 head of cattle. Charges, Thirtyeight pound two shillings and six pence.

HAIRATHA STATION: (Lachlan district), occupier, M.R. Bernard, area 58000 acres, grazing capability 4,000 head of cattle. Charges, Thirty pound.

CLEAR RIDGES STATION: (Lachlan district), occupier, Thomas Lees, area 45,000 acres, grazing capability 640 head of cattle. Charges Thirty pound.

BLOW CLEAR STATION NO. 2: (Lachlan district), occupier, Sweeney Brothers, are 16,000 acres, grazing capability 960 head of cattle. Charges, Thirty pound.

BLAND: is a county in the pastoral district of Lachlan, containing 300 acres of alienated land, and 1,359,700 acres of unalienated. Its boundaries are, however, open to modification.

BLAND STATION: (Lachlan district), occupier, Thomas Atkins, area, 17,000 acres, grazing capability 640 head of cattle. Rental Two hundred and sixteen pound.

BLAND STATION NO. 2: (Lachland district), occupier, John Chisholm.
BLAND EAST STATION: occupier, Mrs Alice Gibson.
BILLABONG STATION: occupier, Thomas Lee, 19,000 acres.
BILLABONG LOWER STATION: occupier, Thomas Lee, 16,000 acres
BILLABONG BACK-RUN: occupier, Thomas Lee, 16,000 acres.
BILLABONG NO 2 STATION: occupier, James Marsden, 16,000 acres.
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THE LONE HAND. AUGUST 2, 1920.

LAKE COWAL.

Boolambayte:- The great rains in N.S.W. last month swelled the Lachlan River until it burst the confines of its banks and spread the water over the plains to fill Lake Cowal. This inland sea is a spasmodic affair, and exists in name more often than in actuality, like all western lakes, save Lake Cudgellico. When the rains of 1915 and 1916 flooded the inland rivers, Lake Cowal filled for the first time for some 12 or 13 years, but the long dry spell during 1918-19 saw its waters vanish completely. This lake is merely a shallow depression, some 69000 acres in area, and when the basin is filled, the greatest depth is only about 4 feet. In early days and ordinary flood in the Lachlan would send a strong stream through Gatenby's Jemalong station into the lake, and, so a consequence, it was very often full. When the Forbes-Condobolin road was formed and N.A. Gatenby went in for irrigation, the embankments and barriers so created obstructed the flow until it required a heavy flood to divert any considerable volume of water along the Bland to the Lake. The area indented by these floods soon dries up in the fierce heat of the western summers, leaving excellent pasturage in the huge basin. This land is held by Samuel Wilson, a typical western squatter of the old school, and his enormous run, probably the largest in the Central-west, is called Lake Cowal Station. It lies near the overflow between the Bland and the Mirrool and save for the lake and a few isolated hills, is genuine plain country. The recent flow from the Lachlan has inundated about 25000 acres of the lake bed, and for 12 months there will be a fine, but shallow sheet of water there. Then, unless heavy rains come next winter it will be dry pasture land. But during its days of fullness, Lake Cowal is a paradise for the naturalist. Every variety of water birds that the back country knows finds a temporary habitat along its grassy fringe, and on its reed strewn basin. In 1916 I saw 3 million of teal, mallard, black and wood duck black swans in clouds, pelicans, cranes, shags and those wonders of the water, the wingless musk-duck. Shooters slaughtered ducks in thousands for food and sport, but the numbers never decreased. Whence the birds came so suddenly, or whither departed when the lake dried ups is one of the mysteries of the inexplicable western bush.
LAKE COWAL.

by S. WILSON.

The date of the earliest settler at Lake Cowal is unknown, but would be probably be prior to 1830. James Marsden 'took up' this station, also Billabong Station, joining the village of Marsden, called after him, and which for over forty years was called Marsden's. Lake Cowal Station was sold by Marsden to Clarence and Kennedy, and they sold it to Ricketson and Shinn about 1876, and the latter sold it to Samuel Wilson, of Lima Station, Benalla, in 1880, since which it had been held by our family.

Caragabel Station, surrounding Marsden, was taken up by Gibson about 70 years ago, and Fred Faithful Gibson held it till his death, and his beneficiaries still hold it. Morangerell Station on the Bland, was taken up by Donald McGregor prior to 1850. He sent a load of hay to Forbes gold rush, getting up to three shillings per pound for it.

The name, Cowal means "lake" in Aboriginal language. Yougee means the "mallee hen". Wamboyne means "kangaroo". Nerang means "small". Morangerell means "white cockatoo". Borongerell means "bird".

The pioneers of the Bland were: Cartwright, Marsden, Gibbons, McGregor, McNamaras, Caldwell, Jamiesons, Chisholms. Willliam Jamieson still lives at Back Creek, Wyalong and could give interesting early history. Steve Caldwell bought Moonbucca in 1894. James white took up Burrangong, where the town of Young now is, in 1819.

Mrs Sarah Musgrave is said to be the first white child born at Young, and she is still alive.

Rabbits were first seen in 1886, and within ten years there were hundreds of thousands of them.

The Aborigines had large camps on the site of the present Lake Cowal Station Homestead, which is on an elevation of about twenty feet above the Lake, and was evidently once a volcano. Numerous middens were about here. Lake Cowal, containing four hundred thousand acres, and eight feet six inches deep when full, was at one time much deeper than it now is, as at a depth of twenty four feet below the ground surface one finds the identical coarse sand that abounds on the huge sand bank,

There is a rock island in the Lake about 76 feet above high water level. The rock is mostly slate, but old Devonian rock appears at the northern end, and on the north littoral there is "plum pudding" stone.

Wamboyne Hill, lying two miles west of the Lake, is sandstone granite. Manna Mountain, four miles north of the
Lake, is granite, with some quartz and sandstone. Billy's Lookout Hill is granite and quartz, and a considerable amount of alluvial gold had been obtained on the Eastern slopes of it.

West Wyalong, 24 miles west of Lake Cowal, had rich veins of gold, and the mining lasted 26 years, but is now worked out.

Grey kangaroos were exceedingly numerous in 1880-84, and over 15,000 were yarded and killed here. There are probably not 20 alive now. There were no red or blue kangaroos on this western side of the Lake, though on the eastern side they were numerous, and still are. There were a few wallabies here once, and probably some scrub wallaby. Paddymelons were plentiful, but now extinct. Bulbys were once numerous. Emus were numerous and still are plentiful. There were a lot of dingoes, but they are now extinct.

copy taken from R.A.H.S. Journal and Proceedings -
WRITTEN BY LESLIE WILSON

Corran was taken up by my father, Samuel Wilson as a Settlement Lease of 2560 acres (26/9/1895 Cowal & Gipps) The capital value was £1.0.0 per acre.

Chas was born at Corran 1897

He had the homestead and stables built and the timber was cut and milled at Lake Cowal and the cost was 5/- per hundred super feet, dressed.

Father sold Corran to his nephew Samuel Stewart for £1300 on a walk in walk out basis. Sam Stewart took over a mortgage on Corran amounting to £800 and agreed to pay Father the balance of £500 spread over five years free of interest.

At a later date Sam Stewart took up an additional area of 1500 acres adjoining the southern boundary of Corran.

About 1908 Sam sold Corran and the additional 1500 acres to S.J. Stanford from South Australia for about 17/6 per acre present title.

In 1913 Stanford sold the additional area of 1500 acres to Dean for around £2.0.0 per acre and at the end of the same year my father bought the original area of 2560 acres on my behalf at £2.0.0 per acre present title.

In 1914 I made application to convert the 2560 acres of settlement lease to conditional purchase at a capital value of 20/- per acre and after a delay of about two years my application came before the Land Court and was granted.

In 1920 I bought 420 acres known as "Clearys" from the late Chas West at £2.0.0 per acre present title and in 1926 I sold Corran and Clearys to T Skinnick for £5.0.0 per acre present title at that time there was 8/- per acre owing to the Crown on 2560 acres and I have no record of the amount owing on the 420 acres known as "Clearys"

I left there in June 1926 and did not see the place again till October 1958.

I took delivery of the property known as "Malboona" 915 miles west of Mudgee) in March 1927 and had a number of unpacked cases stored in a shed there. This shed was burnt down one night and all my diaries dating from 1914 and a lot of my records were destroyed which accounts for a certain amount of vagueness in this record.
Corran was named after a farm on the Isle of Bute which is owned by my Mother's family. I understand that all the balance of the island is owned by the Marquis of Bute. The Corran homestead is built on ground which was originally covered with a dense growth of small pine trees. The plan of the house is the same as a homestead owned by my grandfather near Benalla in Victoria.
WILSON

LESLIE: GEORGE: CHARLES: BASIL

LAKE COWAL 10th JANUARY 1911

SAMAUEL WILSON SNR
NEWSPAPER CUTTING.
9.2.1925
U.S.A. - LAKE COWAL
KDHA HEARD PLAINLY
WEST WYALONG, MONDAY

Exceptional results in the reception of long distance wireless signals were received on Friday night between 8 and 9 o'clock when Leslie M. Wilson at Lake Cowal Station received music and speech broadcast from KDHA, Pittsburgh, Pennsylvania, without using aerial or earth. Owing to very bad atmospheric conditions little of the speech was understandable, but many melodies were easily recognisable, including "Killarney". A low-loss two value set, with coils designed and constructed by the owner was used. With the aerial and earth connected the music was heard 15 feet from the loud speaker. Lake Cowal is 250 miles from Sydney.
WATER FROM LAKE COWAL TO WYALONG.

During May, 1895, a project was afoot to bring water to Wyalong from Lake Cowal. Mr. R.O. Ffrench made preliminary investigations as to the best route, etc., and Mr Campbell, a licensed surveyor, was to ascertain the difference in elevation between the two places. When this was done a more definite report was to be submitted on the scheme. Mr Ffrench stated that no difficulty would be encountered to raise the required capital.

In the report of the Sectional Committee, June 1895, regarding Temora to Wyalong railway, Mr Gough, in his evidence said he thought that if water from Lake Cowal was lain on to the Wyalong field, a pipe might be laid to the range where Billy's Lookout was situated and gravitation would carry it from there to Wyalong. Mr R.J. Campbell, surveyor, said he had made a survey of the line of water supply from the neighbourhood of Lake Cowal to Wyalong West. The plan showed a route via the Wyrra Mountains, near Mr Carter's house on the Billabong, but he had no knowledge of the cost of the work of putting down pipes etc. He said he knew the country between Lake Cowal and Wyalong. About half of it, that next to Lake Cowal, was good agricultural land, but the part between Wyalong and that named is inferior except odd places suitable for agriculture.

Sergeant of Police and Mining Registrar, Sgt. McHardy, said that claims were being taken up in various localities, such as Sandy Creek and Billy's Lookout. Those places did their business with Wyalong. There was also a large area of country close to Wyalong which has not been prospected. Sgt. McHardy thought a permanent supply of water would do more to develop the field than a railway would.

The synopsis of the report regarding the feasibility of obtaining a water supply from Lake Cowal, prepared by Mr. Campbell under instructions of Mr Ffrench stated: "The nearest point to the southwestern shore of the lake from Wyalong West is N33 degrees E and 21 miles distant. A line in this direction would pass over country with out any elevation of sufficient height to admit the gravitation and supply of water into Wyalong and is, therefore, though short, no practicable as part of the proposed scheme.

"A line passing from the centre of the lake to Billy's Lookout which is distant 10 and a half miles form deep water if carried to Wyalong West 15 and three quarter miles, would
require a total of 26 and one quarter miles of pipe. Billy's Lookout is an abrupt elevation of decomposed granite rising to a height of about 400 feet above the level of the lake and a considerably higher elevation the Wyalong. The route is objectionable, partly on account of the great distance to be covered, also owing to the non-permanent character of the supply from the lake itself. A shorter route, and a more desirable one in many respects, would commence on the Bland Creek above where the waters of the lake spread out during flood periods. This route passes over level country and the ascent is gradual from the spur on the Wyrra range, where the elevation would probably be about 300 feet above the starting point, a distance of 10 and a half miles form there. From there to Wyalong West would be twelve and a half miles, or twenty three and a half miles in all. This line seems to be the best, for several reasons. The source of supply is permanent, the creek at this point not being dry for over twenty years. The water there is always pure and sweet, which is not the case with the waters of the lake. The distance is shorter than by Billy's Lookout and the elevation on the Wyrra range is sufficient for the purposes required with the line passing almost entirely through Crown Lands.

The country passed over is open box and pine forest to the foot of the Wyrra range, the soil being moderately stiff clayey loam. Within the slopes of the range the line would pass through ironbark, pine, oak, box and over dense scrub and loose conglomerate soil. From there to Wyalong the timber is box, mallee and scrub, the soil being a stiff, clayey loam. Timber of good quality is obtainable in the vicinity of the forest on the Wyrra range, the line passing for a considerable distance through a Government forest reserve. The starting point on Bland Creek is on a Government water reserve and the banks of the creek are sufficiently above flood mark to permit of buildings and machinery being safely placed there. Lake Cowal, although presenting a very fine appearance as an expanse of water, is not to be relied on as a permanent source of water supply. Its greatest depth when quite full is 14 feet. After that it overflows at the north west end into Manna Creek, it was quite dry for nearly two years between 1883 and 1885, and in consequence of its shallowness, the water is rendered impure by the constant disturbance by the waves of the sedimentary beds of vegetable matter. Wild fowl excrement, weeds etc. would probably choke the pipe which would be laid in the lake.
"I, therefore, think that the most practicable route is one form Bland Creek via Wyrra Range and thence to Wyalong West. Of course, my estimate regarding the height of Billy's Lookout and the Wyrra Range is liable to rectification when the levels are properly taken. This work should be carried out at once in order that this data shall be obtained before the scheme is finally decided upon".

Mr J.B. Reymond, Member for the Electorate of Ashburnham, was in Wyalong for some days during December, 1895. Members of the Progress Committee of West Wyalong conferred with him on the proposed water supply from Lake Cowal to Wyalong. Members of the committee submitted that the scheme was the only one likely to give permanent results. He said the Government was fooling away money in unproductive works while, if it could be shown that this scheme would give anything like payable results, it must receive favourable consideration. He read a letter from Mr. C. McPhillamy of Warroo with regard to bringing water from the Lachlan to Lake Cowal, in which it was shown the natural flow of the water from the river could be used to fill Lake Cowal much more than was being done.

Mr Reymond said he felt sure any proposal to bring water from Lake Cowal to Wyalong would have to be part of a comprehensive water conservation scheme and such a scheme was being formulated.
A TRIP TO LAKE COWAL

A correspondent in the Wyalong Star, August 15, 1895, under the name of "The Vag", wrote the following report on a trip he had made to Lake Cowal: "Lake Cowal is a local Tom Tiddlers ground, the natural point for a picnicker, the sportsman, the budding artist, the adventure seeker, the blase and the impressionist. This it had achieved and it merits well the distinction. Agriculturally it is as yet an undeveloped bonanza. Industrially also it has unlimited water supply and great possibilities in the far future. As a repository of valuable minerals rapidly making its way to the front, let us further see how it is rapidly fulfilling its inevitable destiny.

"About 30 miles by five or six miles, it is best reached from Wyalong by a sandy creek and Billy's Lookout. Taking a northerly track from Billy's Lookout, some five miles through fairly open country, carrying very likely looking soil for cereals, but quite bare of feed at present, brings us in sight of the lake, which forms a large portion of Messrs Wilson and Stewart's Lake Cowal Station. Its agricultural aspect is quite fair, arable soil everywhere, quite rich in places. On the lake bank, half a mile to a mile in width of rich alluvial, which with reef clay, capable of growing anything in creation with this climate and judicious irrigation, it is especially suitable for vine and fruit culture.

"To what extent is it now utilised? It supports about a quarter of a sheep and five thousand rabbits to the acre. Both are museum specimens, for opposite reasons. The sheep rattle like castanets and the rabbits aldermanic quadrupeds - too fat for sport and only useful for boomerang practice.

"All around the lake and the Bland district feed is as bare as your hand, and most of the stations are travelling their sheep southwards to the Tumbarumba plains or north to the Lachlan country, where some of the river flats around Condobolin and Forbes still have a little herbage left and more is springing from the last rains...... Even as I write alluvial discoveries are reported from Billy's Lookout ....Soil, gold and water unlimited -- what bright destiny might not be promised for the lake district?"
PERSONALITIES

Coupled with Marsden, the Lake Cawal district has a background of distinction for the numbers of its citizens who have held important positions in public life. The district can boast of two Members of Parliament. (George Wilson was holding the State seat of Dubbo at the time of his death); shire presidents; eight or nine show society present, number of show committee men and many others who have held office in public affairs.

SAMUEL WILSON

Samuel Wilson was associated with the ownership of Lake Cawal station for half a century, and he resided there for practically the whole of period. During the later-years, Leslie, George, Charles and Basil Wilson were associated with their father on the station. Leslie, George and Charles had also acquired separate properties. Samuel Wilson was the chairman of the temporary shire council, pending the official incorporation of the Shire of Bland. He was also the foundation president of the West Wyalong P.A.H. and I. Association. A further term of office was served by him as a councillor on the Bland Shire Council. He took and active interest in the public affairs of the district and gave much valued support to all the patriotic movement during World War I. A keen supporter of the Billy's Lookout school, he always attended the annual break-ups for the Christmas vacations. Besides giving the school prizes, Mr Wilson would give a lecture on some interesting subject.

ERNEST ALBERT BUTTENSHAW.

Ernest Albert Buttenshaw was the owner of Ellerslie for a period of years. He entered public affairs when a young man. Ernie Buttenshaw, as he was familiarly known throughout the district, contested and won the former State Parliament seat of Lachlan about 1917, as a Progressive Party candidate. A breakaway occurred within the ranks of the Progressives during the early period of the 1920's. Buttenshaw was one of the seven party members who remained loyal to the party. They were known as the seven "true blues". From this breakaway a new party emerged and from
then on was known as the Country Party. The new party was lead by Colonel Michael Bruxner. It was during the term of the Deputy Premiership of Colonel Bruxner that Mr Buttenshaw attained cabinet rank as Minister for Works and Railways. When Colonel Bruxner retired from active politics, Mr Buttenshaw was elevated to the position of Leader of the Country Party. During the absence of the Premier, Sir Thomas Bavin, on a mission overseas Mr Buttenshaw was the Acting Premier. At a later period he became Minister for Lands. During his youth, Ernie Buttenshaw was a keen follower of cricket and tennis and he participated in these sports at most of the surrounding centres where clubs existed.

CHARLES WEST.

A typical rugged pioneer, Charles West was a man of stamina and endurance. He came to Lake View before the turn of the century, with his young wife, who was 20 years of age. Charles West was a strong supporter of the West Wyalong Show Society. He was a member of the general committee for a period of years. In his young days, Charles was a "gun" blade shearer and had the reputation of being a "200 a day" man. Besides sheep, he took a keen interest in wheatgrowing and was the biggest grower in the Lake Cowal area. West never drank, nor did he smoke. He always attributed his good health and physical condition to his abstention from the common habits.

WILLIAM BUTTENSHAW

William A. Buttenshaw was known throughout the district as one of the most honest of gentlemen. He vied with Samuel Wilson for the longest terms of presidency of the show society, topping the list with nine terms of office. Wilson had eight terms. The three sons of William Buttenshaw are past presidents of the show society.

JAMES PATON.

Born in Glasgow Scotland in 1885, James Paton, who had been a law clerk on the Caledonia Railway Company, came to Australia in 1908 to Lake Cowal Station. With a true pioneering spirit he adapted himself to life on the land, with a love of horses and growing crops. he had a strong mechanical bent, was a prolific reader, with a special interest in parliamentary law. He was a Justice of the Peace, a member of the Local Land Board, a trustee of the Clear Ridge hall and the instigator of the Clear Ridge
School. A railway league which was successful in persuading the government to build the Euglo (Burcher) line, was founded by him. He was the sponsor and campaign director for four local men who entered politics. They were Messrs George Wilson, E.A. Buttenshaw, Hugh Roberton and G.P. Evans. On the executive of the Country Party, he also worked for the Wheat Stabilisation Scheme and served for some years on the West Wyalong F.A.H. and I. Association committee. He was a member of Masonic Lodges, a trustee of Billy's Lookout hall and school. During World War II he was a member of the Volunteer Defence Corps mounted Regiment. Mr Paton, who died at the age of 57 years, entered in possession of his "Beulah" property Clear Ridge in 1928.
BUTTENSHAW
JAMES: ROSALIE JASPRIZZA: ERNEST
MARY LLOYD: WILLIAM
MARY (WEST) HENRY NURSING IRENE SIMPK:
VICTOR

CATHERINE DONKIN (BUSHBY)  JOHN DONKIN
MARSден.

