

Enquiry Phone: Customer Service (07) 3412 5269
Please Quote File: 653425-1653425-2653425-3
Document Reference: 6980694/OSIPOWM:KELLYMEL
Property Key: 186941

3 February 2011

150 Wembley Road
Logan Central QLD 4114
PO Box 3226 Logan City DC QLD 4114



Department Of Environment And Resource Management
Development Application Lodgement
PO Box 15155
CITY EAST QLD 4002

Council enquiries **07 3412 3412**
Council fax **07 3412 3444**
Email council@logan.qld.gov.au
Web www.logan.qld.gov.au
ABN 21 627 796 435

Dear Sir/Madam

RECEIVED

08 FEB 2011

PaLM

DECISION NOTICE

DEVELOPMENT APPLICATION NO: MCUC/130/2010
PROPERTY DESCRIPTION: LOT 658 SL 12298
PROPERTY LOCATION: 146-178 KINGSTON ROAD, SLACKS CREEK QLD 4127

APPLICATION DESCRIPTION:

- MATERIAL CHANGE OF USE - OUTDOOR ENTERTAINMENT & RESTAURANT, OPERATIONAL WORKS (VEGETATION CLEARING), AND BUILDING WORKS (PRELIMINARY APPROVAL)**

Reference is made to the above development application.

In accordance with Section 334 of the Sustainable Planning Act 2009 please find enclosed a copy of the Decision Notice and Development Permit issued by Council on 2 February 2011.

For further information about this application please contact Council on (07) 3412 5269 or via email on <mailto:bpuda@logan.qld.gov.au>.

Yours faithfully

49-Sch4 - Signature

Christian Parks
Development Assessment Co-ordinator
(on behalf of Chris Rose, Chief Executive Officer)

Your Reference: AG:KD
Enquiry Phone: Customer Service (07) 3412 5269
Please Quote: MCUC/130/2010
Document Reference: 6980577/OSIPOWM:KELLYMEL
Property Key: 186941
File Number: 653425-4



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3 February 2011



Greyhounds Queensland Lty
C/- ML Design
GPO Box 714
BRISBANE QLD 4001

Dear Sir/Madam

DECISION NOTICE - SUSTAINABLE PLANNING ACT 2009

DEVELOPMENT APPLICATION FOR

**MATERIAL CHANGE OF USE CODE - OUTDOOR
ENTERTAINMENT & RESTAURANT,
OPERATIONAL WORKS (VEGETATION
CLEARING), AND BUILDING WORKS
(PRELIMINARY APPROVAL)**

DEVELOPMENT APPLICATION NO.

MCUC/130/2010

PROPERTY ADDRESS

**146-178 KINGSTON ROAD, SLACKS CREEK QLD
4127**

PROPERTY DESCRIPTION

LOT 658 SL 12298

1. ASSESSMENT MANAGER CONTACT

The Assessment Manager Contact was Marta Osipowicz.

2. DECISION DATE

2 February 2011

3. DECISION

The abovementioned development application was assessed and approved subject to conditions. The decision was made by Logan City Council as the Assessment Manager on the date listed in item 2 of this Decision Notice.

4. DECISION TYPE

Combined Development Permit and Preliminary Approval (under Section 241 of the Sustainable Planning Act 2009) with the different components of the development approval as follows:

DEVELOPMENT PERMIT	PRELIMINARY APPROVAL
Material Change of Use - Outdoor Entertainment & Restaurant, Operational Works (Vegetation clearing), and Building Works (preliminary approval)	Building Works
Operational Works (Vegetation Clearing)	

5. REFERRAL AGENCIES

Name of Agency	Status	Address
Department of Environment and Resource Management	Concurrence Agency	Development Application Lodgement PO Box 15155 CITY EAST QLD 4002
Name of Agency	Status	Address
Department of Transport and Main Roads	Concurrence Agency	Floor 4 477 Boundary St SPRING HILL QLD 4000

6. CONDITIONS OF APPROVAL - ASSESSMENT MANAGER

The Assessment Manager conditions are attached to this Decision Notice.

7. CONDITIONS OF APPROVAL - CONCURRENCE/ADVICE AGENCY

The Concurrence Agency conditions are attached to this Decision Notice.

8. ANY APPROVED VARIATIONS TO THE PLANNING SCHEME THAT WERE GIVEN IN A PRELIMINARY APPROVAL UNDER SECTION 242 OF THE SUSTAINABLE PLANNING ACT 2009

There are no variations applicable to this Decision Notice

9. OTHER DEVELOPMENT PERMITS NECESSARY TO ALLOW THE DEVELOPMENT TO BE CARRIED OUT

Operational Works
Building Works
Plumbing and Drainage Works
Civil Engineering Works (stormwater drainage, access, external road works and footpath)
Electrical Engineering Works

10. ANY CODE THE APPLICANT MAY NEED TO COMPLY WITH FOR SELF-ASSESSABLE DEVELOPMENT RELATED TO THE DEVELOPMENT APPROVED

Comply with the provision of Council's Local Laws, Planning Scheme Policies, Planning Scheme and Planning Scheme Codes to the extent they have not been varied by this approval.

11. DETAILS OF COMPLIANCE ASSESSMENT REQUIRED FOR DOCUMENTS OR WORKS

Documents or works requiring compliance assessment	Matters or things against which the document or work must be assessed	Compliance assessor	When the request for compliance assessment must be made
Landscaping Plan and Works	Landscaping Code Landscape Development Manual Landscaping Conditions of Approval	Development Assessment Logan City Council	Prior to Building Works approval

12. PROPERLY MADE SUBMISSIONS

Please note that there were no submissions made regarding this application.

