

20 November 2019

ATT: Sean Porter
Maryland Development Company Pty Ltd
Via email: Sean.Porter@lendlease.com.au

Waste Management Plan**Proposed Construction Works at Basin C and V6, St Marys Development Site, NSW**

Dear Mr Porter,

1. Introduction and Background

JBS&G Australia Pty Ltd (JBS&G) has been engaged by Maryland Development Company Pty Ltd (the client) to provide a Waste Management Plan (WMP) for the proposed Basin C and Basin V6 (the site, the basins) located to the north west of the St Marys ADI Development site, in St Marys, NSW (the development site). The location of the basins, including lot boundaries, is provided on **Figure 1 of Attachment 2**.

The proposal involves the construction of two detention basins (Basins C and V6) to detain, treat and attenuate stormwater runoff from Village 3 and Village 6 of the Jordan Springs development. The basins are located within the north-western extent of the St Marys Development Site and within the Wianamatta Regional Park. Basins C and V6 will be constructed wetlands and act as water quality improvement basins with the provision for active stormwater detention during high flows.

Basin C will have a surface area of approximately 1.8 hectares and a notional depth of 1.7m. Whereas Basin V6 will be approximately 0.3 hectares and a notional depth of 1.6m.

Each basin is designed to contribute to the water quantity and quality management objectives under the *Sydney Regional Environmental Plan No. 30 – St Marys* (SREP 30) and Penrith City Council's (Council) Water Sensitive Urban Design Policy (December 2013). The basins will incorporate the features for both water quality treatment and detention including a drainage inlet point, low level culvert outlet, spillway with erosion protection and vegetated slopes to provide effective nutrient removal. An access track along the side of each basin with access ramps will be constructed for regular inspection and maintenance access.

This WMP has been prepared for basin materials encountered during construction of the basins, including handling, transportation, stockpiling and disposal/reuse.

1.1 Objective

The objectives of the WMP are to identify each of the potential waste generated during construction of Basins C and V6, and to provide procedures for the management of wastes or reuse of materials during the works.

Additionally, the WMP will implement measures to ensure the aims, objectives and guidelines of the *NSW Waste Avoidance and Resource Recovery Strategy 2014-21* are upheld.

2. Site Identification and Description

The location of the site is shown in **Figure 1**, and the site details are summarised in **Table 2.1** below.

Table 2.1 Summary Site Details

Lot Number	Lot 4 DP1216994 and Lot 5 DP1216994
Street Address	Off Delany Circuit and Agnes Way, Jordan Springs, NSW.
Site Area	Basin C overall footprint – 1.8 ha, Basin V6 footprint 0.3 ha
Local Government Authority	Penrith City Council
Geographic Coordinates (MGA 56)	290288.125 E 6266927.578 N
Current Land-use	Vacant – grassed and woodland areas
Proposed Land-use	Drainage infrastructure

Generally, the basin areas are currently heavily vegetated with trees, shrubs and grasses. An unsealed access track with inclusions of concrete and asphalt was observed running in an east to west direction through both basins. Concrete culverts were observed underlying the access track at a number of locations. A tributary of South Creek was observed as traversing through the south-eastern portion of Basin C.

3. JBS&G Detailed Site Investigation

JBS&G is preparing a Detailed Site Investigation (DSI, JBS&G 2019a¹) report for Basin C and Basin V6 which will be issued as a package with this WMP. Observations and soil analytical results from the DSI have been utilised for materials/waste characterisation in this WMP.

Based on the works conducted, soils were mostly found to be natural soils consistent with virgin excavated natural materials (VENM). An exception is where fill materials with inclusions of concrete and asphalt were identified within access tracks. Sampling within the access track identified an area in the eastern portion of Basin C was impacted with Benzo(a)pyrene which exceeded the adopted human health and ecological criteria.

Also, a length of the access track in the western portion of Basin C was identified to be impacted with visible asbestos containing material (ACM) fragments. The location of the access track and identified B(a)P and ACM impacts is shown on **Figure 2**.

The identified areas of impact will require management and validation through implementation of a remedial action plan (RAP) prior to bulk earthworks commencing in Basin C.