The name Marsden was taken from Mr. James Marsden, who took up a run of country (Bland Billabong) here in 1852. When the village was first established about 1866, it took the name Marsdens, from the fact that the country was known as Marsden's country. This persisted until changed to Marsden in 1912.

It has no connection with the Rev. Samuel Marsden, who arrived in Australia in 1794 and died at Windsor in May 1838.

A Post Office was connected by Telegraph to Morangorell and Young in 1875, the poles for this line being carted by Mr. William Hughes (1830-1916) of Thuddungra. (A relative of the 1970 Cowra road Hughes family).

By this time the Police Station was erected, but it was not until 21st July 1879 that the first Court of Petty Sessions was established at Marsden. Mr. S. Robinson being the Stipendiary Magistrate at the time.

It appears that the first Hotel was erected before 1866, probably the first building at Marsden.

A public meeting was held in January 1882 to erect a school, as there were enough children to secure a school from the Department. The meeting collected Thirty Pounds towards building their own school at the time.

This was erected in 1883 and shops and houses were being added and the 'Royal' Hotel was being rebuilt after a fire in March 1882. This hotel was owned by Mr. Curry, who later had the Criterion at Grenfell.

The Police Magistrate was holding a monthly court at Marsden in 1883 and Miss Hill was the teacher at Marsden School in 1883.

At that time the nearest hospital and doctor was at Grenfell, which was really going ahead in 1883.

It is not known who had the hotel at Marsden in 1884, but Mr. Maurice Paice had the Bimbie Hotel at Sandy Creek crossing at the junction of roads from Young, Morangorell, Young and Bland.

The Welcome Home hotel on Grenfell Road, Wheeogo, was ran by Mr. J. D. Brenner. (later Bristow's).

The railway line from Murrumburrah to Young was not completed until 1885, the next nearest rail head was at Blayney.

Young and Cowra were connected in 1886 and on to Blayney by 1888 which gave those from Marsden a train to Sydney for produce after they had travelled either to Young or Cowra.

The discovery of gold at Wyalong in 1893 and the beginning of a town there, detracted from the importance of Marsden as a centre.
They were hoping that the line coming to Grenfell from Koorawatha in 1899 would continue on through the Bland to Wyalong, via Marsden but the Government of the day decided that a line from Temora to Wyalong would be best and this was constructed in 1903-04.

The Grenfell-Koorawatha line was opened in 1901. Coach fare Grenfell to Marsden in 1898 was fifteen shillings each.

In 1903 Marsden had two stores, Post and Telegraph Office, Police Station, Court House and gaol and the Royal Hotel kept by Mrs. Cleary and daughter. The Bimbi Hotel in 1903 was kept by Mr. John Norton and the school there had 60 pupils. One of the first mailmen on the Grenfell-Marsden run was Mr. Alex Fraser, sometime before 1882 and Mr. Thomas Maguire ran the Marsden-Morangorell mail for many years up to about 1934. Weddin Shire Council was formed in 1906 and the town of Marsden was right on the western edge of the Shire boundary, between Weddin and Bland Shires.

Agitation commenced for the Forbes-Stockinbingal railway line in 1907 and many were the arguments in favor of a Grenfell-Wyalong line instead, through Piney Range or Bimbi. These arguments continued until February 1912, when a start was made on the Forbes-Stockinbingal line at Stockinbingal.

This was the beginning of the end of Marsden township, with motor cars being introduced into the district in about 1909 and roads getting better, more and more people were shopping in the bigger centres. At the same time the township of Bimbi was growing and taking more and more business from Marsden, by 1912. By 1916 the line had been constructed from Stockinbingal to Caragabal where a new township sprang up and a license granted for a proposed new hotel there. This again took away from Marsden, and more so when it was completed right through to Forbes by 1917. The route of the line affected Bimbi as well as Marsden and Quandialla and Caragabal took over as the leading town in the area.

The Police Station closed 20.4.1931.

In 1970 Mrs. J. Martin lives in the old Court House-Police Station and gaol at Marsden, but little else remains of the one time thriving township of the 1880s.

Grenfell Historical Society.
MARSdens POST OFFICE AND MAIL RUNS.

Early postal records show that in a letter written on 30th April, 1866, Mr. Henry H. Cooke of Bland Billabong, requested that he be appointed as Postmaster in that locality (later known as Marsdens). Mr Cooke's letter read, in part as follows: "Sir - Having seen that Tenders are invited for the carrying of a weekly mail, from Morangarell to Mr. Marsden's Station on the Billabong Creek, I beg most respectively (when such mail is established) to solicit the designation of Postmaster at this place. It may be well to state, that within a quarter of a mile of Mr Marsden's, I have a building in the course of erection, which is to be completed by the 20th or 21st of May when I intend opening a general store, on the newly surveyed reserve for a Government Township." This letter of application was supported by two testimonials "from Gentlemen to whom I am personally known". One was from Mr. W. Farrand, Postmaster at Forbes and the other from Johnson C. King, also of Forbes. Both persons regarding Mr Cooke as "Steady, trustworthy, respectable, and in every way eligible for the appointment".

Marsden's Post Office was opened on 1st June, 1866 and Mr Cooke was appointed as Postmaster at a salary of Twelve Pound per year. On 26th September, 1867, Mr Cooke resigned and Robert Butler, who purchased Mr Cooke's business, was appointed Postmaster.

In a report, dated 21st July, 1868, submitted by Postal Inspector Moyse, it was stated that the Post Office at Marsdens was destroyed by fire on 4th January, 1868, and "nothing saved but seal, date stamps and type; the handles of which are burnt". Following the resignation of Robert Butler, John Young was appointed as Postmaster on 1st September, 1875.

A petition, dated 3rd December, 1877, and signed by 15 persons, requested that the Marsdens Post Office be moved to a more convenient place. (The Post Office was carried on at a hotel following the fire.) This petition was forwarded to the Postmaster-General on 14th January, 1878. The petition read as follows:- "We the undersigned, receiving our letters and papers through the Marsdens Post Office, beg leave respectfully to state, that the present Marsdens Post Office is inconveniently situated and is one and a half miles distant from the township, and in our opinion, inadjudiciously kept at a public house, thereby tempting the station men and other servants sent with and for our
letters, to indulge in drink, and otherways delay in returning home."

Reporting on this petition Postal Inspector Buchanan stated:—"At present I see no reason for removing the Office. The petition is, it appears, in the handwriting of Kelly, the applicant for the office, and I can find but two of the names as residents of Marsdens."

A telegraph line had been constructed from Young to Morangarell during 1877; and the line between Morangarell and Marsdens was reported as being under construction in 1878. The date on which the telegraph office was opened at Marsdens is not known. The Telegraph Station Master, John M. Shannon, was appointed to Marsden on 17th January, 1879. However, the Station Masters were often appointed some weeks prior to the opening of the telegraph stations. Although a policy of amalgamation of post and telegraph offices was being implemented at the time, it was not unusual for the telegraph offices to be opened in separate premises.

When Postal Inspector Buchanan recommended on 30th January, 1879, that the Telegraph Station Master also undertake the duties of Postmaster, it is possible that John M. Shannon had not taken duty as Telegraph Station Master. The Inspector said:—"As a Station Master has been appointed to the Telegraph Office at Marsdens, it would be well that he should undertake the duties of Postmaster also. There is a feeling of jealousy respecting the present holder of the office which would be done away with. If my proposition is approved, it would give satisfaction to the general body of the people in this locality." This recommendation was accepted and Mr. J.M. Shannon was appointed Post and Telegraph Master on 1st April, 1879. As Telegraph Master he was paid one hundred and fifty pound per annum by the Telegraph Department. Usually the Post and Telegraph Masters' salaries were paid jointly by the Postal and Telegraph Departments. However, in the case of Mr Shannon the one hundred and fifty pound paid by the Telegraph Department was considered adequate and he did not receive a postal salary.

The Postmaster in a letter addressed to the Secretary requested that Mr. J. Chief's offer to rent or purchase of premises to be used as a Post and Telegraph Office as accepted as the present building was unsuitable. The Postmaster's letter reads: "I respectfully beg to submit for your consideration, enclosed proposal from Mr. Kelly. The present building used as post and telegraph office is in very insecure. It is built of split rails many of which have shrunk so much as to leave apertures large enough to admit a
man's body. The rent of the present building in Twenty six pound per annum and of that offered by Mr Kelly Thirty pound per annum. The number of registered letters passing through this office require greater protection than the insecurity of the present office affords." And Mr. Kelly's offer was:— "I beg to offer for sale or to rent my premises on allotment 4, section 10, Bimbella Street which consist of a four roomed cottage sawn timber iron roof 21x21 feet with detached kitchen 12x8 and necessary for the sum if total sale, One hundred and thirty pound – including allotment or at a rental of Thirty pounds per annum.
PERSONALITIES

THOMAS WILLIAMS: Mine host of the Pig and Whistle at the "Two Mile" which fronted the Forbes Road at the original village. Tom and Mrs Williams were maternal grandparents of the well known Bodel family at Mallee Plains. Mrs Bodel snr was Kitty Williams and was born at Marsdens, as were also her sister Mary and brother George. Young George was tragically killed when a water tank slipped from a dray. The Williams family came to Marsdens about 1866 and during 1873, Mr Williams moved his hotel to a site 18 miles farther upstream on the Bland Creek from Marsdens. The site became known as Williams's Crossing, which was situated at the intersection of the Morangarell and Bimbi Roads. The hotel was named The Travellers Rest.

WILLIAM MARTIN Snr: Listed in an early Directory of N.S.W. as a blacksmith and photographer, he was a well known identity during the early days of Marsden. Horses for shoeing, and vehicles for repairs, were brought to his smithy at Marsdens from distant areas - even west of Ungarie. Bill and Mrs Martin reared a family of ten, five sons and five daughters, at Marsdens. As a Justice of Peace, William Martin presided at the Marsdens Court of Petty Sessions. A family reunion was held at the Marsden home of Jack and Mrs Martin in 1955. The average age of the family at that date was 64 years. Some of the early family history was revealed at the function. The late parents had come to Marsden about 75 years previously, and reared their large family at the village. When a brass band was organised at Marsden, the father made a drum from a goat skin for the band. When William and Mrs Martin died, they were buried in the Wyalong cemetery. One date was 1918.

J.B. DONKIN: Mr J.B. Donkin was the owner of the station known as Donkin's Lake Cowal. J.B. and Mrs Donkin were well known personalities throughout the Marsden and surrounding districts. They were always generous supporters of any charitable or worthy cause. The station homestead was situated on the eastern banks of the Bland Creek, downstream Marsden near the bend called Fisherman's Bend. The vicinity of the homestead, for many years, was the scene of an annual picnic for all the Marsden children. Every child attending the picnic was presented with a prize. Periodic visits to the Donkin homestead were made by some of the Governors of N.S.W. The Governors were always provided with a police
escort to and from the station. The last Governor to visit the station was Sir Harry Rawson. Mr Donkin was the first resident of Marsden to own a motor car. The car was delivered to Wyalong by rail, and at various periods, was trucked back to Sydney for use during visits to the city.

**JOHN THOMAS KELLY**: Familiarly known as "Pop" Kelly. He was the father of Mrs Curry and her twin sister, Mrs Sutcliffe, Senr. of Wyalong. "Pop" Kelly was a hawker by trade when he first arrived at Marsdens. Apparently he was a man with some education as he had been the Marsdens correspondent to one of the Wyalong newspapers for a number of years. Kelly died in 1905, at Cottingly, in the Mallee Plains district, where Mrs Sutcliffe was resident at that period. He was buried in the Wyalong cemetery.

**JACK MARTIN**: one of the sons of William Martin Snr., was a well known personality at all the local dance halls in the role of M.C. Jack's masterpiece was his ability in putting the dancers through the sets of the old-time square dances. The most popular square dance was the Lancers, followed by the Alberts and Quadrilles. During his later life, Jack Martin acquired some of the smaller blocks of land that were situated adjacent to Marsden, and carried on farming and grazing pursuits until his death.

**SYDNEY BUDGE SNR**: Was a station hand on Caragabal Station for 45 years, during the ownership period of F.F.Gibson. As a token of esteem for his long period of service on the station the late F.Gibson bequeathed to him a small block of land adjacent to the village of Marsden, where Syd built a cottage. During the years of his retirement Syd was a well known barracker of the local sporting fixtures, especially cricket and tennis matches. Just as the Sydney Cricket Ground had its "Yabber", so did Marsden have its Syd Budge. Three member of the family still live in the Marsden district. Frank Jack and Ethel live at Caragabal, Zeta (Mrs George Boneham) at Billabong (1972).

**MRS. "GRANNY" WATT**: Remembered as one of the grandest of women in the pioneering days. Mrs Watt was affectionately endeared to all - young and old - as "Granny". During her life Mrs Watt was married three times, two of her husbands (Powell and Walker) having predeceased her. Before moving to the village. It is not known whether she ran the shanty or not. Granny Watt was midwife to most of the children born
there. She was always at the bedside of the sick, and ready
to help those in distress. Mrs Watt was a grandmother of the
Budge family. She died about 1912, and was buried in the
Marsden cemetery.

SUSAN TATE: Was a wandering nomad. Periodically Susan would
walk from Young to Marsden, a distance of 70 miles. On
arrival, she would quench her thirst with a few beers, have
a rest, then start on the return walk to Young.
This photo was taken about 1895 and taken from the Land Annual of 1938. The hotel was ½ mile down the creek from where the new bridge is and now is just on Sinclair's property.

Mrs. Catherine Margaret Bodell (nee Williams) was born on 23rd December 1872 at the Pig & Whistle hotel on the Forbes road at the 2 mile opposite to Basline.
1. Jim Pearce
2. Johanna Williams (Mrs. A. Rhall)
3. Winnie Williams (Mrs. Marsden)
4. Tom Williams the second
5. Mrs. Tom Williams (nee Bridget McNamara)
6. Mrs. Jack Williams (nee Molly McGrath)
7. Mary Williams (Mrs. Andy Worner)
8. Andy Worner
Billy's Lookout was between Wamboyne and Lake Ovval, and it experienced a gold rush just after Wyalong goldfields were discovered, although gold had been mined there intermittently between 1873 and 1894.

The name Billy's (Billies) Lookout is said to have originated from a tragedy that occurred in the area. A young man named Billie and an older man were droving cattle in the area for Samuel Wilson, when Billie's horse bolted, and he was struck by an overhanging limb of a tree. When they returned to the station to report the accident he was in a state of shock, and kept repeating, "I said 'Billie, lookout.'"

The Town and Country Journal, dated 2 June, 1894 states that: "The old mining camp at Billie's Lookout had lately quite a new lease of life and seems likely to become a permanent township. Two stores have been built and are in full swing and other business places are being erected.

There are about 300 men here and prospecting is being carried out very energetically. There are a few parties on gold but not to any great extent - simply tucker and a few shillings."

Neil White Snr and Ned Harris played a prominent part in the discovery of gold at Billy's Lookout. At the beginning of April, 1895, a report stated that in addition to the initial claims, three more claims had bottomed on the run of gold. The whole valley was pegged out and other gullies were vigorously prospected and there were four or five reefs with fair gold. Neil White and party were working a promising reef 18 inches to 2 feet wide. One shaft was down 90 feet to water level and others were down 70 feet and 30 feet. The three shafts were being sunk to the same level when connecting drives were put in and the stopping of water commenced. About 50 tons of fair stone had been brought to the surface.

From the workings at County of Gipps, Parish of Corringle, No. 132 on Map, $2240 worth of gold was found (value in 1967). At least 2.17 kg of gold was found at an average of 9 grams/ton. There were shafts drives and shallow pits for a length of 400 metres by 100 metres wide. The sedimentary soils were silt, clay, sand, granite sediment, quartz pebbles and boulders. The alluvial gold was derived from unworked veins in the surrounding hills.

In the mine known as the Billy's Lookout Reef (County of Gipps, Parish of Corringle, Portion 53, No. 130 on the Map), shafts and drives were driven for a length of 200 metres and width of 30 metres. In 1894 the major primary materials were reported to be gold and pyrite, and the minor primary
material was galena. Cowthorns and party were working this reef.

Other mines in the Parish of Coringle (Nos 127 and 128 on the Map) also produced some gold but the amounts are unknown.

Billy's Lookout had a hall and business houses, and social life included concerts, dances and cricket matches with the neighbouring teams at Marsdens and Wamboye. Messrs Wilson and Stewart of Lake Cowal Station were President and Vice-President of the Billy's Lookout Cricket Club.

On 16 August, 1895, there was a concert at Billy's Lookout to celebrate the erection of a hall for the Miners' Club. This was followed by a dance "with an excellent supper". Dancing continued until 8 a.m. Following the concert Mr Morris, President and an old identity, and Mr Neil White addressed a large crowd of members and residents in the hall, which had been decorated by "ladies and gentlemen of the township".

In November, 1895 the Department of Education made a grant of £5 to the Billy's Lookout Progress Association for the erection of a bark school house and furniture. Edward Morrison was the first teacher to be appointed on 13 April, 1896.

Although approximately 1000 miners and gold seekers congregated at the Billy's Lookout goldfields, the period of winning gold was shortlived. Numerous shallow shafts or diggers holes were sunk at various other sites within the locality. However no further signs of gold bearing stone were discovered.

Robert Brenner operated a battery on the field and also conducted the only licensed hotel - which was closed in 1903. There were possibly a number of shanties on the goldfield because it is recorded that on a Saturday night in September 1895 there was a raid by the Marsdens police. Some liquor was seized and one person was arrested. He appeared at the Marsdens Police Court and was fined £30 or six months in Forbes gaol.

Some of the timber from Robert Brenner's Hotel was later used to build a shed on Mr Harry Bodel's farm at nearby Clear Ridge. Mr Clarke, who was Mrs Neil White's father, moved his hotel from Marsden to Billy's Lookout.

From Miss Wilson and
"BILLY'S LOOKOUT.

History Recalled. by NEIL WHITE.

This is my first venture in print, but I should like to say something of my people, who have passed away, and of Mr. Wilson and his family, who were good friends of my mother while she was alive.

I consider that some of the members of the Chamber of Commerce have gone to far. The Lookout is mentioned in a reading called the History of the Lachlan (written by my mother's father) which goes back over a hundred years. The region known as the Lookout meant the country from the Fish River to the Old Man Plain and the Bland.

My grandfather came from England at the age of 22, and his first residence was at Gralton's station in the Forbes district. Later he lived at Speck's Gap. He was a horse and cattle vet and in the early days he travelled all that district.

The Lookout is first mentioned in the above history in the year '63 when my father laid the foundation of his fortunes by discovering alluvial gold there. In '66 he selected a holding known as Pine Hill in the Forbes district. Ned Harris discovered reef gold at the Lookout before my father made his find of alluvial gold. The first battery in the district was erected at the Lookout.

The old Billybung Station is also mentioned in the readings. It was owned by James Atkins, who died 22 years ago, at the age of 93. The Lookout later became the back station of Billybung and was given the name of Billy's Lookout. Some of the oldest survivors of those districts spoke of the Lookout as being one of the Rignols, those being J.B. Donkin, and Maitland, of Moonbi.

As regards the remark made about a Johnny-come-lately, that could apply to Mr. E.A. Buttenshaw, the man who had done all in his power to make the place a busy centre with the spirit of a good citizen had done what he can for the children and young people re a little recreation, which otherwise they might never have got. It was here that Mr. Buttenshaw got his first start on the land. He also got the right for the railway to that part. I am of the opinion that a little honor is due to such a man. As a fair deal to all concerned, if the place be called any other name but the Lookout, it should be called Ernie's Lookout."
TOWN AND COUNTRY JOURNAL  2. 6. 1894.

BILLIE'S LOOKOUT TUESDAY.
This old mining camp had lately quite a new lease of life and seems likely to become a permanent township. Two stores have been built and are in full swing and other business places are being erected.
There are about 300 men here and prospecting being carried out very energetically.
There are a few parties on gold but not to any great extent simply tucker gold and a few shillings.
A numerously signed petition had been forwarded to the Postmaster General asking that a post office may be established, great inconvenience being felt, there being no post office nearer than Marsden, 15 miles distant.