13. CONFLICT WITH PLANNING LAWS AND POLICIES

The decision does not conflict with any of the matters mentioned in Section 326 of the Sustainable Planning Act 2009.

14. REASONS FOR DECISION THAT CONFLICTS WITH PLANNING LAWS AND POLICIES

Not Applicable.

15. RIGHTS OF APPEAL

Rights of appeal in relation to this application are attached.

With reference to the attached 'Appeal Provisions', Section 337(1)(a) of the Sustainable Planning Act 2009 states inter alia:

"...the applicant gives the assessment manager a written notice stating that the applicant does not intend to make representations mentioned in Section 361(1)"

Should there be no intention to make representations regarding a matter stated in the Decision Notice, and no intention to appeal the decision, please sign and date the attached letter and return to Council to reduce any delays in the approval taking effect.

For further information about this application please contact the Assessment Manager on (07) 3412 5269 or via email on bpuda@logan.qld.gov.au

Yours faithfully

49-Sch4 - Signature

Christian Parks
Development Assessment Co-ordinator
(on behalf of Chris Rose, Chief Executive Officer)

Att:

Marta Osipowicz

RTI DL RELEASE - EHP

APPEAL PROVISIONS

Pursuant to the provisions of Chapter 7 of the *Sustainable Planning Act 2009*, a person may appeal to the Planning and Environment Court against the decision of the Council.

In the event of an appeal being started, the applicant/submitter is required to give written notice of the appeal to the Planning and Environment Court pursuant to Section 481 against the decision of the Council.

In the event of an appeal being started, the applicant/submitter is required to give written notice of the appeal to the entity specified in Section 482.

The relevant provisions of the *Sustainable Planning Act 2009* and the form prescribed for the institution of an appeal are set out below.

PROVISIONS OF THE SUSTAINABLE PLANNING ACT 2009

461 Appeals by applicants

- (1) An applicant for a development application may appeal to the court against any of the following—
 - (a) the refusal, or the refusal in part, of the development application;
 - (b) any condition of a development approval, another matter stated in a development approval and the identification or inclusion of a code under Section 242;
 - (c) the decision to give a preliminary approval when a development permit was applied for;
 - (d) the length of a period mentioned in Section 341;
 - (e) a deemed refusal of the development application.
- (2) An appeal under subSection (1)(a), (b), (c) or (d) must be started within 20 business days (the applicant's appeal period) after—
 - (a) if a decision notice or negotiated decision notice is given—the day the decision notice or negotiated decision notice is given to the applicant; or
 - (b) otherwise—the day a decision notice was required to be given to the applicant.
- (3) An appeal under subSection (1)(e) may be started at any time after the last day a decision on the matter should have been made.

462 Appeals by submitters—general

- (1) A submitter for a development application may appeal to the court only against—
 - (a) the part of the approval relating to the assessment manager's decision about any part of the application requiring impact assessment under Section 314; or
 - (b) the part of the approval relating to the assessment manager's decision under Section 327.
- (2) To the extent an appeal may be made under subSection (1), the appeal may be against 1 or more of the following—
 - (a) the giving of a development approval;
 - (b) any provision of the approval including—
 - (i) a condition of, or lack of condition for, the approval; or
 - (ii) the length of a period mentioned in Section 341 for the approval.
- (3) However, a submitter may not appeal if the submitter—
 - (a) withdraws the submission before the application is decided; or

- (b) has given the assessment manager a notice under Section 339(1)(b)(ii).
- (4) The appeal must be started within 20 business days (the submitter's appeal period) after the decision notice or negotiated decision notice is given to the submitter.

481 How appeals to the court are started

- (1) An appeal is started by lodging written notice of appeal with the registrar of the court.
- (2) The notice of appeal must state the grounds of the appeal.
- (3) The person starting the appeal must also comply with the rules of the court applying to the appeal.
- (4) However, the court may hear and decide an appeal even if the person has not complied with subSection (3).

482 Notice of appeal to other parties—development applications and approvals

- (1) An appellant under division 8 must give written notice of the appeal to—
 - (a) if the appellant is an applicant—
 - (i) the chief executive; and
 - (ii) the assessment manager; and
 - (iii) any concurrence agency; and
 - (iv) any principal submitter whose submission has not been withdrawn; and
 - (v) any advice agency treated as a submitter whose submission has not been withdrawn; or
 - (b) if the appellant is a submitter or an advice agency whose response to the development application is treated as a submission for an appeal—
 - (i) the chief executive; and
 - (ii) the assessment manager; and
 - (iii) any referral agency; and
 - (iv) the applicant; or
 - (c) if the appellant is a person to whom a notice mentioned in Section 465(1) has been given—
 - (i) the chief executive; and
 - (ii) the assessment manager for the development application to which the notice relates; and
 - (iii) any entity that was a concurrence agency for the development application to which the notice relates; and
 - (iv) the person who made the request under Section 383 to which the notice relates, if the person is not the appellant; or
 - (d) if the appellant is a person mentioned in Section 466(1)—
 - (i) the chief executive; and
 - (ii) the responsible entity for making the change to which the appeal relates; and
 - (iii) the person who made the request to which the appeal relates under Section 369, if the person is not the appellant; and
 - (iv) if the responsible entity is the assessment manager—any entity that was a concurrence
 - (v) agency for the development application to which the notice of the decision on the request relates; or
 - (e) if the appellant is a person to whom a notice mentioned in Section 467 has been given—the entity that gave the notice.
- (2) The notice must be given within—

- (a) if the appellant is a submitter or advice agency whose response to the development application is treated as a submission for an appeal—2 business days after the appeal is started; or
 - (b) otherwise—10 business days after the appeal is started.
- (3) The notice must state—
- (a) the grounds of the appeal; and
 - (b) if the person given the notice is not the respondent or a co-respondent under Section 485—that the person may, within 10 business days after the notice is given, elect to become a co-respondent to the appeal by filing in the court a notice of election in the approved form.

