# STAGE 1 SITE CONTAMINATION ASSESSMENT REPORT

# ST. PATRICK'S CATHOLIC COLLEGE
# STRATHFIELD, NSW

## PROPOSED SCIENCE & LEARNING CENTRE BLOCK

**4th May 2020**

Prepared for:
**St. Patrick's Catholic College**
**Francis Street**
**STRATHFIELD NSW 2135**


| Written and Prepared by: | Reviewed by: |
|---|---|
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Ref: SCS – St. Pat's, Strathfield – P1-SCA

# DISTRIBUTION

## Phase 1 – Site Contamination Assessment Report – SCS: Science and Learning Centre Block – St. Patrick's Catholic College, Strathfield NSW

**April 2020**

| Copies | Recipient |
|---|---|
| 1 | **SCS: Mr. Geoff Whitnall** |
| 1 | **Banksia EnviroSciences Pty. Limited** |

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# DOCUMENT HISTORY

| Document No. | Revision No. | Issue Date |
|---|---|---|
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# EXECUTIVE SUMMARY

Banksia EnviroSciences Pty. Limited was engaged by Mr. Geoff Whitnall of Schools Facilities Planning Pty. Limited on behalf of St. Patrick's College, Strathfield to conduct a Preliminary Phase 1 Environmental Site Assessment at St. Patrick's Catholic College located at Francis Street, Strathfield (hereafter referred to as the Site). The Phase 1 preliminary investigation is a review of current and historical activities on the site and an assessment of the potential risk of soil/groundwater contamination existing on the land. The investigation was conducted as part of due diligence for the proposed construction of a new four (plus basement) level classroom block within a sub-section of the college.

The total area of the assessment is approximately 2800 $m^2$ which encompasses the existing 5 tennis court space in roughly the centre of the college grounds. A site inspection was carried out on 30 April 2020 which involved a visual assessment of the accessible areas of the Site and surrounding areas. Details of the findings of the assessment are presented within the body of this report, as well as an assessment of the significance with regards to the findings of the investigation.

Based on the data and evidence collected during the site inspection and site history review, the findings of the Environmental Site Assessment are as follows:

1. The site was first developed circa 1920;
2. No significant development has occurred since the original construction works of tennis courts atop this section of land within the college (i.e. the Site)
3. At the time of inspection, the site was occupied by 5 adjoining sealed tennis courts immediately surrounded by sealed concrete walkways and paths, raised garden beds, a large grassed sports field and public roadways;
4. The site was in a well-maintained condition with no obvious indicators of contamination. However, the following areas of potential concern were identified:
    a. Potentially hazardous building materials (inc. pesticides) within existing adjacent site buildings;
    b. Potentially hazardous materials in fill and formation materials for construction of the courts and local roads; and
    c. Vegetated areas subject to historical flaking of asbestos, lead based paints and pesticide use from adjacent buildings

The site is considered suitable for the proposed development considering the following:

- The site history, desk study and inspection indicates past activities on and surrounding the site have a low potential for environmental impacts on the soil and groundwater; and
- In accordance with the Department of Urban Affairs and Planning and Environment Protection Authority Managing Land Contamination: Planning Guidelines, State Environmental Planning Policy No. 55 - Remediation of Land 1998, the site is suitable for the proposed use and the site is considered to have a LOW RISK of soil and groundwater contamination, however, a further Stage 2 environmental investigation is considered necessary.

Taking into consideration the above, it is considered that further investigation by way of a Phase 2 Investigation is necessary to establish the depth and extent of contamination on site.

Based on the available information, a targeted type sampling plan is recommended and considered most appropriate in order to provide sufficient characterisation data.

Yours truly,

**Nik Orr**
**Banksia EnviroSciences**

# 1.0 INTRODUCTION

## 1.1 Background

Banksia EnviroSciences Pty. Limited was engaged by Mr. Geoff Whitnall of School Facilities Planning Pty. Limited on behalf of St. Patrick's College, Strathfield to conduct a Preliminary Phase 1 Environmental Site Assessment (ESA) of a portion of land within the St. Patrick's College, Strathfield located at Francis Street, Strathfield (hereafter referred to as the Site). The Phase 1 ESA is a review of current and historical activities on the Site and surrounds and an assessment of the potential risk of soil/groundwater contamination existing on the land. The investigation was conducted as part of due diligence for the proposed construction of a new classroom block upon the site.

The total area of investigation is approximately 2800 $m^2$ and is currently used as tennis courts space for the college. The Site is practically level. A site inspection was carried out on 30 April 2020 which involved a visual assessment of the accessible parts of the Site and surrounding areas.

This report was completed in accordance with the *Consultants Reporting on Contaminated Land: Contaminated Land Guidelines, NSW EPA, 2020.*

## 1.2 Planning Guidelines

It is understood that the land is to be developed into a medium density classroom block. This Preliminary Investigation was conducted in general accordance with the Department of Urban Affairs and Planning and Environment Protection Authority *Managing Land Contamination: Planning Guidelines, State Environmental Planning Policy No. 55 - Remediation of Land 1998.*

Land contamination is most often the result of past uses. It can arise from activities that took place on or adjacent to a site and be the result of improper chemical handling or disposal practices, or accidental spillages or leakages of chemicals during manufacturing or storage. Activities not directly related to the site may also cause contamination; for example, from diffuse sources such as polluted groundwater migrating under a site, local public roads and spaces, or dust settling out from industrial emissions.

