Search Results

8 results found.

Cliffbrook House, Stables & Stone Walls 45 Beach St	Coogee, NSW, Australia	(Registered) Register of the National Estate (Non-statutory archive)
Coogee Bay Hotel 253 Coogee Bay Rd	Coogee, NSW, Australia	(Indicative Place) Register of the National Estate (Non-statutory archive)
Giles Baths & Bath-House Baden St	Coogee, NSW, Australia	(Indicative Place) Register of the National Estate (Non-statutory archive)
McIvers Baths Beach St	Coogee, NSW, Australia	(Indicative Place) Register of the National Estate (Non-statutory archive)
Ocean View and Grounds 370 Alison Rd	Coogee, NSW, Australia	(Registered) Register of the National Estate (Non-statutory archive)
Ross Jones Memorial Pools Beach St	Coogee, NSW, Australia	(Indicative Place) Register of the National Estate (Non-statutory archive)
St Brigids Catholic Church 1A Waltham St	Coogee, NSW, Australia	(Registered) Register of the National Estate (Non-statutory archive)
Wylies Baths Neptune St	Coogee, NSW, Australia	(Indicative Place) Register of the National Estate (Non-statutory archive)

Report Produced: Tue Jun 21 16:50:53 2016

Place Details

Send Feedback

Cliffbrook House, Stables & Stone Walls, 45 Beach St, Coogee, NSW, Australia

Photographs



List	Register of the National Estate (Non-statutory archive)
Class	Historic
Legal Status	Registered (28/09/1982)
Place ID	1770
Place File No	1/12/030/0032

Statement of Significance

A late example of a Federation Free Classical style residence, heavily dependent on Georgian sources, which retains much of its setting, complete with older stables and perimeter stone walls. Cliffbrook demonstrates the nature of an early twentieth century estate of Sydney's eastern suburbs. There are fine interiors with marble chimney pieces, Adam Revival plaster ceilings, Art Deco leadlights and a maple staircase of Georgian design. The house has historical associations with the family of Sir Denison Miller, first Governor of the Commonwealth Bank.

Official Values Not Available

Description

A two storey house in the Federation Free Classical style, with brick walls and stone porticos on three sides and other stone trims. The roof is slate. There is a maple staircase of Georgian design, Art Deco leadlights to the stair window and one door, marble chimney pieces probably from an earlier house, marble window sills and Adam Revival plaster ceilings. The sandstone stables/garage and perimeter stone walls date from an earlier house on the site.

History Not Available

Condition and Integrity

Potential danger of erosion by salt and weather to sandstone surrounding walls and to stables (now used as garage). Remedial and waterproofing has already been undertaken.

Location

45 Beach Street, corner Battery Street, Coogee. Includes stone walls to Beach and Battery Streets.

Bibliography Not Available

Report Produced Tue Jun 21 16:47:23 2016

Office of Environment & Heritage

Home > Topics > Heritage places and items > Search for heritage

Search for NSW heritage

Return to search page where you can refine/broaden your search.

Statutory listed items

Information and items listed in the State Heritage Inventory come from a number of sources. This means that there may be several entries for the same heritage item in the database. For clarity, the search results have been divided into three sections.

- **Section 1** - contains Aboriginal Places declared by the **Minister for the Environment** under the National Parks and Wildlife Act. This information is provided by the Heritage Division.
- **Section 2** - contains heritage items listed by the **Heritage Council of NSW** under the NSW Heritage Act. This includes listing on the State Heritage Register, an Interim Heritage Order or protected under section 136 of the NSW Heritage Act. This information is provided by the Heritage Division.
- **Section 3** - contains items listed by **local councils** on Local Environmental Plans under the Environmental Planning and Assessment Act, 1979 and **State government agencies** under s.170 of the Heritage Act. This information is provided by local councils and State government agencies.

Section 1. Aboriginal Places listed under the National Parks and Wildlife Act.

Your search did not return any matching results.

Section 2. Items listed under the NSW Heritage Act.

Your search returned 3 records.

Item name	Address	Suburb	LGA	SHR
Cliffbrook	45-51 Beach Street	Coogee	Randwick	00609
McIver Women's Baths	Grant Reserve	Coogee	Randwick	01869
Wylie's Baths	4B Neptune Street	Coogee	Randwick	01677

Section 3. Items listed by Local Government and State Agencies.

Your search returned 68 records.

Item name	Address	Suburb	LGA	Information source
Art Deco Flats	321 Arden Streets	Coogee	Randwick	LGOV
Art Deco Flats	201 Coogee Bay Road	Coogee	Randwick	LGOV
Art Deco flats	1A Mount Street	Coogee	Randwick	LGOV
Ballamac	39 Arcadia Street	Coogee	Randwick	LGOV
Belle	28 Powell Street	Coogee	Randwick	LGOV

Brooklyn Flats	152 Brook Street	Coogee	Randwick	LGOV
Bungalow	31 Melody Street	Coogee	Randwick	LGOV
Bungalow	14 Mount Street	Coogee	Randwick	LGOV
Bungalow Style Dwelling	296 Alison Road	Coogee	Randwick	LGOV
Byron Lodge	25 Byron Street	Coogee	Randwick	LGOV
Cliffbrook	45 Beach Street	Coogee	Randwick	LGOV
Coogee - Randwick Outfall	Northern Headland of Coogee Beach	Coogee	Randwick	SGOV
Coogee Palace	169-181 Dolphin Street	Coogee	Randwick	LGOV
Coogee Public School and Old Stone Building	Byron Street	Coogee	Randwick	LGOV
Dwelling - 1920's Style	78 Dolphin Street	Coogee	Randwick	LGOV
Edwardian Cottage	3 Quail Street	Coogee	Randwick	LGOV
Edwardian Style Bungalow	153 Oberon Street	Coogee	Randwick	LGOV
Electricity Substation No 362	245 Oberon Street	Coogee	Randwick	LGOV
Electricity Substation No. 141	135S Brook Street	Coogee	Randwick	SGOV
Electricity Substation No. 198	114A Brook Street	Coogee	Randwick	SGOV
Electricity Substation No. 280	15S Higgs Street	Coogee	Randwick	SGOV
Electricity Substation No. 289	1S Abbott Street	Coogee	Randwick	SGOV
English Country House	2 Gordon Avenue	Coogee	Randwick	LGOV
Federation Flats	108 Brook Street	Coogee	Randwick	LGOV
Federation Queen Anne corner house	340 Arden Street	Coogee	Randwick	LGOV
Federation Residence	87 Coogee Bay Road	Coogee	Randwick	LGOV
Federation Style Dwelling	15 Carr Street	Coogee	Randwick	LGOV
Federation Style House	113 Brook Street	Coogee	Rand	LGOV

			wick	
Federation style semi	165-167 Coogee Bay Road	Coogee	Randwick	LGOV
Giles Baths Pool		Coogee Bay	Randwick	LGOV
Grand Pacific Hotel	64 Carr Street	Coogee	Randwick	LGOV
Hotel façade - colonial & neo-classical style with verandah	212 Arden Street	Coogee	Randwick	LGOV
House - 1950's Style	9 Ritchard Avenue	Coogee	Randwick	LGOV
Inter-war Art Deco Ocean Liner Style flats	92-94 Coogee Bay Road	Coogee	Randwick	LGOV
Inter-war three-storey flats	1 Alfreda Street	Coogee	Randwick	LGOV
Juvina	182 Arden Street	Coogee	Randwick	LGOV
Late Victorian House	21 Carr Street	Coogee	Randwick	LGOV
Late Victorian semi-detached houses	81-83 Coogee Bay Road	Coogee	Randwick	LGOV
Maidstone	1A Waltham Street	Coogee	Randwick	LGOV
Neo-classical residential building	131-133 Dolphin Street	Coogee	Randwick	LGOV
Ocean View	370 Alison Road	Coogee	Randwick	LGOV
Rainbow Street Public School	90 Rainbow Street	Coogee	Randwick	LGOV
Randwick Cemetery	Malabar Road	Coogee	Randwick	LGOV
Roslyn	29 Arcadia Street	Coogee	Randwick	LGOV
Ross Jones Memorial Pool	Coogee Beach (end of Carr street)	Coogee	Randwick	LGOV
San Antonio	75 Beach Street	Coogee	Randwick	LGOV
Sandstone Drinking Fountain - Goldstein Reserve	Arden Street	Coogee	Randwick	LGOV
Sandstone Wall	Coogee Beach	Coogee	Randwick	LGOV
Sante Fe Bungalow	28 Coldstream Street	Coogee	Randwick	LGOV
Spanish Mission Style Flats	143 Arden Street	Coogee	Randwick	LGOV

Spanish Mission Style Flats	109 Arden Street	Coogee	Randwick	LGOV
Spanish Mission style residence	1 Hill Street	Coogee	Randwick	LGOV
St. Brigids Catholic church	135 Brook Street	Coogee	Randwick	LGOV
St. Nicholas Anglican Church	125 Brook Street	Coogee	Randwick	LGOV
St. Nicholas Rectory	123 Brook Street	Coogee	Randwick	LGOV
The Warwick	154 Beach Street	Coogee	Randwick	LGOV
Three-storey Art Deco Flats	142A Brook Street	Coogee	Randwick	LGOV
Three-storey neo-classical block of flats	286-290 Arden Street	Coogee	Randwick	LGOV
Timber Cottage	85 Malabar Road	Coogee	Randwick	LGOV
Tudor Hall	291 Arden Street	Coogee	Randwick	LGOV
Two-storey Edwardian Style Semis	90-100 Brook Street	Coogee	Randwick	LGOV
Victorian Attached Houses	1-19 Oswald Street	Coogee	Randwick	LGOV
Victorian Gothic House	86 Coogee Bay Road	Coogee	Randwick	LGOV
Victorian Italianate Mansion	88 Brook Street	Coogee	Randwick	LGOV
Warimoo	69 Beach Street	Coogee	Randwick	LGOV
Weatherboard Cottage	26 Bream Street	Coogee	Randwick	LGOV
Womens Baths	Coogee Beach, Grant Reserve	Coogee	Randwick	LGOV
Wylies Baths	Neptune Street	Coogee	Randwick	LGOV

There was a total of 71 records matching your search criteria.

Key:
LGA = Local Government Area
GAZ= NSW Government Gazette (statutory listings prior to 1997), HGA = Heritage Grant Application, HS = Heritage Study, LGOV = Local Government, SGOV = State Government Agency.
Note: While the Heritage Division seeks to keep the Inventory up to date, it is reliant on State agencies and local councils to provide their data. Always check with the relevant State agency or local council for the most up-to-date information.

Cliffbrook

Item details

Name of item:	Cliffbrook
Type of item:	Built
Group/Collection:	Residential buildings (private)
Category:	Mansion
Location:	Lat: -33.9137647216 Long: 151.2602247550
Primary address:	45-51 Beach Street, Coogee, NSW 2034
Local govt. area:	Randwick
Local Aboriginal Land Council:	La Perouse

Property description

Lot/Volume Code	Lot/Volume Number	Section Number	Plan/Folio Code	Plan/Folio Number
PART LOT	1		DP	109530
LOT	1		DP	8162

All addresses

Street Address	Suburb/town	LGA	Parish	County	Type
Battery Street	Coogee	Waverley			
45-51 Beach Street	Coogee	Randwick			Primary Address

Owner/s

Organisation Name	Owner Category	Date Ownership Updated
	Private	29 Mar 99

Statement of significance:

Cliffbrook is of State heritage significance for its association with the larger original Estate 'Cliff-brook' of John Thompson, Mayor of Randwick in 1873, being the largest surviving area of land of that estate, following successive subdivisions and sales. It is significant through its association with the first owner Sir Denison Miller who was the first Governor of the Commonwealth Bank. The house may be found to be a late work of John Kirkpatrick a prominent architect in Sydney from the 1880s responsible for major commissions such as the Colonial Mutual Life Building, Grandstands at the Sydney Cricket Ground and the Commonwealth Bank Pitt Street Sydney. It may also be established that E.A. Scott was involved in the building's creation. The firm established by E.A. Scott in 1888 still practices today in the name of E.A. and T.M. Scott. The house of a high standard of architectural design. It is well proportioned, has an impressive scale and appearance befitting Sir Denison Miller's prestige and position in public life. The design in the Inter Wars Free Classical style contains anomalous applications of the Italianate style rare in the 1920s. It is the more significant for its rarity being such a late example containing elements of the Italianate style. The building displays high standards of craftsmanship in the brickwork and joinery particularly, as excellent examples of the techniques employed and use of the materials in the 1920s. (McDonald McPhee 1993)

Date significance updated: 09 Sep 11

Note: There are incomplete details for a number of items listed in NSW. The Heritage Division intends to develop or upgrade statements of significance and other information for these items as resources become available.

Description

Designer/Maker: John Kirkpatrick (attributed)

Construction years: 1921-1921

Physical description: Site and Garden:

Cliffbrook stands in a large suburban lot, with an established garden. Lawns abut the main house, with sealed drive sweeping up to its portico / porte cochere.

Three Norfolk Island pines (Araucaria heterophylla) mark the front yard and view in from Beach Street. A number of palm species are also in the garden.

A large Moreton Bay fig (Ficus macrophylla) is towards the rear on the southern side boundary (Stuart Read, pers.comm. from photographs, 31/10/2014).

Stone Boundary Walls

The boundary wall was built in two stages. The western boundary wall is constructed in roughly squared and coursed sandstone with a soft lime mortar containing uncalcified lenses of lime. Successive attempts to repoint eroding mortar in a hard cement rich mix have detracted from its appearance and contributed little to its structural condition.

The main entry gates in the western boundary wall are of no significance, however the gate opening is in the same location as the original main gates shown in the 1893 survey.

The northern boundary wall's stonework is also irregularly coursed but individual stones are more precisely squared and generally larger in size. A wall is shown in this location in a detail survey by T.B.U. Sloman. 25th September 1893 and encloses the stable yard. A photograph in 1883 shows Cliffbrook and the west boundary wall and a large gap extending east from the north east corner to a paling fence.

The mortar is a very hard white cement rich mix - harder than the stone itself. Attempts to patch erosion in darker grey hard cement mortar appear to address the erosion of stone around the cement mortar joints not deterioration of the mortar itself. The mortar patching which is excessive and unsightly has done little to improve the condition of the wall.

There are stone buttresses to both walls. Most of the buttresses to the northern wall are bonded in and are of the same period of construction. The buttresses to the west wall appear to be of two periods of construction: neither type is bonded into the older wall: both are laid in hard cement mortar: the northernmost rectangular form buttress appears to be of the same construction as the buttresses in the north wall.

All but the northernmost buttress in the western boundary wall are shown in the 1893 Survey plan. No buttresses are shown at the north walls at this time.

The date of the western boundary wall is not indicated clearly by documentary evidence available at present, although its construction, and particularly the mortar type is consistent with the technology of the original "Cliffbrook" mansion built in the 1860s. It is unlikely to be later than 1870s when cement was more readily available for mortar mixes and concrete. It is seen in an 1883 photograph.

However documentary evidence of Sloman's Survey Plan of 1893 and the 1883 photograph show that the north wall and buttresses to the west wall certainly precede the construction of the 1920s Cliffbrook.

The Garage

The Garage is an unimposing structure constructed from recycled sandstone in a hard cement mortar. Its walls are not bonded into the older west wall. Again, documentary evidence has

not revealed the precise time of construction. It might be expected that, if it was constructed at the same time as Cliffbrook, it would show some similarity in style and materials. It does not.

In the 1920s garages were still a relatively new and uncommon building type owing more to the tradition of stables. Following this tradition garages of this period were usually designed as secondary utilitarian structures which did not attempt to compete with the architecture of the primary residential building on the site. This garage conforms to the usual pattern, although there is no evidence to prove exactly when it was built. It can be confidently concluded that the garage structure dates from some time in the 1920s or early 1930s. The clues to this "time band" for its construction can be seen in the detailing of the northern windows and architraves and the underlying layer of kalsomine paint on the internal faces of the sandstone walls. .

Otherwise the building has no features of architectural, aesthetic or technical distinction. It has been modified many times in an ad hoc manner:

* the skillion roof construction is of no particular technical interest and

* the asbestos cement and caneite ceiling panels are in poor condition

* the southern louvre window is a later replacement of an earlier window leaving the original architraves.

* the internal single skin brick walls detract from the spatial quality and appearance of the interior.

* the roller shutter door is a recently added standard item.

* the former southern garage door has been infilled by a timber vertical board wall and door, now in very poor condition.

The petrol pump standing by the south east corner is of early vintage but apparently is now non-functional (McDonald McPhee 1993)

House:

Cliffbrook is a two storey liver brick building with sandstone detailing. It is designed in the Interwar Free Classical style. Its overall form and stylistic elements employed in the external design have antecedents in the Victorian Italianate style, although the liver brick work, the simple stone detailing, the terrazo floors and interior joinery are distinctly of the 1920s.

The construction of the house consists of a slate roof, copper gutters and downpipes, bracketed eaves, liver brick walls with sandstone quoins, sandstone window and door heads and sandstone sills, sandstone porticos and terraces in the north, east and west elevations and white painted timber double hung windows, front doors and French doors to the upper level terraces.

The interiors are relatively plain, having moulded plaster ceilings of Regency style with deep coved cornices only to the main living and reception rooms. The original door and window joinery is largely intact - these elements, like the deep timber skirting which survives in most rooms were dark stained maple. In some rooms original timber finishes have been covered by white paint (McDonald McPhee, 1993).

Current use: University Research and Administration building; UNSW Press publishers

Former use: Residence, School, Government building

History

Historical notes: Randwick History:

pre-1780s - local Aboriginal people in the area used the site for fishing and cultural activities - rock engravings, grinding grooves and middens remain in evidence.

1789 - Governor Philip referred to 'a long bay', which became known as Long Bay.

Aboriginal people are believed to have inhabited the Sydney region for at least 20,000 years (Turbet, 2001). The population of Aboriginal people between Palm Beach and Botany Bay in 1788 has been estimated to have been 1500. Those living south of Port Jackson to Botany Bay were the Cadigal people who spoke Dharug (Randwick Library webpage, 2003), while the local clan name of Maroubra people was "Muru-ora-dial" (City of Sydney webpage, 2003). By the mid nineteenth century the traditional owners of this land had typically either moved inland in search of food and shelter, or had died as the result of European disease or confrontation with British colonisers (Randwick Library webpage, 2003).

Colonial History:

One of the earliest land grants in this area was made in 1824 to Captain Francis Marsh, who received 12 acres bounded by the present Botany & High Streets, Alison & Belmore Roads. In 1839 William Newcombe acquired the land north-west of the present town hall in Avoca Street.

Randwick takes its name from the town of Randwick, Gloucestershire, England. The name was suggested by Simeon Pearce (1821-86) and his brother James. Simeon was born in the English Randwick and the brothers were responsible for the early development of both Randwick and its neighbour, Coogee. Simeon had come to the colony in 1841as a 21 year old surveyor. He built his Blenheim House on the 4 acres he bought from Marsh, and called his property "Randwick". The brothers bought and sold land profitably in the area and elsewhere. Simeon campaigned for construction of a road from the city to Coogee (achieved in 1853) and promoted the incorporation of the suburb. Pearce sought construction of a church modelled on the church of St. John in his birthplace. In 1857 the first St Jude's stood on the site of the present post office, at the corner of the present Alison Road and Avoca Street (Pollen, 1988, 217-8).

Randwick was...slow to progress. The village was isolated from Sydney by swamps and sandhills, and although a horse-bus was operated by a man named Grice from the late 1850s, the journey was more a test of nerves than a pleasure jaunt. Wind blew sand over the track, and the bus sometimes became bogged, so that passengers had to get out and push it free. From its early days Randwick had a divided society. The wealthy lived elegantly in large houses built when Pearce promoted Randwick and Coogee as a fashionable area. But the market gardens, orchards and piggeries that continued alongside the large estates were the lot of the working class. Even on the later estates that became racing empires, many jockeys and stablehands lived in huts or even under canvas. An even poorer group were the immigrants who existed on the periphery of Randwick in a place called Irishtown, in the area now known as The Spot, around the junction of St.Paul's Street and Perouse Road. Here families lived in makeshift houses, taking on the most menial tasks in their struggle to survive.

In 1858 when the NSW Government passed the Municipalities Act, enabling formation of municipal districts empowered to collect rates and borrow money to improve their suburb, Randwick was the first suburb to apply for the status of a municipality. It was approved in Februrary 1859, and its first Council was elected in March 1859.

Randwick had been the venue for sporting events, as well as duels and illegal sports, from the early days in the colony's history. Its first racecourse, the Sandy Racecourse or Old Sand Track, had been a hazardous track over hills and gullies since 1860. When a move was made in 1863 by John Tait, to establish Randwick Racecourse, Simeon Pearce was furious, expecially when he heard that Tait also intended to move into Byron Lodge. Tait's venture prospered, however and he became the first person in Australia to organise racing as a commercial sport. The racecourse made a big difference to the progress of Randwick. The horse-bus gave way to trams that linked the suburb to Sydney and civilisation. Randwick soon became a prosperous and lively place, and it still retains a busy residential, professional and commercial life.

Today, some of the houses have been replaced by home units. Many European migrants have made their homes in the area, along with students and workers at the nearby University of NSW and the Prince of Wales Hospital. (ibid, 218-9).

Cliffbrook:

The existing property Cliffbrook presently stands on part of an original estate named "Cliff-Brook" which comprised three parcels of crown land granted between 1845 - 1846 to Lewis Gordon, a State Government Surveyor.