488 How an entity may elect to be a co-respondent

An entity that is entitled to elect to be a co-respondent to an appeal may do so, within 10 business days after notice of the appeal is given to the entity, by following the rules of court for the election.

FORM FOR THE NOTICE OF INSTITUTION OF AN APPEAL

An appeal must be lodged within the Planning and Environment Court Registry nearest to you within 20 business days after the day the decision notice or negotiated decision notice is given to the appellant. The notice must be lodged in person and must be accompanied by the prescribed fee. The Planning and Environment Court Registry will have details of the amount. The following form is prescribed by the Local Government Court Rules 1966 in respect of the institution of the appeal.

IN THE PLANNING and ENVIRONMENT COURT

Appeal No _____ of 2011

BETWEEN

(here set out Name of Appellant)

Appellant

AND

(here set out Name of Respondent)

Respondent

AND

(here set out Name of Co - Respondent)

Co-Respondent

NOTICE OF APPEAL

(APPELLANT'S NAME) of (APPELLANT'S ADDRESS) appeals to the Planning and Environment Court at (REGISTRY), against the decision of the Logan City Council made on (DATE OF THE DECISION) to (DESCRIPTION OF THE DECISION MADE BY THE COUNCIL) and seeks the following orders of judgement.

(INSERT DETAILS OF JUDGEMENT SOUGHT).

PARTICULARS OF THE DECISION THE SUBJECT OF THE APPEAL

The street address of the relevant land is (INSERT ADDRESS)

The real property description is (INSERT DESCRIPTION)

The decision appealed was made by the Logan City Council on the (DATE OF THE DECISION) upon application made by (NAME OF THE APPLICANT) for (description of the development sought in original application).

The grounds of appeal are: (INSERT GROUNDS OF APPEAL)

DATED this Day of 2011

Signed:

(Appellant or solicitor or agent)

This notice of appeal is filed by (here set out name of person filing Notice of Appeal) on behalf of the (here set out the name of Appellant), whose address for service is at (here set out address of service On Appellant). It is intended to effect service of this notice of appeal on (set out name of the Respondent and the Submitters or the Applicant, as appropriate).

RTI DL RELEASE EHP

Your Ref: AG:KD
Enquiry Phone: Customer Service (07) 3412 5269
Please Quote File: 653425-1653425-2653425-3
Document Reference: <docid>
Property Key: 186941



Chief Executive Officer
Logan City Council
PO Box 3226
LOGAN CITY DC QLD 4114

Attention: Marta Osipowicz

Dear Sir/Madam

**WAIVER OF APPEAL PROVISIONS
DEVELOPMENT APPLICATION NO:
PROPERTY ADDRESS:**

MCUC/130/2010
146-178 KINGSTON ROAD, SLACKS CREEK QLD
4127

**PROPERTY DESCRIPTION:
APPLICATION DESCRIPTION:**

LOT 658 SL 12298

- MATERIAL CHANGE OF USE - OUTDOOR ENTERTAINMENT & RESTAURANT,
OPERATIONAL WORKS (VEGETATION CLEARING), AND BUILDING WORKS
(PRELIMINARY APPROVAL)**

In accordance with Section 337(1)(a) of the *Sustainable Planning Act 2009*, I, the applicant, do not intend to make representations mentioned in 361(1) of the *Sustainable Planning Act 2009* regarding the decision for the above-mentioned development application and nor do I intend to lodge an appeal with the Planning and Environment Court.

Yours faithfully

Applicant's Name

Applicant's Signature

Date

CONDITIONS OF APPROVAL

APPLICANT: GREYHOUNDS QUEENSLAND LTD

APPLICATION NUMBER: MCUC/130/2010

TYPE & DESCRIPTION: Development Permit Material Change of Use for Outdoor Entertainment (Greyhound Racing Facility) & Restaurant

Development Permit Operational Works (Vegetation Clearing)

Preliminary Approval Building Works

PROPERTY LOCATION: 146-178 Kingston Road, SLACKS CREEK QLD 4127

OFFICER DETAILS

The Assessment Manager for this application is:

Officer Name: Marta Osipowicz
Contact Number: (07) 3412 5269
Please Quote: MCUC/130/2010
Document Number: 6979645

LAND

Development Permit to apply to the following land:

Street Address: 146-178 Kingston Road, SLACKS CREEK QLD 4127
Real Property Description: Lot 658 on SL12298

CONDITIONS OF DEVELOPMENT:

1. PARAMETERS OF APPROVAL

- 1.1. The development of the premises must comply with the provision of Council's Local Laws, Planning Scheme Policies, Planning Scheme and Planning Scheme Codes to the extent they have not been varied by this approval.
- 1.2. Comply with all conditions of this development approval at no cost to Council and prior to the commencement of the use unless otherwise stated in a specific condition.