BILLIE'S LOOKOUT REEFS.
A correspondent at Billie's Lookout writes:-
White and party struck a reef about three miles in a westerly direction on May 31. The stone, a small specimen of which had since been crushed, gives good results, some say equal to an at Wyalong. Another reef is in McNair's selection and Fitzgerald and party are waiting for permits when they will start working. Prospecting for reefs is being vigorously carried out and any one with capital coming here will no doubt be amply repaid for the outlay.
The petition for a post office has been answered and the postmaster from Marsden is here now making enquiries.
The weather is cold and rainy and there is plenty of water and grass.
Aid was granted for a provisional school at Billie's Lookout on 9.5.1895. First teacher was appointed 13.4.1896, Edward Morrison.

WYALONG-STAR  June 19 1894.

From Billy's Lookout we learn that mining affairs have an improving tendency. Hatward and son cleared up about six loads on Friday for nearly an ounce to the load. The sinking is 35 ft and the depth of wash over a foot.
A few others are getting gold, but in most cases the gold bearing reef 14 inches thick at four feet from the surface has also been found about three miles south and several claims have been registered.
Two bakers, two butchers and two storekeepers should be able to provide well for a population of 200 people. Taken altogether the place has now an air of permanency which it never before possessed.
The Wyalong Advocate dated 8 August 1903 stated that a discovery of gold bearing stone had taken place at Blow Clear some 20 miles north of Wyalong by scrub cutters. The stone was found on the surface and further investigations went to show that a quartz reef is running north and south about twelve inches wide. Samples have prospected so satisfactorily that Brian McNamara and others have bought two shares in the prospective Eldorado for the sum of £20. The stone is of sugary, white quartz quality and said to contain gold freely.

Further Mining Intelligence in the Wyalong Advocate dated 19 August, 1903 stated: The prospectors, Clarke and party are down 20 feet on a 12 inch reef of white sugary quartz, and have commenced to put a crushing together. Stewart and party, No 1 North, are on a reef about the same width, but distinct from the prospectors reef. It is composed of flesh coloured quartz, opalised, and containing ironstone, and is assayed at the rate of 1 oz 14 dwt's gold to the ton. A good deal of prospecting is going on in the surrounding country, which is also Crown Land. There is no outcrop to guide the prospector and most of the work consists of trenching or costeening. Altogether there are about 40 men working at the new find and the adjacent country and there is plenty of water.

On 19 September we read that Clarke and party, Stewart and party, Leadbitter and party all have a tidy parcel of stone paddocked.

On 7 October it was reported that John Thompson had struck a reef at the depth of three feet about a mile south of the prospector’s claim and gold was said to be showing freely in the reef.
BLOW CLEAR

Some excellent stone from this locality has been shown about town since Sunday and as a result there is a revival of interest in the place. In view of this fact we have made enquiries as to the progress being made, with the result that we are enabled to make the following report:—

Clarke and party on the western reef are driving south on the 50 ft level on a fair body of stone. The same party on the eastern reef are down about 50 feet in the new shaft on about a foot of stone. No. 1 north of Clarke and party are crosscutting for the western reef at 60 ft and expect to cut the reef any day. On the eastern reef the same party are down about 50 ft on stone from six to twelve inches carrying fair gold. No. 2 north are crosscutting for the reef. McNeill's prospecting claim about half a mile east of Clarke and party struck nice gold on Saturday last. Your representative has seen some of the stone and can vouch for its appearance. Armstrong and party are sinking on the reef and samples dollied show at least an ounce prospects. Grass and water are both plentiful at this find, and considering the moderate number of men on the field really good work is being done. As depth is attained it will be possible to speak with more authority on the prospects of the place.
Billy's Lookout Post Office - reconstructed at Wyalong by Mr and Mrs Beckett.
The township of Ungarie derives its name from the pastoral holding held in 1866 by one Roger Frehilly. Its native meaning means "thigh". The area of the pastoral station was 29440 acres with a grazing capability of 1000 head of cattle. A small settlement began to rise to the east of the present township and in 1892 it consisted of two general stores, a Post Office, a hotel, a blacksmith's shop, a shop and a boarding house. R.M. Mackrell ran the Post Office and one store. The other store was run by D.A. Colbert.

An application was made on 30 November, 1891 for the establishment of a village. Surveyor Maitland reported that a village should be surveyed on the south bank of the Humbug Creek. Nothing was done about it until Surveyor Roberts reported in December, 1892 that a suitable site could be found on the northern side of the Humbug Creek opposite the present town. Surveyor Maitland surveyed the village on this site in September, 1893 and this was gazetted as the village of Ungarie on 31 March, 1894.

When the Wyalong-Lake Cargellico Railway line was constructed, the surveyors placed the railway station on the side of the creek opposite the village. A suggestion to extend the boundaries of the gazetted township were approved and duly gazetted on 27 July, 1917.
The first mine put down in the district was in 1902 on the Trig Hill in Quinlan's "Nerang Cowal State Forest". The Mines Department paid £1 per foot to have the shaft sunk by the Ellis Brothers but there was no gold.

Gold was found in 1905 by Harry Kaiser in what is now the Burcher district, formerly Wamboyne (County of Gipps, Parish of Bena, Portion 4, No on Map 136). The workings went to a depth of eight metres long and three metres wide. H.F. Fitzgerald and party worked the mine in 1941. Up to 1967, 270 grams of gold worth $288 was produced.

There was quite a rush for a while and Kaiser's Hill was a hive of activity. Harry and Alf Nelson put down a shaft on "Wilga Vale" (No 177 on Map) and Harry Leadbitter Snr sank a shaft on top of the hill, but there was no gold in either. Leadbitter went to a big gully on Mark Fitzgerald's "Uplands". He struck a little gold at fifty feet, but went down to ninety feet and all he found was pipe clay. This came in handy for people for the whitening of their fireplaces - they came for miles around in order to obtain some.

Kaiser was on a good reef, but it was never a bonanza. The ore was carted to West Wyalong by Bullock teams to be crushed. The carriers were Jim Hughes and Herb Beazley. This mine petered out about 1909. The Wyalong Advocate, 18 May 1906 reported that Keyser (sic) was down 30 feet on a new reef with 10 tons at grass which was to be treated at the Billys Lookout Battery. It was also reported that Nelson, Leonard, Easdale and a couple of others had not discovered anything.

The Wamboyne Gold Mine (County of Gipps, Parish of Coringle, Portion 12, No 133 on the Map) was first worked in 1907. Later in 1935 G.W.J. Murray and party and in 1939 this was worked by H. Whiley. The average grades of 3 grams/ton of gold were found but the total production is unknown.

Another mine at County of Gipps, Parish of Bena, Portion 6, No 134 on map) was worked in about 1907 and again about 1970 but the amount produced is not recorded.

In 1927 a decision was made to build a railway line from Wyalong to Wamboyne. Rather than end the line at Wamboyne which was landlocked the Government pushed it on for a further four miles and named the terminus Euglo. Seven years later the name was changed to Burcher, possibly called after Charles Burcher one time owner of Euglo Station.
ABORIGINAL DATA.

When the first settlers arrived at Lake Cowal there appeared to be ample evidence that the area had been inhabited by numbers of Aborigines of tribal proportions. The Bland had been referred to as a meeting place of the tribes of the Lachlan and Murrumbidgee Rivers.

Many of the old gum trees on the western banks of the lake showed extensive carvings on their trunks. The custom of carving a trunk of a tree near a burial plot could be proof that numbers of aborigines had been buried in the sandbanks surrounding the shores of the Lake.

In parts of the dense mallee areas of the district it was apparent that gunyahs had been erected. Practically all the hill areas bore signs of habitation by our first inhabitants. During the early days of Marsdens an aboriginal camp was situated along the eastern banks of Lake Cowal between the village and the Lake.

Samuel Wilson wrote in the RAHS Journal and Proceedings Volume III- 1923 p. 374 that aborigines had large camps on the site of the present Lake Cowal station homestead, and numerous middens were found there.

Mrs Sarah Musgrave, a pioneer of this district, wrote that the Bland was a famous battleground of the Lachlan and Murrumbidgee aborigines. She had remembered an occasion when two aborigines were killed by the same spear and another had his head knocked off by a boomerang. They had their sex initiation ground somewhere in the neighbourhood where they initiated their young men. John Regan discovered the area one day. This was on the site of the future Wyalong. The area was not used again because the aborigines said it was desecrated.

From extracts The Way Back.
TOPOGRAPHY, GEOLOGY AND CLIMATE.

The eastern area of the Bland Shire, is included in the south-western slopes for rainfall reports and it is mostly flat, whilst the western part included in the Central western plains has many hills. The dividing line runs between the towns of Wyalong and West Wyalong.

East and north of West Wyalong the region is generally flat whilst the south and west are more undulating and have some sizable hills with high peaks.

An interesting physical feature is the line of hills which runs from North Yalgogrin across to Earnedman and these hills form a watershed. The streams rising on the northern side eventually flow into the Lachlan River and the various creeks have been listed elsewhere.

The topography of an area influences plant life in various ways. The types that grow on the hills are often quite different from those of the lower country. For example, Hill Red Gum (Eucalyptus dealbata) prefers hilly areas. Waterways, especially those subject to flooding and causing wet or damp conditions for considerable periods, are bordered by plants which can stand these conditions where others such as the River Red Gum (Eucalyptus camaldulensis) would perish.

Plants depend largely on the soil for their food. Soil is derived from broken down rocks. Rocks differ considerably in the amount of plant food which they contain. Thus a brief geological survey has some importance when studying the native flora of any given area.

In the Bland Shire there is a noticeable variation in the geology. It varies in age from the Upper Ordovician (the rocks of that period would have been formed hundreds of millions of years ago) to what is geologically known as Recent. Some of the rocks are Sedimentary and were made from the sediments of older rocks and laid down under water, mainly sandstone and shale. Then there are igneous rocks. These have been formed from molten magma intruding into other rocks and cooling down, such as granite and dolerite. We also have Metamorphic rocks in the Bland Shire – the name means changed form. These rocks were either sedimentary or igneous to begin with and then, because of the great stresses and strains, accompanied by heat and chemical change, they become something different, as in slate and quartzite. Slate was originally shale and quartzite was sandstone.

The following igneous rocks occur in this shire: granite, granophyre, grano-diorite, rhyolite, porphyry, norite, and dolerite. Among the local sedimentary rocks are sandstone,
shale, conglomerate (pudding stone), and travertine (a limestone). The metamorphic group is represented by such rocks as slate, quartzite, schist and phyllite.

Very ancient rocks, probably belonging to the Silurian period, occur towards the eastern end of the shire. They are sheared conglomerates, sandstone, shale, schist and phyllite. The largest area includes Wamboyne and the railway sidings of Corringle, Lake Cowal and Clear Ridge. The Booberoi Hills which cross the Marden Road about eight miles from Wyalong belong to this period. Evidence of tremendous pressure is seen here as the rock strata instead of being flat are just about vertical. Much of this rock is talc schist, a lightish grey colour.

Large areas of granite type rocks occur in the Bland Shire. It was from the quartz veins of these rocks that gold was obtained in the local mines. The rock from the mines is granodiorite, a black and white rock.

The granite belt stretches northward from West Wyalong and includes Wyrra, Calleen, Cirral and areas north and south of Ungarie. There is a long strip going south east from Yalgogrin through Buddigover; another area includes Wargin, and another area lies between Thulloo and Kikoira, but does not include those places.

The only other area is very small, but very interesting. It is at Wyalong and about two miles north and south of it. Chinese market gardeners are excellent judges of soil and so for many years they produced excellent vegetables from the rich soil of Wyalong. The soil of Wyalong is more fertile than that of West Wyalong, much of which is covered by ironstone gravel over clay. There is an outcrop of conglomerate, sandstone, quartzite, siltstone and shale probably of Upper Devonian age on the north west edge of Lake Cowal.

Practically the whole of the Shire east of Wyalong is covered by Tertiary to Recent deposits. They include alluvial clay, silt, sand and sandstone. On the whole the resulting soil is fertile and provides good plant food.

Bland Shire lies within a region of uncertain rainfall and its variability has a big influence on the vegetation. Plants have to adapt themselves to long dry periods and then cope with wet seasons as well. Taking the Shire as a whole, there is not much difference in the average annual rainfalls. It is the variability of the temperatures which influence plant life rather than the average. For example, between 1951 and 1956 Wyalong had an average maximum temperature of 18.18 degrees Celsius and a minimum average of 9.4 degrees Celsius, but this information does not reveal the heatwaves when the temperature reached over 43 degrees
Celsius in the shade and the cold frosty nights when the thermometer fell to zero or less.

Another important factor with regard to plant life is the absence of clouds on so many days of the year and the high rate of evaporation. The average annual evaporation for West Wyalong is about 57 inches compared with the average annual rainfall of about 19 inches.

The relative humidity for the area is low. There is a good deal of calm weather, particularly in the autumn and winter. Probably the most prevalent wind is that from the south west and when it is not moisture laden it is a particularly drying wind. The softer easterlies are not common. Those from other quarters make the temperatures soar in the summertime.
Key to mines as shown on extract of the Forbes Metallogenic map included in these notes.

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<tr>
<th>MINE</th>
<th>NAME</th>
<th>COMMODITY</th>
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<td>Urcaie Tin Prospect E, W</td>
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<td>Girral &quot; &quot; N, S</td>
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Geological Reference:

Fault

Anticline

Syncline

Approximate

Concealed

General Reference:

Major Roads

Railways
It is fortunate that our early explorers were also botanists or took botanists with them on their expeditions. After Blaxland, Lawson and Wollongor crossed the Blue Mountains in 1813 Governor Macquarie sent various expeditions into the interior of New South Wales. The headwaters of the Macquarie and the Lachlan Rivers were discovered but no one knew where the streams went. It was thought that they might be a large inland sea, so, on 6th April, 1817, Surveyor John Oxley’s exploration party, which included the botanist, Allan Cunningham, left Bathurst to trace the course of the Lachlan River.

In 8 weeks they reached the Lachlan and followed it for some weeks. Then, to their surprise, although no rain had fallen in that area, the river began to rise and the water spread in all directions. Fearing they should be caught and drowned by the rising water, Oxley decided to leave the river at a point 30 miles south of where Yarabahambah is to-day before doing so they planted a flat surface on the large bank of a pool and left the following marks:—J. Oxley, Esq., W. Evans, A.C. May 17th 1817. After leaving the river the explorers turned south-west, hoping to reach the neighbourhood of Cape Northumberland. (This cape is situated in the extreme south-east corner of South Australia.)

It was during this stage of the journey that the party traversed portion of what is now known as the Blind Shire. They probably passed east of the present Ungarie about 21st May and were also close to the sites of Yalgongra and Weetalle before reaching Mt. Aiton (now known as The Peak) on 26th May—a distance of about 100 miles from the Lachlan. They continued south-west until they reached Mt. Brogden (now called Mt. Binya). An inscribed monument at this point bears extracts from Oxley’s journal. From there they travelled in a northerly direction on the west side of Coonparrone Range which marks the border of the Peel Range. No doubt in this part of their journey they went close to where Rankin Springs now stand.

The explorers reached the Lachlan River again on the 23rd June and followed it until far from its junction with the Murrumbidgee (although they did not know this). They turned back and in early August crossed the river near the northern end of the Geobobury or Bobome Range. A monument marking the spot can be seen on the lake Carretts-Condobolin Road.

From there they travelled overland to the Macquarie River and thence to Bathurst after an absence of four months.

Oxley’s report of New South Wales stated that they went over country “of the most miserable description.” He objected that “these desolate plains would never again be visited by civilized man.” On 20th May Allan Cunningham noted in his journal: “Continued our course due S.W. over a most sterile, dry, scrubby flat country, abominable for the uniformity of its vegetation being the same as passed yesterday” (Cypress Pine, Borné, and a few Eucalyptus trees the only vegetation.) They continued in this manner for three miles further we traced the same miserable and abominable country that we have seen all day.

Oxley also gave an unfavourable report of the Lachlan River, saying that it was probably a flooded marsh in winter and a chain of ponds in summer. Cunningham’s journal indicates that 1817 was a very dry year and this area was in the grip of a drought. The weather observations were very similar to those of the year 1971, exactly 150 years later (i.e. for May and early June), Oxley’s party left the dangerous waters of the Lachlan only to endure the ravages of drought. No rain fell and much time was spent looking for water which was often stagnant and foul. Their horses suffered from the lack of feed and water and some of them died. The men’s provisions were so low that they had to be rationed. If rain had fallen while they were near Binya they would have pushed on and found the Murrumbidgee about 30 miles farther south and thence to the Murray. However, that was not to be and to save his men Oxley turned towards the north again to get back to the Lachlan.

Neither Oxley nor Cunningham were impressed with what was now printed river flats in the vicinity of the Lachlan. Cunningham wrote on the 13th May: “The soil of these flats is of a nervous cold stiff clay quality. The Cypresses (White Cypress Pine) is frequent, forming small timber trees scarcely exceeding 25 feet, and the many dead stems among the common Eucalypts are sufficient demonstration of the coldness and sterility of the soil.” On 14th May when they left the River and turned south-west “the country became exceedingly brushy and assumed a greyish gloominess in consequence of the growth of Acacia pendula (Borne) and Eucalyptus matangata (Salt bush) which were the two predominant shrubs. The soil is a loose red earth with a large proportion of sand.” As they continued south-west, trees such as Eucalyptus microtheca (Snappy Gum) and Cypress pine were passed—also Kurrajongs and Yarran interspersed with Borees.

As now in Cunningham wrote: “Continued our course due S.W. over a most sterile, dry, scrubby flat country notorious for the uniformity of its productions, being of the same as passed yesterday.” The taller timber was white Cypress pine and the smaller Boodle or Bolehe, Boree. Further on they saw Native Cherries and a “beautiful tree about 30 feet of very spreading habit, with branches on new pendulous.” (This could have been a Willa).” Hop bushes were also in evidence. The next day they continued the S.W. journey and passed through “the melancholy Acacia pendula.” Today we think the Boree a very attractive tree if not marred by an insect pest. On the rises they saw Ironbarks and Cypress pines and a number of shrubs such as Tea Tree, Green Malice (T.), White Malice, Paper Bark and a tree the men called Snakewood, with rough and scaly bark. Mistecos was common on the trees. The vegetation they encountered on 23rd, and 24th April was the same as that found today on the virgin areas from Ungarie to Wyangala on the west and south-west. As well as the plants previously mentioned there were Mix-bushes (both red and white), Goodenias, Eriostemon, Melaleuca (one of which was probably our Broom-bush), Blue daisy bush, Clover bush and the twining Malice Vine. The last evening they were disturbed “a large emu and two young kangaroos who were feeding upon the trifling heritage, the sterility of which the country can only produce in small patches.”
River Red Gum (E. camaldulensis) thrive where there is an abundance of water and occur at Lake Cowal and along the creeks. Black or Flooded Box (E. largiflorus) lives on heavy alluvial soils subject to flooding and occurs in the Lake Cowal area. Fuzzy Box (E. contorta) generally occurs on low land along streams. Narrow-leaf Ironbark (E. extensa) often grows in forests with eucalyptus pines. It occurs in the Burrahe area.

Other district trees are the Kurrajong (Brachychiton populneum). It is both handsome and useful. Where there is Belah (Casuarina equisetifolia) the soil is heavy, and the same is true of Bundi Myall (Acacia pendula). Butt（Oak (Casuarina cunninghamii) is found on a variety of soils. White Cypress Pine (Callitris hastata) is widespread in the district on good sandy loams which are well drained. It is a valuable timber tree and is white-ant resistant. Many of the forest areas have been cut out to fulfil the demands for timber.

The Mallock Pine (Callitris tenuis) occurs in the Western area. Its common name is apt as it has several stems and is small. The Wilga (Geijera parviflora) is usually found on the heaviest soils. It is a very attractive tree and can be used for hedging.

Other trees which grow in the shire are Rosewood or Berrigan (Heterodendrum obsolenum), Quandong (Eucarya acuminata), Butte (Western Pittosporum (Pittosporum Thyrsiflorum) is also known as Berrigan. The hard fruit is yellow and opens to show sticky orange-red seeds.

Warrior Bush or Curtana Bush (Apophyllum anomalum) is a small tree with almost leafless branches. It has an air of great antiquity about it. Budda (Eremophila mitchelli) is a small tree with graceful light green foliage and white or purplish bell-shaped flowers. It is sometimes called Sandalwood. Emu Bush (Eremophila longifolia) often only a shrub, occurs on a variety of soils. It has dull red tubular flowers about an inch long, and is sometimes called Berrigan. Sugarwood (Melaleuca platycarpum) occurs chiefly on sandy loams in mallee country. It exudes a sweetish resin, and is also known as Dogwood and Sandalwood.