The original land grant was for four acres 1 rood and was followed a year later by two further parcels, one 1 acre 3 roods 30 perches. The "Cliffbrook" estate, today stands on part of the latter parcel. Extensive changes to the boundaries' of the estate have occurred through time.

Lewis Gordon apparently erected a house on the estate, however, no record of it can be found today.

Between 1846 and 1856 the estate was sold in full to M.H. Lewis and subsequently to O.M. Lewis.

It was sold again in 1859 to John Thompson. By this time, the "Cliff-Brook" estate included a further parcel of land. The grounds were "over 14 acres then, and included the sheltered bay" - Gordon's Bay.

John Thompson was a local businessman who became Mayor of Randwick in 1873. Thompson is believed to have built the original "Cliff-Brook" mansion in the 1860's.

Designed in the Victorian Italianate style: "the main walls of the house were solid stone quarried from the site. the balustrades to the verandahs and parapet walls were brickwork rendered in cement. The whole of the external walls and cement mouldings were given a lime and cement wash to give the building a uniform colour. The large verandah on the upper floor was laid in Italian mosaic imported from Rome, the main entrance hall floor was tiled. There was a stone lodge at the main entrance gates. large stone stables with four horse stalls. coach house, harness room and man's quarters."

The stone buildings were located on the northern end of the estate where the current mansion stands.

The property was again sold in 1889 to George Hill. The later additions to the mansion, including the towers are believed to have been carried out by George Hill.

Hill was "a squatter and a horse-player and we may never know which sent him broke" but in 1899 he was declared bankrupt and the property was repossessed by the Bank of New South Wales in payment of debts owing to the Bank. The Bank employed a caretaker to look after the house and grounds which were apparently used as a poultry farm. After spending "some (Pounds)600 clearing up the house and garden, the caretaker was finally dismissed.

In 1905 Sir Denison Miller, then assistant to the general Manager of the Bank of New South Wales, was asked to occupy the mansion, rent free. Six years later, Miller now first Governor of the Commonwealth Bank, purchased the estate. "He paid (Pounds)8,000 for the land and house and later sold the foreshores of Thompson's Bay" to Randwick Municipal Council for (Pounds)3,000. The present "Cliffbrook" mansion was built in 1921, according to the Randwick Historical Society's documentation, designed by Architect John Kirkpatrick in the Federation Free Classical style. The original stone buildings were demolished to accommodate the residence.

John Kirkpatrick had established himself as a prominent architect in Sydney by the late 1880s. He was the architect for several important surviving buildings in the City including the Colonial Mutual Life Building, Martin Place (1894) the Commonwealth Bank, Pitt Street (1914). Although Thomas Rowe won the competition for the Sydney Hospital Buildings on Macquarie Street, Kirkpatrick was commissioned by the government to finish the project. The design of the operating Theatre and Chapel at the rear is attributed to Kirkpatrick. He was also architect for

grandstands at the Sydney Cricket Ground.

The authorship of the design remains unresolved. The lack of primary source references in secondary sources consulted suggests that a resolution of this question will require much more research. Uncorroborated oral evidence provided in an inquiry to the Australian Heritage Commission suggested a strong friendship between Sir Denison Miller and Kirkpatrick, perhaps connected with Mller's Governorship of the Commonwealth Bank from 1911 and Kirkpatrick's commission for the Pitt Street Bank Building completed in 1914.

Peter McCallum, who is currently a Principal of EA. and T.M. Scott, has advised that he recalls the firm's archives were destroyed in 1958. EA. Scott established his practice in 1888: after World War I the firm was E.A Scott, Green and Scott: and after 1949 the name EA and T.M. Scott was adopted. Peter McCallum is not able to connect "Cliffbrook" with the firm but did note that E.A Scott designed many houses in Lang Road, Centennial Park, often recognised because of his use of "plum-coloured" bricks.

The present evidence is circumstantial. "Cliffbrook" may have been designed by John Kirkpatrick, or E.A. Scott, or (a third possibility) by Kirkpatrick in association with E.A. Scott. This theory is based on the presumption that Kirkpatrick, late in his career, may have undertaken part of the commission and sought assistance from a younger architect - or may have, for reasons as yet unknown, been unable to complete the commission which was then taken over by E.A. Scott

The new house took on the name "Cliffbrook" and the earlier residence was subsequently known as "Gordon Court".

Miller died in 1923 and the property was sold to Mr Welki King before finally being sold to the Federal Government. During the Second World War the estate was occupied by the army to serve as a school of tropical Medicine.

After 1945, 'Gordon Court' and part of the estate was auctioned and sold to Mr Friedrich Schiller, a Hungarian, electrician who lived in, the mansion with his sister. 'Gordon Court' was eventually sold in 1977 and promptly demolished to make way for housing development.

The site as it stands today was purchased by the Commonwealth and housed the headquarters of the Australian Atomic Energy Commission (AAEC) from 1953 to 1981 (later renamed the Australian Nuclear Science and Technology Organisation) (ANSTO). The property purchase by the AAEC was not finalised until 1959, for the sum of $13,518.42.

The period between 1953 and 1981 saw the most far reaching changes to the site. Three substantial buildings were added to the site. A single storey brick residence. a single storey brick office building. and a 2-3 storey brick office building. Along with these were lesser buildings including two fibro buildings (which may date from the army's occupancy) and a small greenhouse.

The exact dates of construction of three brick buildings are not known. Max Dupain's photographs of the site dated 1965 show that both the L-shaped brick office building and the single storey brick office building existed at this time and presumably too the residence.

The photographs also show that in 1965 the present 2-3 storey L-shaped building comprised a single storey on its northern wing and 3 storeys on the eastern wing. This photograph also shows a mature Norfolk Island Pine in the space between "Cliffbrook" and the three storey wing.

It appears from ANSTO records that the single storey northern wing of the L shaped building existed prior to 1958 when architects Budden Nangle and Michael designed the three storey

eastern wing. The caretakers cottage was also designed in 1958. The Green house was erected in March 1959.

The eastern wing. although containing the equivalent number of storeys as today has been altered on its western and southern faces. The northern wing has had a further level added to it and has also had its facade significantly altered since 1965.

The alterations to the L-shaped building were carried out after 1969. The architects Edwards. Madigan. Torzillo and Partners. were employed to design and document the alterations and additions to this building. The contract documents prepared for this work are dated July 1969 and from this we can assume that the additions were carried out soon after 1969.

The most substantial alterations to "Cliffbrook" were in 1963 - 64. Plans by Budden Nangle and Michael dated 19th September 1963 show how the original kitchen G 12/G 13 was opened up by removal of the south wall, installation of a new lower ceiling and construction of the existing inquiry counter where a former hall closet existed. The kitchen stove recess had new shelves and doors fitted and the south door and partition wall in G 13 was constructed at this time.

A drawing dated 15th May 1964 shows removal of the north wall of the main upstairs bathroom and construction of a new W.C. compartment, new dog-leg stud partition wall (between U7 and U8) and a built in wardrobe. The alterations to the en-suite bathroom and re-opening of the door between U2 and U3 are also shown in the drawing.

In 1981 the Australian Atomic Energy Commission now known as the Australian Nuclear Science and Technology Organisation (ANSTO) moved their headquarters to Lucas Heights in 1981. (McDonald McPhee 1993)

During 1988 the Commonwealth Government sought to dispose of the property. As an item of State significance a Permanent Conservation Order was placed over the property on 28 October 1988 to ensure the future conservation and Management of the property. In the early 1990s ownership of the property was transferred to the University of New South Wales for research and administrative purposes. It was transferred to the State Heritage Register on 2 April 1999.

Historic themes

Australian theme (abbrev)	New South Wales theme	Local theme
4. Settlement-Building settlements, towns and cities	Land tenure-Activities and processes for identifying forms of ownership and occupancy of land and water, both Aboriginal and non-Aboriginal	Changing land uses - from rural to suburban-
4. Settlement-Building settlements, towns and cities	Towns, suburbs and villages-Activities associated with creating, planning and managing urban functions, landscapes and lifestyles in towns, suburbs and villages	20th century Suburban Developments-
4. Settlement-Building settlements, towns and cities	Towns, suburbs and villages-Activities associated with creating, planning and managing urban functions, landscapes and lifestyles in towns, suburbs and villages	Developing suburbia-
6. Educating-Educating	Education-Activities associated with teaching and learning by children and adults, formally and informally.	Tertiary education-
6. Educating-Educating	Education-Activities associated with teaching and learning by children and adults, formally and informally.	Public (tertiary) education-

Assessment of significance

SHR Criteria a) [Historical significance]	Cliffbrook has associations with significant historical figures. The first owner was Sir Denison Miller, the first governor of the Commonwealth Bank. 'Cliffbrook may also be found to be the work of John Kirkpatrick, a prominent 1880s Sydney architect responsible for major commissions such as the Colonial Mutual Life Building, grandstands at the Sydney Cricket Ground and the Commonwealth bank, Pitt Street. E.A.Scott may also have been involved in the building's creation.
SHR Criteria c) [Aesthetic significance]	The house of a high standard of architectural design. It is well proportioned, has an impressive scale and appearance befitting Sir Denison Miller's prestige and position in public life. The design in the Inter Wars Free Classical style contains anomalous applications of the Italianate style rare in the 1920s. It is the more significant for its rarity being such a late example containing elements of the Italianate style.
SHR Criteria e) [Research potential]	The building displays high standards of craftsmanship in the brickwork and joinery particularly, as excellent examples of the techniques employed and use of the materials in the 1920s.
	Despite its conservative architectural style, the building contains examples of contemporary construction techniques and use of materials in the use of reinforced concrete structures, the use of terrazzo floor finishes and the use of dark 'liver' bricks.
Assessment criteria:	Items are assessed against the **State Heritage Register (SHR) Criteria** to determine the level of significance. Refer to the Listings below for the level of statutory protection.

Recommended management:

Recommendations

Management Category	Description	Date Updated
Statutory Instrument	Nominate for State Heritage Register (SHR)	17 Mar 16
Statutory Instrument	Nominate for State Heritage Register (SHR)	17 Mar 16
Statutory Instrument	Nominate for State Heritage Register (SHR)	17 Mar 16
Statutory Instrument	Nominate for State Heritage Register (SHR)	17 Mar 16
Statutory Instrument	Nominate for State Heritage Register (SHR)	17 Mar 16

Procedures /Exemptions

Section of act	Description	Title	Comments	Action date
57(2)	Exemption to allow work	Heritage Act	See File For Schedule Order Under Section 57(2) to exempt the following activities from Section 57(1): (1) The maintenance of any building or item on the site where maintenance means the continuous protective care of existing material.	Oct 28 1988
57(2)	Exemption to allow work	Standard Exemptions	SCHEDULE OF STANDARD EXEMPTIONS HERITAGE ACT 1977 Notice of Order Under Section 57 (2) of the Heritage Act 1977 I, the Minister for Planning, pursuant to subsection 57(2) of the Heritage Act 1977, on the recommendation of the Heritage Council of New South Wales, do by this Order:	Sep 5 2008

			1. revoke the Schedule of Exemptions to subsection 57(1) of the Heritage Act made under subsection 57(2) and published in the Government Gazette on 22 February 2008; and 2. grant standard exemptions from subsection 57(1) of the Heritage Act 1977, described in the Schedule attached. FRANK SARTOR Minister for Planning Sydney, 11 July 2008 To view the schedule click on the Standard Exemptions for Works Requiring Heritage Council Approval link below.	

Standard exemptions for works requiring Heritage Council approval

Listings

Heritage Listing	Listing Title	Listing Number	Gazette Date	Gazette Number	Gazette Page
Heritage Act - State Heritage Register		00609	02 Apr 99	27	1546
Heritage Act - Permanent Conservation Order - former		00609	28 Oct 88	162	5652
Local Environmental Plan	Randwick Local Environmental Plan 1998 - Sch3		30 Apr 99		
National Trust of Australia register	Cliffbrook	7051			
Register of the National Estate	Cliffbrook	1770	28 Sep 82		

Study details

Title	Year	Number	Author	Inspected by	Guidelines used
National Trust Suburban Register	1986	7051	National Trust of Australia (NSW)		No

References, internet links & images

Type	Author	Year	Title	Internet Links
Written	McDonald McPhee Pty Ltd	1993	Conservation Plan for Cliffbrook	
Written	Pollon, F. & Healy, G.	1988	Randwick entry, in 'The Book of Sydney Suburbs'	
Written	Randwick City Council		Coogee Coastal Walk	

Note: internet links may be to web pages, documents or images.









(Click on thumbnail for full size image and image details)

Data source

The information for this entry comes from the following source:

Name:	Heritage Office
Database number:	5045282
File number:	EF14/5219; S91/396; HC 88 1647

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Appendix I WorkCover Documentation

SafeWork NSW
92-100 Donnison Street, Gosford, NSW, 2250
Locked Bag 2906, Lisarow, NSW, 2252 |
Customer Service Centre **13 10 50**
licensing@safework.nsw.gov.au | www.safework.nsw.gov.au

Our Ref: D16/604152
Your ref: Lindsey Blecher

10 June 2016

Attention: Lindsey Blecher
JBS & G Australia Pty Ltd
Level 1
50 Margaret St
Sydney NSW 2000

Dear Mr Blecher,

RE SITE: 45 Beach St Coogee NSW

I refer to your site search request received by SafeWork NSW on 1 June 2016 requesting information on Storage of Hazardous Chemicals for the above site.

A search of the records held by SafeWork NSW has not located any records pertaining to the above mentioned premises.

For further information or if you have any questions, please call our Customer Service Centre on 13 10 50 or email licensing@safework.nsw.gov.au

Yours sincerely,

Brent Jones
Customer Service Officer
Customer Service Centre - Operations
SafeWork NSW

Appendix J Borelogs

Borehole No: BH01

Project No: 51707
Client: Pells Sullivan Meynink
Project Name: UNSW Cliffbrook Campus PSI
Site Address: UNSW Cliffbrook Campus

Date: 31/05/2016
Contractor:
Drill Rig:
Method: Solid Flight Auger
Total Hole Depth (mbgs): 3.8

Eastings (MGA): -
Northings (MGA): -
Reference Level: Ground Surface
Elevation - Surface (m): -
Bore Diameter (mm): -

SUBSURFACE PROFILE			SAMPLE			
Depth	Graphic Log	Lithologic Description	Sample ID	PID (ppm)	Sample Type	Comments
0.0		Ground Surface				
		Fill (FL) Pavers	BH01_0.05-0.15	-	D	No odours, stains or ACM observed
		Fill (FL) Roadbase - igneous gravel, dark grey, moist, loose.	BH01_0.2-0.3	-	D	
		Sand (SP) Sand, dark grey, homogeneous, coarse, loose, moist.	BH01_0.4-0.5	-	D	
						No odours, stains or ACM observed
1.0			BH01_0.9-1.0	-	D	
		Sand (SP) Sand, light grey, homogeneous, coarse, medium dense, moist.				No odours, stains or ACM observed
2.0		**Clayey Sand (SC)** Clayey SAND, orange - brown, homogeneous, loose to medium dense, moist.				No odours, stains or ACM observed
3.0		**Clayey Sand (SC)** Clayey SAND, orange - brown, red mottles, loose to medium dense, moist.				No odours, stains or ACM observed
4.0		**End of hole @ 3.80 mbgs** Continued by Geotech - not logged				

Drilling Method	*Sample Type*	*Reference Level*	*Log Details*
HA - Hand Auger	*U - Undisturbed tube sample*	*AHD - Australian Height Datum*	*Logged By:* Lindsey Blecher
SFA - Solid Flight Auger	*D - Disturbed sample*	*BGS - Below Ground Surface*	*Project Manager:* Matthew Bennett
HFA - Hollow Flight Auger	*CS - Core sample*		
PT - Push Tube			
AH - Air Hammer			

NOTE: This bore log is for environmental assessment purposes only and is not intended to provide geotechnical information

Borehole No: BH02

Project No: 51707
Client: Pells Sullivan Meynink
Project Name: UNSW Cliffbrook Campus PSI
Site Address: UNSW Cliffbrook Campus

Date: 31/05/2016
Contractor:
Drill Rig:
Method: Solid Flight Auger
Total Hole Depth (mbgs): 1.5

Eastings (MGA): -
Northings (MGA): -
Reference Level: Ground Surface
Elevation - Surface (m): -
Bore Diameter (mm): -

SUBSURFACE PROFILE			SAMPLE			
Depth	Graphic Log	Lithologic Description	Sample ID	PID (ppm)	Sample Type	Comments
0.0		Ground Surface				
		Fill (FL) Roadbase.	BH02_0.0-0.1	-	D	No odours, stains or ACM observed
		Fill (FL) Clayey SAND, heterogeneous, orange - brown, coarse, damp, inclusions of sandstone cobbles and igneous gravels.	BH02_0.2-0.3	-	D	
			BH02_0.4-0.5	-	D	No odours, stains or ACM observed
		Sand (SP) Sand, grey - brown, homogeneous, coarse, damp, inclusions of sandstone and gravels.				
1.0			BH02_0.9-1.0	-	D	No odours, stains or ACM observed
		Sand (SP) Sand, light grey, homogeneous, coarse, loose, damp.				No odours, stains or ACM observed
		End of hole @ 1.50 mbgs Continued by Geotech - not logged				
2.0						
3.0						
4.0						

Drilling Method	*Sample Type*	*Reference Level*	*Log Details*
HA - Hand Auger	*U - Undisturbed tube sample*	*AHD - Australian Height Datum*	*Logged By:* Lindsey Blecher
SFA - Solid Flight Auger	*D - Disturbed sample*	*BGS - Below Ground Surface*	*Project Manager:* Matthew Bennett
HFA - Hollow Flight Auger	*CS - Core sample*		
PT - Push Tube			
AH - Air Hammer			

NOTE: This bore log is for environmental assessment purposes only and is not intended to provide geotechnical information

Borehole No: BH03

Project No: 51707
Client: Pells Sullivan Meynink
Project Name: UNSW Cliffbrook Campus PSI
Site Address: UNSW Cliffbrook Campus

Date: 31/05/2016
Contractor:
Drill Rig:
Method: Solid Flight Auger
Total Hole Depth (mbgs): 1.1

Eastings (MGA): -
Northings (MGA): -
Reference Level: Ground Surface
Elevation - Surface (m): -
Bore Diameter (mm): -

SUBSURFACE PROFILE			SAMPLE			
Depth	Graphic Log	Lithologic Description	Sample ID	PID (ppm)	Sample Type	Comments
0.0		Ground Surface				
		Fill (FL) Ashphalt	BH03_0.05-0.15	-	D	No odours, stains or ACM observed
		Fill (FL) Roadbase / coarse ashphalt gravels, grey - black, dense.	BH03_0.2-0.3	-	D	No odours, stains or ACM observed
		Fill (FL) Sand, heterogeneous, dark grey, coarse, loose, damp, inclusions of igeneous gravels and sandstone gravels.	BH03_0.4-0.5	-	D	No odours, stains or ACM observed
		Sand (SP) Sand, light grey, homogeneous, coarse, loose, damp.				No odours, stains or ACM observed
		Clayey Sand (SC) Clayey sand, orange - brown, coarse, medium dense, damp - moist.	BH03_0.9-1.0	-	D	No odours, stains or ACM observed
1.0		**End of hole @ 1.10 mbgs** Continued by Geotech - not logged				
2.0						
3.0						
4.0						

Drilling Method	*Sample Type*	*Reference Level*	*Log Details*
HA - Hand Auger	*U - Undisturbed tube sample*	*AHD - Australian Height Datum*	*Logged By:* Lindsey Blecher
SFA - Solid Flight Auger	*D - Disturbed sample*	*BGS - Below Ground Surface*	*Project Manager:* Matthew Bennett
HFA - Hollow Flight Auger	*CS - Core sample*		
PT - Push Tube			
AH - Air Hammer			

NOTE: This bore log is for environmental assessment purposes only and is not intended to provide geotechnical information

JBS&G	**Borehole No: HA01**	**Project No:** 51707 **Client:** Pells Sullivan Meynink **Project Name:** UNSW Cliffbrook Campus PSI **Site Address:** UNSW Cliffbrook Campus

Date: 31/05/2016
Contractor:
Drill Rig:
Method: Hand Auger
Total Hole Depth (mbgs): 0.5

Eastings (MGA): -
Northings (MGA): -
Reference Level: Ground Surface
Elevation - Surface (m): -
Bore Diameter (mm): -

SUBSURFACE PROFILE			SAMPLE			
Depth	Graphic Log	Lithologic Description	Sample ID	PID (ppm)	Sample Type	Comments
0.0		Ground Surface				
		Fill (FL) Sand, heterogeneous, grey - brown, coarse, medium dense, damp, inclusions of sandstone gravels and trace plastic.	HA01_0.0-0.1	-	D	No odours, stains or ACM observed
		Sand (SP) Sand, homogeneous, grey, coarse, medium dense, damp.	HA01_0.2-0.3	-	D	No odours, stains or ACM observed
		Refusal @ 0.5mbgs Refusal on sandstone bedrock				
1.0						
2.0						
3.0						
4.0						

Drilling Method	*Sample Type*	*Reference Level*	*Log Details*
HA - Hand Auger	*U - Undisturbed tube sample*	*AHD - Australian Height Datum*	*Logged By:* Lindsey Blecher
SFA - Solid Flight Auger	*D - Disturbed sample*	*BGS - Below Ground Surface*	*Project Manager:* Matthew Bennett
HFA - Hollow Flight Auger	*CS - Core sample*		
PT - Push Tube			
AH - Air Hammer			