2. PLAN OF DEVELOPMENT

- 2.1. Undertake development generally in accordance with the following approved plans of development and documents except as altered by other conditions of this development approval including any amendments wherever made in red on the plans:

Plan Number	Rev / Amd't	Title	Date	Prepared by
DA-001	E	Site Plan	28-6-2010	ML Design
DA-001	F	Site Plan - Indicative Landscaping Ares	27-8-2010	ML Design
DA-002	C	Floor Plans - GQL Facility Building (Ground Floor Plan)	18-3-2010	ML Design
DA-003	C	Floor Plans - GQL Facility Building (Level 1	18-3-2010	ML Design

Plan Number	Rev / Amd't	Title	Date	Prepared by
		Plan)		
DA-004	C	Floor Plans - GQL Facility Building (Level 2 Plan)	18-3-2010	ML Design
DA-005	C	Floor Plans - GQL Facility Building (Level 3 Plan)	18-3-2010	ML Design
DA-006	C	Roof Plans - GQL Facility Building	18-3-2010	ML Design
DA-007	C	Floor Plans - Kennel and Trailing Blocks	18-3-2010	ML Design
DA-008	C	Site Section	18-3-2010	ML Design
DA-009	C	Elevations - GQL Facility Building (South and West Elevations)	18-3-2010	ML Design
DA-010	C	Elevations - GQL Facility Building (North and East Elevations)	18-3-2010	ML Design
DA-011	C	Elevations - Kennel Block	18-3-2010	ML Design
DA-012	C	Elevations - Trailing Block	18-3-2010	ML Design
DA-013	C	Perspectives - 01	18-3-2010	ML Design
DA-014	C	Perspectives - 02	18-3-2010	ML Design
DA-015	C	Perspectives - 03	18-3-2010	ML Design
DA-016	C	Perspectives - 04	18-3-2010	ML Design
DA-017	C	Perspectives - 05	18-3-2010	ML Design

Document Number	Rev / Amd't	Title	Date	Prepared by
QB10035	-	Infrastructure Servicing Plan and Site Based Stormwater Management Plan	March 2010	Sinclair Knight Merz (SKM)

3. INFRASTRUCTURE CONTRIBUTIONS

- 3.1. Pay a monetary contribution in accordance with the relevant planning instrument or infrastructure charges schedule applicable at the time of payment prior to the issuing of a Compliance Certificate for any part of the development under the *Plumbing and Drainage Act 2002* or commencement of the use, towards the cost of providing the following infrastructure. The contribution is to be calculated based on the following demand units:

Infrastructure	Demand Units
Water Supply	108.07 EP
Sewerage	57.65 EP
Road Transport	264 VTPD

Further Advice:

On 2 December 2010 the above monetary contributions were calculated to be the following amounts. It is important to note that;

- these amounts are not fixed and vary until the date of payment in accordance with the applicable cost indexation factor identified in the relevant planning instrument or infrastructure charges schedule;
- payments cannot be made without an invoice issued that remains current;
- an invoice will not be issued until the time for payment trigger has been achieved in the relevant condition of approval:

Infrastructure	District and Sub-District	Amount
Water Supply	Springwood Low Level	\$192,148.46
Sewerage	Springwood	\$68,661.15
Road Transport	Sector 12 Underwood	\$116,632.74

4. CONCURRENCE AGENCY RESPONSE

- 4.1. Department of Transport and Main Roads concurrence agency response, as attached.
- 4.2. Department of Environment and Resource Management concurrence agency response, as attached.

MATERIAL CHANGE OF USE - OUTDOOR ENTERTAINMENT (GREYHOUND RACING FACILITY) & RESTAURANT

DEVELOPMENT PERMIT CONDITIONS

5. BUILDING AND DESIGN

- 5.1. Ensure that the Greyhounds Facility Building has a high quality finish; in particular the northern elevation must include variations in materials, colours or textures in order to provide visual interest and a high quality streetscape outcome.
- 5.2. Do not include large images (of any kind, including Greyhounds) on the northern elevation.
- 5.3. Provide two (2) entry feature statements as identified on the approved plans of development. The entry statements are to be architecturally designed in order to reflect the prominent nature of the site within the locality.

6. OPERATION OF THE USE

- 6.1. Undertake activities associated with the Greyhound Racing Facility and Restaurant in the following manner:
 - 6.1.1. Not more than 5 race meetings per week and Restaurant between the hours of 12:00pm (midday) to 10:00pm, Monday to Saturday.
 - 6.1.2. Administrative function of the facility between the hours of 9:00am to 5:00pm, Monday to Saturday.
 - 6.1.3. General training, including the use of the main tracks and trailing track, between the hours of 7:00am to 10:00pm, Monday to Friday and 9:00am to 5:00pm on Saturday and Sunday.
- 6.2. Ensure loading, unloading, deliveries and waste collection activities associated with the operation of the use only occur between the hours of 7:00am to 5:00pm, Monday to Saturday.

7. SOCIAL AMENITY MANAGEMENT PLAN

- 7.1. Prepare a Social Amenity Management Plan for submission and endorsement by Council in writing prior to the commencement of use.
- 7.2. The Management Plan must incorporate details of the development, administration, re-sourcing, partnerships and implementation involved, to be negotiated between the owner and Council, with written endorsement of the final management plan by Council to be in place prior to the commencement of use and thereafter.
- 7.3. The Management Plan must incorporate an action plan describing specific strategies, activities, and measures that will undertake to implement the policies outlined in Greyhounds Queensland Code of Practice including:
 - 7.3.1. Public safety;
 - 7.3.2. Minimising harm from gambling; and
 - 7.3.3. Responsible citizenship.
- 7.4. Carry out the functions as stated within the Management Plan for the life of this approval.