4. Waste Regulatory Framework

4.1 Waste Avoidance and Resource Recovery Act 2001

The Waste Avoidance and Resource Recovery (WARR) Act 2001 establishes the waste hierarchy to ensure that resource management options are considered against the following priorities:

1. Avoidance – actions to reduce the amount of waste generated and undertaking activities;
2. Resource Recovery – which includes reuse, reprocessing, recycling and energy recovery, consistent with the most efficient use of the recovered resources; and
3. Disposal – an end-of-pipe option that must be carefully undertaken to minimise any negative environmental outcomes.

¹ *Detailed Site Investigation – Basin C and V6, St Mary's Development Site, NSW (Rev 0)* JBS&G Australia Pty Ltd, 20 November 2019 (JBS&G 2019a)

The NSW Government's priority areas and actions for waste avoidance and resource recovery is outlined in the Waste Strategy 2014-2021 (an update of earlier Waste Strategies).

The four identified "key target areas" in the Strategy are:

1. preventing and avoiding waste;
2. increasing recovery and use of secondary materials;
3. reducing toxicity in products and materials; and
4. reducing litter and illegal dumping.

The Strategy also includes the following recycling targets (as relevant to the proposed works at the site):

- Increased recycling of commercial and industrial waste to 70% by 2021-22; and
- Increased recycling of construction and demolition waste to 80% by 2021-22.

4.2 Protection of the Environment Operations Act 1997

All material to be excavated and removed from the site (including associated activities such as classification) are required to be undertaken in strict accordance with the requirements of the POEO Act 1997. Such requirements include:

- Ensuring waste is classified appropriately and in accordance with relevant guidelines;
- Waste materials are disposed of to appropriately licensed facilities; and
- Other materials are removed to facilities lawfully able to accept such materials.

4.3 Protection of the Environment Operations (Waste) Regulation 2005

The regulations make requirements relating to non-licensed waste activities and waste transporting. The proposed works on the site will not require to be licensed. However, Section 48 of the Reg. requires that wastes are stored in an environmentally safe manner and that vehicles used to transport waste must be covered when loaded.

The Regulation exempts certain waste streams from the full waste tracking and record keeping requirements. Waste tracking is required only for industrial and hazardous wastes. However, these are not anticipated to be present on the site based on the assessment of materials in JBS&G (2019a).

4.4 Waste Classification Guidelines, 2014, NSW EPA

All wastes generated and proposed to be disposed off-site are required to be assessed, classified and managed in accordance with this guideline.

5. Waste Management Plan

5.1 Waste Strategy

In order to uphold the objectives of (WARR 2001) and the St Marys Environmental Planning Strategy 2000 (DoUAP 2000), retention of materials within the St Mary's development site is the preferred strategy where applicable.

For the basins, it is anticipated that the majority of materials surplus to construction requirements could be reused within the development site.

5.2 Materials Identified and Estimated Volumes

Materials identified at the site are characterised as follows;

- Vegetation - consisting of branches, grass, leaves, plants, loppings, tree trunks, tree stumps and similar materials, and including any mixture of those materials. Volume/quantity not able to be defined at this stage;
- Fill materials - limited to access tracks, noted to have inclusions of concrete and asphalt. Fill materials are anticipated to be present from the surface to a depth of approximately 0.5 m below ground surface (bgs), and consist of approximately 600 m³ within Basin C and 100 m³ in Basin V6. See RAP for remediation of these materials;
- Asbestos impacted fill materials - identified in the western portion of the Basin C access track as identified on **Figure 2**. An approximate volume of 100 m³ asbestos impacted fill is estimated. See RAP for remediation of these materials;
- Construction/demolition materials – concrete culverts were observed at numerous locations. Construction materials associated with service infrastructure including concrete and steel was also observed.
- Natural soils – all soils at the site except for fill identified within the access tracks consist of natural soils. Natural soils are also anticipated to underly the access track.