NOTE: This bore log is for environmental assessment purposes only and is not intended to provide geotechnical information

Borehole No: HA02

Project No: 51707
Client: Pells Sullivan Meynink
Project Name: UNSW Cliffbrook Campus PSI
Site Address: UNSW Cliffbrook Campus

Date: 31/05/2016
Contractor:
Drill Rig:
Method: Hand Auger
Total Hole Depth (mbgs): 1.0

Eastings (MGA): -
Northings (MGA): -
Reference Level: Ground Surface
Elevation - Surface (m): -
Bore Diameter (mm): -

SUBSURFACE PROFILE			SAMPLE			
Depth	Graphic Log	Lithologic Description	Sample ID	PID (ppm)	Sample Type	Comments
0.0		Ground Surface				
		Fill (FL) Sand, heterogeneous, grey, coarse, medium dense, damp, inclusions of tile, sandstone cobbles and igneous gravels.	HA02_0.0-0.1	-	D	QC01 and QC01/A collected Geofabric
			HA02_0.2-0.3	-	D	No odours, stains or ACM observed
			HA02_0.4-0.5	-	D	
		Sand (SP) Sand, homgeneous, light grey, coarse, medium dense, moist, inclusions of roots.				Geofabric No odours, stains or ACM observed
1.0			HA02_0.9-1.0	-	D	
		End of hole @ 1.0mbgs Natural				
2.0						
3.0						
4.0						

Drilling Method	*Sample Type*	*Reference Level*	*Log Details*
HA - Hand Auger	*U - Undisturbed tube sample*	*AHD - Australian Height Datum*	*Logged By:* Lindsey Blecher
SFA - Solid Flight Auger	*D - Disturbed sample*	*BGS - Below Ground Surface*	*Project Manager:* Matthew Bennett
HFA - Hollow Flight Auger	*CS - Core sample*		
PT - Push Tube			
AH - Air Hammer			

NOTE: This bore log is for environmental assessment purposes only and is not intended to provide geotechnical information

Borehole No: HA03

Project No: 51707
Client: Pells Sullivan Meynink
Project Name: UNSW Cliffbrook Campus PSI
Site Address: UNSW Cliffbrook Campus

Date: 31/05/2016
Contractor:
Drill Rig:
Method: Hand Auger
Total Hole Depth (mbgs): 0.6

Eastings (MGA): -
Northings (MGA): -
Reference Level: Ground Surface
Elevation - Surface (m): -
Bore Diameter (mm): -

SUBSURFACE PROFILE			SAMPLE			
Depth	Graphic Log	Lithologic Description	Sample ID	PID (ppm)	Sample Type	Comments
0.0		Ground Surface				
		Fill (FL) Sand, heterogeneous, dark grey, coarse, loose, damp, inclusions of clayey sand (orange - brown), sandstone cobbles, igneous gravels and roots. Service encountered at 0.35 (casted pipe).	HA03_0.0-0.1	-	D	No odours, stains or ACM observed
			HA03_0.2-0.3	-	D	
		Clayey Sand (SC) Clayey sand, homogeneous, orange - brown, coarse, medium dense.	HA03_0.4-0.5	-	D	No odours, stains or ACM observed
		End of hole @ 0.6mbgs Natural				
1.0						
2.0						
3.0						
4.0						

Drilling Method	*Sample Type*	*Reference Level*	*Log Details*
HA - Hand Auger	*U - Undisturbed tube sample*	*AHD - Australian Height Datum*	*Logged By:* Lindsey Blecher
SFA - Solid Flight Auger	*D - Disturbed sample*	*BGS - Below Ground Surface*	*Project Manager:* Matthew Bennett
HFA - Hollow Flight Auger	*CS - Core sample*		
PT - Push Tube			
AH - Air Hammer			

NOTE: This bore log is for environmental assessment purposes only and is not intended to provide geotechnical information

Borehole No: HA04

Project No: 51707
Client: Pells Sullivan Meynink
Project Name: UNSW Cliffbrook Campus PSI
Site Address: UNSW Cliffbrook Campus

Date: 31/05/2016
Contractor:
Drill Rig:
Method: Hand Auger
Total Hole Depth (mbgs): 0.65

Eastings (MGA): -
Northings (MGA): -
Reference Level: Ground Surface
Elevation - Surface (m): -
Bore Diameter (mm): -

SUBSURFACE PROFILE			SAMPLE			
Depth	Graphic Log	Lithologic Description	Sample ID	PID (ppm)	Sample Type	Comments
0.0		Ground Surface				
		Fill (FL) Gravelly sand, heterogeneous, grey, fine to medium grained, loose, inclusions of gravels, roots.	HA04_0.0-0.1	-	D	No odours, stains or ACM observed
		Fill (FL) Gravelly sand, heterogeneous, grey, fine to medium grained, loose, inclusions of gravels, roots and rusted tin (paint or similar)	HA04_0.2-0.3	-	D	
		Fill (FL) Gravelly sand, heterogeneous, grey, fine to medium grained, loose, inclusions of gravels, roots.	HA04_0.4-0.5	-	D	No odours, stains or ACM observed
		Clayey Sand (SC) Clayey sand, homogeneous, orange - brown, medium dense, moist.				
1.0		**End of hole @ 0.65mbgs** Natural				
2.0						
3.0						
4.0						

Drilling Method	*Sample Type*	*Reference Level*	*Log Details*
HA - Hand Auger	*U - Undisturbed tube sample*	*AHD - Australian Height Datum*	*Logged By:* Lindsey Blecher
SFA - Solid Flight Auger	*D - Disturbed sample*	*BGS - Below Ground Surface*	*Project Manager:* Matthew Bennett
HFA - Hollow Flight Auger	*CS - Core sample*		
PT - Push Tube			
AH - Air Hammer			

NOTE: This bore log is for environmental assessment purposes only and is not intended to provide geotechnical information

Appendix K Laboratory Documentation

eurofins | mgt

ABN – 50 005 085 521 e.mail : EnviroSales@eurofins.com web : www.eurofins.com.au

Melbourne
3-5 Kingston Town Close
Oakleigh Vic 3166
Phone : +61 3 8564 5000
NATA # 1261
Site # 1254 & 14271

Sydney
Unit F3, Building F
16 Mars Road
Lane Cove West NSW 2066
Phone : +61 2 9900 8400
NATA # 1261 Site # 18217

Brisbane
1/21 Smallwood Place
Murarrie QLD 4172
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Sample Receipt Advice

Company name:	**JBS & G Australia (NSW & WA) P/L**
Contact name:	Lindsey Blecher
Project name:	UNSW CLIFFBROOK
Project ID:	51707
COC number:	Not provided
Turn around time:	5 Day
Date/Time received:	May 31, 2016 5:00 PM
Eurofins | mgt reference:	**502667**

Sample information

☑ A detailed list of analytes logged into our LIMS, is included in the attached summary table.

☑ Sample Temperature of a random sample selected from the batch as recorded by Eurofins | mgt Sample Receipt : 1 degrees Celsius.

☑ All samples have been received as described on the above COC.

☑ COC has been completed correctly.

☑ Attempt to chill was evident.

☑ Appropriately preserved sample containers have been used.

☑ All samples were received in good condition.

☑ Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.

☑ Appropriate sample containers have been used.

☑ Sample containers for volatile analysis received with zero headspace.

☒ Some samples have been subcontracted.

N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Nibha Vaidya on Phone : +61 (2) 9900 8400 or by e.mail: NibhaVaidya@eurofins.com

Results will be delivered electronically via e.mail to Lindsey Blecher - LBlecher@jbsg.com.au.

eurofins | mgt

Certificate of Analysis

JBS & G Australia (NSW & WA) P/L
Level 1, 50 Margaret St
Sydney
NSW 2000

NATA Accredited
Accreditation Number 1261
Site Number 18217

Accredited for compliance with ISO/IEC 17025. The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

Attention: **Lindsey Blecher**

Report **502667-S**
Project name UNSW CLIFFBROOK
Project ID 51707
Received Date May 31, 2016

Client Sample ID			**BH01 0.40-0.50**	**BH02 0.20-0.30**	**BH03 0.40-0.50**	**BH03 0.90-1.0**
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**S16-Jn00241**	**S16-Jn00242**	**S16-Jn00243**	**S16-Jn00244**
Date Sampled			**May 31, 2016**	**May 31, 2016**	**May 31, 2016**	**May 31, 2016**
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	-
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	-
TRH C15-C28	50	mg/kg	< 50	< 50	170	-
TRH C29-C36	50	mg/kg	< 50	< 50	77	-
TRH C10-36 (Total)	50	mg/kg	< 50	< 50	247	-
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	-
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	-
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	-
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	-
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	-
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	-
4-Bromofluorobenzene (surr.)	1	%	96	96	97	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	-
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	-
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50	-
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	5.4	-
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	5.4	-
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	5.4	-
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Anthracene	0.5	mg/kg	< 0.5	< 0.5	1.1	-
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	3.1	-
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	3.7	-
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	2.7	-
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	2.3	-
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	2.6	-
Chrysene	0.5	mg/kg	< 0.5	< 0.5	3.1	-
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	0.6	-
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	7.6	-
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	1.6	-

Client Sample ID			BH01 0.40-0.50	BH02 0.20-0.30	BH03 0.40-0.50	BH03 0.90-1.0
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**S16-Jn00241**	**S16-Jn00242**	**S16-Jn00243**	**S16-Jn00244**
Date Sampled			**May 31, 2016**	**May 31, 2016**	**May 31, 2016**	**May 31, 2016**
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	5.8	-
Pyrene	0.5	mg/kg	< 0.5	< 0.5	7.9	-
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	42.1	-
2-Fluorobiphenyl (surr.)	1	%	80	87	86	-
p-Terphenyl-d14 (surr.)	1	%	90	96	93	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	-
TRH >C16-C34	100	mg/kg	< 100	< 100	250	-
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	-
% Clay	1	%	-	-	-	7.5
Conductivity (1:5 aqueous extract at 25°C)	10	uS/cm	-	-	-	25
pH (1:5 Aqueous extract)	0.1	pH Units	-	-	-	7.1
% Moisture	1	%	6.6	5.7	6.1	12
Heavy Metals						
Arsenic	2	mg/kg	< 2	< 2	< 2	-
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	-
Chromium	5	mg/kg	< 5	8.1	5.8	-
Copper	5	mg/kg	5.8	25	< 5	-
Iron	5	mg/kg	-	-	-	5600
Lead	5	mg/kg	43	6.1	18	-
Mercury	0.05	mg/kg	0.08	< 0.05	< 0.05	-
Nickel	5	mg/kg	< 5	21	< 5	-
Zinc	5	mg/kg	100	25	28	-
Ion Exchange Properties						
Cation Exchange Capacity	0.05	meq/100g	-	-	-	4.4

Client Sample ID			HA01 0.00-0.10	HA02 0.00-0.10	QC01	HA03 0.0-0.10
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**S16-Jn00245**	**S16-Jn00246**	**S16-Jn00247**	**S16-Jn00248**
Date Sampled			**May 31, 2016**	**May 31, 2016**	**May 31, 2016**	**May 31, 2016**
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	< 50	< 50	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	93	92	95	93

Client Sample ID			HA01 0.00-0.10	HA02 0.00-0.10	QC01	HA03 0.0-0.10
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**S16-Jn00245**	**S16-Jn00246**	**S16-Jn00247**	**S16-Jn00248**
Date Sampled			**May 31, 2016**	**May 31, 2016**	**May 31, 2016**	**May 31, 2016**
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50	< 50
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	85	87	87	89
p-Terphenyl-d14 (surr.)	1	%	90	94	94	96
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
4.4'-DDD	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4.4'-DDE	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4.4'-DDT	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
a-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Aldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
b-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
d-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Dieldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan I	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin aldehyde	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
g-BHC (Lindane)	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor epoxide	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Methoxychlor	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Toxaphene	1	mg/kg	< 1	< 1	< 1	< 1

Client Sample ID Sample Matrix Eurofins | mgt Sample No. Date Sampled Test/Reference	LOR	Unit	HA01 0.00-0.10 Soil S16-Jn00245 May 31, 2016	HA02 0.00-0.10 Soil S16-Jn00246 May 31, 2016	QC01 Soil S16-Jn00247 May 31, 2016	HA03 0.0-0.10 Soil S16-Jn00248 May 31, 2016
Organochlorine Pesticides						
Dibutylchlorendate (surr.)	1	%	71	71	79	71
Tetrachloro-m-xylene (surr.)	1	%	103	100	107	107
Polychlorinated Biphenyls						
Aroclor-1016	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor-1221	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1232	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor-1242	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor-1248	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor-1254	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor-1260	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PCB*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibutylchlorendate (surr.)	1	%	71	71	79	71
Tetrachloro-m-xylene (surr.)	1	%	103	100	107	107
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
% Clay	1	%	-	-	-	2.5
Conductivity (1:5 aqueous extract at 25°C)	10	uS/cm	-	-	-	37
pH (1:5 Aqueous extract)	0.1	pH Units	-	-	-	6.4
% Moisture	1	%	14	8.5	13	13
Heavy Metals						
Arsenic	2	mg/kg	2.5	3.5	3.5	2.1
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	< 5	< 5	< 5	< 5
Copper	5	mg/kg	8.9	15	21	12
Iron	5	mg/kg	-	-	-	3400
Lead	5	mg/kg	57	89	86	41
Mercury	0.05	mg/kg	0.05	0.09	0.09	< 0.05
Nickel	5	mg/kg	< 5	< 5	< 5	< 5
Zinc	5	mg/kg	70	110	99	160
Ion Exchange Properties						
Cation Exchange Capacity	0.05	meq/100g	-	-	-	8.1

Client Sample ID Sample Matrix Eurofins | mgt Sample No. Date Sampled Test/Reference	LOR	Unit	HA04 0.20-0.30 Soil S16-Jn00249 May 31, 2016
Total Recoverable Hydrocarbons - 1999 NEPM Fractions			
TRH C6-C9	20	mg/kg	< 20
TRH C10-C14	20	mg/kg	< 20
TRH C15-C28	50	mg/kg	< 50
TRH C29-C36	50	mg/kg	< 50
TRH C10-36 (Total)	50	mg/kg	< 50

Client Sample ID			HA04 0.20-0.30
Sample Matrix			Soil
Eurofins | mgt Sample No.			S16-Jn00249
Date Sampled			May 31, 2016
Test/Reference	LOR	Unit	
BTEX			
Benzene	0.1	mg/kg	< 0.1
Toluene	0.1	mg/kg	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2
o-Xylene	0.1	mg/kg	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3
4-Bromofluorobenzene (surr.)	1	%	97
Total Recoverable Hydrocarbons - 2013 NEPM Fractions			
Naphthalene[N02]	0.5	mg/kg	< 0.5
TRH C6-C10	20	mg/kg	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50
Polycyclic Aromatic Hydrocarbons			
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2
Acenaphthene	0.5	mg/kg	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5
Anthracene	0.5	mg/kg	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5
Chrysene	0.5	mg/kg	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5
Fluorene	0.5	mg/kg	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5
Naphthalene	0.5	mg/kg	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5
Pyrene	0.5	mg/kg	< 0.5
Total PAH*	0.5	mg/kg	< 0.5
2-Fluorobiphenyl (surr.)	1	%	115
p-Terphenyl-d14 (surr.)	1	%	126
Organochlorine Pesticides			
Chlordanes - Total	0.1	mg/kg	0.2
4.4'-DDD	0.05	mg/kg	< 0.05
4.4'-DDE	0.05	mg/kg	< 0.05
4.4'-DDT	0.05	mg/kg	< 0.05
a-BHC	0.05	mg/kg	< 0.05
Aldrin	0.05	mg/kg	0.09
b-BHC	0.05	mg/kg	< 0.05
d-BHC	0.05	mg/kg	< 0.05
Dieldrin	0.05	mg/kg	0.27
Endosulfan I	0.05	mg/kg	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05
Endrin	0.05	mg/kg	< 0.05

Client Sample ID			HA04 0.20-0.30
Sample Matrix			**Soil**
Eurofins | mgt Sample No.			**S16-Jn00249**
Date Sampled			**May 31, 2016**
Test/Reference	LOR	Unit	
Organochlorine Pesticides			
Endrin aldehyde	0.05	mg/kg	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05
g-BHC (Lindane)	0.05	mg/kg	< 0.05
Heptachlor	0.05	mg/kg	< 0.05
Heptachlor epoxide	0.05	mg/kg	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05
Methoxychlor	0.2	mg/kg	< 0.2
Toxaphene	1	mg/kg	< 1
Dibutylchlorendate (surr.)	1	%	68
Tetrachloro-m-xylene (surr.)	1	%	100
Polychlorinated Biphenyls			
Aroclor-1016	0.5	mg/kg	< 0.5
Aroclor-1221	0.1	mg/kg	< 0.1
Aroclor-1232	0.5	mg/kg	< 0.5
Aroclor-1242	0.5	mg/kg	< 0.5
Aroclor-1248	0.5	mg/kg	< 0.5
Aroclor-1254	0.5	mg/kg	< 0.5
Aroclor-1260	0.5	mg/kg	< 0.5
Total PCB*	0.5	mg/kg	< 0.5
Dibutylchlorendate (surr.)	1	%	68
Tetrachloro-m-xylene (surr.)	1	%	100
Total Recoverable Hydrocarbons - 2013 NEPM Fractions			
TRH >C10-C16	50	mg/kg	< 50
TRH >C16-C34	100	mg/kg	< 100
TRH >C34-C40	100	mg/kg	< 100
% Moisture	1	%	3.4
Heavy Metals			
Arsenic	2	mg/kg	5.3
Cadmium	0.4	mg/kg	< 0.4
Chromium	5	mg/kg	< 5
Copper	5	mg/kg	7.6
Lead	5	mg/kg	31
Mercury	0.05	mg/kg	< 0.05
Nickel	5	mg/kg	< 5
Zinc	5	mg/kg	71

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Sydney	Jun 02, 2016	14 Day
- Method: TRH C6-C36 - LTM-ORG-2010			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	Jun 01, 2016	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	Jun 02, 2016	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
BTEX	Sydney	Jun 01, 2016	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Polycyclic Aromatic Hydrocarbons	Sydney	Jun 02, 2016	14 Day
- Method: E007 Polyaromatic Hydrocarbons (PAH)			
Organochlorine Pesticides	Sydney	Jun 02, 2016	14 Day
- Method: E013 Organochlorine Pesticides (OC)			
Polychlorinated Biphenyls	Sydney	Jun 02, 2016	28 Day
- Method: E013 Polychlorinated Biphenyls (PCB)			
% Clay	Brisbane	Jun 03, 2016	6 Day
- Method: LTM-GEN-7040			
pH (1:5 Aqueous extract)	Sydney	Jun 07, 2016	7 Day
- Method: LTM-GEN-7090 pH in soil by ISE			
Metals M8	Sydney	Jun 01, 2016	28 Day
- Method: LTM-MET-3040_R0 TOTAL AND DISSOLVED METALS AND MERCURY IN WATERS BY ICP-MS			
Heavy Metals	Sydney	Jun 01, 2016	180 Day
- Method: LTM-MET-3030 by ICP-OES (hydride ICP-OES for Mercury)			
Conductivity (1:5 aqueous extract at 25°C)	Melbourne	Jun 02, 2016	7 Day
- Method: LTM-INO-4030			
Ion Exchange Properties	Melbourne	Jun 06, 2016	
% Moisture	Sydney	Jun 01, 2016	14 Day
- Method: LTM-GEN-7080 Moisture			

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Brisbane
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Murarrie QLD 4172
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Company Name: JBS & G Australia (NSW & WA) P/L
Address: Level 1, 50 Margaret St
Sydney
NSW 2000

Project Name: UNSW CLIFFBROOK
Project ID: 51707

Order No.:
Report #: 502667
Phone: 02 8245 0300
Fax:

Received: May 31, 2016 5:00 PM
Due: Jun 7, 2016
Priority: 5 Day
Contact Name: Lindsey Blecher

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						% Clay	Asbestos - WA guidelines	HOLD	Iron	pH (1:5 Aqueous extract)	Polycyclic Aromatic Hydrocarbons	Polycyclic Aromatic Hydrocarbons	Organochlorine Pesticides	Organochlorine Pesticides	Polychlorinated Biphenyls	Polychlorinated Biphenyls	Metals M8	Metals M8 filtered	BTEX	Moisture Set	Cation Exchange Capacity	Total Recoverable Hydrocarbons	Total Recoverable Hydrocarbons
Melbourne Laboratory - NATA Site # 1254 & 14271											X		X		X			X			X	X	X
Sydney Laboratory - NATA Site # 18217							X	X	X	X		X		X		X	X		X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794						X																	
External Laboratory																							
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**																		
1	BH01 0.40-0.50	May 31, 2016		Soil	S16-Jn00241		X					X					X		X	X			X
2	BH02 0.20-0.30	May 31, 2016		Soil	S16-Jn00242		X					X					X		X	X			X
3	BH03 0.40-0.50	May 31, 2016		Soil	S16-Jn00243		X					X					X		X	X			X
4	BH03 0.90-1.0	May 31, 2016		Soil	S16-Jn00244	X			X	X										X	X		
5	HA01 0.00-0.10	May 31, 2016		Soil	S16-Jn00245		X					X		X		X	X		X	X			X
6	HA02 0.00-0.10	May 31, 2016		Soil	S16-Jn00246		X					X		X		X	X		X	X			X