When carrying out planning functions under the Environmental Planning and Assessment (EP&A) Act 1979 (No. 203), a planning authority must consider the possibility that a previous land use has caused contamination of the site as well as the potential risk to health or the environment from that contamination. Decisions must then be made as to whether the land should be remediated, or its use of the land restricted, in order to reduce the risk. Failure to consider the possibility of contamination at appropriate stages of the planning decision process may result in:

- Inappropriate land use decisions
- Increased risk to human health
- Detrimental effects on the biophysical environment
- Impacts on the safety of existing and new structures
- Delay in realising developments
- Substantial fall in the land value and the passing on of unanticipated development costs to other parties

When an authority carries out a planning function, the history of land use needs to be considered as an indicator of potential contamination. Where there is no reason to suspect contamination after acting substantially in accordance with these Guidelines, the proposal may be processed in the usual way. However, where there is an indication that the land is, or may be, contaminated, the appropriate procedures outlined in these Guidelines should be followed. Essentially, the Guidelines recommend that rezonings, development control plans, and development applications (DAs) are backed up by information demonstrating that the land is suitable for the proposed use or can be made suitable, either by remediation or by the way the land is used.

## 1.3 Objectives

The objectives of this Preliminary Site Assessment (PSI) were to:

1. Comply with the Department of Urban Affairs and Planning and Environment Protection Authority *Managing Land Contamination: Planning Guidelines, State Environmental Planning Policy No. 55 – Remediation of Land 1998;*
2. Gain a better understanding of the environmental risks associated with the site;
3. Identify past and present potentially contaminating activities;
4. Identify potential contaminants of concern;
5. Provide a preliminary assessment of the condition of the site and potential for contamination; and
6. Assess the need for further investigation.

## 1.4 Scope of works

The scope of works included the flowing:

1. A desktop search comprising:
    a. Cadastre and Topography
    b. Aerial Imagery
    c. EPA Contaminated Land
    d. EPA Records of Notice
    e. National Waste
    f. Groundwater Bores
    g. Geology & Soils
    h. Planning Zones
    i. Acid Sulphate Soils
2. A review of past and current site uses;
3. A review of past and current adjacent site uses;
4. An integrity assessment;
5. A site inspection;
6. Informal interviews and information gathering;
7. Reporting in accordance with the associated legislations and guidelines.

The Phase 1 PSI was conducted in general accordance and consideration of the Planning Guidelines and the National Environment Protection (Assessment of Site Contamination) Measure (NEPM) 1999 (amended 2013), and other relevant NSW guidelines and legislation.

## 1.5 Legislative Requirements

The legislative framework for the report is based on guidelines that have been set out by the NSW Environmental Protection Agency (EPA) formerly the Office of Environment and Heritage (OEH) in the form of the following Acts/Regulations:

1. *Protection of the Environment Operations Act* (1997);
2. *Protection of the Environment Operations (General) Regulation* (2009);
3. *Contaminated Land Management Act* (1997).

In addition, the following guidelines and technical documents have been reviewed and applied where applicable:

1. *Guidelines for the NSW Site Auditor Scheme* (NSW EPA, 2017).
2. *Guidelines for Consultants Reporting on Contaminated* Land (NSW EPA, 2020).
3. *Guidelines on the Investigation Levels for Soil and Groundwater*, National Environmental Protection Measure 1999, 2013 Amendment (NEPC, 2013).

4. Australian Standard AS 4482.*1 Guide to the sampling and investigation of potentially contaminated soil. Part 1: Non-volatile and semi-volatile compounds.*
5. Australian Standard AS 4482.2 *Guide to the sampling and investigation of potentially contaminated soil. Part 2: Volatile substances.*
6. *Sampling Design Guidelines* (NSW EPA, 1995).
7. *Waste Classification Guidelines Part 1: Classifying Waste* (NSW EPA, 2014).
8. *Guidelines for the Assessment and Management of Groundwater Contamination* (NSW DEC, 2007).

### 1.6 Context of Report

This report is to be read in its entirety and should not be reviewed in individual sections to provide any level of information independently. Each section of the report relates to the rest of the document and as such is to be read in conjunction, including any appendices and attachments.

## 2.0 SITE IDENTIFICATION

The study Site includes a sub section (being the current tennis court area; approx. 2800 $m^2$) of the St Patrick's Catholic College located at Francis Street, Strathfield (Lot 20 of DP 1203221) and is located between Fraser and Francis Streets, Strathfield NSW. The suburb of Strathfield is located approximately 12km west of the Sydney CBD.