8. ROADS & TRANSPORTATION

- 8.1. Dedicate, at no cost to Council, land depicted by Council's *Logan Central Bikeway Network Compton Road - Kingston Road to Allgas Street Compton Road Proposed Acquisition Plan* dated 23 November 2009 for road reserve purposes.
- 8.2. Design and construct a minimum 3.0 metre wide reinforced concrete bikeway in accordance with Council standards along the full length of the Compton Road frontage of the site.
- 8.3. Provide a minimum of 160 car parking spaces including a minimum of seven (7) disabled car parking spaces on the site.
- 8.4. Provide a minimum of five (5) motorcycle spaces on the site.
- 8.5. Provide a minimum of five (5) bicycle parking spaces, including rail-type locking facilities for each parked bicycle, on site. The spaces are to be located a maximum of 25 metres from any pedestrian entrance into the development.
- 8.6. Design all access driveways, circulation driveways, parking aisles and car parking spaces in accordance with Australian Standard 2890.1 - *Parking Facilities - Off Street Car Parking* except where stated otherwise in the planning scheme.

9. ACCESS

- 9.1. Locate vehicular access to and from the site as shown in the plans of the development.
- 9.2. Remove existing access crossover, namely from Kingston Road to the site from the road verge, and reinstate road verge.
- 9.3. Design and construct a matching kerb and channel and a minor underground drainage system to stormwater flow from Kingston Road section in to the existing open channel along the Southern boundary.
- 9.4. Design and construct a minimum 1.2 metre wide reinforced concrete pedestrian footpath along the full length of the Kingston Road frontage of the site.
- 9.5. Provide pedestrian access to the development from Kingston Road and Compton Road.
- 9.6. Construct a vehicular access to the site which incorporates a reinforced concrete industrial crossover as shown in the approved plans of development. Council Technical Officer must inspect and approve the driveway slab prior to placing of concrete.
- 9.7. Design and construct a left turn only egress from the site to Compton Road.
- 9.8. Ensure access to car parking spaces, bicycle spaces, vehicle loading and manoeuvring areas and driveways remain unobstructed and available for their intended purpose during the hours of operation.

- 9.9. Provide loading bay facilities for a Heavy Rigid Vehicle in the location generally shown on the approved plans of development that are designed in accordance with Australian Standard 2890.2 – *Off-street commercial vehicle facilities* except where stated otherwise in the planning scheme.
- 9.10. Demonstrate turning movements for a Heavy Rigid Vehicle on any drawings or plans submitted to the Council as a part of a development application for operational works.

10. SEWER

- 10.1. Connect the development to the reticulation sewer network.
- 10.2. Obtain approval from Allconnex Water for the connection point to the existing sewer prior to the making any development applications for operational work (works for infrastructure) or for plumbing and drainage work, whichever occurs first.
- 10.3. Ensure that a suitable connection servicing the entire development is installed by Allconnex Water at the owner's expense.
- 10.4. Ensure that any redundant sewer and sewer connections within the site or servicing the development are decommissioned by Allconnex Water at the owner's expense.
- 10.5. Ensure that the maintenance hole (MH) is raised or lowered, if necessary, by Allconnex Water at the owner's expense.

11. WATER SUPPLY

- 11.1. Connect the site to the reticulation water supply.
- 11.2. Ensure that the complete property service connection that includes the meter installation and tapping of the main is installed by Allconnex Water at the owner's expense.
- 11.3. Connect the development into the 150mm main in the North West corner of the site;
- 11.4. Ensure that any redundant water meter connection within the site or servicing the development is removed by Allconnex Water at the owner's expense.

12. STORMWATER DRAINAGE/QUANTITY MANAGEMENT

- 12.1. Provide a stormwater drainage easement in any approval for operational works to the benefit of Council that includes:
- 12.1.1. all stormwater overland flow paths traversing the land; and
 - 12.1.2. any stormwater main existing or proposed to traverse the land centrally located within the easement.
- 12.2. Design and construct a stormwater system generally in accordance with the recommendation in the approved document, subject to the following amendments and submit the final Site Based Stormwater Management Plan (SBSMP) with the operational works application;
- 12.2.1. Stormwater flow from Kingston Road section to be diverted to the existing open channel along Southern boundary via a minor underground drainage system.
 - 12.2.2. Existing open channel to be upgraded as a vegetated trapezoidal channel. Provide sections showing batter slopes.
 - 12.2.3. Internal batter slope of the detention basin to be no steeper than 1 in 6.
- 12.3. Provide long sections and cross sections of the proposed detention basin showing the low flow and high flow levels in the operational works application.

13. STORMWATER QUALITY

- 13.1. Implement the recommendations in the approved document, subject to detailed design.