Yarra (Acacia homalophylla) is fairly widely distributed on a variety of soils. Native Cherry (Eucarya eucymis) is an attractive small tree. Looking rather like a pine, it seems to be the fringe of a forest. The Jointed Cherry (Eucarya spathulata) has the same type of fruit, but is not leafless. It has leaves with cross-shaped hard, almost thorny, branchlets and is usually a large shrub. Mosoak (Melaleuca pubescens) grows in sandy soil—a small spreading tree with thin white "bottlebrush" flowers. It is sometimes called Bottle Brush Tree.

Broom Brush (Melaleuca succulenta) is usually a shrub in this area. It contains oil which was sometimes extracted from it in the early days. Needlewood (Elaeagnus teucrium) has a Fairly wide range, and the needle-like leaves are about two inches long. The woody fruit is open and two dark, waxy seeds.

Of hybrid Eucalyptus trees which have not been mentioned there are at least 40 different species within the shire. With the exception of the hybrids, it is likely they have all been here when Ochy and Cunningham passed this way in 1817.

So far 21 different wattle species have been identified in the area. No doubt there are more. The most famous is the Wyndham Wattle (Acacia cardiophylla). It occurs in the Boobaroi area. A few miles west of Wyndham it favours the banks of dry watercourses. It is a beautiful free-flowering shrub, with rich yellow flowers and bi-paniculate leaves, the leaflets being very small. Nurserymen praise its beauty in their catalogues. It should not be confused with Dianthus Wattle (A. acubata) which is much more common. In this species the leaflets are larger and not such an attractive group. The young leaves and branchlets are usually tinged with yellow and the flowers are pale as those of the Wyndham Wattle.

Western Black Wattle (A. hakeareides) is common in the district. Its "leaves" are up to five inches long and half an inch wide. The flowers are bright yellow. Other wattles are: Kanle Wattle (A. cultriformis) Showy Wattle (A. coccinea), Needle Wattle (A. virgata), Kangaroo Thorn (A. azemata), Grey Mulga (A. brachybotrys), Digger-leaved Wattle (A. spathulata), Streaked Wattle (A. aculeata), Buzby Bush (A. rotundifolia), Black Acacia, A. austrina, A. ochrophylla, A. disformis and A. flexilis. The last named flowers in July and brighten the landscape.

Among the most beautiful of our shrubs is the Purple Min Bush (Prosthanthus ovatifolius). Its colouring varies from lavender to purple. Some plants bear white or pink flowers. It seems to favour hillside and occurs at such places as the Boobaroi Hills, Mt. Narriah and hillside in the Alkana area. The Scarlet Mini Bush (Prosthanthus aspidefolius) has a wide distribution. It grows about three feet has tiny bright green leaves and bright red flowers. Anatural Indigo (Indigofera Australis) is another beautiful shrub with blue-green pin-

ness leaves and long sprays of royal-marue flowers. There are seven different species of Hop-Bushes (Diodenicae) all of which are attractive when bearing their blossoms. The Wax Flowers (Eriostenos) are represented by the long-leaved Wax Flower (E. longiflorus) in the south of the shire and by E. disformis, which has pumpl small astatic leaves and is covered with white starry flowers. The Goblin Grevillea (G. floribunda) with its intriguing yellow and brown flowers grows in similar areas to the Purple Mini Bush. Grevillea anethifolia, a small shrub with highly scented white flowers occurs at Grevillea, another Grevillea with red flowers, as yet unnamed. Desert Cassia or Native Daphne (Cassia eremophila) is described as one of our most beautiful shrubs. It is widespread in the area. The local Tea Tree (Leptospermum trivale) is a lovely sight in the spring when covered with small white flowers. Two hardy attractive shrubs are the Common Fringe Myrtle (Labyrotrix riegeri) and the Fringed Heath Myrtle (Micromyrtus citriata).
PLANTS SEEN BY ALLAN CUNNINGHAM WHILST EXPLORING THROUGH WHAT IS NOW THE BLAND SHIRE, FROM 18TH TO 25TH MAY, 1817

(C omprehensive but incomplete list).

Cypressus glauca (White Cypress Pine) now called Callitris rigida (C. glauca), Acacia pondea (Black Gum), Eucalyptus d Dagger (Salie-bush), Eucalyptus maculata (Desert Oak), Eucalyptus leucoxylon, Eucalyptus lewinii (Snappy Gum), Pimelea colorans (a rice flower), Atherosperma gracile, Arthrotomia augustifolia, Zieria pulchella (pulchella means pretty), Extosia rugosa, Sida species (Phyllis Lucerne), Aiters decussata now called Olea decussata (A Daisy-bush), Senna grandis (Wattle), now called Brachychiton populneus (Cabbage Tree), Atherosperma androsa (Creeping shrub twining on small Cypresses), Acacia homalophylla (Yarrawa), Eucalyptus sideroxylon (Western Ironbark), Casuarina (could be Bulbo or Belah), Loranthus filiformis, now called Amyema probably Aristophila (Mistletoe), Zygophyllum (Yin-leaf), Davinia filiformis, Eucalyptus sp. (Paper-bark), Eucalyptus sp. (probably a Paper-bush), Goodenia biforma (could be present G. Ovata), Eriostemon rhombifolium (a Wax-Flower) now E. deflexa, Prostanthera nivea (White Mist-bush), Prostanthera avenacea, now called Prostanthera asparagoides, (Scarlet Mist-bush), Myoporum gracile (belonging to the Bochilla group), Melaleuca sp. (probably a Paper-bark), Cassytha (Malake Vine or Devil's Twine), Shrubby Aster (probably an Olearia), Goodia bladdifolia (Clover-bush or Golden Tip), Eriphyes (Crowfoot), Aster aculeatus, now called Alkaria ramalona (Twiriga Daisy-bush), Syngynexia (Kenny of some kind), Westringia fruticosa, now called Westringia argentea, (Australian Rosemary), Bignonia eximia, now called Pendera pandorana sub species eximia (Western Wonga Vine), Pectandra monogynia (Rutaceae), Extremely likely that this is now called Grevillia parviflora (Witgo), Dodonea cinerea (Wedge-leaf Hop-bush), Eucarpus superfructiferus (Native Cherry), A "meddling sized tree" from its description was very likely, Heterobrotys oleifolium (Rosewood).

It is impossible to decipher some of the plant names recorded in the journal. Also some of the names have been altered, partially or completely.

Cunningham does not mention grasses. No doubt they were included in the "trilling herbage" he saw down, but leaving no means of identification. Obviously the explorers did not come close to the sites of West Wyalong for Cunningham would certainly have observed our Blue Malake, Eucalyptus fruticetorum. It is not possible to tell whether he observed Bullecks or Belah, or both. He merely states that Casuarina, Lkmanh and Bulah are Casuarina has zealous levels, both of which grow in this area. He does not appear to be interested in the fauna of the region, except for Kangaroo, emus and snakes, and that interest was not scientific. The Aborigines were more special mention for their tolerance of the explorers. From time to time he writes of finding their encampments, of hearing them and many of the party seeing them. The natives would never have seen a white man before. With their common sense binkraul they easily could have wiped out this expedition. It is hard to think that the white man's fire is such a small kind for this period of tribe.

Our native flora look after itself very well for thousands of years and even the advent of the Aborigines 20,000 years ago did not disturb not badly, so they were neither pastoralists nor agriculturists. They did not dominate the plants, but lived with them using that and that, such as Nardoo (Kanadiiia drummondii) and Yam (Microcorys acapjegi).

Now the white man is here and much of the native flora has disappeared, either by clearing by pests such as rabbits, or being replaced by weeds, among them, Cape Weed (Cryptostegia calycina) and Skeleton Weed (Chondrilla junccea). The growing interest in our native plants in the last few years should lead to action to preserve our unique flora from extinction while there is yet time.

To get water and retain it has been the greatest need of our plants and they have developed many means of doing so. One striking example is the aromatic oils contained in the leaves of Jojoba. On a hot day the oil, volatile and the leaves have a protective layer between them and the sun, then keeping down loss of water.

Some wattle (Acacia) have finely divided leaves, such as the Wyalong Wattle (A. cardifolia), but many of them, through untold years, have gone a step further and divided their phyllodes, act as leaves. The leaflets, or phylloids and giving off less moisture than a leaf. As seedlings, all wattles have pinnate leaves. If it is the phylloide type, such as the western Black Wattle (A. hakeaee), the transition stage can be seen as it gradually changes. When grown in the wetter climate of Melbourne the leaves of the Wyalong Wattle are much larger. In the Casuarina, among them the Bull Oak and Belah, the leaves are reduced to scales and the warty branchlets act as leaves.

There are numerous other examples of the adaptation of the plants to dry conditions. In the drier areas it does not seem to be the quality of the soil which is the governing factor in the distribution of plants, but rather its ability to retain water. Some plants are more adaptable than others and occur throughout the whieh, while others are localised.

There are at least 18 different species of eucalyptus in the area. Malakes usually occur on solonized brown soils, but those around West Wyalong are on decomposed granite. The best known is the Blue Malake (Eucalyptus fruticetorum). The Broad-leaved Malake Box (E. brittonii) is called Bull Malake locally. It grows naturally only in the Wyalong district. Other wattles are Malake Gum (E. gracilis), Green Malake (E. viridus), White Malake (E. dunnii) Red Malake (E. minor) and Narrow-leaved Red Malake (E. leucoxylon).

On stony ridges with poor shallow soils Ironbark (E. sideroxylon), Hill Red Gum (E. dealbata) and Hill Gum (E. dwwyeri) thrive where others would die. Currawong (Acacia dawsonii) and Black Pine (Callitris radiata) are often associated with them. At Narrab, Denning See Oak (Casuarina stricta) also occurs.

Grey Box (Eucalyptus robusta) is well scattered through the thre on red soils, whereas the Western Grey Box (E. microcarpa) prefers good heavy soils. The Box with the roundish shining leaves, Bumble Box (E. populnea) is drought resistant and is found mostly on poor soft clay soils. The presence of Yellow Box (E. melliodora) is an indication of good soil, usually heavy alluvial. It is our best honey tree.
Among the smaller plants there are many underbrushes, including daisy bushes, everlasting, pea plants, orchids, rushers, herbs and bulbs. The Rock Fern (Ceterachites tenuifolius) is widespread. The Nardoo (Marishia drummondii) which looks rather like a clover in the gillit, is also False Sampfella (Passiflora violacea), White Wonga Vine (Pandorea pandorana oxleyi), Clematis (C. microphylla), Farnonia eucalyptophylla with highly perfumed mustard-coloured flowers, sweet apple-berry (Billardiera cymosa) a shrubby climber rare in N.S.W. and Glycine caducea, with sprays of small pea flowers.

Many overgrown grasses have become naturalised here, but among the original native grasses are Cordgrass or Variable Spear Grass (Siga variegata), Liverpool Plains Grass (S. aristiglimus), Soft Spear Grass (S. mollis), Feather Grass (S. elegansissima), Waitara Grass (Psasalidium jubiflorum), Slender Panic (Panicum constrictum),高三 Panic (?), effusum), Wallaby Grass (Dasodon richardsonii), White-top or Wallaby Grass (D. cespitosa), Brush Wire Grass (Triodia brachytricha), and the Wire Grasses or "Kunhinished" a.? (Arthrithria retusa), A. jericchoensis, and A. Calycina, Umbrella Grass (Chloris tricnchata), Purple Love-grass (Eragrostis sequelaria), Clustered Love-Grass (E. elongata), Grey " and Grass (Amphipogon carinatus), Buxton Grass (Dactylocynium radiata) and Spinifex (Spinifex paradoxus).

The native trees were put to many uses by the early settlers, who proved themselves adept at improvising from what materials were available. They built and roofed houses, built fences and stipirades, made bullock yokes, and even cooked kurrajong leaves as vegetables.

The Grey Box proved to be a very useful tree. Box bark was used for roofing houses, huts, dairies and sheds by the early settlers and miners. Sometimes even the walls of box bark. The bark was attached to a frame of White Cypress Pine. The miner would choose a big tree with good, straight bark. The operation had to be carried out when the sun was hot, possibly after a good rain, as the bark then peeled off in large sheets, varying from a half to an inch in thickness.

To remove the bark one sheet was cut low down on the tree and another higher up, according to the length of the sheet required. It was made lengthways up the tree. A curved stick with a wedge-shaped point was used to pry the bark off the tree.

The curved sheets had to be flattened, and this was usually done by placing weights on the bark, but sometimes a small fire was lit underneath to straighten it out. The bark sheets were placed on the frame in the same way as galvanised iron is today, and were then kept in place by timber being laid across them and secured. These bark roofs shed the rain and were comparatively cool in summer. They lasted many years. The Grey Box was sometimes used as fencing posts and the timber was also used to some extent in brick kilns and baker's ovens, but Cypress Pine was preferred.

Box and Ironbark were used extensively for making charcoal, which was used for forge work by blacksmiths and farmers. A pile of wood, arranged in layers, was covered over with soil with vents left at both ends. A fire was lit at one end and the draught carried through to the other end. When properly alight and the logs reduced to charcoal the pile was thoroughly sealed off and left for several days to cool down. This procedure prevented the woods from burning to ash. Box was the chief timber used for firing the boilers in the mines.

Ironbark, fencing posts lasted a long time. They were fairly resistant to white ants and resistant to fire. The bark from Ironbark was used extensively for heating steel tyres, prior to fixing them on to waggon and sulky wheels. Once the tyres were in place on the wheels cold water was applied to make the metal shrink and fit tightly.

White Cypress Pine had, and still has, many uses. One of its great advantages is that it is white and resistant. Pine was used in the construction of houses and was also used for lining rooms. For sheds, round sapling posts were used for rafters and battens. Fencing posts were also used. It was easy to split and saw and was not fire resistant. Young round pine rails, not less than four inches at the small end, were used extensively for underground mine props. Brick kiln owners used pine almost exclusively, as it provided a quick hot fire. It was also popular for bakers' ovens. Rabbit pits were lined with White Pine. Big pine trees were preferred to small ones for much of the building work. Some rafters in an old local shearing shed were over 30 feet long and without a knot in them.

Bull Oak was used for rails and firewood. It makes a very hot fire. Sometimes it was used to make bullock yokes, but they were not as good as those made of Kurrajong.

Kurrajong was used for solid material for bullock yokes and one skilled man could make a yoke for two bullocks in two hours. There were four holes in the wood for the iron bows to pass through. Red hot rods were put through these to toughen the wood. Kurrajong yokes were valuable fodder in dry times.

Bulah provided good fodder. Bovine also yielded fodder and fencing posts. Posts from old Bovine trees are hard, and last a long time. There are some very old ones on a property near Yalgogin.

Other trees that provided fodder of some value were Wilga, Rosewood and Warrior Bush. Mallee Vine, also known as Devil's Twine, was useful as cattle fodder. Locally this plant is semi-parasitic on mallee trees.

The fruits of Quandong were used for jams, sauces and tart fillings. The wood of Needlewood provided material for home-made pipes and walking-sticks. The Currawong was said to be used for shoulder poles by the Chinese who lived in the district. At the turn of the century Blue Mallee was being treated for eucalyptus and other valuable products. Most of the trees were used and mallee roots were used for firewood.

Rabbit Pits were made of White Cypress Pine. The pits were sunk along the wire netting boundary fences, about one or two miles apart, depending on the nature of the country. Rabbits were always more plentiful in sandy country, because of the ease with which they could build their warrens. A hole about five feet deep and five feet square was sunk directly underneath the wire netting. Sawn rough timber slats of pine were then placed
side by side in an upright position along one side of the hole. Then a 4 inch by 2 inch plank was placed horizontally to support the slabs and another one was pegged down at the bottom. The other three sides of the hole were treated the same way. The pit was then covered over with boards. Among them were four balanced pieces of board. An incoming rabbit would tilt a board and drop into the pit. The board would then swing back into its original position. A chain long, ran from each corner of the pit, making a sharp angle with the fence. This arrangement "herded" the rabbits towards the pit. 

Every day or so a man would kill the rabbits and clear the pit. Other animals, too, would fall into the pits, especially anti-eaters, foxes, cats, and occasionally snakes also met their doom that way. When the rabbits were plentiful, as in 1907, there could be 300 rabbits in a trap. The average was 150 rabbits. Fourpence per pound was paid for rabbit skins in those days. In winter seven and in summer nine skins went to the pound. They were bought by the local Chinese.

A Dog-Leg Fence was usually made of Cypress Pine. Two round posts were erected, and crossed rather like an open pair of scissors. They were supported by an 18 inch block of wood six to eight inches in diameter. This process was repeated and then a pine log, with branches still attached, was placed in the V's of the crossed posts. By this means a fairly good sheep-proof fence could be constructed.

For a Check and Log fence, any large available timber was used, Box, Ironbark and especially Cypress Pine. Green timber was easier to cut and work, and the longer poles were better for the purpose. A check of wood two feet long and 9 to 12 inches was placed flat on the ground. A scarf was then cut out of the centre of the top side. A log was placed in the scarf. Then another check was scarfed on both sides to fit over the first log and placed in position to receive another log on top. This process was continued until the desired height was reached. The top was finished off the Vance. Only the bottom check needed to be two feet long. The others could be shorter and do a satisfactory job.

For a Post and Rail fence, Ironbark posts were used if possible. It is good straight splitting timber and lasts a long time. It is also easier to dig out than Box. Ballast, Box and old Belah were used as rails. The timber was used green and both posts and rails were split lengthwise. A flaring size was used to cut oblong holes in the upright posts. The rails were trimmed to fit snugly in the holes. As a rule three or four rails were used in each panel.

Slip Rails were used in place of gates. One method of making them was to place rails loosely in holes in the uprights so that they could be removed quickly to allow passage through. They were made of any available timber. Box rails were satisfactory, but Pine was too brittle and liable to break under pressure from stock. Another type of sliprail was made with slots cut in the posts to allow the poles to be dropped in. To remove one would require both a lifting and a pulling movement. This made the "gates" move securely where stock were concerned. Later on U-shaped round iron, or large used horseshoes, were driven into the posts and the rails slipped into these. Wire twigs were also used.

Some handholders believed that timber growing on the spot and used as fencing material lasted longer than other timber. One local property had a paddock fenced with Box, another with Pine, and so on. Another had assorted fence posts with Pine, Malloa, Ironbark and others alternating. As one would expect, the Ironbark outlasted the other timber. Beald had to be old when used, as the young stuff rotted quickly. However, the timber had to be green when barked for fence posts otherwise the bits on the braces and bits would be broken. Yarran timber was used for fence posts and in the erection of stock and shearing yards. It lasted for years. Yarran wood makes a fine with great heat and burns to an ash. It heat caused buckling and destruction in the fire- box in stoves.

Black Pine was used to make bullock whip handles, and Quandong timber was used to make bullock yokes. Kurrangong leaves were sometimes cooked as vegetables, the meat tender leaves coming from the top of the tree. The introduced plants, such as marshmallow and nettle, were also cooked as "greens."

The best meat blocks, both for homestead and butcher's use, were made from Kurrangong stumps. The wood was spongy, and slits made by cleavers closed up again. A few still in use are greatly valued by owners.

Sometimes setters erected lofts in a corner of the stockyard, near a dam or waterhole. Men would hide in this until the kangaroo came for a drink, when they would shoot the unsuspecting animals.

FORESTRY DEPARTMENT

Of the 25 State Forests in the West Wyalong Sub-district the present Cypress Pine forests are by far the most important, not only because they produce a bulk of the sales of logs, poles and fencing timber, but because a considerable amount of grazing is available in them. The main Cypress Pine forest areas are in the Booborowie Hills, east of Wyalong, Yarrankajurry, south of Arashi Park and along the Rankins Springs Road, south of Lake Corrigin.

The Hardwood forests were of great consequence when they were dedicated, as they were the source of supply of such products as railway sleepers, fencing timber and firewood. Demand has since fallen off considerably and only a small amount of fencing timber and firewood is now sold. Twenty of the forests carry predominantly Cypress Pine timber and eight carry other timber (Box Bank and Box). There are 15,000 acres in the pine forests and 14,000 acres in the hardwood forests. One forest carries a considerable amount of Blue Gums, which is cut periodically for the distillation of eucalyptus oil.
The West Wyalong Sub-district of the Forestry Commission extends about 110 miles in a N.W.-S.E. direction and averages about 30 miles across. West Wyalong is the administrative centre of the sub-district, and with the sub-districts of Grenfell, Forbes and Cundobolin, comprises the Forbes Forestry district. The sub-district boundary is roughly, Temora, Bland Creek, Lake Cowal, Burren, Bena, Ungarie, Tullibiggal, Lake Cargelligo, Willandra Weir, Naradhan, Talecham, Sandy Creek, Ardlethan, Wallarooches, Mimosa, and Temora. Personnel in the sub-district are a forester and an office assistant engaged on administrative duties, and a forest foreman and another employee, who are engaged on field work.