### 2.1 Site History

#### 2.1.1 Strathfield

The Strathfield district was originally occupied by the Wangal clan. European colonisation commenced in 1793 with the issue of land grants in the area of Liberty Plains. In 1808, a grant was made to James Wilshire, which forms the largest part of the current suburb of Strathfield. In 1867, this grant was subdivided and sold as the 'Redmire Estate', which promoted the residential development of the district under the suburb name of 'Redmire'. By 1885, sufficient numbers of people resided in the district to enable incorporation of its own local government. The suburb of Redmire was renamed Strathfield c.1886.

Strathfield Council was incorporated in 1885 and included the suburbs of Redmire, Homebush and Druitt Town. The adjoining area of Flemington was unincorporated and was annexed to Strathfield Council in 1892, which increased the size of the Council area by about 50%. The Council formed three wards – Flemington, Homebush and Strathfield. Wards were abolished in 1916. Following the introduction of the Local Government Act in 1919, Strathfield Council was one of the first to proclaim the major part of its area a residential district by proclamation in 1920.

#### 2.1.2 St. Patrick's College

Founded in 1928, St. Patrick's College is an independent Roman Catholic single-sex primary and secondary day school for boys, located in Strathfield, an inner western suburb of Sydney, New South Wales, Australia.

In 1926 Christian Brothers' Provincial, Br P I Hickey had the vision of building a new Catholic boys' school on the outskirts of Strathfield. More specifically he proposed that this school be built within the perimeter of the Christian Brothers' Training College, 'Mount St Mary' and would thereby serve as an ideal practising school for student Brothers training there.

The idea was met with some criticism, mainly due to the remoteness of the area, which was largely surrounded by bush and cattle tracks, had little road access, and was situated a fair distance away from local railway stations. Br Hickey remained undeterred however and pushed ahead with his building plans.

St Patrick's College was founded on 20 January 1928 and was officially opened by the then Archbishop of Sydney. At that time the school itself consisted of six large classrooms, and four other rooms designed for science, art and technical training.

## 2.2 Proposed Development

The investigation was conducted as part of due diligence for the proposed stripping and excavation of the current tennis court surfaces and the construction of a four-level (plus basement) classroom block (science and learning centre building). **Figure 1** below shows a current 'Google Maps' image of the approximate location of the Site in relation to the surrounding areas of Strathfield. **Figure 2** shows a current aerial image from 'Google Maps' of the area shown in **Figure 1**.


**Figure 1: Site Locality Map (Google Maps 2020)**

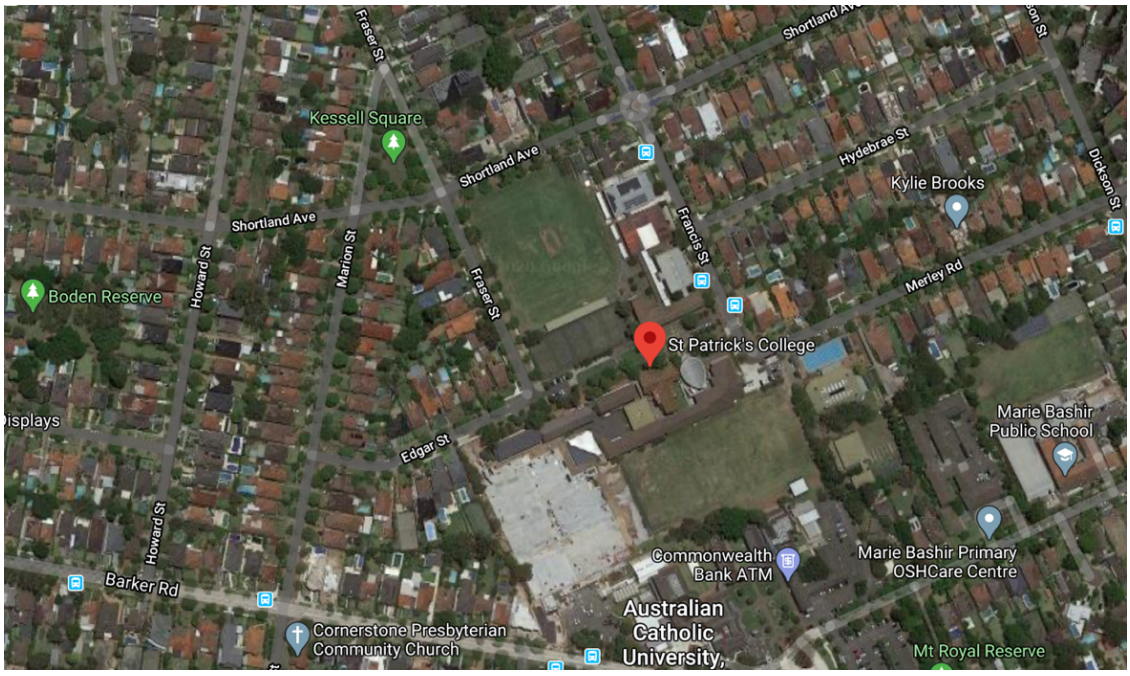


**Figure 2: Site Location Map (Satellite; Google Maps 2020)**

## 2.3 Site Description

### 2.3.1 Site Inspection

On 30 April 2020, a site inspection was conducted by Banksia EnviroSciences consultant Mr. Nik Orr. Field work was carried out in accordance with the methodology described in AS 4482.1-2005 and the NEPM (2013). At the time of inspection, the sub-section of the college under assessment was occupied by 5 sealed standard tennis courts surfaces. A large level playing sports field is situated immediately to the north of the courts space with a covered concrete seating stand separating the two areas. A former public road (Edgar St.) which was purchased by the college in 2007 and incorporated into the school grounds runs along the southern edge of the area of assessment (tennis courts; the Site).