- 13.2. Submit a Detailed Stormwater Quality Management Plan (DSQMP) including all stormwater infrastructure, relevant landscaping and engineering designs with an operational works application. The Detailed Stormwater Quality Management Plan and designs are to be in accordance with the *Water Sensitive Urban Design Technical Design Guidelines for South East Queensland* (WSUD TDG), the *Construction and Establishment Guidelines: Swales, Bioretention Systems and Wetlands* (C&E guidelines) and IPWEAQ Standard Drawings numbers WSUD-001 to WSUD-012 and must include:
- 13.2.1. detailed calculations for each treatment measure and completed copies of the applicable Design Calculation Summary checklists from the WSUD TDG;
 - 13.2.2. a completed copy of the relevant design assessment checklist from the WSUD TDG for each treatment measure certified by the stormwater quality system designer.
- 13.3. All drainage swales and vegetated areas are to have a minimum gradient of 1%.
- 13.4. Submit an Operational Management and Maintenance Plan (OMMP) as a separable section of the DSQMP to provide an outline of the proposed long term operational management and maintenance requirements of the stormwater system on the site. Include a plan showing the location of the individual components of the system.
- 13.5. Implement the approved DSWMP and OMMR in perpetuity. Maintain copies of the DSWMP and OMMR on site and regular inspection records and make available to Council upon request. Make all necessary improvements immediately upon awareness of any deficiencies in the treatment measures.

14. EARTHWORKS, EROSION AND SEDIMENT CONTROL, RETAINING WALLS

- 14.1. Do not carry out earthworks or building works prior to obtaining a permit for operational works.
- 14.2. Carry out earthworks in accordance with AS 3798-1996, *Guidelines on earthworks for commercial and residential developments*
- 14.3. Do not carry out earth filling against the property boundaries of surrounding properties, unless the fill is adequately retained. Ensure that those properties are not impacted by changes to the existing natural drainage in the area.
- 14.4. Provide an Erosion and Sediment Control Management Plan prepared in accordance with Soil Erosion and Sediment Control Engineering Guidelines for Queensland Institution of Engineers Australia (Qld) in conjunction with the operational works application.

15. LANDSCAPING PLANS

- 15.1. Submit and have approved by Council a landscape plan and documentation, prepared by a Corporate Member of the Australian Institute of Landscape Architects (or other suitably qualified and experienced professional deemed suitable on demonstration of project experience and document skills to Council) as part of an application for Compliance Assessment - Landscaping.
- 15.2. The landscape plan and documentation must reflect the approved layout and must be prepared in accordance with the provisions of the Landscaping Code, the Landscape Development Manual and must include the following:
- 15.2.1. Landscape areas are to be at natural ground level except where it is proposed to import soil with suitable retaining works;
 - 15.2.2. Car park shade trees in accordance with Council requirements. Some tree locations have been shown in red on the approved drawings however, additional planting areas are required to accommodate shade trees to Council requirements;
 - 15.2.3. Provide landscaping areas as shown in red on the approved drawings;
 - 15.2.4. A detailed plant schedule listing all the proposed species. Plants to be predominantly native species; and
 - 15.2.5. An automatic in ground irrigation system to all new garden areas that while water restrictions are in place uses harvested stormwater or recycled water;

- 15.3. Any fencing along the Kingston Road and Compton Road frontages must be a maximum 1.8 metres in height with a minimum 80% transparency for passive surveillance of the street.
- 15.4. The location of the entry statement must not be located within the road reserve and must not impede sight lines when exiting/entering any road.
- 15.5. All trees that are to be retained must be protected during the course of construction in accordance with AS4970 *Protection of trees on development sites*.
- 15.6. Provide fencing or bollards with suitable maintenance and emergency access that prevents unauthorised vehicles from entering the track and building area.
- 15.7. All batters and disturbed areas are to be grassed.
- 15.8. Remove all weeds and rubbish from the site including the drainage channel along the southern and eastern boundaries.
- 15.9. Maintenance must be in accordance with the Landscape Development Manual.

16. KENNEL WASTE MANAGEMENT

- 16.1. All waste (including waste water) generated as part of the kennel operations must be disposed of in a safe and sanitary manner.
- 16.2. Waste waters from animals from washing down the floors, surfaces, enclosures and other areas must be collected and drained to an approved pre-treatment device before discharge to the sewage system.

17. ACOUSTICS

- 17.1. All external speakers are to be directed away from noise sensitive places (i.e. residential dwellings).
- 17.2. Onsite noise must comply with the noise level limits outlined in Table 1:

Table 1: Noise Level Limits

Time	Maximum noise level (LA _{max,T}) at 1 metre from the façade of the nearest noise sensitive place	Maximum noise level (LA _{max,T}) at 1 metre from the façade of the nearest non-noise sensitive place
7:00am to 6:00pm	Background LA _{90,T} + 5dB(A)	Background LA _{90,T} + 10dB(A)
6:00pm to 10:00pm	Background LA _{90,T} + 5dB(A)	Background LA _{90,T} + 10dB(A)
10:00pm to 7:00am	Background LA _{90,T} + 3dB(A)	Background LA _{90,T} + 8dB(A)

- 17.1. Animal noise must comply with the noise level limits outlined in Table 2:

Table 2: Noise Level Limits for the Greyhounds

Time	Maximum Noise Level	Location- Noise Sensitive Receptor
7:00am to 8:00pm	Background LA _{90,T} + 10dB(A) or Ambient LA _{10,T} + 10dB(A)	Measured in accordance with Section 6.2.3 of AS1055.1: 1997
8:00pm to 7:00am	Background LA _{90,T} + 5dB(A) or Ambient LA _{10,T} + 5dB(A)	Measured in accordance with Section 6.2.3 of AS1055.1: 1997

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8:00pm to 7:00am	Background LA _{90,T} + 5dB(A) or Ambient LA _{10,T} + 5dB(A)	Measured in accordance with Section 6.2.3 of AS1055.1: 1997

- 17.2. Prepare and submit a Transitional Environmental Plan (TEP) to Council for approval within one month of a validated noise complaint being received. The TEP will address sections 330, 331 and 332 of the *Environmental Protection Act 1994*. The TEP must include, but is not restricted to:
- 17.2.1. Objectives of the plan.
 - 17.2.2. Measures to be implemented to achieve the objectives.
 - 17.2.3. Appropriate performance indicators at intervals of less than 6 months.
 - 17.2.4. Provisions for monitoring and compliance recording.
 - 17.2.5. The TEP must demonstrate how compliance with the noise emission criteria outlined above will be achieved, and include a timetabled implementation plan.
 - 17.2.6. Once approved, the use is to operate in accordance with the approved TEP.