Work done by the commission consists mainly of the maintenance of assets, including roads, fences and water supplies, killing of useless Hardwood competing with Pine, supervision of timber operations and rabbit eradication. All these are done by local employees, with the exception of road maintenance, for which a grader unit comes from Forbes periodically, to grade the 216 miles of roads through local forests.

There are seven sawmillsers in the sub-district, one of whom regularly buys logs from State Forests. A sawmiller from Grenfell also buys an annual quota of logs from this area. Sales from State Forests and other Crown areas are also periodically made to other millers. Most sawmilers are able to obtain the bulk of their log input from privately owned land. Miscellaneous sales of timber, poles, firewood, sand and gravel are made under licence and licences are issued to apiarists to allow them to place their hives in State Forests. Honey production is usually from those forests carrying Ironbark.

A considerable amount of grazing under permit is being done on local forests. Grazing was suspended on many forests about 1955, in order to encourage the germination and growth of Cypress Pine seedlings. Those responded so well that grazing by cattle was introduced on many forests from 1964, and grazing by sheep, which eat small seedlings, is now being considered on some forests.

Grazing in the West Wyalong district forests has the desirable effect of removing much of the dry grass that creates a serious fire hazard each summer. Fires in the forests of the sub-district are rare. There have been only two in the last 12 years, burning a total of 33 acres.

BULLOCK YOKE MADE BY EARLY SETTLERS.
Early settlers in the Bland Shire have told of a small animal that lived in mulberry trees, which they knew as a native bear. This gives evidence to the listing of Koalas by the National Parks and Wildlife Service as being in the district, although rare.

A marsupial about half the size of a kangaroo, grey in colour with splashes of white, was a common sight. It was known as the pademelon. The burrowing of another marsupial, the bilby, caused a crater-like Warren. Rabbits took over the warrens and the bilbies disappeared. Clearing of the land for wheat-growing and grazing has led to the extinction of dingoes and native cats that were common in the closing years of the nineteenth century.

The keen observer will find many species still living in the bushlands of the shire. Listed as uncommon in the monotremes is the platypus, but the spiny anteater is still fairly common.

Common marsupials are the yellow-footed marsupial mouse, the fat-tailed, spiny mouse, brush-tailed possum and the grey kangaroo. Uncommon marsupials are the feather-tailed glider, the squirrel glider, the ring-tailed possum, bushy-tailed possum, pigmy possum and the red kangaroo. Mammals extinct in the district are rabbit-eared bandicoot, brush-tailed rat kangaroo, brown hare-wallaby and the bristle-nail-tailed wallaby. Tiger cats have been seen on rare occasions in the Wee Waa district.

Of native rats and mice the Eastern water rat is still common. The allied rat and the long-haired rat are uncommon, and the extinct species are the Eastern pseudo-rat, the white-footed rabbit-rat, and Mitchell's hopping mouse. Bats are uncommon to rare, but the district has been at times inhabited by the Eastern horseshoe-bat, the greater long-eared bat, the little brown bat, Gould's wattle bat, the bent-winged bat, yellow-bellied free-tail bat, white-striped mastiff bat and the little mastiff bat. Flying foxes are rare visitors.

Introduced mammals are the European rabbit, the European hare, the dingo, red fox, Feral pig, Feral cat, goat, rat and mouse.

Of the snakes the carpet snake, common brown snake, tiger snake, mulga snake, red-bellied black snake, small snake and the bandy-bandie are the most common. Sedge seen now are the red-mopped snake, yellow-faced whip snake and death adder. A snake expert who visited the district in recent years is said to have been of the opinion that taipans could be here, but no sightings have been reported. Copper-headed are also said to be present. The bush is inhabited by a number of lizards, skinks, Geckos, the common skink, legless lizard, jacky lizard, bearded dragon, goanna, striped skink, Cunningham's skink, shingle-back skink, blue tongue, copper-tailed skink, water skink and grass skink. Seldom seen are the thick-tailed Geckos, scaly-footed, and Gould's gecko.

In the year of good rainfall, when the waters of Lake Cawnduck spread over the north eastern countryside of the shire, black swans and numerous other water birds are seen. Sea gulls have found their way to the lake, and on rare occasions have been seen over West Wyalong.

Flocks of galahs and colourful parrots are most plentiful in the wheat season than at any other time, but, unless steps are taken to conserve larger areas of the suitable habitat of the more rare types their chances of survival are slight.

Among the birds seen in the shire are the emu, brown goose, wedge-tailed eagle, peregrine falcon, brown hawk,霎神 fox, common bronzewing, crested pigeon, Major Mitchell's cockatoo, galah, cockatoo, ringnecked parrot, red-rumped parrot, blue-benared, mulga parrot, pallid cockatoo, magpie flegman, owlet nightjar, laughing kookaburra, rainbow bird, black-faced cuckoo-shrike, southern scrub robin, chestnut-quill-thrush, white necked honeyeater, brown swallow, black shouldered kite, brown snake, black and white kite, western warbler, little thornbill, chestnut-banded thornbill, yellow-throated thornbill, brown wheatear, malays heath war, red-capped parrot, hooded parrot, southern yellow robin, grey fantail, white wagtail, restless flycatcher, golden whistler, rufus whistler, red-browed whistler, Gilbert's whistler, white cacked honeyeater, striated pardalote, yellow-tailed pardalote, striped honeyeater, white-eared honeyeater, yellow-plumed honeyeater, brown-headed honeyeater, white-tailed honeyeater, spiny-checked honeyeater, peewee, white-winged dove, apostle bird, pied butcher-bird, grey butcher-bird, black-backed magpie, Australian raven, little raven, pelican, spoonbill, blue crane, white ibis, hab chick, wood duck, mall, black duck, black swan, green leek parrot, finches, seagulls, swallows, eastern stone curlew, spotted woodpecker, quail, dove, shell parrot (budgerigar), little crow, eastern rosella, brooks, mistletoe bird, turquoise parrot, noisy miner, little wattle bird, masked wood swallow (blue martin), dusky wood swallow, pied currawong, collared sparrow hawk, branded plover, kingfisher (several species), eastern shrike-tit, diamond dove.

THE KELPIE

The Woy Woy district has played its part in the development of the Kelpie sheep dog which has been so invaluable to the pastoral industry in this country.

The early 1800's, were an era when transport and handling of stock, other than by drayage was virtually unknown. The hundreds of counties through England and Scotland all had stock of one sort or another, and with the stock went the shepherds and their dogs. When stock was first brought to Australia, so were shepherds and their dogs to care for them. This was necessary for the stock had to be "folded" or yarded every night to protect them from the dingoes and Aborigines and to stop them from straying.
With the rapid increase in stock numbers there was an increasing demand for a "mustering" or "gathering" type worker to replace the "shepherd's" type dog. There is little doubt that by the mid 1800's a great number of different strains and types of workers had been imported. One of the first to successfully make a name for themselves was the Rutherford strain of North County Collies which immediately proved ideally suitable to Australian conditions. Several young members of the Rutherford family had migrated to Australia, and once settled were supplied with dogs by their Scottish relatives. Mr. J. Rutherford purchased Yarrawonga from the Hume family, where he bred the black dog, Moss, which later became the property of Mr. Jack Gleeson.

Mr. Robert Talby, a well known breeder in the Murray and Darling River areas, was also a strong supporter of the Rutherford strain collie and all his stock were claimed to have carried this blood.

The dog which gave the Kelpie breed its name was Gleeson's Kelpie which was bred, as far as we know, on Werrock station in Victoria. Mr. John D. (Jack) Gleeson came into possession by swapping a horse for the pup, which had been bred by Mr. G. Robertson from imported collie parent. Gleeson's Kelpie is described as a black and tan with semi-erect ears and who had a reddishinge to her coat when seen in the sun.

Mr. Gleeson left the district shortly after acquiring Kelpie and stayed for a short time at Albury, where he met and married Miss Mary Ryan, a daughter of Mr. Lanceot Ryan of Wellandoolo station. Two other daughters, Kate and Grace, married Harry King and Pat Cox, sons of the owners of Yalgogrin and Wellongue stations respectively. In crossing the Murray bridge, on his way to take up a position in Bologo (North Baliem) he met an old friend, Mr. Mark Talby, brother to Mr. Robert Talby, who gave him the black dog, Moss, who had been bred at Yarrawonga from dogs imported from the Rutherford kennels in North Scotland.

Kelpie was mated twice to Moss; the first litter she whelped was shortly after arriving at Bologo and a pup was given to Mr. T. Keogh. The second litter by Moss was born on North Yalgogrin and a pup from this litter was given to Mr. Steve Appo, who was on Murrangre.

About this time, 1870, Mr. Arthur Robinson brought out from Scotland a pair of black and tan, Brutus and Jenny for Mr. Elliott of the firm of Elliott and Allen of Gerskra station.

They had been mated together on the way out and the black, Jenny, whelped shortly after arrival. Both Brutus and Jenny are described as smooth-coated black and tans with semi-erect ears. One of the pups from the first litter, Caesar, was given to Mr. John King who was on Narrabup at the time. Caesar was mated to Gleeson's Kelpie and the most famous of all Kelpies was the result. When the litter arrived a black and tan female pup named Young Kelpie later Kelpie the Second then King's Kelpie was given to Mr. C. T. W. King and she became famous in the early 1870's when she won the first sheep dog trial ever held in Australia. Her performance at Forbes on this occasion was so outstanding it resulted in the naming of the breed.

For a short time the name, Kelpie, applied to the progeny of King's Kelpie only, although more properly it should have been applied to Gleeson's Kelpie for without her there would never have been a breed so named today. From the mass of records to hand it appears that it was not long before all dogs of similar appearance were being described as Kelpies. In the entry of 35 dogs at the Sydney Sheep Dog Trials in 1898 only two dogs were entered as collies.

Gleeson took up a selection on Bologo, being portion 10 Parish of Yalgogrin, 40 acres, in March 1878. When leaving North Yalgogrin to take up a position at Lake Cow 1 West, he left Kelpie with his friend Mr. T. J. Gailey, and Moss with Mr. P. J. Cox of Murringuran, but as Kelpie shortly afterward developed a cancerous growth she had to be destroyed, ending her days at Wellongue, Unape. Old Moss, which Mr. Cox had lent to Mr. C. T. W. King for stud purposes, was found dead on the chase one morning at Caimin, Lake Cargelliga, which property Mr. King was managing at the time. While living at Lake Cowal West, Gleeson had an accident with a horse and died at Wagga Wagga.

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THE MOUSE PLAGUE

Almost incredible stories have been told of the mice plague of 1916. Early in the winter hoards of mice appeared from nowhere, to invade the fields, the homes and business places. They destroyed haystacks and grain, ate the produce and foodstuffs in stores, and in the homes they even got into bed mattresses. Many of the houses were lined with hessian, which was covered with wallpaper. The mice ate the paper and hessian, and the nights were disturbed by their scurrying up and down the walls. The stench was everywhere.

Mr. Jack King was working at Mr. Charles O'Donnell's farm at Budgong and he recollect that the men walked around the haystacks at night, carrying a tin tub containing water. With a stick they knocked the mice into the tub. The mice ate stacked legged wheat until the heaps collapsed, and, as 1916 was a wet year the damage was considerable. In 1917 Mr. N. Conn, of Quindalba, was pulling down a shed, when he noticed there were no lead washers on the screws. Close examination showed that the mice had eaten away all the lead, but could not bite into the iron in the screws. In 1917 there was another plague, but it was on a smaller scale.
Journals of two expeditions into Interior of N.S.W. 1817-1818. This provides the earliest description of this area.

SQUATTING AGE IN AUSTRALIA. 1835-1847. by Stephen H. Roberts 1935.
Professor Roberts has given us an excellent account of the taking up of land and the struggle of the Squatters for their rights with Burke and Gipps.

This book written by the first white girl born in the Young district, gives an interesting but unchecked account of the early history of Wyalong.

N.S.W. GOVERNMENT GAZETTE - 1840.
This supplies the list of Runs and Names of owners in the Wyalong area of the Lachlan District.

SQUATTING ON CROWN LANDS IN N.S.W. by J.F. Campbell. - Royal Australian Historical Journal Vols XV, XVII.
Mr J.F. Campbell has given us a list of Runs extant in 1849. The author makes quite clear the reasons for the attitude adopted by Governors Bourke and Gipps against the rapacity of the Squatters.

This book gives details of Name of Run, Holder, Size etc of the Pastoral Runs. It gives a detailed description of the area under discussion.

PASTORAL POSSESSION OF N.S.W. William Hanson, 1889.
Gives vital information about the Pastoral Holdings which usually consisted of an agglomeration of runs. The document supplies the important information of the area, annual rental and holder of Leasehold Area and Resumed Area.

NATIVE NAMES OF SOME OF THE RUNS IN THE LACHLAN DISTRICT. - F.W. Woolrych L.F. Paper read before the Royal Society of N.S.W. 4 June, 1890.
Information is given regarding the origin of names of early Runs in the Wyalong area. It also supplies an early map of the district.

MANUSCRIPTS held by the Lands Department contain information about names of Runs and Holders in the Bland about 1847.

This gives the condition of the field - the amount treated and the yield. These reports continued until the goldfield ceased as a gold supplier in 1920.

**RECORDS OF GEOLOGICAL SURVEY** - Vol IV Part 2, 1894. This document gave the Geological origin of the field.

**GEOLOGICAL STRUCTURE OF THE WYALONG GOLDFIELD** Vol IV, Part II, 1894. E.F. Pittman A.R.S.M. The author points out that the easy nature of working of the goldfield was due to the decomposition of the granite. He pays a great tribute to the Neeld family in opening up the field.

**REPORT ON THE WYALONG GOLDFIELD** - J.A. Watt M.A., B.Sc. 1899. This document gave details of the geological formations on the Wyalong Goldfield and an accurate description with diagrams of each important mine.

**WYALONG ARGUS** - 1898. This newspaper gives accurate information regarding the needs of the mining population - namely water and a railway.

**OUTBACK IN AUSTRALIA** - by Walter K. Harris F.R.G.S., F.R.C.I. 1913. The author visited Wyalong just as the mining era was closing and the population was turning to wheat cultivation.

**EARLY DAYS IN WEST WYALONG** - by R.P. Bell. Commonwealth Bank Notes, September, 1934. The author pays tribute to the pioneers who strove against the prophesies of the explorers. He points out how the population was attracted by the gold but remained when the district settled down as a flourishing wheat area.


**TOWN AND COUNTRY JOURNAL** 2 June, 1894 and 16 Jun3, 1894.


**MISS UNA WILSON**. Personal research and Files.
APPENDIX B

COWAL GOLD PROJECT
EUROPEAN HERITAGE AND ASSESSMENT
AND RECORDING OF HOMESTEAD COMPLEX
DRAFT

COWAL GOLD PROJECT
EUROPEAN HERITAGE AND ASSESSMENT
AND RECORDING OF
HOMESTEAD COMPLEX

By

Dr Michael Pearson
Heritage Management Consultants

For

Barrick Gold Australia Pty Ltd

4 June 2003
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1. INTRODUCTION

1.1 BACKGROUND TO THE STUDY

Heritage Management Consultants has been engaged to provide advice as to the heritage assessment of building at the Cowal West homestead area, identified by the Bland Shire Council for their Local Environment Plan, and to undertake recording of these items. Preliminary advice on the potential heritage and recording issues relating to other buildings on the Barrick area was also sought. The site was inspected and recording undertaken on 27-28 May 2003. Photography of the Cowal West Buildings was separately contracted by Barrick and undertaken by Neil Crook, in consultation with Michael Pearson.

1.2 ACKNOWLEDGMENTS

The kind assistance of Col, Nyelva and Jenelle Carnegie, former owners of Cowal West, and Bill Shallvey of Cowal Gold Project are gratefully acknowledged.

1.3 AUTHORSHIP

The report was researched and written by Dr Michael Pearson, Heritage Management Consultants Pty Ltd, 84 Ballarat Street, FISHER, ACT.

2. UNDERSTANDING THE PLACE

2.1 HISTORY OF THE LAKE COWAL AND COWAL WEST PROPERTIES

Exploration
The explorer John Oxley was sent to investigate the Lachlan River in 1817, and was the first recorded European to pass through the area. Oxley’s route took him from the vicinity of Condobolin south-west to Griffith, passing well to the north-west of the Lake Cowal district. Major Thomas Mitchell passed well to the south of the Lake Cowal area in 1826.1 The non-indigenous exploration of the Cowal area was undertaken, as it was over most of inland Australia, by the pastoralists themselves. The earliest recorded pastoralists in the general Wyalong district were the Gibson brothers, who took up a run near Bland, about 40km south-east of Lake Cowal, in 1833.

Pastoral settlement
Lake Cowal was beyond the Limits of Location, that is outside the Nineteen Counties, established in 1829, within which settlement was sanctioned. However, the promise for better grazing land ‘further out’ enticed pastoralists to send their stock beyond the ‘Limits’, and the squatting boom followed. As the government slowly came to grips with the reality of the spread of settlement, it created in 1839 eight pastoral districts (‘squatting districts’), one of which, the Lachlan District, included Lake Cowal.2

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By 1840 there were 98 stations established in the Lachlan squatting district. In subsequent years several pastoral runs were established surrounding Lake Cowal, and the configuration of the local properties changed over time as runs were amalgamated or subdivided. The picture of the early runs is also confusing because of the use of the same run name for a number of different grazing holdings (eg ‘Billabong’ and ‘Lake Cowal’ in various forms).

Cowal Station, occupying the eastern side of Lake Cowal, was leased by Thomas J. Atkins in 1842, and was described in 1866 as comprising 16,000 acres with a carrying capacity of 600 head of cattle. The newly assessed annual rental in 1866 was £75. Atkins also held Cowal No. 2 Station of 16,000 acres (640 cattle and £38 2s 6d rental). John Rodd took up Billabong Station (south of Lake Cowal, not to be confused with the later station overlapping the Lake) and Caragabal Station (to the east), also in 1842. 3

By 1866 Thomas Lee occupied a number of runs that covered the western side of Lake Cowal and what is now the Cowal Gold Mining Leases and Barrick land holdings, these being4:

<table>
<thead>
<tr>
<th>Run</th>
<th>Acres</th>
<th>Capacity</th>
<th>Rental</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wombine Station</td>
<td>20,000</td>
<td>4,000 head cattle</td>
<td>£30</td>
</tr>
<tr>
<td>Billabong Station</td>
<td>19,000</td>
<td>7,000 head cattle</td>
<td>£75</td>
</tr>
<tr>
<td>Billabong Back Station</td>
<td>16,000</td>
<td>640 head cattle</td>
<td>£30</td>
</tr>
<tr>
<td>(immediately west of Cowal</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mining Lease area)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Billabong Lower Station</td>
<td>16,000</td>
<td>640 head cattle</td>
<td>£30</td>
</tr>
<tr>
<td>(north west of Cowal Mining</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lease area)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The area now occupied by the Cowal Gold Mining Leases was originally part of the pastoral runs of Wombine and Billabong (See accompanying maps). The four Lee stations were combined in the 1880s with the Clear Ranges Run to the south west, to form Lake Cowal Pastoral Holding No. 701.