## 2.4 Surrounding Land Use

The Site is situated within the current St. Patrick's College grounds. The area under investigation is locally surrounded by a large multi-level classroom block to the east, a large sports field (Breen Oval) to the north, Fraser St and private residences to the west and Edgar St (closed to vehicular traffic) to the south.

- The college in general lies within a semi-residential setting and bordered to the south of a minor network of public roads being:
  - Fraser St to the NW,
  - Shortland Av to the N, and
  - Francis St to the NE
- Standard residences to the north, east and west
- The Australian Catholic University (Strathfield campus) on Barker Rd. to the south

## 2.5 Topography

While the area of assessment within St. Patrick's College being the tennis courts is practically a level space, the college grounds as a whole occupies land with a natural and gentle mid-slope incline from the south sloping downwards to the north at a 3% gradient. There were no signs of mass importation of soils.

## 2.6 Geology and Soils

Soil landscape mapping indicates the site occurs on the Blacktown Soil Landscape. This residual soil landscape consists of gently undulating rises on Wianamatta Group Shales with local relief to 30 m and slopes usually less than 5%. Soils typically consist of dark brown loams over reddish to yellowish brown well-structured clays.

The Department of Mineral Resources Geological Map Sydney 1:100,000 (Geological Series Sheet 9130 (DMR 1983) indicates that the underlying geology consist of the Ashfield Shale, which is part of the Wianamatta Group which typically comprises black to dark-grey shale and laminate. The regional stratigraphy is for the Ashfield Shales to overlie rocks of the Mittagong formation then Hawkesbury Sandstone. Ashfield Shale generally weathers into the silty clay of medium to high plasticity.

## 2.7 Surface Water Hydrology

Stormwater infiltration is expected to be low to moderate due to the sites clay rich sub-soils. It is anticipated that any un-infiltrated stormwater will sheet across the site towards adjacent properties.

## 2.8 Hydrogeology

A search for groundwater bores within 2 kilometres of the site was undertaken via the Australian Government – Bureau of Meteorology's Australian Groundwater Explorer website. The results indicate a shallow to moderate groundwater depth with standing water levels ranging between 1.5 – 31.0 m BGL.

Groundwater in the area most likely occurs as an unconfined aquifer in fractures and joints of the shale and sandstone (fracture rock aquifer). The 1:2 000 000 Department of Water Resources Groundwater in NSW, Assessment of Pollution Risk map indicates that the Site is likely to be underlain by shales and that the potential for groundwater movement is likely to be low. The direction of the regional groundwater flow is expected to follow the slight slope of the regional topography, towards the south and east. Notwithstanding, groundwater wells may need to be installed for monitoring of the groundwater levels.

### 2.9 Acid Sulphate Soils

The Department for Infrastructure, Planning and Natural Resources (DIPNR) Acid Sulphate Soils Risk Mapping (1997) indicates that the Site is not expected to be underlain by acid sulphate soils.

### 2.10 Receptors and Sensitive Environments

The closest sensitive receiving environment is Powell's Creek approximately 1.5 km north-east of the site.

### 2.11 Areas of Concern

The site was in well maintained condition with no obvious indicators of contamination. However, the following areas of potential concern were identified:

1. Potentially hazardous building materials within existing site (college) buildings; and
2. Vegetated areas and garden beds subject to historical flaking of asbestos and lead based paints, pesticides and treated timber
3. Fill and run-off from road-top material of (former) Edgar St roadway to the south of the site

## 3.0 CONCEPTUAL GROUND MODEL

A summary of subsurface ground conditions likely to be encountered at the Site is presented in **Table 1** below. Information presented in **Table 1** below is inferred from a review of our in-house database and our knowledge of the area. Based on the regional information, the subsurface conditions around the site are comprised of fill and residual soils over Ashfield Shale.

**Table 1: Conceptual Ground Model**

| Unit | Material | Comment |
|---|---|---|
| **1** | Fill | Fill material is inferred to be uncontrolled and poorly compacted. The filling may be deeper beneath existing structures and in landscaped areas of the site. |
| **2** | Residual Soils | Silty CLAY; medium to high plasticity, typically very stiff to hard clay grading onto extremely weathered shale. |
| **3** | Shale | The depth to weathered shale bedrock is expected to be between about 2.0 to 4.0m BEGL, based on various other previous investigations within the vicinity of the site. The shale is expected to be initially extremely weathered. The strength generally increases in strength and decreases in weathering with depth. |

Based on our experience within the area, groundwater is expected to be encountered at depths ranging between about 5.0 to 7.0m BEGL. However, groundwater levels at the site may need to be confirmed by intrusive investigation prior to the finalisation of designs.