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Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Company Name: JBS & G Australia (NSW & WA) P/L
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Project Name: UNSW CLIFFBROOK
Project ID: 51707

Order No.:
Report #: 502667
Phone: 02 8245 0300
Fax:

Received: May 31, 2016 5:00 PM
Due: Jun 7, 2016
Priority: 5 Day
Contact Name: Lindsey Blecher

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						% Clay	Asbestos - WA guidelines	HOLD	Iron	pH (1:5 Aqueous extract)	Polycyclic Aromatic Hydrocarbons	Polycyclic Aromatic Hydrocarbons	Organochlorine Pesticides	Organochlorine Pesticides	Polychlorinated Biphenyls	Polychlorinated Biphenyls	Metals M8	Metals M8 filtered	BTEX	Moisture Set	Cation Exchange Capacity	Total Recoverable Hydrocarbons	Total Recoverable Hydrocarbons
Melbourne Laboratory - NATA Site # 1254 & 14271											X		X		X			X			X	X	X
Sydney Laboratory - NATA Site # 18217							X	X	X	X		X		X		X	X		X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794						X																	
External Laboratory																							
7	QC01	May 31, 2016		Soil	S16-Jn00247		X					X		X		X	X		X	X			X
8	HA03 0.0-0.10	May 31, 2016		Soil	S16-Jn00248	X	X		X	X		X		X		X	X		X	X	X		X
9	HA04 0.20-0.30	May 31, 2016		Soil	S16-Jn00249		X					X		X		X	X		X	X			X
10	RB	May 31, 2016		Water	S16-Jn00250						X		X		X			X	X			X	
11	TS	May 31, 2016		Water	S16-Jn00251														X				
12	TB	May 31, 2016		Water	S16-Jn00252														X				
13	BH01 0.05-0.15	May 31, 2016		Soil	S16-Jn00253			X															
14	BH01 0.20-0.30	May 31, 2016		Soil	S16-Jn00254			X															
15	BH01 0.90-1.0	May 31, 2016		Soil	S16-Jn00255			X															

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Priority: 5 Day
Contact Name: Lindsey Blecher

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						% Clay	Asbestos - WA guidelines	HOLD	Iron	pH (1:5 Aqueous extract)	Polycyclic Aromatic Hydrocarbons	Polycyclic Aromatic Hydrocarbons	Organochlorine Pesticides	Organochlorine Pesticides	Polychlorinated Biphenyls	Polychlorinated Biphenyls	Metals M8	Metals M8 filtered	BTEX	Moisture Set	Cation Exchange Capacity	Total Recoverable Hydrocarbons	Total Recoverable Hydrocarbons
Melbourne Laboratory - NATA Site # 1254 & 14271											X		X		X			X			X	X	X
Sydney Laboratory - NATA Site # 18217							X	X	X	X		X		X		X	X		X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794						X																	
External Laboratory																							
16	BH02 0.00-0.1	May 31, 2016		Soil	S16-Jn00256			X															
17	BH02 0.40-0.5	May 31, 2016		Soil	S16-Jn00257			X															
18	BH02 0.90-1.0	May 31, 2016		Soil	S16-Jn00258			X															
19	BH03 0.03-0.13	May 31, 2016		Soil	S16-Jn00259			X															
20	BH03 0.2-0.3	May 31, 2016		Soil	S16-Jn00260			X															
21	HA01 0.2-0.3	May 31, 2016		Soil	S16-Jn00303			X															
22	HA02 0.2-0.3	May 31, 2016		Soil	S16-Jn00304			X															
23	HA02 0.4-0.5	May 31, 2016		Soil	S16-Jn00305			X															
24	HA02 0.9-1.0	May 31, 2016		Soil	S16-Jn00306			X															
25	HA03 0.2-0.3	May 31, 2016		Soil	S16-Jn00307			X															
26	HA03 0.4-0.5	May 31, 2016		Soil	S16-Jn00308			X															

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Project ID: 51707

Order No.:
Report #: 502667
Phone: 02 8245 0300
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Received: May 31, 2016 5:00 PM
Due: Jun 7, 2016
Priority: 5 Day
Contact Name: Lindsey Blecher

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						% Clay	Asbestos - WA guidelines	HOLD	Iron	pH (1:5 Aqueous extract)	Polycyclic Aromatic Hydrocarbons	Polycyclic Aromatic Hydrocarbons	Organochlorine Pesticides	Organochlorine Pesticides	Polychlorinated Biphenyls	Polychlorinated Biphenyls	Metals M8	Metals M8 filtered	BTEX	Moisture Set	Cation Exchange Capacity	Total Recoverable Hydrocarbons	Total Recoverable Hydrocarbons
Melbourne Laboratory - NATA Site # 1254 & 14271											X		X		X			X			X	X	X
Sydney Laboratory - NATA Site # 18217							X	X	X	X		X		X		X	X		X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794						X																	
External Laboratory																							
27	HA04 0.0-1.0	May 31, 2016		Soil	S16-Jn00309			X															
28	HA04 0.4-0.5	May 31, 2016		Soil	S16-Jn00310			X															
Test Counts						2	8	16	2	2	9	9	6	6	6	6	8	1	11	9	2	9	9

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs 20-130%

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling.Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/kg	< 20			20	Pass	
TRH C10-C14	mg/kg	< 20			20	Pass	
TRH C15-C28	mg/kg	< 50			50	Pass	
TRH C29-C36	mg/kg	< 50			50	Pass	
Method Blank							
BTEX							
Benzene	mg/kg	< 0.1			0.1	Pass	
Toluene	mg/kg	< 0.1			0.1	Pass	
Ethylbenzene	mg/kg	< 0.1			0.1	Pass	
m&p-Xylenes	mg/kg	< 0.2			0.2	Pass	
o-Xylene	mg/kg	< 0.1			0.1	Pass	
Xylenes - Total	mg/kg	< 0.3			0.3	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/kg	< 0.5			0.5	Pass	
TRH C6-C10	mg/kg	< 20			20	Pass	
Method Blank							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	mg/kg	< 0.5			0.5	Pass	
Acenaphthylene	mg/kg	< 0.5			0.5	Pass	
Anthracene	mg/kg	< 0.5			0.5	Pass	
Benz(a)anthracene	mg/kg	< 0.5			0.5	Pass	
Benzo(a)pyrene	mg/kg	< 0.5			0.5	Pass	
Benzo(b&j)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Benzo(g.h.i)perylene	mg/kg	< 0.5			0.5	Pass	
Benzo(k)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Chrysene	mg/kg	< 0.5			0.5	Pass	
Dibenz(a.h)anthracene	mg/kg	< 0.5			0.5	Pass	
Fluoranthene	mg/kg	< 0.5			0.5	Pass	
Fluorene	mg/kg	< 0.5			0.5	Pass	
Indeno(1.2.3-cd)pyrene	mg/kg	< 0.5			0.5	Pass	
Naphthalene	mg/kg	< 0.5			0.5	Pass	
Phenanthrene	mg/kg	< 0.5			0.5	Pass	
Pyrene	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Organochlorine Pesticides							
Chlordanes - Total	mg/kg	< 0.1			0.1	Pass	
4.4'-DDD	mg/kg	< 0.05			0.05	Pass	
4.4'-DDE	mg/kg	< 0.05			0.05	Pass	
4.4'-DDT	mg/kg	< 0.05			0.05	Pass	
a-BHC	mg/kg	< 0.05			0.05	Pass	
Aldrin	mg/kg	< 0.05			0.05	Pass	
b-BHC	mg/kg	< 0.05			0.05	Pass	
d-BHC	mg/kg	< 0.05			0.05	Pass	
Dieldrin	mg/kg	< 0.05			0.05	Pass	
Endosulfan I	mg/kg	< 0.05			0.05	Pass	
Endosulfan II	mg/kg	< 0.05			0.05	Pass	
Endosulfan sulphate	mg/kg	< 0.05			0.05	Pass	
Endrin	mg/kg	< 0.05			0.05	Pass	
Endrin aldehyde	mg/kg	< 0.05			0.05	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Endrin ketone	mg/kg	< 0.05			0.05	Pass	
g-BHC (Lindane)	mg/kg	< 0.05			0.05	Pass	
Heptachlor	mg/kg	< 0.05			0.05	Pass	
Heptachlor epoxide	mg/kg	< 0.05			0.05	Pass	
Hexachlorobenzene	mg/kg	< 0.05			0.05	Pass	
Methoxychlor	mg/kg	< 0.2			0.2	Pass	
Toxaphene	mg/kg	< 1			1	Pass	
Method Blank							
Polychlorinated Biphenyls							
Aroclor-1016	mg/kg	< 0.5			0.5	Pass	
Aroclor-1221	mg/kg	< 0.1			0.1	Pass	
Aroclor-1232	mg/kg	< 0.5			0.5	Pass	
Aroclor-1242	mg/kg	< 0.5			0.5	Pass	
Aroclor-1248	mg/kg	< 0.5			0.5	Pass	
Aroclor-1254	mg/kg	< 0.5			0.5	Pass	
Aroclor-1260	mg/kg	< 0.5			0.5	Pass	
Total PCB*	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
TRH >C10-C16	mg/kg	< 50			50	Pass	
TRH >C16-C34	mg/kg	< 100			100	Pass	
TRH >C34-C40	mg/kg	< 100			100	Pass	
Method Blank							
% Clay	%	< 1			1	Pass	
Conductivity (1:5 aqueous extract at 25°C)	uS/cm	< 10			10	Pass	
Method Blank							
Heavy Metals							
Arsenic	mg/kg	< 2			2	Pass	
Cadmium	mg/kg	< 0.4			0.4	Pass	
Chromium	mg/kg	< 5			5	Pass	
Copper	mg/kg	< 5			5	Pass	
Iron	mg/kg	< 5			5	Pass	
Lead	mg/kg	< 5			5	Pass	
Mercury	mg/kg	< 0.05			0.05	Pass	
Nickel	mg/kg	< 5			5	Pass	
Zinc	mg/kg	< 5			5	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	74			70-130	Pass	
TRH C10-C14	%	96			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	91			70-130	Pass	
Toluene	%	92			70-130	Pass	
Ethylbenzene	%	91			70-130	Pass	
m&p-Xylenes	%	92			70-130	Pass	
o-Xylene	%	93			70-130	Pass	
Xylenes - Total	%	92			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	88			70-130	Pass	
TRH C6-C10	%	83			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Acenaphthene	%	86			70-130	Pass	
Acenaphthylene	%	84			70-130	Pass	
Anthracene	%	89			70-130	Pass	
Benz(a)anthracene	%	84			70-130	Pass	
Benzo(a)pyrene	%	92			70-130	Pass	
Benzo(b&j)fluoranthene	%	109			70-130	Pass	
Benzo(g.h.i)perylene	%	84			70-130	Pass	
Benzo(k)fluoranthene	%	78			70-130	Pass	
Chrysene	%	92			70-130	Pass	
Dibenz(a.h)anthracene	%	75			70-130	Pass	
Fluoranthene	%	88			70-130	Pass	
Fluorene	%	84			70-130	Pass	
Indeno(1.2.3-cd)pyrene	%	79			70-130	Pass	
Naphthalene	%	89			70-130	Pass	
Phenanthrene	%	84			70-130	Pass	
Pyrene	%	88			70-130	Pass	
LCS - % Recovery							
Organochlorine Pesticides							
Chlordanes - Total	%	122			70-130	Pass	
4.4'-DDD	%	124			70-130	Pass	
4.4'-DDE	%	124			70-130	Pass	
4.4'-DDT	%	119			70-130	Pass	
a-BHC	%	115			70-130	Pass	
Aldrin	%	114			70-130	Pass	
b-BHC	%	109			70-130	Pass	
d-BHC	%	116			70-130	Pass	
Dieldrin	%	121			70-130	Pass	
Endosulfan I	%	120			70-130	Pass	
Endosulfan II	%	117			70-130	Pass	
Endosulfan sulphate	%	118			70-130	Pass	
Endrin	%	116			70-130	Pass	
Endrin aldehyde	%	126			70-130	Pass	
Endrin ketone	%	117			70-130	Pass	
g-BHC (Lindane)	%	116			70-130	Pass	
Heptachlor	%	124			70-130	Pass	
Heptachlor epoxide	%	120			70-130	Pass	
Hexachlorobenzene	%	106			70-130	Pass	
Methoxychlor	%	110			70-130	Pass	
Toxaphene	%	88			70-130	Pass	
LCS - % Recovery							
Polychlorinated Biphenyls							
Aroclor-1260	%	117			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
TRH >C10-C16	%	97			70-130	Pass	
LCS - % Recovery							
% Clay	%	95			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Arsenic	%	104			70-130	Pass	
Cadmium	%	109			70-130	Pass	
Chromium	%	93			70-130	Pass	
Copper	%	92			70-130	Pass	
Iron	%	98			70-130	Pass	

Test			Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Lead			%	91			70-130	Pass	
Mercury			%	104			70-130	Pass	
Nickel			%	107			70-130	Pass	
Zinc			%	109			70-130	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C6-C9	S16-My28580	NCP	%	86			70-130	Pass	
TRH C10-C14	S16-My29777	NCP	%	112			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	S16-My28580	NCP	%	98			70-130	Pass	
Toluene	S16-My28580	NCP	%	98			70-130	Pass	
Ethylbenzene	S16-My28580	NCP	%	99			70-130	Pass	
m&p-Xylenes	S16-My28580	NCP	%	99			70-130	Pass	
o-Xylene	S16-My28580	NCP	%	99			70-130	Pass	
Xylenes - Total	S16-My28580	NCP	%	99			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	S16-My28580	NCP	%	96			70-130	Pass	
TRH C6-C10	S16-My28580	NCP	%	93			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
TRH >C10-C16	S16-My29777	NCP	%	117			70-130	Pass	
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					
Acenaphthene	S16-Jn00242	CP	%	90			70-130	Pass	
Acenaphthylene	S16-Jn00242	CP	%	87			70-130	Pass	
Anthracene	S16-Jn00242	CP	%	93			70-130	Pass	
Benz(a)anthracene	S16-Jn00242	CP	%	91			70-130	Pass	
Benzo(a)pyrene	S16-Jn00242	CP	%	91			70-130	Pass	
Benzo(b&j)fluoranthene	S16-Jn00242	CP	%	75			70-130	Pass	
Benzo(g.h.i)perylene	S16-Jn00242	CP	%	88			70-130	Pass	
Benzo(k)fluoranthene	S16-Jn00242	CP	%	92			70-130	Pass	
Chrysene	S16-Jn00242	CP	%	96			70-130	Pass	
Dibenz(a.h)anthracene	S16-Jn00242	CP	%	80			70-130	Pass	
Fluoranthene	S16-Jn00242	CP	%	95			70-130	Pass	
Fluorene	S16-Jn00242	CP	%	90			70-130	Pass	
Indeno(1.2.3-cd)pyrene	S16-Jn00242	CP	%	84			70-130	Pass	
Naphthalene	S16-Jn00242	CP	%	94			70-130	Pass	
Phenanthrene	S16-Jn00242	CP	%	93			70-130	Pass	
Pyrene	S16-Jn00242	CP	%	94			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	S16-Jn00242	CP	%	95			70-130	Pass	
Cadmium	S16-Jn00242	CP	%	99			70-130	Pass	
Chromium	S16-Jn00242	CP	%	84			70-130	Pass	
Copper	S16-Jn00242	CP	%	74			70-130	Pass	
Lead	S16-Jn00242	CP	%	84			70-130	Pass	
Mercury	S16-Jn00242	CP	%	109			70-130	Pass	
Nickel	S16-Jn00242	CP	%	92			70-130	Pass	
Zinc	S16-Jn00242	CP	%	105			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Iron	S16-My31059	NCP	%	103			70-130	Pass	
Spike - % Recovery									
Organochlorine Pesticides				Result 1					
Chlordanes - Total	S16-Jn02686	NCP	%	101			70-130	Pass	
4.4'-DDD	S16-Jn04556	NCP	%	130			70-130	Pass	
4.4'-DDE	S16-Jn03788	NCP	%	115			70-130	Pass	
4.4'-DDT	S16-Jn03788	NCP	%	95			70-130	Pass	
a-BHC	S16-Jn03788	NCP	%	107			70-130	Pass	
Aldrin	S16-Jn03788	NCP	%	108			70-130	Pass	
b-BHC	S16-Jn03788	NCP	%	102			70-130	Pass	
d-BHC	S16-Jn03788	NCP	%	118			70-130	Pass	
Dieldrin	S16-Jn03788	NCP	%	118			70-130	Pass	
Endosulfan I	S16-Jn03788	NCP	%	115			70-130	Pass	
Endosulfan II	S16-Jn03788	NCP	%	120			70-130	Pass	
Endosulfan sulphate	S16-Jn03788	NCP	%	114			70-130	Pass	
Endrin	S16-Jn03788	NCP	%	117			70-130	Pass	
Endrin aldehyde	S16-Jn03788	NCP	%	112			70-130	Pass	
Endrin ketone	S16-Jn03788	NCP	%	123			70-130	Pass	
g-BHC (Lindane)	S16-Jn03788	NCP	%	110			70-130	Pass	
Heptachlor	S16-Jn03788	NCP	%	122			70-130	Pass	
Heptachlor epoxide	S16-Jn03788	NCP	%	120			70-130	Pass	
Hexachlorobenzene	S16-Jn03788	NCP	%	96			70-130	Pass	
Methoxychlor	S16-Jn03788	NCP	%	123			70-130	Pass	
Spike - % Recovery									
Polychlorinated Biphenyls				Result 1					
Aroclor-1260	S16-Jn04556	NCP	%	80			70-130	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C10-C14	S16-Jn04401	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	S16-Jn04401	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C29-C36	S16-Jn04401	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	S16-Jn00241	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	S16-Jn00241	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	S16-Jn00241	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	S16-Jn00241	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	S16-Jn00241	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b&j)fluoranthene	S16-Jn00241	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(g.h.i)perylene	S16-Jn00241	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(k)fluoranthene	S16-Jn00241	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	S16-Jn00241	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenz(a.h)anthracene	S16-Jn00241	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	S16-Jn00241	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluorene	S16-Jn00241	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	S16-Jn00241	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Naphthalene	S16-Jn00241	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	S16-Jn00241	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pyrene	S16-Jn00241	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
TRH >C10-C16	S16-Jn04401	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	S16-Jn04401	NCP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH >C34-C40	S16-Jn04401	NCP	mg/kg	< 100	< 100	<1	30%	Pass	

Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S16-My29772	NCP	mg/kg	< 2	< 2	<1	30%	Pass	
Cadmium	S16-My29772	NCP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	S16-My29772	NCP	mg/kg	< 5	< 5	<1	30%	Pass	
Copper	S16-My29772	NCP	mg/kg	7.0	7.1	3.0	30%	Pass	
Lead	S16-My29772	NCP	mg/kg	< 5	< 5	<1	30%	Pass	
Mercury	S16-My29772	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Nickel	S16-My29772	NCP	mg/kg	22	27	20	30%	Pass	
Zinc	S16-My29772	NCP	mg/kg	21	14	39	30%	Fail	Q15
Duplicate									
				Result 1	Result 2	RPD			
% Clay	S16-My28408	NCP	%	48	48	<1	30%	Pass	
Conductivity (1:5 aqueous extract at 25°C)	M16-Jn01085	NCP	uS/cm	69	63	10	30%	Pass	
pH (1:5 Aqueous extract)	S16-My29982	NCP	pH Units	7.5	7.4	pass	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Iron	S16-My31058	NCP	mg/kg	1500	1500	2.0	30%	Pass	
Duplicate									
Organochlorine Pesticides				Result 1	Result 2	RPD			
Chlordanes - Total	S16-Jn01510	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
4.4'-DDD	S16-Jn01510	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDE	S16-Jn01510	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDT	S16-Jn01510	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
a-BHC	S16-Jn01510	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Aldrin	S16-Jn01510	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
b-BHC	S16-Jn01510	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
d-BHC	S16-Jn01510	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Dieldrin	S16-Jn01510	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan I	S16-Jn01510	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan II	S16-Jn01510	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan sulphate	S16-Jn01510	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin	S16-Jn01510	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin aldehyde	S16-Jn01510	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin ketone	S16-Jn01510	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
g-BHC (Lindane)	S16-Jn01510	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor	S16-Jn01510	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor epoxide	S16-Jn01510	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Hexachlorobenzene	S16-Jn01510	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Methoxychlor	S16-Jn01510	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Toxaphene	S16-Jn01510	NCP	mg/kg	< 1	< 1	<1	30%	Pass	
Duplicate									
Polychlorinated Biphenyls				Result 1	Result 2	RPD			
Aroclor-1016	S16-Jn01510	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1221	S16-Jn01510	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1232	S16-Jn01510	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1242	S16-Jn01510	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1248	S16-Jn01510	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1254	S16-Jn01510	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1260	S16-Jn01510	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	S16-Jn00249	CP	mg/kg	< 20	< 20	<1	30%	Pass	

Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	S16-Jn00249	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	S16-Jn00249	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	S16-Jn00249	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	S16-Jn00249	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	S16-Jn00249	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total	S16-Jn00249	CP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	S16-Jn00249	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	S16-Jn00249	CP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	S16-Jn00249	CP	%	3.4	3.4	1.0	30%	Pass	

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs
Q15	The RPD reported passes Eurofins | mgt's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.