Lake Cowal Pastoral Holding No. 701 was divided in 1886 into a Leasehold Area5 of 78,879 acres (annual rental £591 11s 10d), and a Resumed Area of 70,735 acres (annual licence £294 14s 7d). Holding No. 701 was held in 1889 by the Australian Mortgage, Land and Finance Company, probably indicating that Lee had been unable to withstand the growing rural economic crisis.6

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4 Bailliere’s New South Wales Gazetteer and Road Guide: 43.
5 A new Lands Act (1884 ‘The Subdivision of Runs Act’) limited free selection in NSW. Each squatter’s run was to be divided into two portions, a ‘Leasehold Area’ retained by the lessee and a ‘Resumed Area’ to be opened to settlement by small farmers. However, the 1880s and 90s were periods of decline in the central and western regions, and increasingly the runs were in the hands of banks (623 runs and 577 occupation leases in resumed areas by 1889). By 1893 8 million acres of settled land had been abandoned. In 1894 the Carruthers Act returned the remaining balance of the Resumed Areas back to the leaseholder, to be resumed by government only when needed. See Roberts, S.H. 1968. History of Australian Land Settlement 1788-1920. Macmillan of Australia, Melbourne. pp 309-311.
6 Hanson, W. 1889. Pastoral Possessions of New South Wales, Gibbs, Shallard & Co, Sydney 280. The map of Lake Cowal Pastoral Run 701 gives different figure: 85,600 Leasehold and 81,600 Resumed Areas.
Lake Cowal Station
Lake Cowal Station, incorporating the southern blocks currently held by Barrick, and extending south up Bland Creek towards Marsdens, was taken up by James Marsden in the 1850s. The station was later sold to Clarence and Kennedy, who in turn sold to F.W. Ricketson and H. Ghinn in about 1876. The 1886 map of the Holding 701 subdivision shows a homestead in the current Lake Cowal homestead location, a woolshed where the current woolshed ruins are located, and adjacent huts, presumably for shearers accommodation, on portions 1 (a lot within portion 74) and 10 held by Ricketson and Ghinn. This is confusing, as the land area involved was within Lee’s Lake Cowal Pastoral Holding 701, yet would appear to be an independent pastoral property of some size well before the 1886 subdivision of 701. Subsequent ownership of Lake Cowal Station is a bit confusing, different version saying it was acquired by John Boyd Donkin in the 1880s, or by Sir Samuel Wilson in 1880. The latter seems correct, Donkin’s station appearing to be further south near Marsdens, probably a part of the original and larger Lake Cowal run.

The Lake Cowal woolshed, which appears from the map information quoted above to have been built before 1886, may have been one of the first sheds in Australia to install mechanical machinery in 1888. While another source suggests the machines were installed in Donkin’s Lake Cowal shed, it is possible Wilson’s Lake Cowal might have been the shed involved, as Sir Samuel Wilson also owner Dunlop Station on the Darling, the first shed to have mechanical shears installed in 1887. This deserves further research.

Wilson’s Lake Cowal woolshed was the scene of a record-breaking clip in September 1935, when shearers William Ellis and his sons Patrick and William Jnr. established a record for family shearing of 656 sheep in one day.

The sequence of ownership of portions within the Cowal Gold Mining Lease area, as tracked from the copies of parish maps annotated by the Lands Department Office is shown in the following table.

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7 Bland Historical Society ‘Lake Cowal historical research’: 88.
8 Bland Historical Society ‘Lake Cowal historical research’: 50, 88.
10 West of the Bland: 44.
11 West of the Bland: 45.
<table>
<thead>
<tr>
<th>Holder and Details</th>
<th>Date (purchase confirmed)</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>F.W. Ricketson &amp; Henry Ghinn</td>
<td>1895 map</td>
<td>Ricketson held the reduced Billabong Station to the south east in 1904</td>
</tr>
<tr>
<td>James Stewart CP81.169</td>
<td>4 Aug 1881</td>
<td>Map of Cowal Pastoral Holding 701. Hut worth £30, dam and tank worth £100. Forfeited 18.8.85, hut, tank, ring barking, fencing and stacked wood worth £159 5s. (1909 ed.)</td>
</tr>
<tr>
<td>Frank Allen CP85.47</td>
<td>12 Feb 1886</td>
<td></td>
</tr>
<tr>
<td>J.H. Palmer Pt ASL04-5</td>
<td>April 1904</td>
<td>Settlement Lease</td>
</tr>
<tr>
<td>Commercial Banking Company of Sydney</td>
<td>1909 map</td>
<td></td>
</tr>
<tr>
<td>Australian Mortgage, Land &amp; Finance Company</td>
<td>1895 map</td>
<td></td>
</tr>
<tr>
<td>Annie Isabel Allen CP85.46</td>
<td>11 Feb 1886</td>
<td>Block on which Cowal West homestead complex sits</td>
</tr>
<tr>
<td>Commercial Banking Company of Sydney</td>
<td>1909 map</td>
<td></td>
</tr>
<tr>
<td>Annie Isabel Allen CL4656</td>
<td>11 Feb 1886</td>
<td></td>
</tr>
<tr>
<td>W.J. Hammond CP28.40</td>
<td>9 Dec 1910</td>
<td>subdivision</td>
</tr>
<tr>
<td>Frank Allen CL4657</td>
<td>12 Feb 1886</td>
<td></td>
</tr>
<tr>
<td>R.H. Thompson pt CL28.24</td>
<td>15 Feb 1929</td>
<td></td>
</tr>
<tr>
<td>Originally part of WR 579 (watering reserve)</td>
<td>22 Feb 1878</td>
<td></td>
</tr>
<tr>
<td>F.C.H. Allen CP86.19</td>
<td>6 May 1887</td>
<td></td>
</tr>
<tr>
<td>Beaufoy A. Greene Sp L</td>
<td>5 Feb 1908</td>
<td></td>
</tr>
<tr>
<td>Reserve for Flood Refuge</td>
<td>31 Aug 1928</td>
<td></td>
</tr>
<tr>
<td>R.C. Hammond</td>
<td>17/8/1995</td>
<td></td>
</tr>
<tr>
<td>Originally part of WR 579 (watering reserve)</td>
<td>22 Feb 1878</td>
<td></td>
</tr>
<tr>
<td>F.C.H. Allen CL6.51</td>
<td>6 May 1887</td>
<td></td>
</tr>
<tr>
<td>Bank of NSW</td>
<td>1909 map</td>
<td></td>
</tr>
<tr>
<td>R.C.J. Hammond CP28.41</td>
<td>29 Dec 1910</td>
<td>Subdivision</td>
</tr>
<tr>
<td>J.H. Palmer</td>
<td>1900</td>
<td></td>
</tr>
<tr>
<td>P. Hetherington</td>
<td>23 Nov 1928</td>
<td></td>
</tr>
<tr>
<td>J.H. Palmer</td>
<td>1904</td>
<td></td>
</tr>
<tr>
<td>R.H. Thompson pt CP28.24</td>
<td>15 Feb 1929</td>
<td></td>
</tr>
</tbody>
</table>
Parish Lake

<table>
<thead>
<tr>
<th>Portion Number</th>
<th>Holder and Details</th>
<th>Date (purchase confirmed)</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>22</td>
<td>W.C. Rathmell CP28.20</td>
<td>1928</td>
<td>The floor of Lake Cowal was subdivided as Home Farm Grants in the 1920s</td>
</tr>
<tr>
<td>23</td>
<td>Tom Croft Home Farm Grant 36.2</td>
<td>1936</td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>R.G. Butteneshaw HFG</td>
<td></td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>M.W. Whiley SpL 31.58</td>
<td>1931</td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>Frank Plackett Additional Home Farm Grant AHF32.1</td>
<td>1931</td>
<td></td>
</tr>
</tbody>
</table>

Parish Cowal

<table>
<thead>
<tr>
<th>Portion Number</th>
<th>Holder and Details</th>
<th>Date (purchase confirmed)</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (part of 74)</td>
<td>F.W. Ricketson &amp; H. Ghinn</td>
<td>1880 map</td>
<td>1886 map for Lake Cowal Pastoral Holding 701 shows homestead in position of present homestead, valued at £880.</td>
</tr>
<tr>
<td>1 (part of 74)</td>
<td>Clarence Hann &amp; Co, I.P 73.3298</td>
<td>1873</td>
<td>Shown on 1880 map, crossed out and replaced by Ricketson and Ghinn.</td>
</tr>
<tr>
<td>1 (part of 74)</td>
<td>F.W. Ricketson &amp; H. Ghinn</td>
<td>1880 map</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Frederick William Ricketson C.P.78.100</td>
<td>March 28 1878.</td>
<td>1886 map for Lake Cowal Pastoral Holding 701 shows woolshed at position of present woolshed ruin, valued at £940, and adjacent huts valued at £100.</td>
</tr>
<tr>
<td>10</td>
<td>Australian Mortgage, Land &amp; Finance Company</td>
<td>1892 map</td>
<td></td>
</tr>
</tbody>
</table>

Stock owners in the Lake Cowal area in 1904 are listed as:\(^{13}\):

- Frank Allen, Lake Cowal West: 2,092 sheep
- J.B. Donkin, Lake Cowal, Marsdens: 11,808 sheep, 28 cattle, 18 horses
- Low Brothers, Lake Cowal: 6,340 sheep, 19 cattle, 8 horses
- Wilson & Co., Lake Cowal Station: 18,808 sheep

The exact boundaries between these stations have not been researched.

Cowal West

The portions making up the western section of the Cowal Mining Lease area were taken up by Frank and Annie Isabel Allen between 1885 and 1887, and named ‘Cowal West’. This acquisition would have been more understandable if the land had been in the resumed section of Pastoral Holding 701, but it was in fact mainly in the leasehold section. This suggests that Lee had already lost control of the property and the finance company was trying to sell-off its asset.

It appears from the history of the portions making up Cowal West that Frank Allen disposed of the property in the early 1900s. Allen sold to Beaufoy Greene, who, after misfortunes including the burning of the homestead, sold to Key Perry. Perry’s resident manager was William McNair. Perry in turn sold to William J. Hammond in the 1920s, Hammond living on the station with his son and three daughters. The property was subdivided on Hammond’s death in the late 1920s. Further subdivision of blocks in the Cowal West holdings occurred when the railway between West Wyalong and Burcher was opened in 1930, the rail line reserve effectively cutting some portions in half.

The remaining section of Cowal West was bought from Hammond’s son by Col Carnegie and his family in 1954, who occupied the property until acquired by Barrick.

**Lake Cowal farmstead blocks**

Samuel Wilson at Lake Cowal Station carried out experiments in wheat growing and predicted a good future for the crop in the district. In 1911 the leasehold land comprising the major part of Wilson’s Lake Cowal Station was subdivided for wheat production. This included large areas in the districts of Billy’s Lookout, Clear Ridge, Wyrra, Blow Clear and Wamboyne. These areas are south and west of the Lake Cowal Gold area.

The Lake Cowal leases (parishes Blow Clear and Clear Ridge) were made available for closer settlement from 21 April 1913. 35 blocks in Parish of Blow Clear and 21 in parish of Clear Ridge were gazetted as Homestead Farms (an area capable of supporting a settler, his home and family under reasonable conditions).

Large tracts of Crown Land in the district were taken up for closer settlement following the First World War and into the 1920s. Many were taken up by wheat farmers with little grazing experience, and the blocks proved too small for self sufficient wheat production. Much of the floor of Lake Cowal was taken up as small blocks in the 1920s.

‘Lakeside’, the farm formerly occupied by the Bolte family in the north of the Barrick holdings, is an example of the Home Farm Grants, occupying the lake floor. Harold Bolte won the block in a ballot in 1922, built a home for his family, and grew prize-winning wheat, as well as grazing sheep and cattle. The homestead still stands.

The combination of depression and drought in the late 1920s and early 30s caused major distress in the Wyalong/Cowal district, with the government becoming involved in a major relief scheme. In 1940 the Commonwealth and State governments reached agreement on a scheme to introduce a Rural Reconstruction Board to assess and rationalise farm size to produce viable farm holdings. This work was substantially completed by 1950. The original 1,970 farms in a 3.5 million acres area, were reduced to 1,103 farms, and a better balance between wheat and grazing was struck.

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14 Bland Historical Society ‘Lake Cowal historical research’: 5.
15 Personal communication, Col Carnegie, 27/5/03.
16 *West of the Bland*: 48-49.
17 *West of the Bland*: 40.
18 *West of the Bland*: 40.
19 Bland Historical Society ‘Lake Cowal historical research’: 82.
20 *West of the Bland*: 41-42.
One of the lake blocks was a 2,400 acres special lease given to Reg Rattey V.C. in recognition of his Victoria Cross winning exploits in New Guinea in 1945. Rattey had grown up in Barmedman, south of West Wyalong, and named his new Lake Cowal lease ‘Weeloona’. Rattey built the homestead that stands in the block today.\textsuperscript{21} (see attached description of Rattey’s life and V.C. award.)

2.2 DESCRIPTION OF THE PLACE

Cowal West

The Cowal West Homestead Complex consists of the following items:

*Homestead building*

The original Cowal West homestead, probably built by the Allens, burnt down about the turn of the 20\textsuperscript{th} century. A new homestead was built, probably in the first decade of the 20\textsuperscript{th} century. A date on one of the fireplaces indicated 1916, but this might have post-dated the main construction.\textsuperscript{22}

The homestead as rebuilt consisted of a five-roomed cottage with a detached kitchen block of two rooms (see fold-out plans attached).\textsuperscript{23} The main cottage had a large room with 3320mm high ceiling, plaster-lined walls with picture rails and a polished floor, with a fireplace on the northern wall. This room was separated by a timber-lined corridor from two timber-lined rooms, also with 3320 high ceilings. These rooms were subsequently combined into one. This main group of rooms had a hipped roof. At the rear were two rooms, possibly early additions, with a gable roof and the same ceiling height as the main rooms, and being plaster lined with picture rails.

The original gable-roofed kitchen block had two timber lined rooms with 3340mm high ceilings, one room having a stove setting within a chimney, the other possibly being the original dining room. Two rooms were subsequently added to the rear of the kitchen block, which had fibro-lined walls and a skillion roof.

To the south of the main rooms was a three-roomed free-standing addition with a gable roof with a gablet (gambrel) form on the eastern end, which was probably built soon after completion of the main building. It has timber-lined rooms with 3260mm high ceilings. This suit of sleeping rooms is separated from the main building by a wide corridor, roofed by the verandah surrounding the main building. A verandah extends across the eastern front of the main building and sleeping addition, and part way along the northern wall of the main building and along the southern wall of the sleeping addition. The corners of the roof were decorated with decorative metal fins (acroteria). All buildings were clad externally with weatherboards.

\textsuperscript{21} Website www.chapter-one.com/vc/award.asp?vc=1022
\textsuperscript{22} Personal communication, Col and Jenelle Carnegie, 27/5/03.
\textsuperscript{23} Described from plans drawn up in 1976 by architect George Guest, provided by Nyelva Carnegie..
The homestead had this configuration until 1976, when extensive alterations and additions were made, designed by the architect George Guest. At that date the corridor between the main building and sleeping addition and the verandah south of the sleeping addition were enclosed, new rooms formed, the merged large room in the main building was subdivided into two bedrooms, and the sleeping addition extended west to create a bathroom. A roof was extended over the northern side of the building to create a shaded area, but a proposed new room for that location was not built. The kitchen was enlarged and redesigned, with a corridor inserted separating it from the adjacent room. New entries were created into the living room and the newly created bedroom.²⁴

The homestead is in good condition.

**Woolshed and yards**

The woolshed has six discernible stages of construction.

*Stage 1* consists of an aisled gable-roofed set of sweating pens and catching pens, and the shearing board. It is constructed with heavy round timber posts supporting the outside walls and aisle walls, and clad externally in a combination of weatherboard, iron formed from flattened drums, and horizontal planks. The top 300mm of the eastern wall adjacent to the sweating pens is open and protected with chicken wire and fly wire. A light roof framing without trusses or collar ties but simply pitched from the level of the top of the aisle posts, supports the corrugated galvanised iron (CGI) roof. Several glass skylights have been inserted above the board. The floor of the sweating and catching pens are timber gratings, formed either from sawn timber slats or round timbers in some sections. The shearing board has a timber boarded floor.

The sweating pens and catching pens are divided by rails made of whole bush poles, morticed into the upright posts. Gates in the central race are hurdles made of boughs morticed into a frame, and raised vertically between posts, the ends of the hurdles contained within simple pairs of battens attached to the posts. The hurdles are held up by a wire hook looped over a peg in a beam above.

Gates into the sweating and catching pens are made of boughs morticed into a frame, and swung on posts. The support posts either run up to the beam above, where they are morticed into the beam which acts as a pivot, or are gate-height and supported at the top by a wrought iron hoop, or later by a twisted wire loop. The bases of the support posts sit in a circular depression cut into a timber plate set into the floor of the shed. The gates were originally (and some still are) held closed by a wooden peg chained to the gate and fitting into a circular hole in the jamb-post. The gates giving onto the board are boarded over a bough and plank ledged and braced frame.

Above the sweating and catching pens are doubled round timber beams acting as ties between the posts supporting the aisles, and providing top-supports for the posts within the pens. The sections above the northern and southern pen sections are boarded over to form an upper level, used for storage.

²⁴ described from plans
The western aisle roof over the board has been raised by attaching new rafters higher-up the main roof frame, held about 400mm above the level of the top of the aisle posts by timber spacers, and extending to posts along the western wall about 300mm taller than those along the eastern wall. The roof appears to have been raised by a total of about 700mm to allow for the installation of mechanical sheering machinery, suggesting that the shed was originally built to accommodate hand shearing (see implications in the Analysis of Evidence section).

The board has four stands for mechanical shears, with a line shaft above driven by an electric motor. He chutes to the counting out pens are located between round timber posts along the western wall.

Stage 2 consists of a two-bayed gable-roofed extension to the south, which forms a press room. The roof has a ridge at the same height as the Stage 1 roof, but the roof slope is continuous to the side posts, leaving a gap where it adjoins the double-slope of the Stage 1 roof above the Stage 1 aisle posts. This gaps has been partially infilled with iron sheet. The floor level is 300mm lower than the level of the board and pens in Stage 1, the board level being extended into the western side of Stage 2 to house the wool sorting tables. A series of partitions in the south-west corner form wool bins, and double opening doors give access in the southern wall. The northern wall of Stage 2 is weatherboard to about 2m height, separating it from the sweating and catching pens in Stage 1.

The roof frames of Stage 2 have timber brackets to support a roller or pulley, probably associated with the original wool press that would have been located here. The present wool press is an electric Sunbeam press.

Stage 3 is a weatherboard and iron-clad skillion extension to the east of the southern bay of Stage 2.

Stage 4 and 5 are a gable-roofed extension to the west of the shearing board. Stage 4 may be contemporary with Stage 1, acting as the experts room, or it may have been added when the first machine shears were introduced, as the engine room. The floor is timber boarded and at the level of the board. It currently has a shelf with shearing components and related materials on it, a coat rack, and a free-standing set of disc grinders.

Stage 5 is an extension about 250 mm wider than Stage 4, and has a dirt floor at a lower level, with a large concrete pad extending into a skillion extension on the northern wall. This probably housed a later engine for mechanical shears. Double opening doors give access to the west. Stages 4 and 5 are clad in vertical boards, with no internal lining.

Stage 6 is an extension of the sweating pens on the northern wall of Stage 1. It has a slatted floor and is clad in Flattened iron drums. Two doors give access from the pens to the north to the central race and the eastern sweating pens. This addition was built in 1952.25

Artefacts within the woolshed include old lamb-bats (for gathering up lambs wool), slatted sorting tables, bale stencils, two cane wool baskets, and the more recent modern disc grinder, wool press and mechanical shears set.

25 Personal communication, Col Carnegie, 27/5/03.
The yards extend about 65 metres north and 35 metres west of the woolshed. The yards are roughly made and poorly maintained, consisting of sections of post and rail fencing, old iron fencing, old gates, iron sheet and weldmesh panels. Only the southern section retains a formal linear shape, the rest being without a straight section. A galvanised iron clad drop dunny is located west of the yards.

**Shearing Quarters**
The shearing quarters, located 80 metres west of the woolshed, which were erected before Col Carnegie arrived in 1954, are made up of four buildings.

**Sleeping Quarters:** Consisting of a gabled corrugated galvanised iron roof, timber-framed and fibro-clad building with five rooms, supported on timber and concrete stumps. Each room is approximately 3500mm by 2880mm in floor size, with a small shelf built onto the rear wall as the only built-in furniture. Each room has a louvred window and single door, timber boarded floor, and is fibro clad internally.

**Kitchen and dining room:** A gabled CGI roofed building, timber-framed and externally clad in CGI and internally clad in fibro. The fibro-clad ceiling is 2740mm high. The building sits of timber and concrete stumps, and has a suspended timber boarded floor. The building is divided internally into two rooms by a partition with a central opening. Doors provide access into the east and west sides of each room. The kitchen room has a ‘Younger’ iron stove set in a brick fireplace with an external brick chimney on the southern wall. A bench top with sink occupies most of the western wall. A large fly-wire covered food safe sits in the room, but has been moved from its original location.

The dining room has a fireplace at the northern end with external brick chimney, and a fly-wire walled food cupboard is built into the south-west corner of the room.

**Shower block:** A CGI clad skillion-roofed shed with concrete slab floor and housing three shower stalls, a room for a water heater, and an externally accessed flush septic toilet.

**Laundry:** A CGI clad gable-roofed shed with concrete slab floor. A brick fireplace setting with a pipe chimney for a laundry copper is located in the south-west corner, and bench on the eastern wall. The interior has been clad in recent years in black plastic for use as a photographic dark room by Jenelle Carnegie.