# 4.0 SITE RECORDS

A search of the various government databases for the area within 2 km of the Site on the following records was undertaken:

## 4.1 List of NSW Contaminated Sites – Notified to EPA

- No records

## 4.2 List of NSW Contaminated Sites – Record of Notices

- No records

## 4.3 National Waste Management Site Database

- No records

## 4.4 List of Current EPA Licensed Activities

- No records

## 4.5 Delicensed Activities still regulated by the EPA

- No records

## 4.6 Former Licensed Activities under the POEO Act 1997

- No records

## 4.7 Section 10.7 Certificate

- A search of the section 10.7 certificate has not been undertaken. A review of the certificate with regards to Matters arising under the Contaminated Land Management Act 1997 and the Contaminated Land Management Amendment Act 2008 should be undertaken concurrently with the review of this report.

## 4.8 Historic & Aerial Photographs

A review of historical records and aerial photographs (see **Photographs 1 – 9**) of the site including some of the surrounding area was undertaken. The results of which are summarized in **Table 2**.

**Table 2**: Findings of historical records/photograph review

| Year | Description |
|---|---|
| **1920's** | • Photograph 3 - Low resolution semi-aerial black/white photograph<br>• Mixture of open pasture/wasteland and tea tree scrub<br>• Initial college building works completed<br>• Low level residential blocks established<br>• Courts yet to be created |
| **1934** | • Photograph 4 – Low resolution land-based photograph<br>• Preparation for creation of 2 x clay courts<br>• Carving out Breen oval commences |
| **1938** | • Photograph 5 – Low resolution elevated land-based sepia photograph<br>• Completion of 2 x Clay courts constructed at Eastern end of current site |
| **1941** | • Photograph 6 – Low resolution black/white photograph<br>• Breen oval completed |

| | |
|---|---|
| **1943** | • Photograph 1 - Moderate resolution black and white photograph (6maps)<br>• Surrounding area primarily light residential and vacant land |
| **1961** | • Photograph 7 – Low resolution black/white photograph<br>• 3 additional courts constructed adjacent to original (2) clay courts and full surface sealed in concrete |
| **1966** | • Uncovered grandstand seating between courts and oval constructed |
| **2006** | • Photograph 8 – Moderate resolution aerial colour photograph<br>• Site as is currently – no significant modifications to surrounding areas |
| **2007** | • Photograph 9 – Moderate resolution colour aerial photograph<br>• Portion of Edgar St. purchased and incorporated into school grounds landscaped and closed to traffic |
| **2020** | • Photograph 2 – Moderate resolution colour aerial photograph<br>• Current layout and state of college site – no significant change since 2006 |

# 5.0 POTENTIAL FOR CONTAMINATION

Our assessment of site areas of concern (AEC) and contaminants of potential concern (COPC; **Table 3**) is made on the basis of available site history, aerial photograph interpretation and site walkover.

**Table 3**: Areas of Environmental Concern and Contaminants of Potential Concern

| AEC | Potential for Contamination | COPC | Contamination Likelihood |
|---|---|---|---|
| A-Levelling Fill | Fill of unknown origin and quality | HM, TRH, BTEX, PAH, OCP/OPP and asbestos | Low-Medium |
| B-Surrounding Buildings | Pesticides and heavy metals may have been utilised underneath structures (pest control). Building construction may include ACM, PCBs and/or lead based paints | HM, OCP/OPP, PCBs and asbestos | Low-Medium |
| C-Surrounding Garden Beds & Landscaping | Application of herbicide/pesticides and heavy metals for pest control | HM, CCA and OCP/OPP | Low-Medium |
| D-Adjacent Roadway (Former; Edgar St.) | Run off from bituminous layers and fill material | HM, TRH, BTEX, PAH, OCP/OPP and asbestos | Medium |

## 5.1 Information Gaps

A site history has been established using the various sources as outlined above. However, the following information gaps have been identified:

1. Inferences have been drawn based on 'point in time' aerial photographs and informal interviews;
2. No reliable information pertaining to the site pre-1920 was available;
3. Restricted visual access to natural surfaces due to complete coverage of surfaces with concrete, etc.

In regard to the information available, it is considered that the quality of the information is consistent the industry standard and that the information is of high integrity with respect to the historical use of the site overall.

# 6.0 RESULTS

## 6.1 Site Observations

The site was in moderately well maintained condition with no indicators of potential contamination. However, the following areas of potential concern were identified:

1. Asbestos and lead based paints within existing adjacent site buildings;
2. Vegetated/Landscaped areas subject to potential pesticide/herbicide use (inc. CCA) and historical flaking of asbestos and lead based paints;
3. Fill used to Edgar St and bituminous road surface material;
4. Fill used to fill and level courts and oval areas

# 7.0 DISCUSSION

## 7.1 Potential Risks to Onsite Receptors

Potentially hazardous fill, construction/building materials and applied hazardous chemicals within adjacent existing surrounds and site buildings may be present as a potential hazard to onsite receptors – particularly those involved in excavation works.

## 7.2 Potential for Migration of Contaminants

The site is well situated in a controlled environment and the risk of contaminant migration is considered low.