5.3 Characterisation of Identified Materials from a Waste Perspective

Waste classification of each of the identified materials in accordance with EPA NSW Waste Classification Guidelines (EPA 2014) is as follows:

- Vegetation is classified as 'Garden Waste' as consistent with EPA (2014) waste classification guidelines;
- Fill materials are classified as 'General solid waste (non putrescible)' (GSW) in accordance with EPA (2014), noting B(a)P impacted material identified in JBS&G (2019a) may require further characterisation sampling;
- Asbestos impacted fill materials are classified as 'General solid waste (non putrescible) mixed with Special waste (asbestos) in accordance with EPA (2014);
- Construction materials are classified as 'Building and demolition waste' in accordance with EPA (2014);
- Natural soils (all other soils) are classified as 'virgin excavated natural material' consistent with EPA (2014) definition.

Further as per EPA (2014), VENM means natural material (such as clay, gravel, sand, soil or rock fines):

- That has been excavated or quarried from areas that are not contaminated with manufactured chemicals, or with process residues, as a result of industrial, commercial, mining or agricultural activities; and
- That does not contain sulfidic ores or soils, or any other waste.

5.4 Options for Reuse

Based on the materials identified and with respect to potential reuse opportunities within the development site, **Table 5.1** has been developed below.

Table 5.1 Reuse/Disposal of Identified Materials

Material Type	Reuse within the development site	Offsite Disposal and Waste Classification	Suggested Preferred Option
Vegetation	Suitable to be mulched and reused	Garden waste	Reuse as mulch within the development site
Fill Materials*	Suitable for reuse beneath road pavements or within commercial/industrial land use areas	General solid waste (non putrescible)	Reuse beneath roads or commercial/industrial land use areas within the development site
Asbestos impacted fill materials*	Not suitable	General solid waste (non putrescible) mixed with Special waste (asbestos)	Disposal offsite
Construction/demolition materials	Reusing culverts or recycling of concrete	Disposal offsite as Building and demolition waste	Reuse within the development site or recycling
Natural Soils	Subject to geotechnical suitability, suitable for unconditional reuse	If surplus to requirements, offsite disposal as VENM	Reuse within the development site

- It is noted that remediation of B(a)P and asbestos impacted fill materials as per the RAP developed will be required in addition to the proposed waste management approach

5.5 Works Staging and Waste Segregation

Materials to classified as 'Garden Waste', GSW, GSW mixed with special waste (asbestos) and VENM will require to be kept separate at all stages of the construction works. This will be undertaken in practice by the staging of the works:

- All surface vegetation shall be initially removed and stockpiled;
- Fill materials from the access paths including asbestos and B(a)P impact shall be excavated and stockpiled/transported elsewhere in the development site or disposed offsite; and
- Only subsequent to removal of vegetation and fill soils shall bulk excavation of soils commence.

5.6 Waste Transporting

All wastes removed from the site shall be transported in accordance with relevant road and transportation regulatory requirements. Where required (depending on the classification of the wastes), appropriately licensed transport contractors shall be used.

The appointed transporters shall be responsible for ensuring they are appropriately licensed to:

- Carry the particular type of waste; and
- Transport the materials to an appropriately licensed facility or otherwise approved receipt site.

Materials tracking shall be undertaken for the movement of all materials and records retained to inform the validation of the site.

5.7 Waste Recycling and Disposal

Garden waste and VENM shall be either re-used onsite within the development site, or otherwise recycled off-site at a facility legally permitted to receive and use the materials. It is likely that garden waste will be required to be processed (i.e. chipped) to facilitate re-use within the site.

Recycling / re-use of materials as outlined in **Section 5.4** will satisfy NSW EPA waste objectives and NEPM land use suitability requirements.

Fill materials (non asbestos impacted) can potentially be reused within a less sensitive land use area of the development site such as beneath road pavements, or within a commercial/industrial land use area. Otherwise fill materials would require disposal offsite to a facility suitably licensed to accept the waste.

Fill materials impacted with asbestos will require disposal offsite to a facility suitably licensed to accept the waste in accordance with EPA (2014).

Materials that are designated for disposal offsite, other than those pre classified, including garden waste and building and demolition waste, will require a waste classification letter or VENM letter to be provided by an environmental consultant prior to offsite disposal/reuse occurring.

5.8 Received Imported Materials

If it is proposed to import materials for use in filling, engineering purposes or landscaping materials, they must comply with the following guidelines and procedures:

- Imported fill material must comprise virgin excavated natural material (VENM); or
- Excavated natural material (ENM); or
- Meet the requirements of an applicable EPA exemption (e.g. recovered aggregate Order 2014).