Authorised By

Nibha Vaidya	Analytical Services Manager
Bob Symons	Senior Analyst-Inorganic (NSW)
Emily Rosenberg	Senior Analyst-Metal (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Ivan Taylor	Senior Analyst-Metal (NSW)
Rhys Thomas	Senior Analyst-Asbestos (NSW)
Richard Corner	Senior Analyst-Inorganic (QLD)
Ryan Hamilton	Senior Analyst-Organic (NSW)
Ryan Hamilton	Senior Analyst-Volatile (NSW)

Glenn Jackson

National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Uncertainty data is available on request

Certificate of Analysis

NATA Accredited
Accreditation Number 1261
Site Number 18217

Accredited for compliance with ISO/IEC 17025. The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

JBS & G Australia (NSW & WA) P/L
Level 1, 50 Margaret St
Sydney
NSW 2000

Attention:	Lindsey Blecher
Report	502667-AID
Project Name	UNSW CLIFFBROOK
Project ID	51707
Received Date	May 31, 2016
Date Reported	Jun 07, 2016

Methodology:

Asbestos ID	Conducted in accordance with the Australian Standard AS 4964 – 2004: Method for the Qualitative Identification of Asbestos in Bulk Samples and in-house Method LTM-ASB-8020 by polarised light microscopy (PLM) and dispersion staining (DS) techniques. Bulk samples include building materials, soils and ores.
Subsampling Soil Samples	The whole sample submitted is first dried and then sieved through a 10mm sieve followed by a 2mm sieve. All fibrous matter viz greater than 10mm, greater than 2mm as well as the material passing through the 2mm sieve are retained and analysed for the presence of asbestos. If the sub 2mm fraction is greater than approximately 30 to 60g then a sub-sampling routine based on ISO 3082:2009(E) Iron ores - Sampling and Sample preparation procedures is employed. Depending on the nature and size of the soil sample, the sub-2 mm residue material may need to be sub-sampled for trace analysis in accordance with AS 4964-2004.
Bonded asbestos-containing material (ACM)	The material is first examined and any fibres isolated and where required interfering organic fibres or matter may be removed by treating the sample for several hours at a temperature not exceeding 400 ± 30°C. The resultant material is then ground and examined in accordance with AS 4964-2004.
Limit of Reporting	The nominal detection limit of the AS4964 method is around 0.01%. The examination of large sample sizes (at least 500 ml is recommended) may improve the likelihood of identifying asbestos material in the greater than 2 mm fraction. The NEPM screening level of 0.001% w/w asbestos in soil for FA and AF (i.e. non-bonded/friable asbestos) only applies where the FA and AF are able to be quantified by gravimetric procedures. This screening level is not applicable to free fibres. NOTE: NATA News, September 2011 – page 34, states, “Weighing of fibres is problematic and can lead to loss of fibres and potential exposure for laboratory analysts. To request laboratories to report information which is outside the scope of AS 4964-2004 and the scope of their accreditation is misleading and is most unwise” therefore such values reported are outside the scope of Eurofins | mgt NATA accreditation as designated by an asterisk.

Project Name UNSW CLIFFBROOK
Project ID 51707
Date Sampled May 31, 2016
Report 502667-AID

Client Sample ID	Eurofins | mgt Sample No.	Date Sampled	Sample Description	Result
BH01 0.40-0.50	16-Jn00241	May 31, 2016	Approximate Sample 501g Sample consisted of: Brown coarse grain soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No respirable fibres detected.[M11]
BH02 0.20-0.30	16-Jn00242	May 31, 2016	Approximate Sample 553g Sample consisted of: Brown coarse grain soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No respirable fibres detected.[M11]
BH03 0.40-0.50	16-Jn00243	May 31, 2016	Approximate Sample 908g Sample consisted of: Brown coarse grain soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No respirable fibres detected.[M11]
HA01 0.00-0.10	16-Jn00245	May 31, 2016	Approximate Sample 435g Sample consisted of: Brown coarse grain soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No respirable fibres detected.[M11]
HA02 0.00-0.10	16-Jn00246	May 31, 2016	Approximate Sample 534g Sample consisted of: Brown coarse grain soil and rocks	ACM: Chrysotile and amosite asbestos detected in fibre cement fragments. Approximate raw weight of ACM = 2.3385g Total estimated asbestos content in ACM = 0.3508g* Total estimated asbestos concentration in ACM = 0.0657% w/w* Organic fibre detected.[M11]
QC01	16-Jn00247	May 31, 2016	Approximate Sample 568g Sample consisted of: Brown coarse grain soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No respirable fibres detected.[M11]
HA03 0.0-0.10	16-Jn00248	May 31, 2016	Approximate Sample 648g Sample consisted of: Brown coarse grain soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No respirable fibres detected.[M11]

Client Sample ID	Eurofins | mgt Sample No.	Date Sampled	Sample Description	Result
HA04 0.20-0.30	16-Jn00249	May 31, 2016	Approximate Sample 925g Sample consisted of: Brown coarse grain soil and rocks	FA: Chrysotile, amosite and crocidolite asbestos detected in weathered fibre cement fragments. Approximate raw weight of FA = 0.0111g Estimated asbestos content in FA = 0.0078g* Total estimated asbestos concentration in FA = 0.0008% w/w* No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected.[M11]

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Asbestos - LTM-ASB-8020	Sydney	Jun 01, 2016	Indefinite

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Site # 1254 & 14271

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NATA # 1261 Site # 18217

Brisbane
1/21 Smallwood Place
Murarrie QLD 4172
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Company Name: JBS & G Australia (NSW & WA) P/L
Address: Level 1, 50 Margaret St
Sydney
NSW 2000

Project Name: UNSW CLIFFBROOK
Project ID: 51707

Order No.:
Report #: 502667
Phone: 02 8245 0300
Fax:

Received: May 31, 2016 5:00 PM
Due: Jun 7, 2016
Priority: 5 Day
Contact Name: Lindsey Blecher

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						% Clay	Asbestos - WA guidelines	HOLD	Iron	pH (1:5 Aqueous extract)	Polycyclic Aromatic Hydrocarbons	Polycyclic Aromatic Hydrocarbons	Organochlorine Pesticides	Organochlorine Pesticides	Polychlorinated Biphenyls	Polychlorinated Biphenyls	Metals M8	Metals M8 filtered	BTEX	Moisture Set	Cation Exchange Capacity	Total Recoverable Hydrocarbons	Total Recoverable Hydrocarbons
Melbourne Laboratory - NATA Site # 1254 & 14271											X		X		X			X			X	X	X
Sydney Laboratory - NATA Site # 18217							X	X	X	X		X		X		X	X		X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794						X																	
External Laboratory																							
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**																		
1	BH01 0.40-0.50	May 31, 2016		Soil	S16-Jn00241		X					X					X		X	X			X
2	BH02 0.20-0.30	May 31, 2016		Soil	S16-Jn00242		X					X					X		X	X			X
3	BH03 0.40-0.50	May 31, 2016		Soil	S16-Jn00243		X					X					X		X	X			X
4	BH03 0.90-1.0	May 31, 2016		Soil	S16-Jn00244	X			X	X										X	X		
5	HA01 0.00-0.10	May 31, 2016		Soil	S16-Jn00245		X					X		X		X	X		X	X			X
6	HA02 0.00-0.10	May 31, 2016		Soil	S16-Jn00246		X					X		X		X	X		X	X			X

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Melbourne Laboratory - NATA Site # 1254 & 14271											X		X		X			X			X	X	X
Sydney Laboratory - NATA Site # 18217							X	X	X	X		X		X		X	X		X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794						X																	
External Laboratory																							
7	QC01	May 31, 2016		Soil	S16-Jn00247		X					X		X		X	X		X	X			X
8	HA03 0.0-0.10	May 31, 2016		Soil	S16-Jn00248	X	X		X	X		X		X		X	X		X	X	X		X
9	HA04 0.20-0.30	May 31, 2016		Soil	S16-Jn00249		X					X		X		X	X		X	X			X
10	RB	May 31, 2016		Water	S16-Jn00250						X		X		X			X	X			X	
11	TS	May 31, 2016		Water	S16-Jn00251														X				
12	TB	May 31, 2016		Water	S16-Jn00252														X				
13	BH01 0.05-0.15	May 31, 2016		Soil	S16-Jn00253			X															
14	BH01 0.20-0.30	May 31, 2016		Soil	S16-Jn00254			X															
15	BH01 0.90-1.0	May 31, 2016		Soil	S16-Jn00255			X															

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Melbourne Laboratory - NATA Site # 1254 & 14271											X		X		X			X			X	X	X
Sydney Laboratory - NATA Site # 18217							X	X	X	X		X		X		X	X		X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794						X																	
External Laboratory																							
16	BH02 0.00-0.1	May 31, 2016		Soil	S16-Jn00256			X															
17	BH02 0.40-0.5	May 31, 2016		Soil	S16-Jn00257			X															
18	BH02 0.90-1.0	May 31, 2016		Soil	S16-Jn00258			X															
19	BH03 0.03-0.13	May 31, 2016		Soil	S16-Jn00259			X															
20	BH03 0.2-0.3	May 31, 2016		Soil	S16-Jn00260			X															
21	HA01 0.2-0.3	May 31, 2016		Soil	S16-Jn00303			X															
22	HA02 0.2-0.3	May 31, 2016		Soil	S16-Jn00304			X															
23	HA02 0.4-0.5	May 31, 2016		Soil	S16-Jn00305			X															
24	HA02 0.9-1.0	May 31, 2016		Soil	S16-Jn00306			X															
25	HA03 0.2-0.3	May 31, 2016		Soil	S16-Jn00307			X															
26	HA03 0.4-0.5	May 31, 2016		Soil	S16-Jn00308			X															

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Contact Name: Lindsey Blecher

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						% Clay	Asbestos - WA guidelines	HOLD	Iron	pH (1:5 Aqueous extract)	Polycyclic Aromatic Hydrocarbons	Polycyclic Aromatic Hydrocarbons	Organochlorine Pesticides	Organochlorine Pesticides	Polychlorinated Biphenyls	Polychlorinated Biphenyls	Metals M8	Metals M8 filtered	BTEX	Moisture Set	Cation Exchange Capacity	Total Recoverable Hydrocarbons	Total Recoverable Hydrocarbons
Melbourne Laboratory - NATA Site # 1254 & 14271											X		X		X			X			X	X	X
Sydney Laboratory - NATA Site # 18217							X	X	X	X		X		X		X	X		X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794						X																	
External Laboratory																							
27	HA04 0.0-1.0	May 31, 2016		Soil	S16-Jn00309			X															
28	HA04 0.4-0.5	May 31, 2016		Soil	S16-Jn00310			X															
Test Counts						2	8	16	2	2	9	9	6	6	6	6	8	1	11	9	2	9	9

Internal Quality Control Review and Glossary

General

1. QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Samples were analysed on an 'as received' basis.
4. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

Units

% w/w: weight for weight basis	grams per kilogram
Filter loading:	fibres/100 graticule areas
Reported Concentration:	fibres/mL
Flowrate:	L/min

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
COC	Chain of custody
SRA	Sample Receipt Advice
ISO	International Stardards Organisation
AS	Australian Standards
WA DOH	Western Australia Department of Health
NOHSC	National Occupational Health and Safety Commission
ACM	Bonded asbestos-containing material means any material containing more than 1% asbestos and comprises asbestos-containing-material which is in sound condition, although possibly broken or fragmented, and where the asbestos is bound in a matrix such as cement or resin. Common examples of ACM include but are not limited to: pipe and boiler insulation, sprayed-on fireproofing, troweled-on acoustical plaster, floor tile and mastic, floor linoleum, transite shingles, roofing materials, wall and ceiling plaster, ceiling tiles, and gasket materials. This term is restricted to material that cannot pass a 7 mm x 7 mm sieve. This sieve size is selected because it approximates the thickness of common asbestos cement sheeting and for fragments to be smaller than this would imply a high degree of damage and hence potential for fibre release.
FA	FA comprises friable asbestos material and includes severely weathered cement sheet, insulation products and woven asbestos material. This type of friable asbestos is defined here as asbestos material that is in a degraded condition such that it can be broken or crumbled by hand pressure. This material is typically unbonded or was previously bonded and is now significantly degraded (crumbling).
PACM	Presumed Asbestos-Containing Material means thermal system insulation and surfacing material found in buildings, vessels, and vessel sections constructed no later than 1980 that are assumed to contain greater than one percent asbestos but have not been sampled or analyzed to verify or negate the presence of asbestos.
AF	Asbestos fines (AF) are defined as free fibres, or fibre bundles, smaller than 7mm. It is the free fibres which present the greatest risk to human health, although very small fibres (< 5 microns in length) are not considered to be such a risk. AF also includes small fragments of bonded ACM that pass through a 7 mm x 7 mm sieve. (Note that for bonded ACM fragments to pass through a 7 mm x 7 mm sieve implies a substatntial degree of damage which increases the potential for fibre release.)
AC	Asbestos cement means a mixture of cement and asbestos fibres (typically 90:10 ratios).

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N/A	Not applicable
M11	NATA accreditation does not cover the performance of this service.

Authorised by:

Rhys Thomas Senior Analyst-Asbestos (NSW)

Glenn Jackson
National Operations Manager

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Uncertainty data is available on request

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Certificate of Analysis

JBS & G Australia (NSW & WA) P/L
Level 1, 50 Margaret St
Sydney
NSW 2000

NATA Accredited
Accreditation Number 1261
Site Number 18217

Accredited for compliance with ISO/IEC 17025.
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

Attention: **Lindsey Blecher**

Report **502667-W**
Project name UNSW CLIFFBROOK
Project ID 51707
Received Date May 31, 2016

Client Sample ID			**RB**	**TS**	**TB**
Sample Matrix			**Water**	**Water**	**Water**
Eurofins | mgt Sample No.			**S16-Jn00250**	**S16-Jn00251**	**S16-Jn00252**
Date Sampled			**May 31, 2016**	**May 31, 2016**	**May 31, 2016**
Test/Reference	LOR	Unit			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions					
TRH C6-C9	0.02	mg/L	< 0.02	-	-
TRH C10-C14	0.05	mg/L	< 0.05	-	-
TRH C15-C28	0.1	mg/L	< 0.1	-	-
TRH C29-C36	0.1	mg/L	< 0.1	-	-
TRH C10-36 (Total)	0.1	mg/L	< 0.1	-	-
BTEX					
Benzene	0.001	mg/L	< 0.001	94%	< 0.001
Toluene	0.001	mg/L	< 0.001	99%	< 0.001
Ethylbenzene	0.001	mg/L	< 0.001	101%	< 0.001
m&p-Xylenes	0.002	mg/L	< 0.002	100%	< 0.002
o-Xylene	0.001	mg/L	< 0.001	100%	< 0.001
Xylenes - Total	0.003	mg/L	< 0.003	100%	< 0.003
4-Bromofluorobenzene (surr.)	1	%	105	103	99
Total Recoverable Hydrocarbons - 2013 NEPM Fractions					
Naphthalene[N02]	0.01	mg/L	< 0.01	-	-
TRH C6-C10	0.02	mg/L	< 0.02	-	-
TRH C6-C10 less BTEX (F1)[N04]	0.02	mg/L	< 0.02	-	-
TRH >C10-C16 less Naphthalene (F2)[N01]	0.05	mg/L	< 0.05	-	-
Polycyclic Aromatic Hydrocarbons					
Acenaphthene	0.001	mg/L	< 0.001	-	-
Acenaphthylene	0.001	mg/L	< 0.001	-	-
Anthracene	0.001	mg/L	< 0.001	-	-
Benz(a)anthracene	0.001	mg/L	< 0.001	-	-
Benzo(a)pyrene	0.001	mg/L	< 0.001	-	-
Benzo(b&j)fluoranthene[N07]	0.001	mg/L	< 0.001	-	-
Benzo(g.h.i)perylene	0.001	mg/L	< 0.001	-	-
Benzo(k)fluoranthene	0.001	mg/L	< 0.001	-	-
Chrysene	0.001	mg/L	< 0.001	-	-
Dibenz(a.h)anthracene	0.001	mg/L	< 0.001	-	-
Fluoranthene	0.001	mg/L	< 0.001	-	-
Fluorene	0.001	mg/L	< 0.001	-	-
Indeno(1.2.3-cd)pyrene	0.001	mg/L	< 0.001	-	-
Naphthalene	0.001	mg/L	< 0.001	-	-
Phenanthrene	0.001	mg/L	< 0.001	-	-
Pyrene	0.001	mg/L	< 0.001	-	-

Client Sample ID			RB	TS	TB
Sample Matrix			Water	Water	Water
Eurofins | mgt Sample No.			S16-Jn00250	S16-Jn00251	S16-Jn00252
Date Sampled			May 31, 2016	May 31, 2016	May 31, 2016
Test/Reference	LOR	Unit			
Polycyclic Aromatic Hydrocarbons					
Total PAH*	0.001	mg/L	< 0.001	-	-
2-Fluorobiphenyl (surr.)	1	%	69	-	-
p-Terphenyl-d14 (surr.)	1	%	83	-	-
Organochlorine Pesticides					
Chlordanes - Total	0.001	mg/L	< 0.001	-	-
4.4'-DDD	0.0001	mg/L	< 0.0001	-	-
4.4'-DDE	0.0001	mg/L	< 0.0001	-	-
4.4'-DDT	0.0001	mg/L	< 0.0001	-	-
a-BHC	0.0001	mg/L	< 0.0001	-	-
Aldrin	0.0001	mg/L	< 0.0001	-	-
b-BHC	0.0001	mg/L	< 0.0001	-	-
d-BHC	0.0001	mg/L	< 0.0001	-	-
Dieldrin	0.0001	mg/L	< 0.0001	-	-
Endosulfan I	0.0001	mg/L	< 0.0001	-	-
Endosulfan II	0.0001	mg/L	< 0.0001	-	-
Endosulfan sulphate	0.0001	mg/L	< 0.0001	-	-
Endrin	0.0001	mg/L	< 0.0001	-	-
Endrin aldehyde	0.0001	mg/L	< 0.0001	-	-
Endrin ketone	0.0001	mg/L	< 0.0001	-	-
g-BHC (Lindane)	0.0001	mg/L	< 0.0001	-	-
Heptachlor	0.0001	mg/L	< 0.0001	-	-
Heptachlor epoxide	0.0001	mg/L	< 0.0001	-	-
Hexachlorobenzene	0.0001	mg/L	< 0.0001	-	-
Methoxychlor	0.0001	mg/L	< 0.0001	-	-
Toxaphene	0.01	mg/L	< 0.01	-	-
Dibutylchlorendate (surr.)	1	%	141	-	-
Tetrachloro-m-xylene (surr.)	1	%	109	-	-
Polychlorinated Biphenyls					
Aroclor-1016	0.001	mg/L	< 0.001	-	-
Aroclor-1221	0.001	mg/L	< 0.001	-	-
Aroclor-1232	0.001	mg/L	< 0.001	-	-
Aroclor-1242	0.001	mg/L	< 0.001	-	-
Aroclor-1248	0.001	mg/L	< 0.001	-	-
Aroclor-1254	0.001	mg/L	< 0.001	-	-
Aroclor-1260	0.001	mg/L	< 0.001	-	-
Total PCB*	0.001	mg/L	< 0.001	-	-
Dibutylchlorendate (surr.)	1	%	141	-	-
Tetrachloro-m-xylene (surr.)	1	%	109	-	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions					
TRH >C10-C16	0.05	mg/L	< 0.05	-	-
TRH >C16-C34	0.1	mg/L	< 0.1	-	-
TRH >C34-C40	0.1	mg/L	< 0.1	-	-
Heavy Metals					
Arsenic (filtered)	0.001	mg/L	< 0.001	-	-
Cadmium (filtered)	0.0002	mg/L	< 0.0002	-	-
Chromium (filtered)	0.001	mg/L	< 0.001	-	-
Copper (filtered)	0.001	mg/L	0.002	-	-
Lead (filtered)	0.001	mg/L	< 0.001	-	-
Mercury (filtered)	0.0001	mg/L	< 0.0001	-	-

Client Sample ID			RB	TS	TB
Sample Matrix			**Water**	**Water**	**Water**
Eurofins | mgt Sample No.			**S16-Jn00250**	**S16-Jn00251**	**S16-Jn00252**
Date Sampled			**May 31, 2016**	**May 31, 2016**	**May 31, 2016**
Test/Reference	LOR	Unit			
Heavy Metals					
Nickel (filtered)	0.001	mg/L	< 0.001	-	-
Zinc (filtered)	0.001	mg/L	0.004	-	-

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Melbourne	Jun 02, 2016	7 Day
- Method: TRH C6-C36 - LTM-ORG-2010			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	Jun 01, 2016	7 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Jun 02, 2016	7 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
BTEX	Sydney	Jun 01, 2016	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Polycyclic Aromatic Hydrocarbons	Melbourne	Jun 02, 2016	7 Day
- Method: USEPA 8270 Polycyclic Aromatic Hydrocarbons			
Organochlorine Pesticides	Melbourne	Jun 02, 2016	7 Day
- Method: USEPA 8081 Organochlorine Pesticides			
Polychlorinated Biphenyls	Melbourne	Jun 02, 2016	7 Day
- Method: USEPA 8082 Polychlorinated Biphenyls			
Metals M8 filtered	Melbourne	Jun 01, 2016	28 Day
- Method: LTM-MET-3040 Metals in Waters by ICP-MS			