A 2750mm diameter CGI water tank sits in a space adjacent to all buildings.

**Stables**
The stables is a pole-framed drop-slab building. The main building is a two-storey gable-roofed construction 8.88m long by 4.5m wide, having four bays on the ground floor separated by full-height round posts on the perimeter and down the centre-line. The side-wall posts are 3.24m high and the ridge is 4.8m high. The upper floor is a single-roomed loft, accessed by a door in the eastern gable-end. The walls between the posts on the lower floor and on the upper side-walls are infilled with horizontal drop-slabs of cypress pine in the form of thick split planks up to 70mm thick, 360mm wide and 2.5m long. Many of the slabs have fallen from the building. The gable-ends above the log joists supporting the upper floor are clad in roughly made weatherboards.
The ground floor has four bays, separated by three round pole rails spanning between the support posts to a height of 1340mm. Between the bottom rail and the floor, a height of approx 550mm, is infilled with slabs held between battens attached to each post. The floor of the western three bays is made of slabs laid directly on the ground.

The western-most bay is a tack room, the round-timber joists supporting the upper floor having wooden pegs inset into them on which to hang harness. The two central bays are stable stalls. The western stall has a feed crib in the form of a hurdle attached at an angle to the upper rear wall of the stall, and fed with hay through a slot in the floor above. The other stall has a wooden trough, 340mm wide, supported between the bottom two side rails at each end. This is also fed from the floor above, hay being fed into a cavity created by lining the adjacent posts on both sides, the hay then being forked out of a gap left in this cavity above the trough. The posts at the entry end of each stall has a broad curved peg attached, to support saddles, as well as subsidiary pegs for harness.

The floor of the eastern-most bay is covered in coke, presumably to supply the blacksmith’s forge which was originally located in a shed nearby. The walls of this bay are clad with flat iron sheets, made from flatted drums.

In the southern walls of each bay were doors, either double or single hung.

A 4.5m wide skillion addition to the northern side of the main building has flat iron (flattened drums) and weatherboard walls and a floor made of half-logs laid on the ground. The skillion originally housed horse-drawn vehicles.

The stables building has a severe lean, up to 15° from the vertical on the eastern wall, due to the rotting of the bases of key posts and the absence of cross-bracing. Many slabs and supporting frames have fallen from the building, and the structure is at risk of imminent collapse.

Workers cottage

Two buildings form the worker’s cottage and bathroom. The cottage itself has several stages of development. The original building was a two-roomed timber-framed weatherboard-clad structure with gable roof. The two rooms were clad in tongue and groove boards, as was the ceiling, and were separated by a 1970mm high tongue and groove boarded partition. A brick fireplace and chimney was attached to the northern wall. Each room has a separate door off the skillion-roofed verandah extending part way across the front of the building. The floor is timber boarded, supported on low stumps.

An addition to the rear of the original building has side walls clad in weatherboards of a different profile to the original, and is internally clad in fibro. The western wall is stud-framed and clad only on the interior with fibro, suggesting the shed structure west of it were designed at the same time to protect that wall from the weather.

West of the addition is the ruined remains of a pole-framed shed, not accessed from within the cottage. Hinges on the remaining posts on the eastern wall suggest double-opening doors on that side.
The gable roof of the original cottage was extended over the addition and the rear shed. A CGI water tank sits partly under the front verandah, which has a concrete slab floor.

A separate gable-roofed timber-framed weatherboard clad building is located immediately to the north-east of the cottage, and is identified by Col Carnegie as a bathroom. The single door faces east, and the floor is timber over short stumps. The gable-ends are clad in fibro. No fittings for its supposed use survive.

The rear shed has substantially collapsed, and the addition is roofless. The southern wall of the original cottage has separated from the rest of the building and has pulled away at the base. The roof has several CGI sheets missing or detached, and the chimney and fireplace have collapsed. The cottage is in poor condition. The bathroom is in fair condition.

**Other buildings**

*Fibro cottage*: A workman’s cottage is located to the north-east of the complex. It is a timber-framed fibro cottage, in fair condition. Col Carnegie states that it was built in 1951. The cottage was not recorded in detail.

*Machinery Shed*: A 22m x 9m steel-framed ribbed corrugated iron clad open-fronted machinery shed was built by Col Carnegie in the 1970s.

*Hay shed/Vehicle shelter*: A tall pole-framed structure with a CGI roof supported on steel trusses and with no wall cladding, 11m square, is a 1970s construction.

*Hay shed ruin*: A totally collapsed pole-framed shed, possibly contemporaneous with the stables, is located north of that building. Timber posts, slabs and iron are scattered over the 9m x 10m site, and part of the northern gable-end wall lies partly intact on the ground.

*Feed shed*: a modern CGI clad feed shed located adjacent to a small set of yards about 80m south of the woolshed.

*Vehicle/work shed*: Located adjacent to the homestead, this steel-framed CGI clad open-fronted shed is probably of 1970s vintage.

*Garage*: A weatherboard clad, fibro-lined garage is adjacent to the homestead.

**Lake Cowal and adjacent blocks**

*Rattey’s house*

Reg Rattey V.C.’s house on Lot 38, later acquired by the Buttenshaws, is a four-roomed timber-framed CGI clad cottage with a two-roomed skillion extension at the rear. Internal cladding is tongue and groove boards. An enclosed verandah ran around three sides of the house, and has substantially collapsed in several sections. Most of the roofing iron has blown off, the verandahs are in a state of collapse, and the main building is in poor condition. The front entry path is lined with up-turned beer bottles. The building was not recorded in detail.
**Survey markers**
Two survey markers were inspected. The first is a tree with a blaze within which is cut a broad arrow and the numbers 38, 31 and 37 one above the other. Two adjacent trees have blazes cut in them but no lettering. The marker is at the junctions of lots 38, 31 and 37 (formerly lots 3 and 4 of Portion 74).

The second marker is a tree with a blaze in which is carved ‘BM’ above the number 10 and the letters ‘PT’. It is at the corner of Lot 10, Portion 4 (formerly lots 1 and 2 of portion 74). The survey bench mark is a peg and nail located immediately below the blaze and encircled by the roots.

**Lake Cowal homestead complex**
The Homestead Complex consists of:

- a substantial homestead building
- stables
- two workers cottages
- garage/shed
- meat house
- machinery shed
- dump

No recording was undertaken.

**Lake Cowal Woolshed**
A very large timber woolshed in very poor condition, largely collapsing located about 1.4km south of the homestead.

**Lake Cowal Shearer’s Quarters**
Located on Sandy Creek (formerly Back Creek) between the homestead and the woolshed, the quarters consist of weatherboard sleeping quarters with eight rooms, a kitchen/dining block, generator shed and showers block. The quarters are not those shown in the 1886 plan of the area (which were adjacent to the woolshed), but appear to be of a substantial age. The quarters buildings are in a poor condition, but still standing.

### 2.3 ANALYSIS OF EVIDENCE

**Thematic context**

The NSW Heritage Office uses the NSW Historical Themes as a framework within which to consider the possible aspects of significance of heritage places. There are also National Themes, which can be related to the NSW themes.
The Cowal West and Lake Cowal sites have a connection with the following NSW Historical Themes:

<table>
<thead>
<tr>
<th>NSW Historical Theme</th>
<th>Australian Theme</th>
<th>Relevance to Cowal Sites</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td>Developing local, regional and national economies</td>
<td>Settlement of the lake floor by Home Farm Grant areas for wheat growing</td>
</tr>
<tr>
<td>Pastoralism</td>
<td>Developing local, regional and national economies</td>
<td>Early runs, later station development, such as Cowal West and Lake Cowal. Associated woolsheds, yards, homestead, quarters.</td>
</tr>
<tr>
<td>Technology</td>
<td>Developing local, regional and national economies</td>
<td>Transition from hand shears to mechanical shearing exhibited in Cowal West and Lake Cowal woolsheds.</td>
</tr>
<tr>
<td>Land tenure</td>
<td>Building settlements, towns and cities</td>
<td>Changes in run, station and farm configuration, survey trees, fencing.</td>
</tr>
<tr>
<td>Accommodation</td>
<td>Building settlements, towns and cities</td>
<td>Homesteads, shearsers quarters, workers accommodation.</td>
</tr>
<tr>
<td>Domestic life</td>
<td>Developing Australia’s cultural life</td>
<td>Homestead, shearsers quarters, workers accommodation, kitchens, shower blocks.</td>
</tr>
<tr>
<td>Persons</td>
<td>Marking the phases of life</td>
<td>Associations with early squatters, station holders, small settlers: Sir Samuel Wilson, Frank Allen, Bolte family, Buttenshaws, Ricketson, Reg Rattey V.C.</td>
</tr>
</tbody>
</table>

**Recorded places in context—Cowal West**

The pastoralism theme is one of the strongest reflected at Cowal West. The themes of technology, accommodation, labour and domestic life are closely associated with the pastoralism theme. Cowal West has historical associations with the early squatter runs and later stations, and with the late 19th century subdivision of the runs. The woolshed and stables, in particular, relate to late 19th century origins.

The **homestead** is typical of self-sufficient homesteads of the early 20th century. It demonstrates the domestic living conditions of pastoral families through the 20th century, without exhibiting the characteristics of its type in an outstanding way. Very many homesteads in rural NSW demonstrate the same level of evidence. It is associated with a number of pastoral families of local note.
The woolshed demonstrates, in the lifting of the roof over the board, clear and uncommon evidence of the technological change from hand shearing to mechanical shearing. No evidence was located to provide the date of this change, but the very early conversion of the Lake Cowal shed (either Wilson’s or Donkin’s) in 1888 illustrates that the technology was known at an early date to the Allens at Cowal West. It can be assumed that the shed was converted to mechanical shearing before the turn of the century. The mechanical handpiece was well established by 1900, and only one shed surveyed in the Riverina was still using hand-blades by 1923.\(^{26}\)

The best study of woolsheds with which to compare the Cowal West shed is Peter Freeman’s work. This study looked at 25 woolsheds in the broadly defined Riverina region. The nearest sheds to Lake Cowal covered in the study are ‘Bygoo’ near Ardlethan, ‘Wallendbeen’, ‘Kingsvale’ and ‘Memagong’ near Young, and ‘Wooyeo’, ‘Uabba’ and ‘Naradhan’, near Lake Cargellico.\(^{27}\) This study was done over 20 years ago, and Peter Freeman estimates that about one third of the sheds he surveyed no longer exist today.\(^{28}\) The sheds date from the 1860s through to the 1890s, so are directly comparable in age to the Cowal West shed.

Many of the sheds surveyed by Freeman were larger than Cowal West, but it is reasonably typical in layout and detail for a small to medium-scale shed. The double-aisled design is more or less the standard form for woolsheds of the period. The use of cypress pine for wall cladding (only partly used at Cowal West) and internal rails was also common. Only two of the surveyed sheds demonstrated the raising of the roof over the board to accommodate mechanical shears—these being ‘Bundylumblah’ (1880) near Moulamein, and ‘Roto’ (1889) near Hillston. Other sheds converted to mechanical shears had sufficient head-room to accommodate the equipment without major alteration, and hence have less physical evidence of the technological change. The evidence at Cowal West is therefore uncommon.

While many of the sheds had gates and fences made of framed boughs, these were often replaced with sawn timber or iron gates as the larger sheds were upgraded. While not rare, these features at Cowal West are of note and are increasingly uncommon. Only one of the surveyed sheds had its vertically-lifting race gates highlighted, were at ‘Bygoo’ (1867) near Ardlethan, where the slatted gates are counter-balanced with pine log weights suspended from pulleys. While some other sheds in NSW are known to have lifting gates (such as ‘Meriville’, Murrumbateman), the vertical lifting gates at Cowal West would appear to be rare.

The yards adjacent to the woolshed have been poorly maintained in their original configuration and have an ad hoc feel to their arrangement. The yards give little evidence of the arrangement of stock handling at the height of the shed’s activities. They are not typical, nor are they a significant rarity.

The Shearer’s Quarters are typical of 1930s-1940s era quarters—fibro and CGI cladding, conforming to the Shearers Accommodation legislation. They contribute to completeness of the overall complex, but are not of particular significance in their own right.


\(^{27}\) Freeman, *The woolshed: a Riverina anthology.*

\(^{28}\) Personal communication, Peter Freeman, 2/6/03.
The **Stables** are uncommon in their age and retained details of drop-slab construction, use of pole rail partitions, log floor and surviving chaff rack/crib, feed trough, and saddle pegs. Little comparative evidence is available. Cypress pine drop log construction using round logs or split half-logs is more common than split pine slabs as used here, but this construction is found in a number of the Riverina woolsheds of a similar vintage.\(^{29}\) The size of the slabs (up to 370mm wide) puts them at or beyond the maximum size (12”) allowed to be cut without special permit under the 1884 *Crown Lands Act*\(^{30}\), and is an interesting interpretative devise to show the environmental changes in the local district. Similar chaff racks are found at ‘Fernhill’ (1858) near Bowenfels, and ‘Cliefden’ (1842) near Carcoar,\(^{31}\) and probably at other 19th century stables. Saddle racks and pegs are common, though a standard inverted ‘V’ form seems more common than the carved curved form found at Cowal West. While a good comparative analysis is not possible, the Cowal West stables are assessed as being at least uncommon if not rare. The condition of the stables, however, is very poor, and unless stabilised they are likely to collapse in the near future. The stables have a strong visual appeal due to their rustic timber form and obvious handcrafted construction.

The **weatherboard workers cottage** is of historical interest in illustrating the layout of the working homestead complex, and demonstrating the conditions of worker accommodation in the early 20th century. However, due to changes made to it over time, its poor condition, and the incomplete nature of the evidence shown in the surviving structure, it is not a particularly good example of its type.

The 1951 **fibro-clad workers cottage** is of a form and construction common throughout rural NSW, and is not considered to be of significance.

The **remaining buildings**, constructed in the 1970s and later, are considered to be part of the contemporary use of the property, and, other than as evidence of the historical development of the complex over time, not considered to be of heritage significance.

**Recorded places in context—Lake Cowal Station**

The identified places on Lake Cowal Station, outside the Development Approval area for the Cowal Gold project, were not recorded or assessed. The following analysis is based on a brief inspection only, and would require additional work to confirm a final assessment.

The **Lake Cowal Homestead complex** is directly related to the second generation of pastoral runs in the Lake Cowal region, and together with its woolshed and shearing quarters appears to have historical associations and physical remains of potential heritage significance.

The **Lake Cowal Woolshed** is a large shed that would benefit from an analysis in the context of Freeman’s wider survey of the Riverina sheds. It is possibly one of the earliest sheds to be converted to mechanical shearing. The shed is in ruin, and is beyond effective conservation, but its recording would salvage potentially important historical and technological evidence of local and regional significance. The original shearers quarters were adjacent to the shed (as shown on 1885 subdivision map), and may have left archaeological evidence.

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\(^{29}\) Freeman, *The woolshed: a Riverina anthology*  
The Lake Cowal Shearer’s Quarters are of as yet unknown age, but appear to be early 20th century in date. They are potentially of greater significance than the Cowal West quarters.

Rattey’s house is closely associated with a prominent Australian, due to his war record, who also typified the small-scale settlement of the lake area.

The survey marker trees appear to be related to subdivision of the lake bed blocks in the 1920s, and are interesting evidence of the survey of the local area.

3. STATEMENT OF SIGNIFICANCE

The following statement of significance is based on the criteria used for assessments for the NSW Heritage Register. The assessment is for the Cowal West complex only.

Statement of Significance

Cowal West homestead complex is of local significance in reflecting the late-19th century creation of pastoral properties out of the earlier large runs, typifying the pattern of land settlement in central NSW established at that time.

The woolshed has significant evidence of the change from hand shearing to mechanical shearing, a technological advance that had a major influence on the consolidation of pastoralism as the dominant landuse of the region. The woolshed contains construction elements and fittings that are uncommon or rare in the region, and under substantial risk throughout the state. It is an important example of its type in the region. It has some potential to reveal new information about 19th century woolshed construction, given its relatively unaltered internal details. The interior of the woolshed has some aesthetic appeal due to its rustic character and demonstrated craftsmanship.

The stables contain construction elements and fittings that are uncommon or rare, and under substantial risk. The stables have some aesthetic appeal due to their rustic character and demonstrated craftsmanship. Initial assessment (without good comparative evidence) suggests the building is an important example of its type in the region.

The pastoral families associated with the development of Cowal West, including the Allen, Greene, Hammond and Carnegie families, are closely associated with the history of the local Lake Cowal area.

Breakdown of significance by criterion

Criterion A: an item is important in the course, or pattern, of NSW’s cultural or natural history;

Cowal West homestead complex is of local significance in reflecting the late-19th century creation of pastoral properties out of the earlier large runs, typifying the pattern of land settlement in central NSW established at that time.
The woolshed has significant evidence of the change from hand shearing to mechanical shearing, a technological advance that had a major influence on the consolidation of pastoralism as the dominant landuse of the region.

**Criterion B:** an item has strong or special association with the life or works of a person, or group of persons, of importance in NSW’s cultural or natural history;

The pastoral families associated with the development of Cowal West, including the Allen, Greene, Hammond and Carnegie families, are closely associated with the history of the local Lake Cowal area.

**Criterion C:** an item is important in demonstrating aesthetic characteristics and/or a high degree of creative or technical achievement in NSW;

The complex as a whole is typical of the layout, design and visual character of medium-scale pastoral holdings in the region, but does not have outstanding aesthetic values or evidence of creative or technical achievement originating on the property. The Stables have some aesthetic appeal due to their rustic character and demonstrated craftsmanship. The interior of the woolshed shares this aesthetic appeal.

**Criterion D:** an item has strong or special associations with a particular community or cultural group in NSW for social, cultural or spiritual reasons;

Does not apply

**Criterion E:** an item has potential to yield information that will contribute to an understanding of NSW’s cultural or natural history;

The woolshed has some potential to reveal new information about 19th century woolshed construction, given its relatively unaltered internal details. The rubbish dumps appear to have been both cleaned up and scavenged for bottles, and little archaeological potential remains.

**Criterion F:** an item possesses uncommon, rare or endangered aspects of NSW’s cultural or natural history;

The woolshed and the stables contain construction elements and fittings that are uncommon or rare in the region, and under substantial risk throughout the state.
**Criterion G:** an item is important in demonstrating the principal characteristics of a class of NSW’s
- cultural or natural places; or
- cultural or natural environments.

The homestead complex as a whole is typical of its kind, but is not assessed as an important example. The woolshed and stables are important examples of their type, retaining construction elements and fittings now uncommon or rare in other examples.

4. CONCLUSIONS

The Cowal West Homestead Complex has local significance. The key elements of the place that underpin that significance are the woolshed and to a lesser degree the stables. The woolshed is certainly of local significance, and potentially of regional significance. The stables are of local significance, the assessment of their wider importance requiring further comparative research.

The woolshed is capable of being conserved. The building is in good condition, and superficial examination suggests conservation would not be a major undertaking. If conservation *in situ* is not feasible, the option of moving the shed to a new location should be critically assessed before being adopted. The shed is of pole construction, so it cannot be moved intact or in sections, but would have to be taken apart and totally reconstructed in its new location. The significance of the building in its original place and context would be irretrievably lost, and the risk of loss of physical evidence and aesthetic character in the process of demolition and reconstruction would be great. The cost benefit and heritage benefit of such a move has to be questioned. The Burra Charter stresses that the moving of a building ‘should not be to the detriment of any place of cultural significance.

If demolition cannot be avoided, **it is recommended** that representative components of the gates, hurdles and movable artefacts be salvaged from the building and donated to a collecting institution (local museum, state museum, Shearer’s Hall of Fame etc) with appropriate financial assistance to allow their proper display interpretation and conservation.

The stables are capable of conservation, if action is taken immediately. Similar concerns to those expressed about the woolshed arise about moving the building if conservation *in situ* is not feasible. While the stables are more likely to be easier to disassemble and re-erect, it is high-risk proposition from the point of view of retention of cultural significance. A critical consideration is whether there is a potential recipient of the moved building who would be able to guarantee ongoing conservation and public access and interpretation. Without such a recipient, removal of the building may be a costly step that simply postpones the building’s eventual destruction.

The places on Lake Cowal Station, outside the development application area but owned by Barrick, are of considerable historical interest and potentially of local or regional heritage significance. Their further research and recording **is recommended**, to assist Barrick make appropriate decisions about their future use and possible conservation.
5. BIBLIOGRAPHY


Bland Historical Society, 1993. ‘Lake Cowal historical research’, a report for North Mining Limited


Freeman, P. 1980. _The woolshed: a Riverina anthology_, Oxford University Press, Melbourne


Parish and Pastoral Run maps, Department of Land and Property Information NSW web site (2003).