# 8.0 CONCLUSIONS

Based on the data and evidence collected during the site inspection and site history review, the findings of the preliminary Site Assessment are as follows:

1. The site was first developed c1920;
2. At the time of inspection, the Site was occupied by a large concrete tennis court space and surrounded by paved areas and concrete paths. A large classroom building, an open playing field and garden bed areas makeup the wider area around the Site; public roads and private residences surround the greater area;
3. The Site was in well-maintained condition with no obvious indicators of contamination. However, the following areas of potential concern were identified:
    a. Potentially hazardous building materials within adjacent existing site buildings;
    b. Unknown fill material used to fill and level the courts, adjacent sports field and road, and
    c. Vegetated areas subject to historical flaking of asbestos and lead based paints and pesticide use.
4. Considering the above, it is considered that further investigation by way of a Phase 2 Investigation is necessary to establish the presence, depth and extent of potential land contamination on site.

Assessment shall address each of the identified AECs and assess COPC identified for each AEC (**Table 2**). Results of the site testing shall be assessed against site acceptance criteria (SAC) with reference to ASC NEPM (1999, amended 2013).

## 9.0 LIMITATIONS STATEMENT

Banksia EnviroSciences (BES) Pty. Limited has undertaken the following report in accordance with the scope of works set out between BES and the client. BES derived the data in this report primarily from the brief onsite assessment and remote evaluation of the site. The impacts of future events may require future investigation of the site and subsequent data analysis, together with a re-evaluation of the conclusions and recommendations of this report.
In preparing this report, BES has relied upon, and assumed accurate, certain site information provided by the client and other persons. Except as otherwise stated in the report, we have not attempted to verify the accuracy or completeness of any such information. BES accepts no liability or responsibility whatsoever for or in respect to any use or reliance upon this report by any third party.

The information contained within this report have been prepared exclusively for the client. BES have prepared the report to address the risk associated with scale of the works. The report has been prepared with a degree of care and skill ordinarily exercised in similar investigations by reputable members of the environmental industry in Australia. No other warranty, expressed or implied, is made or intended. This report is to be read in its entirety including attachments and should not read in individual sections.

A third party should not rely upon the information prior to making an assessment that the scope of work conducted meets their specific needs. BES cannot be held liable for third party reliance on this document.

BESs professional opinions are based upon its professional judgment, experience, training and results from analytical data. In some cases, testing or further testing and analysis may be required, thus producing different results and/or opinions. BES has limited its investigation to the scope agreed upon with its client.

## 10.0 REFERENCES AND LEGISLATION


- *Guidelines for the NSW Site Auditor Scheme* (NSW DEC, 2006).
- *Guidelines for Consultants Reporting on Contaminated Sites* (NSW EPA, 2000).
- *Guidelines on the Investigation Levels for Soil and Groundwater*, National Environmental Protection Measure 1999, 2013 Amendment (NEPC, 2013).
- Australian Standard AS 4482.1 *Guide to the sampling and investigation of potentially contaminated soil. Part 1: Non-volatile and semi-volatile compounds.*
- Australian Standard AS 4482.*2 Guide to the sampling and investigation of potentially contaminated soil. Part 2: Volatile substances.*
- *Sampling Design Guidelines* (NSW EPA, 1995).
- *Waste Classification Guidelines Part 1: Classifying Waste* (NSW DECCW, 2014).
- *Guidelines for the Assessment and Management of Groundwater Contamination* (NSW DEC, 2007).
- NSW Spatial Information Exchange (http://maps.six.nsw.gov.au/)
- NSW Department of Environment & Heritage eSpade (NSW Soil and Land Contamination) (http://www.environment.nsw.gov.au/eSpadeWebapp/)
- Department of Urban Affairs and Planning and Environment Protection Authority Managing Land Contamination: *Planning Guidelines, State Environmental Planning Policy No. 55 - Remediation of Land 1998*
- National Environment Protection Council, December 1999. National Environment Protection (Assessment of Site Contamination) Measure
- NSW DEC (2006) 2nd Ed. Contaminated Sites: Guidelines for the NSW Site Auditor Scheme.
- NSW OEH (2011) Contaminated Sites: Guidelines for Consultants Reporting on Contaminated Sites, 2nd Ed.
- Informal interview: St. Patrick's College, Strathfield – Archivist