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Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Company Name: JBS & G Australia (NSW & WA) P/L
Address: Level 1, 50 Margaret St
Sydney
NSW 2000

Project Name: UNSW CLIFFBROOK
Project ID: 51707

Order No.:
Report #: 502667
Phone: 02 8245 0300
Fax:

Received: May 31, 2016 5:00 PM
Due: Jun 7, 2016
Priority: 5 Day
Contact Name: Lindsey Blecher

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						% Clay	Asbestos - WA guidelines	HOLD	Iron	pH (1:5 Aqueous extract)	Polycyclic Aromatic Hydrocarbons	Polycyclic Aromatic Hydrocarbons	Organochlorine Pesticides	Organochlorine Pesticides	Polychlorinated Biphenyls	Polychlorinated Biphenyls	Metals M8	Metals M8 filtered	BTEX	Moisture Set	Cation Exchange Capacity	Total Recoverable Hydrocarbons	Total Recoverable Hydrocarbons
Melbourne Laboratory - NATA Site # 1254 & 14271											X		X		X			X			X	X	X
Sydney Laboratory - NATA Site # 18217							X	X	X	X		X		X		X	X		X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794						X																	
External Laboratory																							
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**																		
1	BH01 0.40-0.50	May 31, 2016		Soil	S16-Jn00241		X					X					X		X	X			X
2	BH02 0.20-0.30	May 31, 2016		Soil	S16-Jn00242		X					X					X		X	X			X
3	BH03 0.40-0.50	May 31, 2016		Soil	S16-Jn00243		X					X					X		X	X			X
4	BH03 0.90-1.0	May 31, 2016		Soil	S16-Jn00244	X			X	X										X	X		
5	HA01 0.00-0.10	May 31, 2016		Soil	S16-Jn00245		X					X		X		X	X		X	X			X
6	HA02 0.00-0.10	May 31, 2016		Soil	S16-Jn00246		X					X		X		X	X		X	X			X

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Melbourne Laboratory - NATA Site # 1254 & 14271											X		X		X			X			X	X	X
Sydney Laboratory - NATA Site # 18217							X	X	X	X		X		X		X	X		X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794						X																	
External Laboratory																							
7	QC01	May 31, 2016		Soil	S16-Jn00247		X					X		X		X	X		X	X			X
8	HA03 0.0-0.10	May 31, 2016		Soil	S16-Jn00248	X	X		X	X		X		X		X	X		X	X	X		X
9	HA04 0.20-0.30	May 31, 2016		Soil	S16-Jn00249		X					X		X		X	X		X	X			X
10	RB	May 31, 2016		Water	S16-Jn00250						X		X		X			X	X			X	
11	TS	May 31, 2016		Water	S16-Jn00251														X				
12	TB	May 31, 2016		Water	S16-Jn00252														X				
13	BH01 0.05-0.15	May 31, 2016		Soil	S16-Jn00253			X															
14	BH01 0.20-0.30	May 31, 2016		Soil	S16-Jn00254			X															
15	BH01 0.90-1.0	May 31, 2016		Soil	S16-Jn00255			X															

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Sample Detail						% Clay	Asbestos - WA guidelines	HOLD	Iron	pH (1:5 Aqueous extract)	Polycyclic Aromatic Hydrocarbons	Polycyclic Aromatic Hydrocarbons	Organochlorine Pesticides	Organochlorine Pesticides	Polychlorinated Biphenyls	Polychlorinated Biphenyls	Metals M8	Metals M8 filtered	BTEX	Moisture Set	Cation Exchange Capacity	Total Recoverable Hydrocarbons	Total Recoverable Hydrocarbons
Melbourne Laboratory - NATA Site # 1254 & 14271											X		X		X			X			X	X	X
Sydney Laboratory - NATA Site # 18217							X	X	X	X		X		X		X	X		X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794						X																	
External Laboratory																							
16	BH02 0.00-0.1	May 31, 2016		Soil	S16-Jn00256			X															
17	BH02 0.40-0.5	May 31, 2016		Soil	S16-Jn00257			X															
18	BH02 0.90-1.0	May 31, 2016		Soil	S16-Jn00258			X															
19	BH03 0.03-0.13	May 31, 2016		Soil	S16-Jn00259			X															
20	BH03 0.2-0.3	May 31, 2016		Soil	S16-Jn00260			X															
21	HA01 0.2-0.3	May 31, 2016		Soil	S16-Jn00303			X															
22	HA02 0.2-0.3	May 31, 2016		Soil	S16-Jn00304			X															
23	HA02 0.4-0.5	May 31, 2016		Soil	S16-Jn00305			X															
24	HA02 0.9-1.0	May 31, 2016		Soil	S16-Jn00306			X															
25	HA03 0.2-0.3	May 31, 2016		Soil	S16-Jn00307			X															
26	HA03 0.4-0.5	May 31, 2016		Soil	S16-Jn00308			X															

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Sample Detail						% Clay	Asbestos - WA guidelines	HOLD	Iron	pH (1:5 Aqueous extract)	Polycyclic Aromatic Hydrocarbons	Polycyclic Aromatic Hydrocarbons	Organochlorine Pesticides	Organochlorine Pesticides	Polychlorinated Biphenyls	Polychlorinated Biphenyls	Metals M8	Metals M8 filtered	BTEX	Moisture Set	Cation Exchange Capacity	Total Recoverable Hydrocarbons	Total Recoverable Hydrocarbons
Melbourne Laboratory - NATA Site # 1254 & 14271											X		X		X			X			X	X	X
Sydney Laboratory - NATA Site # 18217							X	X	X	X		X		X		X	X		X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794						X																	
External Laboratory																							
27	HA04 0.0-1.0	May 31, 2016		Soil	S16-Jn00309			X															
28	HA04 0.4-0.5	May 31, 2016		Soil	S16-Jn00310			X															
Test Counts						2	8	16	2	2	9	9	6	6	6	6	8	1	11	9	2	9	9

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

ug/l: micrograms per litre

ppb: Parts per billion

org/100ml: Organisms per 100 millilitres

MPN/100mL: Most Probable Number of organisms per 100 millilitres

mg/l: milligrams per litre

ppm: Parts per million

%: Percentage

NTU: Nephelometric Turbidity Units

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs 20-130%

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling.Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/L	< 0.02			0.02	Pass	
TRH C10-C14	mg/L	< 0.05			0.05	Pass	
TRH C15-C28	mg/L	< 0.1			0.1	Pass	
TRH C29-C36	mg/L	< 0.1			0.1	Pass	
Method Blank							
BTEX							
Benzene	mg/L	< 0.001			0.001	Pass	
Toluene	mg/L	< 0.001			0.001	Pass	
Ethylbenzene	mg/L	< 0.001			0.001	Pass	
m&p-Xylenes	mg/L	< 0.002			0.002	Pass	
o-Xylene	mg/L	< 0.001			0.001	Pass	
Xylenes - Total	mg/L	< 0.003			0.003	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/L	< 0.01			0.01	Pass	
TRH C6-C10	mg/L	< 0.02			0.02	Pass	
Method Blank							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	mg/L	< 0.001			0.001	Pass	
Acenaphthylene	mg/L	< 0.001			0.001	Pass	
Anthracene	mg/L	< 0.001			0.001	Pass	
Benz(a)anthracene	mg/L	< 0.001			0.001	Pass	
Benzo(a)pyrene	mg/L	< 0.001			0.001	Pass	
Benzo(b&j)fluoranthene	mg/L	< 0.001			0.001	Pass	
Benzo(g.h.i)perylene	mg/L	< 0.001			0.001	Pass	
Benzo(k)fluoranthene	mg/L	< 0.001			0.001	Pass	
Chrysene	mg/L	< 0.001			0.001	Pass	
Dibenz(a.h)anthracene	mg/L	< 0.001			0.001	Pass	
Fluoranthene	mg/L	< 0.001			0.001	Pass	
Fluorene	mg/L	< 0.001			0.001	Pass	
Indeno(1.2.3-cd)pyrene	mg/L	< 0.001			0.001	Pass	
Naphthalene	mg/L	< 0.001			0.001	Pass	
Phenanthrene	mg/L	< 0.001			0.001	Pass	
Pyrene	mg/L	< 0.001			0.001	Pass	
Method Blank							
Organochlorine Pesticides							
Chlordanes - Total	mg/L	< 0.001			0.001	Pass	
4.4'-DDD	mg/L	< 0.0001			0.0001	Pass	
4.4'-DDE	mg/L	< 0.0001			0.0001	Pass	
4.4'-DDT	mg/L	< 0.0001			0.0001	Pass	
a-BHC	mg/L	< 0.0001			0.0001	Pass	
Aldrin	mg/L	< 0.0001			0.0001	Pass	
b-BHC	mg/L	< 0.0001			0.0001	Pass	
d-BHC	mg/L	< 0.0001			0.0001	Pass	
Dieldrin	mg/L	< 0.0001			0.0001	Pass	
Endosulfan I	mg/L	< 0.0001			0.0001	Pass	
Endosulfan II	mg/L	< 0.0001			0.0001	Pass	
Endosulfan sulphate	mg/L	< 0.0001			0.0001	Pass	
Endrin	mg/L	< 0.0001			0.0001	Pass	
Endrin aldehyde	mg/L	< 0.0001			0.0001	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Endrin ketone	mg/L	< 0.0001			0.0001	Pass	
g-BHC (Lindane)	mg/L	< 0.0001			0.0001	Pass	
Heptachlor	mg/L	< 0.0001			0.0001	Pass	
Heptachlor epoxide	mg/L	< 0.0001			0.0001	Pass	
Hexachlorobenzene	mg/L	< 0.0001			0.0001	Pass	
Methoxychlor	mg/L	< 0.0001			0.0001	Pass	
Toxaphene	mg/L	< 0.01			0.01	Pass	
Method Blank							
Polychlorinated Biphenyls							
Aroclor-1016	mg/L	< 0.001			0.001	Pass	
Aroclor-1221	mg/L	< 0.001			0.001	Pass	
Aroclor-1232	mg/L	< 0.001			0.001	Pass	
Aroclor-1242	mg/L	< 0.001			0.001	Pass	
Aroclor-1248	mg/L	< 0.001			0.001	Pass	
Aroclor-1254	mg/L	< 0.001			0.001	Pass	
Aroclor-1260	mg/L	< 0.001			0.001	Pass	
Total PCB*	mg/L	< 0.001			0.001	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
TRH >C10-C16	mg/L	< 0.05			0.05	Pass	
TRH >C16-C34	mg/L	< 0.1			0.1	Pass	
TRH >C34-C40	mg/L	< 0.1			0.1	Pass	
Method Blank							
Heavy Metals							
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium (filtered)	mg/L	< 0.0002			0.0002	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc (filtered)	mg/L	< 0.001			0.001	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	90			70-130	Pass	
TRH C10-C14	%	70			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	94			70-130	Pass	
Toluene	%	98			70-130	Pass	
Ethylbenzene	%	99			70-130	Pass	
m&p-Xylenes	%	101			70-130	Pass	
o-Xylene	%	99			70-130	Pass	
Xylenes - Total	%	100			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	96			70-130	Pass	
TRH C6-C10	%	93			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	101			70-130	Pass	
Acenaphthylene	%	100			70-130	Pass	
Anthracene	%	98			70-130	Pass	
Benz(a)anthracene	%	107			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Benzo(a)pyrene	%	108			70-130	Pass	
Benzo(b&j)fluoranthene	%	119			70-130	Pass	
Benzo(g.h.i)perylene	%	117			70-130	Pass	
Benzo(k)fluoranthene	%	105			70-130	Pass	
Chrysene	%	107			70-130	Pass	
Dibenz(a.h)anthracene	%	128			70-130	Pass	
Fluoranthene	%	97			70-130	Pass	
Fluorene	%	101			70-130	Pass	
Indeno(1.2.3-cd)pyrene	%	117			70-130	Pass	
Naphthalene	%	98			70-130	Pass	
Phenanthrene	%	104			70-130	Pass	
Pyrene	%	98			70-130	Pass	
LCS - % Recovery							
Organochlorine Pesticides							
4.4'-DDD	%	83			70-130	Pass	
4.4'-DDE	%	90			70-130	Pass	
Aldrin	%	86			70-130	Pass	
b-BHC	%	87			70-130	Pass	
d-BHC	%	72			70-130	Pass	
Dieldrin	%	105			70-130	Pass	
Endosulfan I	%	113			70-130	Pass	
Endosulfan II	%	77			70-130	Pass	
Endosulfan sulphate	%	83			70-130	Pass	
Endrin	%	74			70-130	Pass	
Endrin ketone	%	75			70-130	Pass	
g-BHC (Lindane)	%	111			70-130	Pass	
Heptachlor epoxide	%	113			70-130	Pass	
Hexachlorobenzene	%	115			70-130	Pass	
Methoxychlor	%	73			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
TRH >C10-C16	%	70			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Arsenic (filtered)	%	110			80-120	Pass	
Cadmium (filtered)	%	108			80-120	Pass	
Chromium (filtered)	%	101			80-120	Pass	
Copper (filtered)	%	106			80-120	Pass	
Lead (filtered)	%	107			80-120	Pass	
Mercury (filtered)	%	112			70-130	Pass	
Nickel (filtered)	%	105			80-120	Pass	
Zinc (filtered)	%	107			80-120	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C6-C9	S16-My29819	NCP	%	92			70-130	Pass	
TRH C10-C14	M16-My30184	NCP	%	102			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	S16-My29819	NCP	%	99			70-130	Pass	
Toluene	S16-My29819	NCP	%	102			70-130	Pass	
Ethylbenzene	S16-My29819	NCP	%	105			70-130	Pass	
m&p-Xylenes	S16-My29819	NCP	%	106			70-130	Pass	
o-Xylene	S16-My29819	NCP	%	102			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Xylenes - Total	S16-My29819	NCP	%	105			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	S16-My29819	NCP	%	99			70-130	Pass	
TRH C6-C10	S16-My29819	NCP	%	95			70-130	Pass	
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					
Acenaphthene	B16-Jn00524	NCP	%	115			70-130	Pass	
Acenaphthylene	B16-Jn00524	NCP	%	117			70-130	Pass	
Anthracene	B16-Jn00524	NCP	%	121			70-130	Pass	
Benz(a)anthracene	B16-Jn00524	NCP	%	122			70-130	Pass	
Benzo(a)pyrene	B16-Jn00524	NCP	%	128			70-130	Pass	
Benzo(b&j)fluoranthene	B16-Jn00524	NCP	%	114			70-130	Pass	
Benzo(g.h.i)perylene	B16-Jn00524	NCP	%	118			70-130	Pass	
Benzo(k)fluoranthene	B16-Jn00524	NCP	%	121			70-130	Pass	
Chrysene	B16-Jn00524	NCP	%	121			70-130	Pass	
Dibenz(a.h)anthracene	B16-Jn00524	NCP	%	118			70-130	Pass	
Fluoranthene	B16-Jn00524	NCP	%	103			70-130	Pass	
Fluorene	B16-Jn00524	NCP	%	118			70-130	Pass	
Indeno(1.2.3-cd)pyrene	B16-Jn00524	NCP	%	118			70-130	Pass	
Naphthalene	B16-Jn00524	NCP	%	112			70-130	Pass	
Phenanthrene	B16-Jn00524	NCP	%	121			70-130	Pass	
Pyrene	B16-Jn00524	NCP	%	105			70-130	Pass	
Spike - % Recovery									
Organochlorine Pesticides				Result 1					
4.4'-DDD	S16-Jn00250	CP	%	125			70-130	Pass	
4.4'-DDE	S16-Jn00250	CP	%	121			70-130	Pass	
Aldrin	S16-Jn00250	CP	%	82			70-130	Pass	
b-BHC	M16-My29026	NCP	%	70			70-130	Pass	
d-BHC	M16-My29015	NCP	%	71			70-130	Pass	
Dieldrin	M16-My29015	NCP	%	97			70-130	Pass	
Endosulfan I	S16-Jn00250	CP	%	99			70-130	Pass	
Endosulfan II	S16-Jn00250	CP	%	116			70-130	Pass	
Endosulfan sulphate	S16-Jn00250	CP	%	87			70-130	Pass	
Endrin	M16-My29015	NCP	%	91			70-130	Pass	
Endrin aldehyde	S16-Jn00250	CP	%	83			70-130	Pass	
Endrin ketone	S16-Jn00250	CP	%	84			70-130	Pass	
g-BHC (Lindane)	S16-Jn00250	CP	%	102			70-130	Pass	
Heptachlor epoxide	S16-Jn00250	CP	%	102			70-130	Pass	
Hexachlorobenzene	M16-My29015	NCP	%	109			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
TRH >C10-C16	M16-My30184	NCP	%	102			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic (filtered)	M16-Jn05362	NCP	%	101			70-130	Pass	
Cadmium (filtered)	M16-Jn05362	NCP	%	100			70-130	Pass	
Chromium (filtered)	M16-Jn03625	NCP	%	102			70-130	Pass	
Copper (filtered)	M16-Jn05362	NCP	%	94			70-130	Pass	
Lead (filtered)	M16-Jn05362	NCP	%	98			70-130	Pass	
Mercury (filtered)	M16-Jn05021	NCP	%	80			70-130	Pass	
Nickel (filtered)	M16-Jn05362	NCP	%	93			70-130	Pass	
Zinc (filtered)	M16-Jn05362	NCP	%	92			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	S16-My30863	NCP	mg/L	< 0.02	0.02	6.0	30%	Pass	
TRH C10-C14	M16-My30667	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH C15-C28	M16-My30667	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH C29-C36	M16-My30667	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	S16-My30863	NCP	mg/L	0.001	0.002	24	30%	Pass	
Toluene	S16-My30863	NCP	mg/L	0.004	0.005	19	30%	Pass	
Ethylbenzene	S16-My30863	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
m&p-Xylenes	S16-My30863	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
o-Xylene	S16-My30863	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Xylenes - Total	S16-My30863	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	S16-My30863	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
TRH C6-C10	S16-My30863	NCP	mg/L	0.02	0.03	14	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	B16-Jn00523	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Acenaphthylene	B16-Jn00523	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Anthracene	B16-Jn00523	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Benz(a)anthracene	B16-Jn00523	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Benzo(a)pyrene	B16-Jn00523	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Benzo(b&j)fluoranthene	B16-Jn00523	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Benzo(g.h.i)perylene	B16-Jn00523	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Benzo(k)fluoranthene	B16-Jn00523	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Chrysene	B16-Jn00523	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Dibenz(a.h)anthracene	B16-Jn00523	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Fluoranthene	B16-Jn00523	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Fluorene	B16-Jn00523	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	B16-Jn00523	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Naphthalene	B16-Jn00523	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Phenanthrene	B16-Jn00523	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Pyrene	B16-Jn00523	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Duplicate									
Organochlorine Pesticides				Result 1	Result 2	RPD			
Chlordanes - Total	M16-Jn01462	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
4.4'-DDD	M16-Jn01462	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
4.4'-DDE	M16-Jn01462	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
4.4'-DDT	M16-Jn01462	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
a-BHC	M16-Jn01462	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Aldrin	M16-Jn01462	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
b-BHC	M16-Jn01462	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
d-BHC	M16-Jn01462	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Dieldrin	M16-Jn01462	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Endosulfan I	M16-Jn01462	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Endosulfan II	M16-Jn01462	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Endosulfan sulphate	M16-Jn01462	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Endrin	M16-Jn01462	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Endrin aldehyde	M16-Jn01462	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Endrin ketone	M16-Jn01462	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
g-BHC (Lindane)	M16-Jn01462	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	

Duplicate									
Organochlorine Pesticides				Result 1	Result 2	RPD			
Heptachlor	M16-Jn01462	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Heptachlor epoxide	M16-Jn01462	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Hexachlorobenzene	M16-Jn01462	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Methoxychlor	M16-Jn01462	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Toxaphene	M16-Jn01462	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
Duplicate									
Polychlorinated Biphenyls				Result 1	Result 2	RPD			
Aroclor-1016	M16-Jn01462	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Aroclor-1221	M16-Jn01462	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Aroclor-1232	M16-Jn01462	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Aroclor-1242	M16-Jn01462	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Aroclor-1248	M16-Jn01462	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Aroclor-1254	M16-Jn01462	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Aroclor-1260	M16-Jn01462	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Total PCB*	M16-Jn01462	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
TRH >C10-C16	M16-My30667	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH >C16-C34	M16-My30667	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH >C34-C40	M16-My30667	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic (filtered)	M16-Jn05362	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium (filtered)	M16-Jn05362	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Chromium (filtered)	M16-Jn03625	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper (filtered)	M16-Jn05362	NCP	mg/L	0.002	0.002	5.0	30%	Pass	
Lead (filtered)	M16-Jn05362	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Mercury (filtered)	M16-Jn05362	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel (filtered)	M16-Jn05362	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Zinc (filtered)	M16-Jn05362	NCP	mg/L	0.022	0.020	12	30%	Pass	

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs

Authorised By

Nibha Vaidya	Analytical Services Manager
Emily Rosenberg	Senior Analyst-Metal (VIC)
Mele Singh	Senior Analyst-Organic (VIC)
Ryan Hamilton	Senior Analyst-Volatile (NSW)

Glenn Jackson

National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Uncertainty data is available on request

eurofins | mgt
Unit F3-F6 Building F, Parkview Building
16 Mars Road, Lane Cove West
NSW 2066