5.9 Unexpected Find Protocol

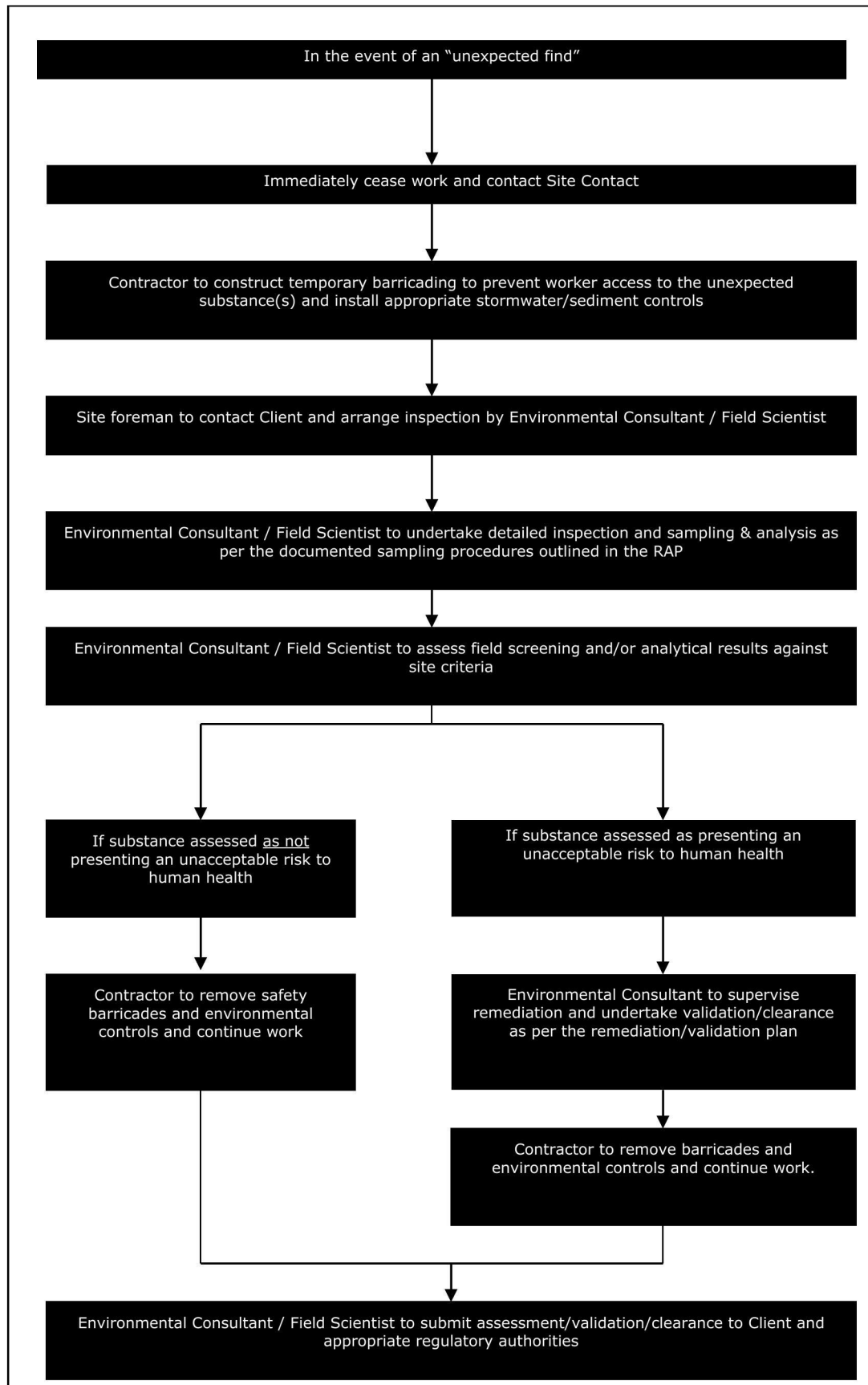
It is acknowledged that previous investigations have been undertaken to assess contaminants of potential concern at the basins. Additionally, review of historical site activities indicates a low probability that contaminants may be present between sampling points. However, there remains the potential that ground conditions between sampling points may vary, and further hazards may arise from unexpected sources and/or in unexpected locations during construction of the detention basins. The nature of any residual hazards which may be present at the site are generally detectable through visual or olfactory means, for example:

- Fill materials not consistent with the definition of VENM;
- Visible ACM fragments;
- Friable ACM such as lagging (visible);
- Bottles/containers of chemicals (visible); and
- Ash and/or slag contaminated soils/fill materials (visible).