## 11.0 PHOTOGRAPHS

*Photo 1 – Aerial Photograph 1943 (6maps)*

*Photo 2 – Aerial Photograph 2019 (6maps)*

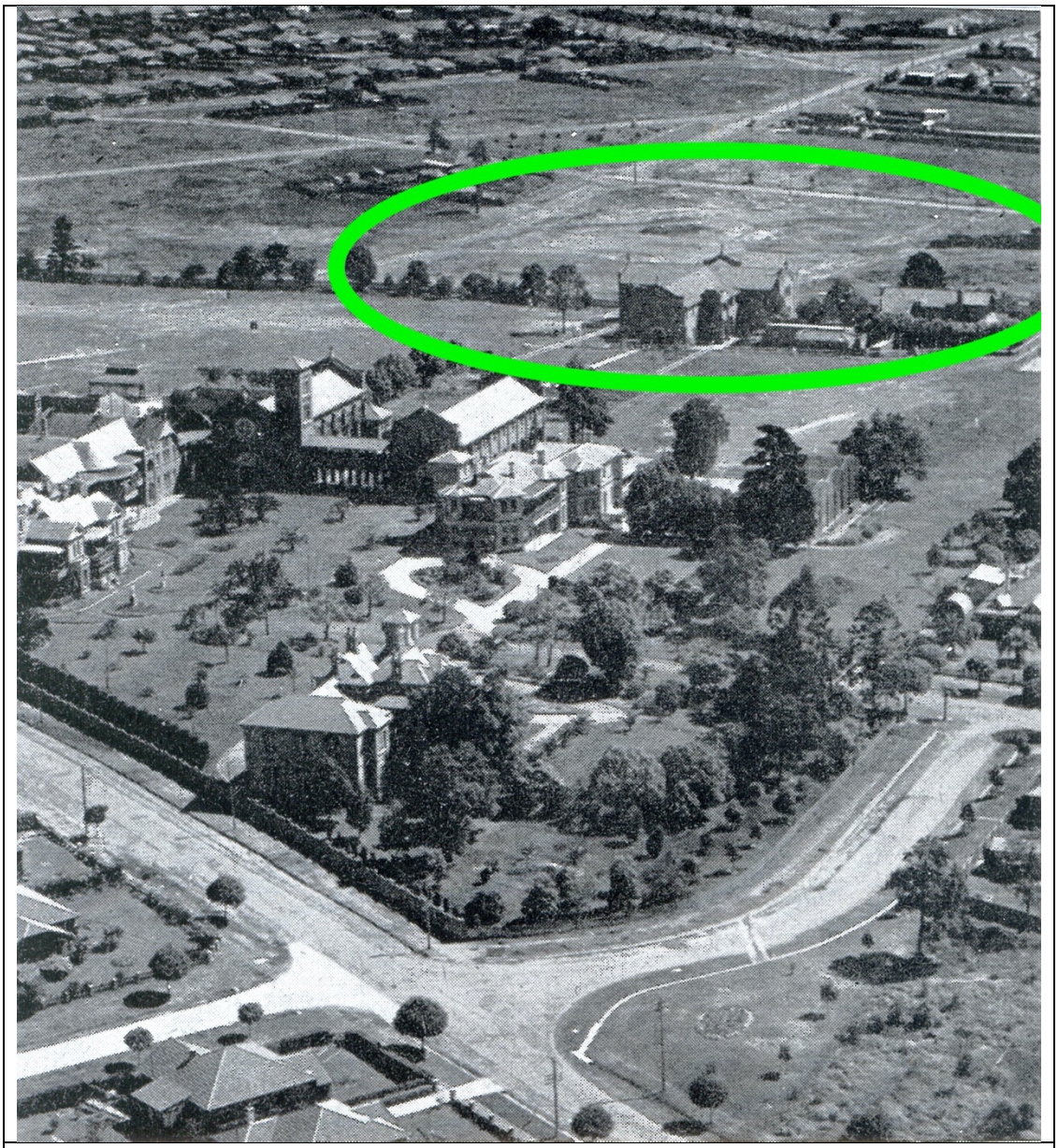

*Photo 3 – Aerial Photograph 1928 (College Archives) showing open pastureland*

*Photo 4 – 1928, Pre-Construction of Tennis Courts (Foreground)*

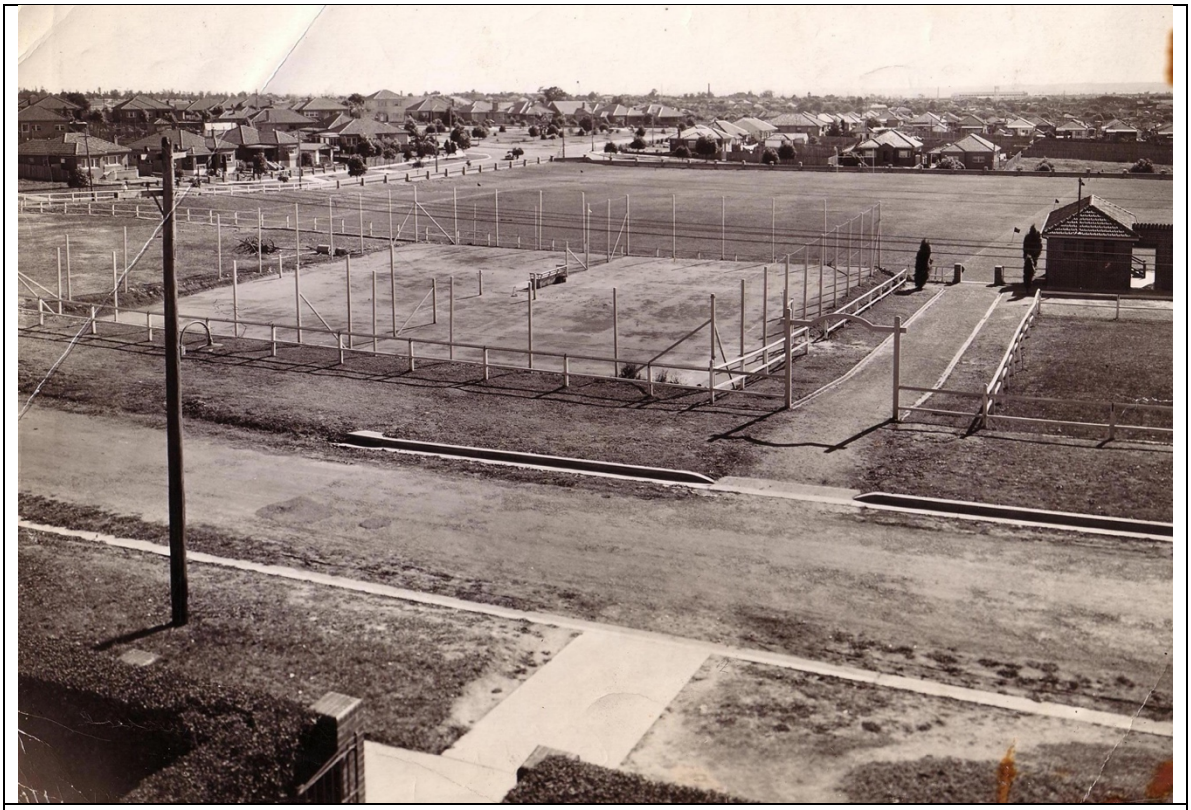

*Photo 5 – Elevated Land-Based Photograph 1938 – Completion of 2 Clay Tennis Courts*