502667

JBS&G

CHAIN OF CUSTODY

PROJECT NO.: 51707	LABORATORY BATCH NO.:
PROJECT NAME: UNSW Cliffbrook	SAMPLERS: Lindsey Blecher
SEND REPORT TO: LBlecher@jbsg.com.au, mbarnet@jbsg SEND INVOICE TO: AdminNSW@jbsg.com.au	PHONE: SYDNEY 02 82450300 – PERTH 08 9488 0100 EMAIL: LBlecher@jbsg.com.au
DATE NEEDED BY: STD	QC LEVEL: NEPM (2013)
COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:	JBS&G SPECIFIC SUITES

SAMPLE ID	MATRIX	DATE	TIME	TYPE & PRESERVATIVE	pH	JB1	JB1T	JB1A	JB2	JB2A	B10	JB2/JBL	JB3/JBL	JB4	JBL	Heavy Metals	PAH	TRH/BTEX	Asbestos (w/w)	OCP/PCBs	pH, CEC, %clay, Fe	TCLP metals	TCLP PAHs	HOLD		NOTES: 502667
BH01 (0.05-0.15)	Soil	31/5		Bag+jar+ice.												~~X~~	~~X~~	~~X~~	~~X~~	~~X~~				X		
(0.20-0.30)																								X		
(0.40-0.50)																X	X	X	X					~~X~~		
(0.90-1.00)																								X		
BH02 (0.00-0.10)																								X		
(0.20-0.30)																X	X	X	X							
(0.40-0.50)																								X		
(0.90-1.00)																								X		
BH03 (0.03-0.13)																								X		
(0.20-0.30)																								X		
(0.40-0.50)																X	X	X	X							
(0.90-1.00)																					X					
HA01 (0.00-0.10)																X	X	X	X	X						
(0.20-0.30)																								X		
HA02 (0.00-0.10)																X	X	X	X	X	~~X~~					
QC01																X	X	X	X	X	~~X~~					
HA02 (0.20-0.30)																								X		
(0.40-0.50)																								X		
(0.90-1.00)																								X		

RELINQUISHED BY:	METHOD OF SHIPMENT:	RECEIVED BY:	FOR RECEIVING LAB USE ONLY:
NAME: L.Blecher DATE: 31/5 OF: JBS&G	CONSIGNMENT NOTE NO. TRANSPORT CO.	NAME: Sigma? 17:00 DATE: 31/05 OF: EMGT	COOLER SEAL – Yes....... No .... Intact .... Broken .... COOLER TEMP .... deg C
NAME: DATE: OF:	CONSIGNMENT NOTE NO. TRANSPORT CO	NAME: DATE: OF:	COOLER SEAL – Yes....... No .... Intact .... Broken .... COOLER TEMP .... deg C

Container & Preservative Codes: P = Plastic; J = Soil Jar; B = Glass Bottle; N = Nitric Acid Prsvd.; C = Sodium Hydroxide Prsvd; VC = Hydrochloric Acid Prsvd Vial; VS = Sulfuric Acid Prsvd Vial; S = Sulfuric Acid Prsvd; Z = Zinc Prsvd; E = EDTA Prsvd; ST = Sterile Bottle; O = Other

IMSO FormsO13 – Chain of Custody - eurofins mgt

JB1 – TRH/BTEX/PAH/As,Cd,Cr,Cu,Ni,Pb,Zn,Hg/Phenolics (Total)
JB1T - TRH/BTEX/PAH(Trace Level)/As,Cd,Cr,Cu,Ni,Pb,Zn,Hg/Phenolics (Total)
JB1A - TRH/BTEX/PAH/As,Cd,Cr,Cu,Ni,Pb,Zn,Hg/Phenolics (Total)/Asbestos
JB2 - TRH/BTEX/PAH/OCP/PCB/As,Cd,Cr,Cu,Ni,Pb,Zn,Hg
JB2A - TRH/BTEX/PAH/OCP/PCB/As,Cd,Cr,Cu,Ni,Pb,Zn,Hg/Asbestos
B10 - TRH/BTEX/PAH/OCP/OPP/As,Cd,Cr,Cu,Ni,Pb,Zn,Hg
JB2/JBL - TRH/BTEX/PAH/OCP/PCB/As,Cd,Cr,Cu,Ni,Pb,Zn,Hg/TCLP(PAH & 6 Metals)
JB3/JBL - TRH/BTEX/PAH/OCP/OPP/PCB/As,Cd,Cr,Cu,Ni,Pb,Zn,Hg/TCLP(PAH & 6 Metals)/Asbestos
JB4 - TRH/BTEX/VOC
JBL - TCLP(PAH & 6 Metals)

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Unit F3-F6 Building F, Parkview Building
16 Mars Road, Lane Cove West
NSW 2066

CHAIN OF CUSTODY

JBS&G

PROJECT NO.: 51707	LABORATORY BATCH NO.:
PROJECT NAME: UNSW Cliffbrook Campus	SAMPLERS: Lindsey Blecher
SEND REPORT TO: LBlecher@jbsg.com.au, MBeaner@jbsg SEND INVOICE TO: AdminNSW@jbsg.com.au	PHONE: SYDNEY 02 82450300 – PERTH 08 9488 0100 EMAIL: LBlecher@jbsg.com.au
DATE NEEDED BY: -	QC LEVEL: NEPM (2013)

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

JBS&G SPECIFIC SUITES

SAMPLE ID	MATRIX	DATE	TIME	TYPE & PRESERVATIVE	pH	JB1	JB1T	JB1A	JB2	JB2A	B10	JB2/JBL	JB3/JBL	JB4	JBL	Heavy Metals	PAH	TRH/BTEX	Asbestos (w/A)	OCP/PCBs	pH/CEC/%clay &	TCLP metals	TCLP PAHs	HOLD	BTEX	NOTES:
HA03 (0.00–0.10)	Soil	31/5		Bag + jar + ice												X	X	X	X	X	X					
(0.20–0.30)	↓	↓		↓																				X		
↓ (0.40–0.50)	↓	↓		↓																				X		
HA04 (0.00–0.10)	↓	↓		↓																				X		
(0.20–0.30)	↓	↓		↓												X	X	X	X	X						
↓ (0.40–0.80)	↓	↓		↓																				X		
RR	Water	↓		Metals, amber, vials, ice.												X	X	X		X						
TS/TB	↓	↓		Vials + ice.																					X	

RELINQUISHED BY:	METHOD OF SHIPMENT:	RECEIVED BY:	FOR RECEIVING LAB USE ONLY:
NAME: L.Blecher DATE: 31/5/16 OF: JBS&G	CONSIGNMENT NOTE NO. TRANSPORT CO.	NAME: SS DATE: 31/05 OF:	COOLER SEAL – Yes....... No .... Intact .... Broken .... COOLER TEMP .... deg C
NAME: DATE: OF:	CONSIGNMENT NOTE NO. TRANSPORT CO	NAME: DATE: OF:	COOLER SEAL – Yes....... No .... Intact .... Broken .... COOLER TEMP .... deg C

Container & Preservative Codes: P = Plastic; J = Soil Jar; B = Glass Bottle; N = Nitric Acid Prsvd.; C = Sodium Hydroxide Prsvd; VC = Hydrochloric Acid Prsvd Vial; VS = Sulfuric Acid Prsvd Vial; S = Sulfuric Acid Prsvd; Z = Zinc Prsvd; E = EDTA Prsvd; ST = Sterile Bottle; O = Other

IMSO FormsO13 - Chain of Custody - eurofins mgt

JB1 – TRH/BTEX/PAH/As,Cd,Cr,Cu,Ni,Pb,Zn,Hg/Phenolics (Total)
JB1T - TRH/BTEX/PAH(Trace Level)/As,Cd,Cr,Cu,Ni,Pb,Zn,Hg/Phenolics (Total)
JB1A - TRH/BTEX/PAH/As,Cd,Cr,Cu,Ni,Pb,Zn,Hg/Phenolics (Total)/Asbestos
JB2 - TRH/BTEX/PAH/OCP/PCB/As,Cd,Cr,Cu,Ni,Pb,Zn,Hg
JB2A - TRH/BTEX/PAH/OCP/PCB/As,Cd,Cr,Cu,Ni,Pb,Zn,Hg/Asbestos
B10 - TRH/BTEX/PAH/OCP/OPP/As,Cd,Cr,Cu,Ni,Pb,Zn,Hg
JB2/JBL - TRH/BTEX/PAH/OCP/PCB/As,Cd,Cr,Cu,Ni,Pb,Zn,Hg/TCLP(PAH & 6 Metals)
JB3/JBL - TRH/BTEX/PAH/OCP/OPP/PCB/As,Cd,Cr,Cu,Ni,Pb,Zn,Hg/TCLP(PAH & 6 Metals)/Asbestos
JB4 - TRH/BTEX/VOC
JBL - TCLP(PAH & 6 Metals)

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Phone : +61 2 9900 8400
NATA # 1261 Site # 18217

Brisbane
1/21 Smallwood Place
Murarrie QLD 4172
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Sample Receipt Advice

Company name:	**JBS & G Australia (NSW & WA) P/L**
Contact name:	Matthew Bennett
Project name:	ADDITIONAL: UNSW CLIFFBROOK
Project ID:	51707
COC number:	Not provided
Turn around time:	5 Day
Date/Time received:	Jun 7, 2016 6:22 PM
Eurofins | mgt reference:	**503683**

Sample information

☑ A detailed list of analytes logged into our LIMS, is included in the attached summary table.

☑ Sample Temperature of a random sample selected from the batch as recorded by Eurofins | mgt Sample Receipt : 1 degrees Celsius.

☑ All samples have been received as described on the above COC.

☑ COC has been completed correctly.

☑ Attempt to chill was evident.

☑ Appropriately preserved sample containers have been used.

☑ All samples were received in good condition.

☑ Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.

☑ Appropriate sample containers have been used.

☒ Some samples have been subcontracted.

N/A Custody Seals intact (if used).

Notes

Additional from 502667

Contact notes

If you have any questions with respect to these samples please contact:

Nibha Vaidya on Phone : +61 (2) 9900 8400 or by e.mail: NibhaVaidya@eurofins.com

Results will be delivered electronically via e.mail to Matthew Bennett - MBennett@jbsg.com.au.

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Certificate of Analysis

JBS & G Australia (NSW & WA) P/L
Level 1, 50 Margaret St
Sydney
NSW 2000

NATA Accredited
Accreditation Number 1261
Site Number 18217

Accredited for compliance with ISO/IEC 17025.
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

Attention: **Matthew Bennett**

Report **503683-S**
Project name ADDITIONAL: UNSW CLIFFBROOK
Project ID 51707
Received Date Jun 07, 2016

Client Sample ID			**BH03 0.9-1.0**
Sample Matrix			**Soil**
Eurofins | mgt Sample No.			**S16-Jn07502**
Date Sampled			**May 31, 2016**
Test/Reference	LOR	Unit	
Polycyclic Aromatic Hydrocarbons			
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	1.4
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	1.7
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.9
Acenaphthene	0.5	mg/kg	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5
Anthracene	0.5	mg/kg	< 0.5
Benz(a)anthracene	0.5	mg/kg	0.9
Benzo(a)pyrene	0.5	mg/kg	1.1
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	0.8
Benzo(g.h.i)perylene	0.5	mg/kg	0.7
Benzo(k)fluoranthene	0.5	mg/kg	0.9
Chrysene	0.5	mg/kg	1.1
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5
Fluoranthene	0.5	mg/kg	2.4
Fluorene	0.5	mg/kg	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5
Naphthalene	0.5	mg/kg	< 0.5
Phenanthrene	0.5	mg/kg	1.6
Pyrene	0.5	mg/kg	2.6
Total PAH*	0.5	mg/kg	12.1
2-Fluorobiphenyl (surr.)	1	%	99
p-Terphenyl-d14 (surr.)	1	%	107
% Moisture	1	%	9.4

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Polycyclic Aromatic Hydrocarbons	Sydney	Jun 08, 2016	14 Day
- Method: E007 Polyaromatic Hydrocarbons (PAH)			
% Moisture	Sydney	Jun 08, 2016	14 Day
- Method: LTM-GEN-7080 Moisture			

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Site # 1254 & 14271

Sydney
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16 Mars Road
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Phone : +61 2 9900 8400
NATA # 1261 Site # 18217

Brisbane
1/21 Smallwood Place
Murarrie QLD 4172
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Company Name:	JBS & G Australia (NSW & WA) P/L	**Order No.:**		**Received:**	Jun 7, 2016 6:22 PM
Address:	Level 1, 50 Margaret St Sydney NSW 2000	**Report #:**	503683	**Due:**	Jun 16, 2016
		Phone:	02 8245 0300	**Priority:**	5 Day
		Fax:		**Contact Name:**	Matthew Bennett
Project Name:	ADDITIONAL: UNSW CLIFFBROOK				
Project ID:	51707				

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Asbestos - WA guidelines	Polycyclic Aromatic Hydrocarbons	USA Leaching Procedure	Moisture Set
Melbourne Laboratory - NATA Site # 1254 & 14271									
Sydney Laboratory - NATA Site # 18217						X	X	X	X
Brisbane Laboratory - NATA Site # 20794									
External Laboratory									
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**				
1	BH03 0.9-1.0	May 31, 2016		Soil	S16-Jn07502		X		X
2	BH03 0.4-0.5	May 31, 2016		US Leachate	S16-Jn07503		X	X	
3	AH02 0.2-0.3	May 31, 2016		Soil	S16-Jn07504	X			
Test Counts						1	2	1	1

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

ug/l: micrograms per litre

ppb: Parts per billion

org/100ml: Organisms per 100 millilitres

MPN/100mL: Most Probable Number of organisms per 100 millilitres

mg/l: milligrams per litre

ppm: Parts per million

%: Percentage

NTU: Nephelometric Turbidity Units

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs 20-130%

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling.Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	mg/kg	< 0.5			0.5	Pass	
Acenaphthylene	mg/kg	< 0.5			0.5	Pass	
Anthracene	mg/kg	< 0.5			0.5	Pass	
Benz(a)anthracene	mg/kg	< 0.5			0.5	Pass	
Benzo(a)pyrene	mg/kg	< 0.5			0.5	Pass	
Benzo(b&j)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Benzo(g.h.i)perylene	mg/kg	< 0.5			0.5	Pass	
Benzo(k)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Chrysene	mg/kg	< 0.5			0.5	Pass	
Dibenz(a.h)anthracene	mg/kg	< 0.5			0.5	Pass	
Fluoranthene	mg/kg	< 0.5			0.5	Pass	
Fluorene	mg/kg	< 0.5			0.5	Pass	
Indeno(1.2.3-cd)pyrene	mg/kg	< 0.5			0.5	Pass	
Naphthalene	mg/kg	< 0.5			0.5	Pass	
Phenanthrene	mg/kg	< 0.5			0.5	Pass	
Pyrene	mg/kg	< 0.5			0.5	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	98			70-130	Pass	
Acenaphthylene	%	89			70-130	Pass	
Anthracene	%	102			70-130	Pass	
Benz(a)anthracene	%	86			70-130	Pass	
Benzo(a)pyrene	%	77			70-130	Pass	
Benzo(b&j)fluoranthene	%	79			70-130	Pass	
Benzo(g.h.i)perylene	%	79			70-130	Pass	
Benzo(k)fluoranthene	%	93			70-130	Pass	
Chrysene	%	104			70-130	Pass	
Dibenz(a.h)anthracene	%	73			70-130	Pass	
Fluoranthene	%	95			70-130	Pass	
Fluorene	%	92			70-130	Pass	
Indeno(1.2.3-cd)pyrene	%	74			70-130	Pass	
Naphthalene	%	100			70-130	Pass	
Phenanthrene	%	106			70-130	Pass	
Pyrene	%	98			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					
Acenaphthene	S16-Jn09497	NCP	%	96			70-130	Pass	
Acenaphthylene	S16-Jn09497	NCP	%	95			70-130	Pass	
Anthracene	S16-Jn09497	NCP	%	98			70-130	Pass	
Benz(a)anthracene	S16-Jn09497	NCP	%	91			70-130	Pass	
Benzo(a)pyrene	S16-Jn09497	NCP	%	85			70-130	Pass	
Benzo(b&j)fluoranthene	S16-Jn09497	NCP	%	84			70-130	Pass	
Benzo(g.h.i)perylene	S16-Jn09497	NCP	%	78			70-130	Pass	
Benzo(k)fluoranthene	S16-Jn09497	NCP	%	90			70-130	Pass	
Chrysene	S16-Jn09497	NCP	%	101			70-130	Pass	
Dibenz(a.h)anthracene	S16-Jn09497	NCP	%	73			70-130	Pass	
Fluoranthene	S16-Jn09497	NCP	%	96			70-130	Pass	
Fluorene	S16-Jn09497	NCP	%	93			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Indeno(1.2.3-cd)pyrene	S16-Jn09497	NCP	%	75			70-130	Pass	
Naphthalene	S16-Jn09497	NCP	%	99			70-130	Pass	
Phenanthrene	S16-Jn09497	NCP	%	105			70-130	Pass	
Pyrene	S16-Jn09497	NCP	%	99			70-130	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	S16-Jn07502	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	S16-Jn07502	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	S16-Jn07502	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	S16-Jn07502	CP	mg/kg	0.9	0.9	9.0	30%	Pass	
Benzo(a)pyrene	S16-Jn07502	CP	mg/kg	1.1	1.0	10	30%	Pass	
Benzo(b&j)fluoranthene	S16-Jn07502	CP	mg/kg	0.8	0.7	8.0	30%	Pass	
Benzo(g.h.i)perylene	S16-Jn07502	CP	mg/kg	0.7	0.7	10	30%	Pass	
Benzo(k)fluoranthene	S16-Jn07502	CP	mg/kg	0.9	0.8	9.0	30%	Pass	
Chrysene	S16-Jn07502	CP	mg/kg	1.1	1.0	8.0	30%	Pass	
Dibenz(a.h)anthracene	S16-Jn07502	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	S16-Jn07502	CP	mg/kg	2.4	2.2	9.0	30%	Pass	
Fluorene	S16-Jn07502	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	S16-Jn07502	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Naphthalene	S16-Jn07502	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	S16-Jn07502	CP	mg/kg	1.6	1.3	16	30%	Pass	
Pyrene	S16-Jn07502	CP	mg/kg	2.6	2.4	8.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	S16-Jn07502	CP	%	9.4	9.3	<1	30%	Pass	

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs

Authorised By

Nibha Vaidya	Analytical Services Manager
Bob Symons	Senior Analyst-Inorganic (NSW)
Ivan Taylor	Senior Analyst-Metal (NSW)
Rhys Thomas	Senior Analyst-Asbestos (NSW)
Ryan Hamilton	Senior Analyst-Organic (NSW)

Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

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Certificate of Analysis

JBS & G Australia (NSW & WA) P/L
Level 1, 50 Margaret St
Sydney
NSW 2000

NATA Accredited
Accreditation Number 1261
Site Number 18217

Accredited for compliance with ISO/IEC 17025.
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

Attention: **Matthew Bennett**

Report **503683-L**
Project name ADDITIONAL: UNSW CLIFFBROOK
Project ID 51707
Received Date Jun 07, 2016

Client Sample ID			**BH03 0.4-0.5**
Sample Matrix			**US Leachate**
Eurofins | mgt Sample No.			**S16-Jn07503**
Date Sampled			**May 31, 2016**
Test/Reference	LOR	Unit	
Polycyclic Aromatic Hydrocarbons			
Acenaphthene	0.001	mg/L	< 0.001
Acenaphthylene	0.001	mg/L	< 0.001
Anthracene	0.001	mg/L	0.001
Benz(a)anthracene	0.001	mg/L	< 0.001
Benzo(a)pyrene	0.001	mg/L	< 0.001
Benzo(b&j)fluoranthene[N07]	0.001	mg/L	< 0.001
Benzo(g.h.i)perylene	0.001	mg/L	< 0.001
Benzo(k)fluoranthene	0.001	mg/L	< 0.001
Chrysene	0.001	mg/L	< 0.001
Dibenz(a.h)anthracene	0.001	mg/L	< 0.001
Fluoranthene	0.001	mg/L	0.002
Fluorene	0.001	mg/L	< 0.001
Indeno(1.2.3-cd)pyrene	0.001	mg/L	< 0.001
Naphthalene	0.001	mg/L	0.002
Phenanthrene	0.001	mg/L	0.005
Pyrene	0.001	mg/L	0.002
Total PAH*	0.002	mg/L	0.012
2-Fluorobiphenyl (surr.)	1	%	95
p-Terphenyl-d14 (surr.)	1	%	87
USA Leaching Procedure			
Leachate Fluid[C01]		comment	1.0
pH (initial)	0.1	pH Units	8.9
pH (off)	0.1	pH Units	4.3
pH (USA HCl addition)	0.1	pH Units	2.2

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Polycyclic Aromatic Hydrocarbons	Sydney	Jun 10, 2016	7 Day
- Method: E007 Polyaromatic Hydrocarbons (PAH)			
USA Leaching Procedure	Sydney	Jun 08, 2016	14 Day
- Method: E019 TCLP Preparation			

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ABN – 50 005 085 521 e.mail : EnviroSales@eurofins.com web : www.eurofins.com.au

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2-5 Kingston Town Close
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Phone : +61 3 8564 5000
NATA # 1261
Site # 1254 & 14271

Sydney
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16 Mars Road
Lane Cove West NSW 2066
Phone : +61 2 9900 8400
NATA # 1261 Site # 18217