Walsh, G. 1993. _Pioneering days: people and innovations in Australia’s rural past_, Alen and Unwin, Sydney
APPENDIX C

APPENDIX J – GROUND VIBRATION AND AIRBLAST, AUSTRALIAN STANDARD AS 2187.2-1993 EXPLOSIVES – STORAGE, TRANSPORT AND USE PART 2: USE OF EXPLOSIVES
APPENDIX J
GROUND VIBRATION AND AIRBLAST
(Informative)

J1 INTRODUCTION This Appendix addresses the two common physical environmental impacts of blasting; ground vibration and airblast.

The energy released in blasting to break and move rock can result in ground vibration and airblast which may cause discomfort and damage to blast-site neighbours, adjacent structures and underground services. More useful monitoring equipment is now available to assess these impacts which are likely to require increasing understanding by shotfirers.

Ground vibration and airblast can be affected by a number of factors, some of which are under the control of the shotfirer. Nevertheless, complaints can arise following a blast and the keeping of records is often crucial in responding to complaints as well as improving techniques.

Common criteria for ground vibration and airblast are used to evaluate a blast. These criteria represent a normal threshold for human discomfort. Damage will occur at higher levels of ground vibration and airblast. It is impossible to specify levels at which damage begins to occur. It would also be unwise to plan blasting activities according to damage criteria.

It is common for blast-site neighbours to find it confusing and difficult to comprehend these two blast environmental impacts. Some secondary noise is often contributed to the blast but this noise, such as windows and crockery rattling, may have been caused either by the ground vibrations or airblast. It is generally important to have a good understanding of these and be able to communicate that understanding to blast-site neighbours, backed up by monitoring records.

Paragraph J3 provides maximum recommended levels for these phenomena. Some limitations to using standard procedures is given. This Appendix is designed to be helpful to the general case and does not attempt to address more specialized applications.

An estimate of ground vibration levels based on the effective charge mass per delay for three types of blasting operations is provided in Paragraph J7.

J2 DESCRIPTION OF THE PHENOMENA

J2.1 Ground vibration Ground vibration is a complex matter for most blasts. The frequency of ground vibrations is very important. At close distances the frequency of ground motion is very much higher than at greater distances.

At mid-range frequencies the velocity of the rock is commonly regarded as the appropriate damage criterion. The peak particle velocity (see Paragraph J3.2) is the commonly accepted damage criterion. The choice of appropriate damage criterion requires consideration of the frequencies of the blast and relevant frequency responses. If the standard peak particle velocity monitoring method fails to satisfactorily explain blast effects, then it may be necessary to consider frequency responses.

Studies and experience suggest that 'conventional' blasting at 'normal' distances is unlikely to create ground vibrations of a magnitude which causes damage. Out of the ordinary structures such as tall buildings, or abnormal ground conditions such as water-logged ground should be carefully considered.

Cracks in buildings may be attributable to causes other than ground vibration, especially ground or foundation movements (settlement and swell) associated with reactive clay soils during periods of prolonged dry or wet weather.

J2.2 Airblast Airblast is the pressure wave transmitted through the air, caused by an explosion. Airblast may be felt, generally on the cheeks or on loose clothing. It generally requires practice to recognize the effect.

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Airblast should be felt (if it is to be felt) after any ground vibration. Shock waves from a blast normally travel faster through the ground than the airblast travels through the air. The difference between perceptions of the airblast and the ground vibration may indicate a problem for any particular blast: if the airblast is felt more than expected then airblast problems are likely; if ground vibration is stronger than expected and airblast is less than expected, then the blast design was inappropriate and ground vibrations are likely to cause complaints.

Airblast is generally the cause of far more complaints than ground vibration.

J3 RECOMMENDED MAXIMUM LEVELS

J3.1 General The recommended maximum levels for ground vibration and airblast overpressure are set out in Paragraph J3.2 and J3.3. Advice on the measurement of these levels is provided in Paragraph J4.

J3.2 Ground vibration Vibrations transmitted through the ground may cause damage to buildings or structures and discomfort to their occupants. The likelihood of such damage or discomfort may be ascertained by measuring, near the building or structure, the ground vibration originating from a blast. Ground vibrations should normally be measured near the building or structure with the instrument placed between the source of the blast and the building or structure. The choice of locations for the measurement of ground vibration and the actual measurement should be carried out by persons competent in such matters.

It is recommended that ground vibration be measured by ascertaining the peak particle velocity (PPV). The peak particle velocity (\(v_p\)) is the maximum vector sum of three time synchronized velocity components and, when not directly measured by an instrument, may be determined by the following equation:

\[
v_p = \sqrt{v_x^2 + v_y^2 + v_z^2}
\]

where

\(v_x\), \(v_y\) and \(v_z\) are the instantaneous components of particle velocity on the x, y and z axes, respectively.

The peak particle velocity measured at the ground surface should not exceed the limits recommended in Table J1 and its related Notes.

**TABLE J1**

<table>
<thead>
<tr>
<th>Type of building or structure</th>
<th>Peak particle velocity ((v_p)) mm/s</th>
</tr>
</thead>
<tbody>
<tr>
<td>Houses and low-rise residential buildings; commercial buildings not included below</td>
<td>10</td>
</tr>
<tr>
<td>Commercial and industrial buildings or structures of reinforced concrete or steel construction</td>
<td>25</td>
</tr>
</tbody>
</table>

**NOTES:**

1. This Table does not cover high-rise buildings, buildings with long-span floors, specialist structures such as reservoirs, dams and hospitals, or buildings housing scientific equipment sensitive to vibration. These require special considerations which may necessitate taking additional measurements on the structure itself, to detect any magnification of ground vibrations which might occur within the structure. Particular attention should be given to the response of suspended floors.

2. In a specific instance, where substantiated by careful investigation, a value of peak particle velocity other than that recommended in the Table may be used.

3. The peak particle velocities in the Table have been selected taking into consideration both human discomfort and structural integrity together with the effect on sensitive equipment located within buildings.
The likelihood of damage in residential areas starts to increase at ground vibration levels above 10 mm/s (peak particle velocity). Structures which may be particularly susceptible to ground vibration should be examined on an individual basis. Peak particle velocity may not be the appropriate criterion for determination of damage. In the absence of a particular site-specific study which may determine the appropriate damage criterion, then peak particle velocity is suggested as the damage criterion and a maximum level of 5 mm/s is recommended for blast design purposes, as experience has shown that damage is unlikely to occur at ground vibration levels below this level.

J3.3 Airblast Airblast can cause discomfort to persons and in some cases, damage to structures. Appropriate levels for airblast for local conditions may be required by the relevant authority. A limit of 120 dB for human discomfort is commonly used and 133 dB to avoid structural damage is generally appropriate.

J4 MEASUREMENT

J4.1 General Records of blast effects are strongly recommended as good management tools. Measurements can be taken of airblast and ground vibration in a variety of ways and for different reasons.

While a standard approach is recommended, it must be remembered that blasting will have a different end effect on each and every structure. The standard approach is particularly useful for routine monitoring of relatively standard blasts under relatively uniform conditions.

Special monitoring techniques may be required for all other conditions, but these are not addressed in this Standard.

It is emphasized that measurement equipment used should comply with specifications approved by the regulatory authorities, who may require or approve the use of equipment with specifications which differ from those specified in Clause J4.2.1 and J4.3.1 to meet specific situations.

J4.2 Ground vibration

J4.2.1 Measuring equipment The measuring equipment should be capable of providing a direct reading of the maximum instantaneous peak particle velocity which is the vector sum of the three orthogonal ground vibration components detected by the geophone.

Ground vibration should be measured with tri-axial transducers, and the measurement equipment should have a maximum absolute error of 15% over a frequency range of 5 Hz (lower cut-off frequency) to 250 Hz. The dynamic range of the equipment should be sufficient for the vibration levels to be measured.

The instrument should have these three components—

(a) tri-axial transducer;
(b) processor; and
(c) recorder.

They should be interconnected with cables (see Figure J1).

![Diagram](attachment:image)

FIGURE J1 MEASURING EQUIPMENT

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The recorder should give a printed recording of the date, the time, and the resultant peak particle velocity as measured by the transducer.

The tri-axial transducer housing should have indicators which show the orientation of the individual transducer components.

**J4.2.2 Measuring technique**  The transducer should be effectively and securely coupled to the ground to ensure that the transducer effectively measures the ground vibration. The transducer should be placed on or in the ground rather than on a structure. The transducer should be located at a sufficient distance from any structure so as to avoid undue interference from the structure.

The transducer should be orientated as recommended by the manufacturer in the direction of the blast and be sunk into the ground by excavating the minimum amount of ground and tamping the transducer in the hole to provide firm contact with the ground.

When the measurement surface consists of rock, asphalt, or concrete, the transducer should be fastened to the measurement surface with either epoxy or quick-setting cement.

When particle accelerations are less than 0.3g it may not be necessary to hold the transducer to the measurement surface. If particle accelerations are greater than 1.0g, bolts or cement are needed. Incorrect coupling of the transducer to the ground may lead to erroneous recordings.

It may be necessary, when setting up the instrument, to estimate the distance from the blast and use standard tables or site charts to estimate the likely range of ground vibration in order to set appropriate scales.

**J4.3 Airblast**

**J4.3.1 Measuring equipment**  The measuring equipment should be capable of measuring in decibels (dB) on a linear scale and the peak value.

Airblast should be measured with equipment that has a maximum absolute error of ±15% (±3 dB) over a frequency range of 2 Hz (lower cut-off frequency) to 200 Hz. The dynamic range of the equipment should be sufficient for the vibration levels to be measured.

A recording device is desirable but, if it is not provided, the measuring instrument should have a ‘hold’ facility to allow the peak reading to be read easily. A ‘hold’ facility should be accompanied by an easy reset device in the event that a false trigger occurs.

The specification for the range and accuracy of the instrument can be obtained from the appropriate authority.

**J4.3.2 Measuring technique**  The microphone should be orientated to be most uniformly sensitive to the incident sound, and fitted with a windshield, in accordance with the manufacturer’s specifications.

The instrument should preferably not be held by a person, nor should it be unduly affected by reflections from nearby structures. Similarly, it should not be too close (less than 1 m) to the ground.

**J4.4 Records**  Blast records should ideally incorporate ground vibration and airblast measurements. Ground vibration and airblast reports should include blast details, especially the size, location and method of initiation of the blast.

Apart from specifying the instruments used, blast monitoring details may include the following:

(a) Both ground vibration and airblast responses.

(b) All measurement locations (including relationship to adjacent structures and in relation to the blast site).

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(c) Weather conditions, especially windspeed and direction, and any other notable condition such as rain.

(d) Any subjective comments as to personal responses both from the blaster and any affected neighbours.

J5 OPERATING PRACTICE

J5.1 General Blast operators should endeavour to reduce the ground vibration and airblast to as low a level as practically possible to reduce the possibility of discomfort, worry or complaint. This should be reinforced by frequent consultation with affected neighbours.

Relevant blast personnel should be given regular training in these aspects of blasting. To ensure a good relationship is maintained with site neighbours and the regulatory authorities, blast performance should be regularly reviewed and possible improvements implemented.

Table J2 gives guidance on the various options available for controlling ground vibration and airblast.

J5.2 Ground vibration The methods which may be effective in reducing the effects of ground vibration at a particular site may include the following:

(a) Reduce maximum instantaneous charge (MIC) or charge mass per delay by the use of delays of sufficient length, reduced hole diameter or deck loading.

(b) Ensure that broken rock and excessive humps or toe are removed prior to the firing of the main blastholes.

(c) Optimize blast design (change burden and spacing) by altering drilling patterns or delay layout or alter hole inclination from the vertical.

(d) Exercise strict control over the location, spacing and orientation of all blast drill holes and use the minimum practicable subdrilling which gives satisfactory toe conditions.

(e) Establish times of blasting to suit the situation, e.g. fire all blasts at a set time acceptable to neighbours and preferably when background noise is highest. It is preferable to fire at times when neighbours are out or moving about, rather than when they are seated for meals.

J5.3 Airblast reduction Blast operators should attempt to reduce the airblast to as low a level as practicable. Appropriate action may include the following:

(a) Reduce the maximum instantaneous charge (MIC) or charge mass per delay, to the lowest possible level.

(b) Keep face heights to a practical minimum.

(c) Ensure stemming type and length is adequate.

(d) Eliminate exposed detonating cord. Investigate alternative initiation methods.

(e) Eliminate secondary blasting (instead of popping, use rock breaker or drop hammer).

(f) Make extra efforts to eliminate the need for toe shots (e.g. better control of drill patterns).

(g) Consider delaying or cancelling the blast by not loading a shot with explosives if the weather forecast is unfavourable.

(h) Develop a knowledge of the effects of temperature inversion and wind speed and direction on the propagation of airblast to surrounding areas, and modify blasting practice as necessary when meteorological conditions are unfavourable.
(i) Orientate faces where possible so that they do not face directly towards residences.
(j) Vary the direction of initiation.
(k) Exercise strict control over the burden, spacing and orientation of all blast drill holes.
(l) Take particular care where the face is already broken or where it is strongly jointed, sheared, or faulted.
(m) Consider deck loading where appropriate to avoid broken ground or cavities in the face (e.g. from back break).

**TABLE J2**

**GROUND VIBRATION AND AIRBLAST CONTROLS**

<table>
<thead>
<tr>
<th>Variables</th>
<th>Ground vibration</th>
<th>Airblast</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Influence on ground motion</td>
<td>Influence on overpressure</td>
</tr>
<tr>
<td></td>
<td>Significant</td>
<td>Moderately significant</td>
</tr>
<tr>
<td>1. Within the control of blasting operators</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Charge mass per delay (MIC)</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Delay interval</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Burden and spacing</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Stemming: amount</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>type</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Charge length and diameter</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Angle of blasthole</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Direction of initiation</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Charge mass per blast</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Charge depth</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Covering of detonating cord</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Charge confinement</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Blasting deviation</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>2. Not in control of blasting operators</td>
<td></td>
<td></td>
</tr>
<tr>
<td>General surface</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Type and depth of overburden</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Wind and weather conditions</td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

**J6 BLASTING COMPLAINTS** Many complaints resulting from blasting in built-up areas are wrongly attributed to ground vibration. Although most complaints are of excessive ground vibration, the actual problem is more usually airblast, which can be controlled by proper blasting technique.

Those in charge of blasting operations should ensure that relevant personnel and affected neighbours are consulted and advised on the nature, causes and effects of airblast from blasting and the difference between it and ground vibration.

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Those in charge of blasting operations should recognize the importance of monitoring blasts as a tool for minimizing complaints as well as investigating complaints. It is in the interest of operators to monitor their blasting operations for their own protection in the event of any claims for damages arising from blasting. Where the blast is in an environmentally sensitive area, monitoring of all blasts should be undertaken.

Records of any complaints associated with blasting should be kept, identifying the nature of the complaint, the particular operation that initiated the complaint, and documenting the action taken.

Any complaints related to blasting should be immediately investigated personally by the person in charge of the blasting and a genuine endeavour made to satisfy the complainant. Swift action, follow-up visits and good public relations are essential (i.e. feedback to the complainant as to the cause of the problem and what is being done to rectify it).

Many complaints from blasting can be avoided by training blast operators to 'think blasting', i.e. to develop an awareness of possible adverse impacts resulting from a blast.

Blasting complaints are generally directed to the blast operator first and if the complainant feels a lack of an appropriate response, he or she may complain to the responsible authority, the local council or both. During an investigation the following will need to be established:

(a) The nature of the complaint, i.e. whether the problem is ground vibration or airblast.
(b) Distance from blast to complaint site.
(c) Whether there is any proven damage to property, e.g. cracks in walls or foundations or broken windows, which can genuinely be attributed to blasting; or whether the complainant only felt ground vibration or airblast overpressure.
(d) Whether the blast was monitored.
(e) Whether blast records were kept.

In the event of repeated complaints, professional or technical advice may need to be sought. If all or most blasts are monitored at the location where complaints are most likely to arise, the operator will be better able to respond to complaints, to institute remedial action and to satisfy any investigating authority.

**J7 ESTIMATION OF GROUND VIBRATION LEVELS**

**J7.1 General** It is useful to be able to estimate the ground vibration expected from any particular blasting operations. Of course, as many site factors will affect the transmission of vibration through the ground, the most accurate prediction graph for a site will be that generated from vibration measurements taken at the site.

However in the absence of such site data, ground vibration may be estimated using the following attenuation equation.

\[ V = K \left( \frac{R}{Q^{1/2}} \right)^{-B} \]

where

- \( V \) = ground vibration as peak particle velocity, in millimetres per second
- \( R \) = distance between charge and point of measurement, in metres
- \( Q \) = effective charge mass per delay or maximum instantaneous charge, in kilograms
- \( K, B \) = constants related to site and rock properties for estimation purposes
It should be noted that ground vibration depends on the maximum charge weight per delay, and not the total charge weight, provided the delay interval is significant (more than 8 ms).

J7.2 Free face—hard or highly structured rock  When blasting is to be carried out to a free face in open cut mines and hard or highly structured rock quarries, the following equation for peak particle velocity may be used:

\[ V = 500 \left( \frac{R}{Q^{1/2}} \right)^{-1.6} \]

This equation is represented in graphical form in Figure J2 and in tabular form in Table J3.

![Figure J2 Free face - hard rock](image)

**TABLE J3**

FREE FACE—HARD ROCK

<table>
<thead>
<tr>
<th>Vibration (PPV) (mm/s)</th>
<th>Estimated maximum effective charge per delay, kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>1     5     10    20    30    50   80   100   150    200    300    400   500    600    800    1 000</td>
</tr>
<tr>
<td>2</td>
<td>0.001 0.025 0.100 0.4 0.9 2.5 6.4 10 23 40 90 250 650 1 000</td>
</tr>
<tr>
<td>5</td>
<td>0.003 0.080 0.320 1.3 2.8 7.9 20.2 32 71 125 285 790 2 000 3 150</td>
</tr>
<tr>
<td>10</td>
<td>0.008 0.190 0.760 3.0 6.8 18.9 48.4 76 170 300 680 1 900 4 850 7 550</td>
</tr>
<tr>
<td>25</td>
<td>0.020 0.600 2.400 9.5 21.3 59.2 151.5 235 535 950 2 150 5 900 15 150 23 700</td>
</tr>
</tbody>
</table>

J7.3 Free face—average rock  When blasting is to be carried out to a free face in average field conditions, the following equation for peak particle velocity may be used:

\[ V = 1140 \left( \frac{R}{Q^{1/2}} \right)^{-1.6} \]

This equation is represented in graphical form in Figure J3 and in tabular form in Table J4.
J7.4 Heavily confined blasting—nearfield When blasting is to be carried out in heavily confined areas (e.g. opening holes in a heading, presplitting and similar, where no free face exists or the overburden is large) or in moist ground conditions, the following equation for peak particle velocity in the nearfield (i.e. approximately 150 times the blasthole diameter) may be used:

\[ V = 5000 \left( \frac{R}{Q^{1/2}} \right)^{-1.6} \]
This equation is represented in graphical form in Figure J4 and in tabular form in Table J5.

NOTES:

1. For farfield situations (i.e. beyond 150 times the blasthole diameter) the equation for PPV shown in Paragraph J7.2 may be more appropriate.

2. In some softer rock types, possibly due to moisture or special geological conditions, vibrations exceeding those predicted may be generated.

3. At critical locations, where there has been no prior blasting experience, it is wise to carry out initial blasts with conservative charges and monitor the levels of vibration generated.

![Graph showing peak particle velocity vs. distance from charge and effective charge per delay](image)

**FIGURE J4** HEAVILY CONFINED BLASTING

**TABLE J5**

<table>
<thead>
<tr>
<th>Vibration (PPV)</th>
<th>Estimated maximum effective charge per delay, kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>mm/s</td>
<td>1</td>
</tr>
<tr>
<td>-----------------</td>
<td>-------</td>
</tr>
<tr>
<td>2</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>0.001</td>
</tr>
</tbody>
</table>

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APPENDIX D

BLAND DISTRICT HISTORICAL SOCIETY
LETTER TO BARRICK, 24 JUNE 2003
Dear Mr. Shalvey,

In behalf of the members of the Bland District Historical Society, I am writing to inform you that we have no historic interest in the building at the Mine Site.

We support whatever decisions you make.

Yours Sincerely,

June Nicholson