18. LIGHTING EMISSIONS

- 18.1. Provide certification from a suitably qualified lighting installation technician/engineer that all on site lighting (particularly outdoor lighting) complies with *AS4282:1997 Control of Obtrusive Effects of Outdoor Lighting* and Schedule 3 Part 1 Table 1.3 of the *Logan Planning Scheme 2006*.
- 18.2. All track lighting must be turned off after 10:00pm.

19. GENERAL

- 19.1. Be responsible for the full cost of any alteration necessary to electricity, telephone, water mains, sewer mains, stormwater drainage systems or easements and/or other public utility installations resulting from the development or from road and drainage works required in connection with the development.
- 19.2. Do not commence on works which will ultimately revert to Council or on adjacent roads or drainage schemes until Council has been advised in writing, of the name of the responsible contractor and that the contractor has received from Council a notice of appointment of principal contractor under the provisions of the *Workplace Health and Safety Act 1989*.
- 19.3. Provide written authority at the time of submission of Operational Works plans to allow Council officers to enter the land at all reasonable times in order to carry out inspections in relation to this approval.

OPERATIONAL WORKS (VEGETATION CLEARING)

DEVELOPMENT PERMIT CONDITIONS

20. VEGETATION CLEARING

- 20.1. Undertake vegetation clearing in accordance with the approved plans of development only. No additional clearing is permitted other than permitted exemptions in accordance with the applicable Planning Scheme.
- 20.2. Ensure all vegetation removed as a result of this development approval and requiring disposal is disposed of:
 - 20.2.1. On the premises for landscaping and sediment and erosion control purposes (for example as mulch); and/or
 - 20.2.2. At a waste disposal facility operated by Council provided that the waste is delivered to the waste disposal facility in a manner and form which allows it to be mulched at the facility, and/or
 - 20.2.3. In such other environmentally responsible manner as meets with the written approval of the Council.

Ensure any vegetation removed as a result of this development approval is not burnt or incinerated on the subject site.

BUILDING WORKS

PRELIMINARY APPROVAL CONDITIONS

There are no planning conditions relating to the **Preliminary Approval for Building Works**. An assessment against the Building Code of Australia has not been undertaken and prior to any building work commencing a Development Permit for Building Works must be obtained.

RTI DL RELEASE - EHP

FURTHER ADVICE TO APPLICANT

In relation to the application, the applicant is further advised:

1. The relevant period for this approval is in accordance with Section 341 of the *Sustainable Planning Act 2009*.
2. Authorised persons of the Council may enter the premises the subject of this approval at any reasonable time to ascertain whether the above conditions have been complied with (and/or whether the above requirements have been carried out).
3. Documentation in relation to any land required to be registered to the benefit of Council is required to be prepared and carried out by Council's solicitors at the owner's expense.

The applicant and owner be further advised:-

It is the owner's and occupants responsibility under the *Environmental Protection Act 1994* to advise the Chief Executive of the Department of Environment and Resource Management, of any Notifiable Activity conducted on the site or contamination or suspected contamination which may cause a hazard to human health or the environment within 30 days of becoming aware of the operation of a Notifiable Activity on the site or of any contamination or suspected contamination. The Chief Executive, pursuant to the Act, is empowered to require that the development complies with the provisions of the Act, including the preparation of site investigation reports and if necessary the remediation of the site at the owners expense.

FURTHER DEVELOPMENT PERMITS OR COMPLIANCE PERMITS REQUIRED UNDER THE SUSTAINABLE PLANNING ACT 2009

- Building Works
- Plumbing and Drainage Works
- Operational Works
 - Civil Engineering Works (stormwater drainage, access, external road works and foot path)
 - Electrical Engineering works

FURTHER COMPLIANCE CERTIFICATES REQUIRED UNDER THE SUSTAINABLE PLANNING ACT 2009

Documents or works requiring compliance assessment	Matters or things against which the document or work must be assessed	Compliance assessor	When the request for compliance assessment must be made
Landscaping Plan and Works	Landscaping Code Landscape Development Manual Landscaping Conditions of Approval	Development Assessment Logan City Council	Prior to Building Works approval

DECISION

That in accordance with delegation to the Development Assessment Manager under section 277 of the *Local Government Act 2009* it is recommended that in accordance with the matters set out in the submission to the Delegate and the recommendation of the officer, I am satisfied that the conditions accord with relevant standards and the *Sustainable Planning Act 2009* where applicable and as such approve the above conditions.