*Photo 6 – Elevated Land-Based Photograph 1940 – Construction of Breen Oval (Foreground) to North of the [current] Site (Background)*

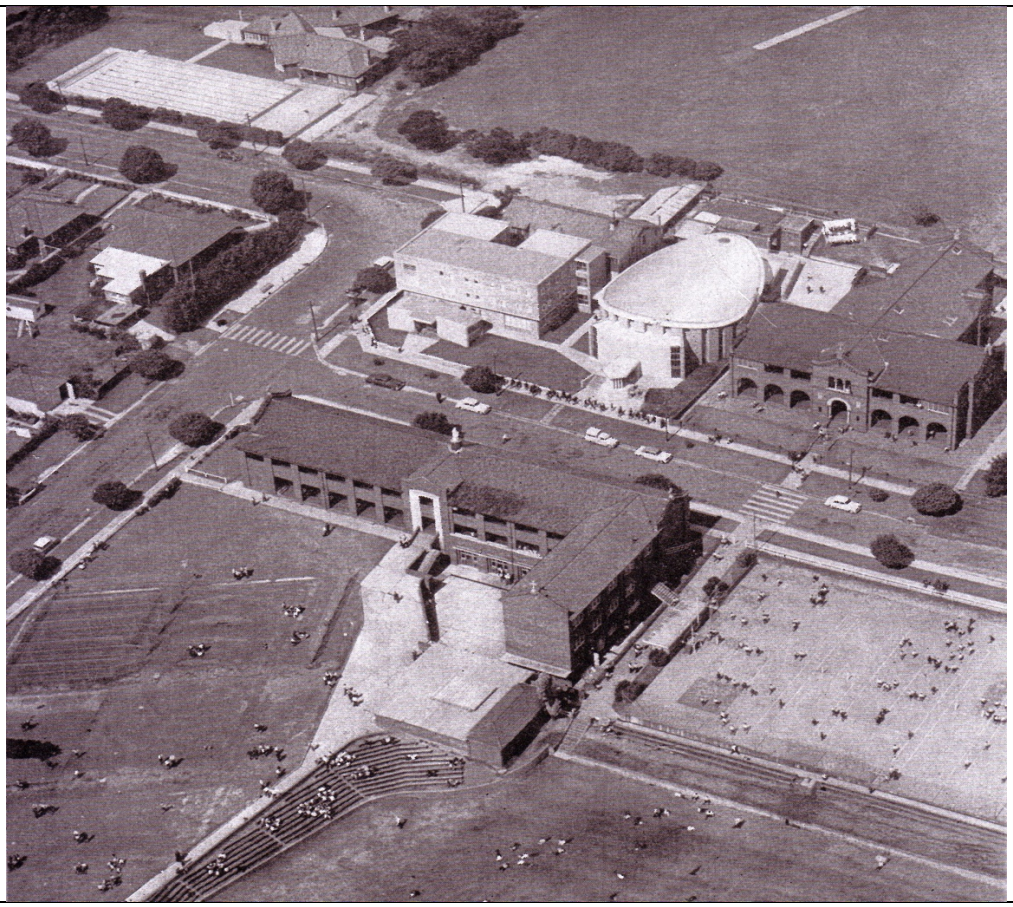

*Photo 7 – Aerial Photograph 1961 – All (current) 5 courts in use (completed 1950)*

*Photo 8 – Aerial Photograph 2006 – Similar to Present Landscape*

*Photo 9 – Aerial Photograph 2017 – No Change to Site since Photo 8 (2006)*