Brisbane
1/21 Smallwood Place
Murarrie QLD 4172
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Company Name:	JBS & G Australia (NSW & WA) P/L	**Order No.:**		**Received:**	Jun 7, 2016 6:22 PM
Address:	Level 1, 50 Margaret St Sydney NSW 2000	**Report #:**	503683	**Due:**	Jun 16, 2016
		Phone:	02 8245 0300	**Priority:**	5 Day
		Fax:		**Contact Name:**	Matthew Bennett
Project Name:	ADDITIONAL: UNSW CLIFFBROOK				
Project ID:	51707				

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Asbestos - WA guidelines	Polycyclic Aromatic Hydrocarbons	USA Leaching Procedure	Moisture Set
Melbourne Laboratory - NATA Site # 1254 & 14271									
Sydney Laboratory - NATA Site # 18217						X	X	X	X
Brisbane Laboratory - NATA Site # 20794									
External Laboratory									
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**				
1	BH03 0.9-1.0	May 31, 2016		Soil	S16-Jn07502		X		X
2	BH03 0.4-0.5	May 31, 2016		US Leachate	S16-Jn07503		X	X	
3	AH02 0.2-0.3	May 31, 2016		Soil	S16-Jn07504	X			
Test Counts						1	2	1	1

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram

ug/l: micrograms per litre

ppb: Parts per billion

org/100ml: Organisms per 100 millilitres

MPN/100mL: Most Probable Number of organisms per 100 millilitres

mg/l: milligrams per litre

ppm: Parts per million

%: Percentage

NTU: Nephelometric Turbidity Units

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs 20-130%

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling.Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
C01	Leachate Fluid Key: 1 - pH 5.0; 2 - pH 2.9; 3 - pH 9.2; 4 - Reagent (DI) water; 5 - Client sample, 6 - other
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs

Authorised By

Nibha Vaidya	Analytical Services Manager
Ryan Hamilton	Senior Analyst-Organic (NSW)

Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

Certificate of Analysis

NATA Accredited
Accreditation Number 1261
Site Number 18217

Accredited for compliance with ISO/IEC 17025. The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

JBS & G Australia (NSW & WA) P/L
Level 1, 50 Margaret St
Sydney
NSW 2000

Attention:	Matthew Bennett
Report	503683-AID
Project Name	ADDITIONAL: UNSW CLIFFBROOK
Project ID	51707
Received Date	Jun 07, 2016
Date Reported	Jun 16, 2016

Methodology:

Asbestos ID	Conducted in accordance with the Australian Standard AS 4964 – 2004: Method for the Qualitative Identification of Asbestos in Bulk Samples and in-house Method LTM-ASB-8020 by polarised light microscopy (PLM) and dispersion staining (DS) techniques. Bulk samples include building materials, soils and ores.
Subsampling Soil Samples	The whole sample submitted is first dried and then sieved through a 10mm sieve followed by a 2mm sieve. All fibrous matter viz greater than 10mm, greater than 2mm as well as the material passing through the 2mm sieve are retained and analysed for the presence of asbestos. If the sub 2mm fraction is greater than approximately 30 to 60g then a sub-sampling routine based on ISO 3082:2009(E) Iron ores - Sampling and Sample preparation procedures is employed. Depending on the nature and size of the soil sample, the sub-2 mm residue material may need to be sub-sampled for trace analysis in accordance with AS 4964-2004.
Bonded asbestos-containing material (ACM)	The material is first examined and any fibres isolated and where required interfering organic fibres or matter may be removed by treating the sample for several hours at a temperature not exceeding 400 ± 30°C. The resultant material is then ground and examined in accordance with AS 4964-2004.
Limit of Reporting	The nominal detection limit of the AS4964 method is around 0.01%. The examination of large sample sizes (at least 500 ml is recommended) may improve the likelihood of identifying asbestos material in the greater than 2 mm fraction. The NEPM screening level of 0.001% w/w asbestos in soil for FA and AF (i.e. non-bonded/friable asbestos) only applies where the FA and AF are able to be quantified by gravimetric procedures. This screening level is not applicable to free fibres. NOTE: NATA News, September 2011 – page 34, states, “Weighing of fibres is problematic and can lead to loss of fibres and potential exposure for laboratory analysts. To request laboratories to report information which is outside the scope of AS 4964-2004 and the scope of their accreditation is misleading and is most unwise” therefore such values reported are outside the scope of Eurofins | mgt NATA accreditation as designated by an asterisk.

Project Name ADDITIONAL: UNSW CLIFFBROOK
Project ID 51707
Date Sampled May 31, 2016
Report 503683-AID

Client Sample ID	Eurofins | mgt Sample No.	Date Sampled	Sample Description	Result
AH02 0.2-0.3	16-Jn07504	May 31, 2016	Approximate Sample 606g Sample consisted of: Brown coarse grain soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No respirable fibres detected.[M11]

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Asbestos - LTM-ASB-8020	Sydney	Jun 14, 2016	Indefinite

eurofins | mgt

ABN – 50 005 085 521 e.mail : EnviroSales@eurofins.com web : www.eurofins.com.au

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3-5 Kingston Town Close
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Phone : +61 3 8564 5000
NATA # 1261
Site # 1254 & 14271

Sydney
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16 Mars Road
Lane Cove West NSW 2066
Phone : +61 2 9900 8400
NATA # 1261 Site # 18217

Brisbane
1/21 Smallwood Place
Murarrie QLD 4172
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Company Name:	JBS & G Australia (NSW & WA) P/L	**Order No.:**		**Received:**	Jun 7, 2016 6:22 PM
Address:	Level 1, 50 Margaret St Sydney NSW 2000	**Report #:**	503683	**Due:**	Jun 16, 2016
		Phone:	02 8245 0300	**Priority:**	5 Day
		Fax:		**Contact Name:**	Matthew Bennett
Project Name:	ADDITIONAL: UNSW CLIFFBROOK				
Project ID:	51707				

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Asbestos - WA guidelines	Polycyclic Aromatic Hydrocarbons	USA Leaching Procedure	Moisture Set
Melbourne Laboratory - NATA Site # 1254 & 14271									
Sydney Laboratory - NATA Site # 18217						X	X	X	X
Brisbane Laboratory - NATA Site # 20794									
External Laboratory									
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**				
1	BH03 0.9-1.0	May 31, 2016		Soil	S16-Jn07502		X		X
2	BH03 0.4-0.5	May 31, 2016		US Leachate	S16-Jn07503		X	X	
3	AH02 0.2-0.3	May 31, 2016		Soil	S16-Jn07504	X			
Test Counts						1	2	1	1

Internal Quality Control Review and Glossary

General

1. QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Samples were analysed on an 'as received' basis.
4. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

Units

% w/w: weight for weight basis	grams per kilogram
Filter loading:	fibres/100 graticule areas
Reported Concentration:	fibres/mL
Flowrate:	L/min

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
COC	Chain of custody
SRA	Sample Receipt Advice
ISO	International Stardards Organisation
AS	Australian Standards
WA DOH	Western Australia Department of Health
NOHSC	National Occupational Health and Safety Commission
ACM	Bonded asbestos-containing material means any material containing more than 1% asbestos and comprises asbestos-containing-material which is in sound condition, although possibly broken or fragmented, and where the asbestos is bound in a matrix such as cement or resin. Common examples of ACM include but are not limited to: pipe and boiler insulation, sprayed-on fireproofing, troweled-on acoustical plaster, floor tile and mastic, floor linoleum, transite shingles, roofing materials, wall and ceiling plaster, ceiling tiles, and gasket materials. This term is restricted to material that cannot pass a 7 mm x 7 mm sieve. This sieve size is selected because it approximates the thickness of common asbestos cement sheeting and for fragments to be smaller than this would imply a high degree of damage and hence potential for fibre release.
FA	FA comprises friable asbestos material and includes severely weathered cement sheet, insulation products and woven asbestos material. This type of friable asbestos is defined here as asbestos material that is in a degraded condition such that it can be broken or crumbled by hand pressure. This material is typically unbonded or was previously bonded and is now significantly degraded (crumbling).
PACM	Presumed Asbestos-Containing Material means thermal system insulation and surfacing material found in buildings, vessels, and vessel sections constructed no later than 1980 that are assumed to contain greater than one percent asbestos but have not been sampled or analyzed to verify or negate the presence of asbestos.
AF	Asbestos fines (AF) are defined as free fibres, or fibre bundles, smaller than 7mm. It is the free fibres which present the greatest risk to human health, although very small fibres (< 5 microns in length) are not considered to be such a risk. AF also includes small fragments of bonded ACM that pass through a 7 mm x 7 mm sieve. (Note that for bonded ACM fragments to pass through a 7 mm x 7 mm sieve implies a substatntial degree of damage which increases the potential for fibre release.)
AC	Asbestos cement means a mixture of cement and asbestos fibres (typically 90:10 ratios).

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N/A	Not applicable
M11	NATA accreditation does not cover the performance of this service.

Authorised by:

Rhys Thomas Senior Analyst-Asbestos (NSW)

Glenn Jackson
National Operations Manager

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Uncertainty data is available on request

Sean 7/6 6:22

503683

-----Original Message-----
From: Nibha Vaidya [mailto:NibhaVaidya@eurofins.com]
Sent: Tuesday, 7 June 2016 6:22 PM
To: EnviroSampleNSW@eurofins.com.au
Subject: FW: Eurofins | mgt Test Results - Report 502667 : Site UNSW CLIFFBROOK (51707)

Additional analysis please

Nibha Vaidya
Phone : +61 2 9900 8415
Mobile : +61 499 900 805
Email : NibhaVaidya@eurofins.com

-----Original Message-----
From: Matthew Bennett [mailto:MBennett@jbsg.com.au]
Sent: Tuesday, June 07, 2016 6:13 PM
To: Nibha Vaidya
Cc: Lindsey Blecher
Subject: RE: Eurofins | mgt Test Results - Report 502667 : Site UNSW CLIFFBROOK (51707)

Thanks Nibha,

Could you please arrange the following additional analyses on this batch:

* PAHs on sample ID BH03 (0.9-1.0)
* TCLP PAH on sample ID BH03 (0.4-0.5)
* Asbestos (NEPM) on sample ID AH02 (0.2-0.3)

Standard TAT.

Thanks
Matt

-----Original Message-----
From: NibhaVaidya@eurofins.com [mailto:NibhaVaidya@eurofins.com]
Sent: Tuesday, 7 June 2016 5:59 PM
To: Lindsey Blecher <LBlecher@jbsg.com.au>
Cc: Matthew Bennett <MBennett@jbsg.com.au>
Subject: Eurofins | mgt Test Results

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
enquiries@envirolabservices.com.au
www.envirolabservices.com.au

SAMPLE RECEIPT ADVICE

Client Details	
Client	JBS & G (NSW & WA) Pty Ltd
Attention	M Bennett

Sample Login Details	
Your Reference	51707, UNSW Cliffbrook Campus
Envirolab Reference	**147764**
Date Sample Received	01/06/2016
Date Instructions Received	01/06/2016
Date Results Expected to be Reported	**08/06/2016**

Sample Condition	
Samples received in appropriate condition for analysis	YES
No. of Samples Provided	1 soil
Turnaround Time Requested	Standard
Temperature on receipt (°C)	6.2
Cooling Method	Ice
Sampling Date Provided	YES

Comments
Samples will be held for 1 month for water samples and 2 months for soil samples from date of receipt of samples

Please direct any queries to:

Aileen Hie	Jacinta Hurst
Phone: 02 9910 6200	Phone: 02 9910 6200
Fax: 02 9910 6201	Fax: 02 9910 6201
Email: ahie@envirolabservices.com.au	Email: jhurst@envirolabservices.com.au

Sample and Testing Details on following page

Envirolab Services Pty Ltd
ABN 37 112 535 645
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Sample Id	*vTRH(C6-C10)/BTEXN in Soil*	*svTRH (C10-C40) in Soil*	*PAHs in Soil*	*Organochlorine Pesticides in soil*	*PCBs in Soil*	*Acid Extractable metals in soil*	*Asbestos ID - soils NEPM - ASB-001*
QC01/A	✓	✓	✓	✓	✓	✓	✓

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CERTIFICATE OF ANALYSIS 147764

Client:

JBS & G (NSW & WA) Pty Ltd
Level 1, 50 Margaret St
Sydney
NSW 2000

Attention: M Bennett

Sample log in details:

Your Reference:	**51707, UNSW Cliffbrook Campus**
No. of samples:	1 soil
Date samples received / completed instructions received	01/06/16 / 01/06/16

Analysis Details:

Please refer to the following pages for results, methodology summary and quality control data.
Samples were analysed as received from the client. Results relate specifically to the samples as received.
Results are reported on a dry weight basis for solids and on an as received basis for other matrices.
Please refer to the last page of this report for any comments relating to the results.

Report Details:

Date results requested by: / Issue Date:	8/06/16 / 7/06/16
Date of Preliminary Report:	Not Issued

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Accredited for compliance with ISO/IEC 17025. **Tests not covered by NATA are denoted with *.**

Results Approved By:

Jacinta Hurst
Laboratory Manager

vTRH(C6-C10)/BTEXN in Soil		
Our Reference:	UNITS	147764-1
Your Reference	---------- -	QC01/A
Date Sampled	----------	31/05/2016
Type of sample		soil
Date extracted	-	02/06/2016
Date analysed	-	03/06/2016
TRHC$_6$ - C$_9$	mg/kg	<25
TRHC$_6$ - C$_{10}$	mg/kg	<25
vTPHC$_6$ - C$_{10}$ less BTEX (F1)	mg/kg	<25
Benzene	mg/kg	<0.2
Toluene	mg/kg	<0.5
Ethylbenzene	mg/kg	<1
m+p-xylene	mg/kg	<2
o-Xylene	mg/kg	<1
naphthalene	mg/kg	<1
Surrogate aaa-Trifluorotoluene	%	95

svTRH (C10-C40) in Soil		
Our Reference:	UNITS	147764-1
Your Reference	----------	QC01/A
	-	
Date Sampled	----------	31/05/2016
Type of sample		soil
Date extracted	-	2/06/2016
Date analysed	-	03/06/2016
TRHC$_{10}$ - C$_{14}$	mg/kg	<50
TRHC$_{15}$ - C$_{28}$	mg/kg	<100
TRHC$_{29}$ - C$_{36}$	mg/kg	<100
TRH>C$_{10}$-C$_{16}$	mg/kg	<50
TRH>C$_{10}$ - C$_{16}$ less Naphthalene (F2)	mg/kg	<50
TRH>C$_{16}$-C$_{34}$	mg/kg	<100
TRH>C$_{34}$-C$_{40}$	mg/kg	<100
Surrogate o-Terphenyl	%	80

PAHs in Soil		
Our Reference:	UNITS	147764-1
Your Reference	----------	QC01/A
	-	
Date Sampled	----------	31/05/2016
Type of sample		soil
Date extracted	-	02/06/2016
Date analysed	-	03/06/2016
Naphthalene	mg/kg	<0.1
Acenaphthylene	mg/kg	0.1
Acenaphthene	mg/kg	<0.1
Fluorene	mg/kg	<0.1
Phenanthrene	mg/kg	0.2
Anthracene	mg/kg	<0.1
Fluoranthene	mg/kg	0.5
Pyrene	mg/kg	0.5
Benzo(a)anthracene	mg/kg	0.3
Chrysene	mg/kg	0.3
Benzo(b,j+k)fluoranthene	mg/kg	0.5
Benzo(a)pyrene	mg/kg	0.3
Indeno(1,2,3-c,d)pyrene	mg/kg	0.2
Dibenzo(a,h)anthracene	mg/kg	<0.1
Benzo(g,h,i)perylene	mg/kg	0.2
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5
Total Positive PAHs	mg/kg	3.1
Surrogate p-Terphenyl-d14	%	95

Organochlorine Pesticides in soil		
Our Reference:	UNITS	147764-1
Your Reference	----------	QC01/A
	-	
Date Sampled	----------	31/05/2016
Type of sample		soil
Date extracted	-	02/06/2016
Date analysed	-	03/06/2016
HCB	mg/kg	<0.1
alpha-BHC	mg/kg	<0.1
gamma-BHC	mg/kg	<0.1
beta-BHC	mg/kg	<0.1
Heptachlor	mg/kg	<0.1
delta-BHC	mg/kg	<0.1
Aldrin	mg/kg	<0.1
Heptachlor Epoxide	mg/kg	<0.1
gamma-Chlordane	mg/kg	<0.1
alpha-chlordane	mg/kg	<0.1
Endosulfan I	mg/kg	<0.1
pp-DDE	mg/kg	<0.1
Dieldrin	mg/kg	<0.1
Endrin	mg/kg	<0.1
pp-DDD	mg/kg	<0.1
Endosulfan II	mg/kg	<0.1
pp-DDT	mg/kg	<0.1
Endrin Aldehyde	mg/kg	<0.1
Endosulfan Sulphate	mg/kg	<0.1
Methoxychlor	mg/kg	<0.1
Surrogate TCMX	%	76

PCBs in Soil		
Our Reference:	UNITS	147764-1
Your Reference	----------	QC01/A
	-	
Date Sampled	----------	31/05/2016
Type of sample		soil
Date extracted	-	02/06/2016
Date analysed	-	03/06/2016
Aroclor 1016	mg/kg	<0.1
Aroclor 1221	mg/kg	<0.1
Aroclor 1232	mg/kg	<0.1
Aroclor 1242	mg/kg	<0.1
Aroclor 1248	mg/kg	<0.1
Aroclor 1254	mg/kg	<0.1
Aroclor 1260	mg/kg	<0.1
Surrogate TCLMX	%	76

Acid Extractable metals in soil		
Our Reference:	UNITS	147764-1
Your Reference	----------	QC01/A
	-	
Date Sampled	----------	31/05/2016
Type of sample		soil
Date prepared	-	02/06/2016
Date analysed	-	02/06/2016
Arsenic	mg/kg	<4
Cadmium	mg/kg	<0.4
Chromium	mg/kg	6
Copper	mg/kg	17
Lead	mg/kg	73
Mercury	mg/kg	<0.1
Nickel	mg/kg	2
Zinc	mg/kg	99

Moisture		
Our Reference:	UNITS	147764-1
Your Reference	----------	QC01/A
	-	
Date Sampled	----------	31/05/2016
Type of sample		soil
Date prepared	-	2/06/2016
Date analysed	-	3/06/2016
Moisture	%	6.2

Asbestos ID - soils NEPM - ASB-001		
Our Reference:	UNITS	147764-1
Your Reference	---------- -	QC01/A
Date Sampled	----------	31/05/2016
Type of sample		soil
Date analysed	-	7/06/2016
Sample mass tested	g	601.81
Sample Description	-	Brown coarse-grained soil & rocks
Asbestos ID in soil (as per AS4964)	-	Chrysotile asbestos detected Organic Fibres detected
Trace Analysis	-	No asbestos detected
Total Asbestos[#1]	g/kg	0.9696
Asbestos ID in soil <0.1g/kg*	-	Not applicable
ACM >7mm Estimation*	g	0.5835
FA and AF Estimation*	g	0.0000
ACM>7mm Estimation*	%(w/w)	0.0970
FA and AF Estimation*[#2]	%(w/w)	<0.001

Method ID	Methodology Summary
Org-016	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-014	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
Org-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-012	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013. For soil results:- 1. 'TEQ PQL' values are assuming all contributing PAHs reported as <PQL are actually at the PQL. This is the most conservative approach and can give false positive TEQs given that PAHs that contribute to the TEQ calculation may not be present. 2. 'TEQ zero' values are assuming all contributing PAHs reported as <PQL are zero. This is the least conservative approach and is more susceptible to false negative TEQs when PAHs that contribute to the TEQ calculation are present but below PQL. 3. 'TEQ half PQL' values are assuming all contributing PAHs reported as <PQL are half the stipulated PQL. Hence a mid-point between the most and least conservative approaches above. Note, the Total +ve PAHs PQL is reflective of the lowest individual PQL and is therefore" Total +ve PAHs" is simply a sum of the positive individual PAHs.
Org-005	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.
Org-006	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
Metals-020	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Inorg-008	Moisture content determined by heating at 105+/-5 deg C for a minimum of 12 hours.
ASB-001	Asbestos ID - Identification of asbestos in soil samples using Polarised Light Microscopy and Dispersion Staining Techniques. Minimum 500mL soil sample was analysed as recommended by "National Environment Protection (Assessment of site contamination) Measure, Schedule B1 and "The Guidelines from the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia - May 2009" with a reporting limit of 0.1g/kg (0.01% w/w) as per Australian Standard AS4964-2004. Results reported denoted with * are outside our scope of NATA accreditation. **NOTE** #1 Total Asbestos g/kg was analysed and reported as per Australian Standard AS4964 (This is the sum of ACM >7mm, <7mm and FA/AF) **NOTE** #2 The screening level of 0.001% w/w asbestos in soil for FA and AF only applies where the FA and AF are able to be quantified by gravimetric procedures. This screening level is not applicable to free fibres. Estimation = Estimated asbestos weight Results reported with "--" is equivalent to no visible asbestos identified using Polarised Light microscopy and Dispersion Staining Techniques.
ASB-001	Asbestos ID - Qualitative identification of asbestos in bulk samples using Polarised Light Microscopy and Dispersion Staining Techniques including Synthetic Mineral Fibre and Organic Fibre as per Australian Standard 4964-2004.

Method ID	Methodology Summary