As a precautionary measure to ensure the protection of the workforce and surrounding community, should any of the abovementioned substances be identified (or any other unexpected potentially hazardous substance), the procedure summarised in **Flowchart 5.1** is to be followed.

An enlarged version of the unexpected finds protocol, suitable for use onsite, should be posted in the Site Office and referred to during the site-specific induction by the Contractor.

Flowchart 5.1 – Unexpected Finds Protocol



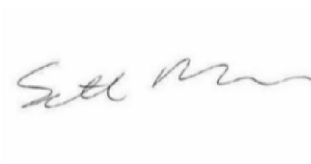
Should you require clarification, please contact the undersigned on 02 8245 0300 or by email gblack@jbsg.com.au.

Yours sincerely:



George Black
Environmental Consultant
JBS&G Australia Pty Ltd

Reviewed/Approved by:



Seth Molinari
Principal Contaminated Land
JBS&G Australia Pty Ltd

Attachments

- 1) Limitations
- 2) Figures

Attachment 1 – Limitations

This report has been prepared for use by the client who commissioned the works in accordance with the project brief only and has been based in part on information obtained from other parties. The advice herein relates only to this project and all results conclusions and recommendations made should be reviewed by a competent person with experience in environmental investigations, before being used for any other purpose.

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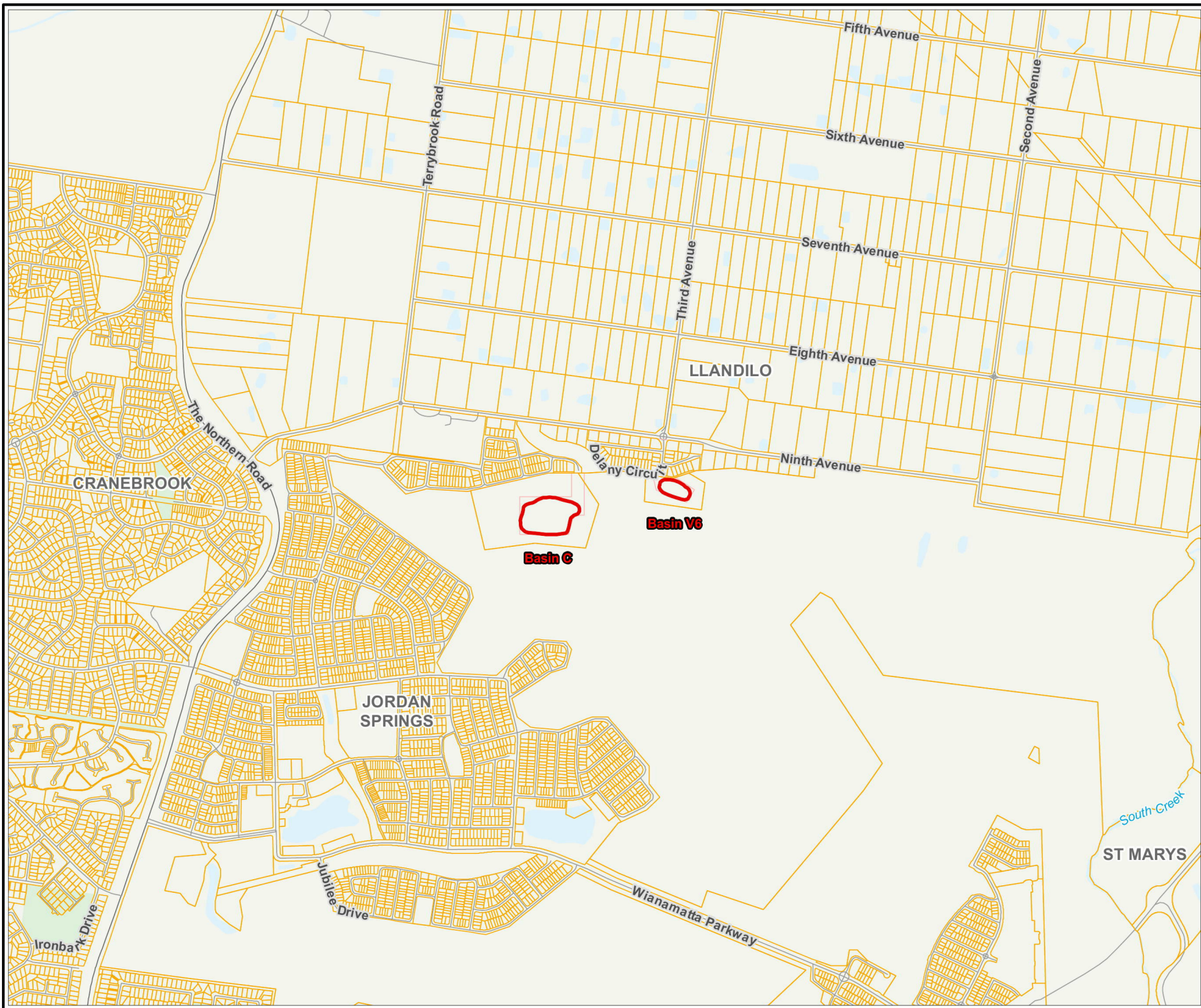
Sampling and chemical analysis of environmental media is based on appropriate guidance documents made and approved by the relevant regulatory authorities. Conclusions arising from the review and assessment of environmental data are based on the sampling and analysis considered appropriate based on the regulatory requirements and site history, not on sampling and analysis of all media at all locations for all potential contaminants.

Limited sampling and laboratory analyses were undertaken as part of the investigations, as described herein. Ground conditions between sampling locations may vary, and this should be considered when extrapolating between sampling points. Chemical analytes are based on the information detailed in the site history. Further chemicals or categories of chemicals may exist at the sites, which were not identified in the site history and which may not be expected at the site.

Changes to the subsurface conditions may occur subsequent to the investigations described herein, through natural processes or through the intentional or accidental addition of contaminants. The conclusions and recommendations reached in this report are based on the information obtained at the time of the investigations.

This report does not provide a complete assessment of the environmental status of the site, and it is limited to the scope defined herein. Should information become available regarding conditions at the site including previously unknown sources of contamination, JBS&G reserves the right to review the report in the context of the additional information.

Attachment 2 – Figures



- Legend:**
- Approximate Site Boundary
 - Cadastre (NSW LPI, 2019)
 - Proposed Cadastre
 - Primary Road
 - Local Road
 - Waterbody area
 - Waterway
 - Parks and reserves



Job No: 57591	
Client: Maryland Development Company	
Version: L01 Rev A	Date 18/11/2019
Drawn By: AS	Checked By: GB
Scale 1:20,000	

Coord. Sys. GDA 1994 MGA Zone 56

**Basin C and Basin V6
Jordan Springs, NSW**

SITE LOCATION

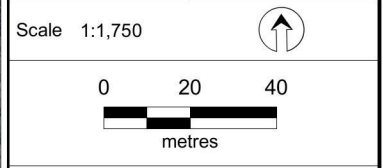
FIGURE 1



- Legend:**
- ▭ Approximate Site Boundary
 - ▭ Cadastre (NSW LPI, 2019)
 - ▭ Proposed Cadastre
 - South Creek Tributary
 - ★ Aboriginal Heritage Sites
 - Access Road
 - Drainage Culvert
 - Sample Locations
 - Groundwater Monitoring Wells
 - Surface Water Locations
 - Old Groundwater Monitoring Wells
 - ✕ ACM Fragments
- Approximate Areas of Impact**
- ▭ Asbestos Impact
 - ▭ B(a)P/B(a)PTEQ and TRH Impact



Job No: 57591
 Client: Maryland Development Company
 Version: R03 Rev A Date 18/11/2019
 Drawn By: AS Checked By: GB



Coord. Sys. GDA 1994 MGA Zone 56

**Basin C and Basin V6
 Jordan Springs, NSW**

**IDENTIFIED AREAS
 OF IMPACT**

FIGURE 2