Dated the 2nd day of February 2011

49-Sch4 - Signature

Christian Parks
Development Assessment Co-ordinator
Strategy and Outcomes
AS DELEGATE OF THE COUNCIL

RTI DL RELEASE - EHP



103708494

**Queensland
Government**

12 July 2010

Chief Executive Officer
Logan City Council
PO Box 3226
Logan City DC Qld 4114

COPY**Attention: Ms Marta Osipowicz**

Dear Madam

REFERRAL AGENCY'S RESPONSE

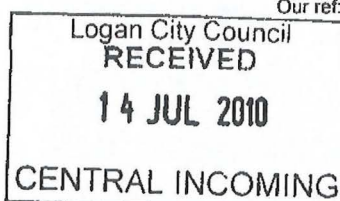
Logan City Council: Brisbane Beenleigh Road
Proposed Material Change of Use - Outdoor Entertainment (Greyhound Racing Facility) and Restaurant
Operational Works - Vegetation Clearing
Preliminary Approval - Building Works
Application No. MCUC/130/2010
Lot 658 on SL12298
Situated at 146 - 178 Kingston Road, Slacks Creek

We refer to an application received by this department on 7 April 2010 from ML Design for the above proposal.

Document Reference	Revision	Title	Date	Author
Drawing no. QB10035SK05	Revision A	Vehicle turning path	18/11/2009	SKM Pty Ltd
Drawing no. QB10035FIGF1	Amendment A	Figure F1 Water & sewerage reticulation plans (indicative)	-	SKM Pty Ltd
Drawing no. Q0785	-	Lighting engineering & design - 9 poll tower locations & 9 poll inner track	18/02/2010	Sylvania Lighting Australasia Pty Ltd

Transport and Main Roads
Assets and Operations
South Coast Region/Gold Coast Office
36-38 Cotton Street, Nerang QLD 4211
PO Box 442, Nerang QLD 4211

ABN 39 407 609 291



Our ref: 240/204/658SL12298 DA.2 cjs-cjs.539 10616

Your ref: GREY0001
Enquiries: Carly Stebbing
Telephone +61 7 5596 9500
Facsimile +61 7 5596 9511
Website www.tmr.qld.gov.au
Email nerangdo@tmr.qld.gov.au



**Queensland
Government**

The Department of Transport and Main Roads, as a Concurrence Agency has carried out an assessment of the application and is satisfied that the proposed development will not have a significant impact on the State transport network. Accordingly, the Department of Transport and Main Roads has no requirements in regards to the proposal.

Yours sincerely

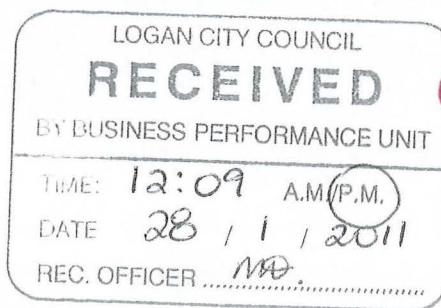
49-Sch4 - Signature

for Andrew Cramp

Regional Director (South Coast)

RTI DL RELEASE - EHP

Department of Environment
and Resource Management



COPY
Notice

Concurrence Agency Response

This notice is issued by the Department of Environment and Resource Management pursuant to section 287 of the Sustainable Planning Act 2009 ("the Act").

Chief Executive Officer
Logan City Council
PO Box 3226
LOGAN CITY DC QLD 4114

cc. Greyhounds Queensland Ltd
C/- ML Design Pty Ltd
GPO Box 714
BRISBANE QLD 4001

Attention: **Marta Osipowicz**

Attention: **Andrew Gaffney**

Reference: MCUC/130/2010

DERM reference: IC0410BEE0020_LOG6122_347288

Re: Concurrence Agency Response

1. Application details

Assessment Manager ref.: MCUC/130/2010

Date application made to DERM: 12 April 2010

Development approval applied for: Development permit

Development descriptions: Application for MCU & OpWks - Queensland Greyhound Track

Property/Location description: Lot 658 on SL12298 (Kingston Road, Slacks Creek) - Logan City Council

2. The Chief Executive, Department of Environment and Resource Management (DERM), as a concurrence agency for the application, advises that a response for each of the concurrence agency referral jurisdictions has been made and is attached.

3. General advice to assessment manager

Pursuant to sections 334 and 363 of the Act, a copy of a decision notice or negotiated decision notice issued by the assessment manager must be forwarded to DERM as a referral agency for the relevant application at PO Box 1164, BEENLEIGH QLD 4207 and an electronic copy to eco.access@derm.qld.gov.au.

Notice
Concurrence Agency Response

The State's Native Title Work Procedures provide that responsibility for assessment of native title issues for an IDAS application rests with the assessment manager. Therefore, DERM as a referral agency for the relevant application has not provided notification to native title parties.

Aboriginal Cultural Heritage Act 2003

Under section 23 of the *Aboriginal Cultural Heritage Act 2003* a person who carries out an activity must take all reasonable and practicable measures to ensure the activity does not harm Aboriginal cultural heritage (the "cultural heritage duty of care"). Maximum penalties for breaching the duty of care are \$1,000,000 for a corporation and \$100,000 for an individual.

Applicants will comply with the duty of care in relation to Aboriginal cultural heritage if they are acting in accordance with cultural heritage duty of care guidelines gazetted under the *Aboriginal Cultural Heritage Act 2003*, available on the DERM website, or in accordance with an agreement with the Aboriginal party for the area or a cultural heritage management plan approved under part 7 of the *Aboriginal Cultural Heritage Act 2003*.

Applicants are also encouraged to undertake a search of the Aboriginal Cultural Heritage Database and the Aboriginal Cultural Heritage Register, administered by the Cultural Heritage Coordination Unit, DERM. Application forms to undertake a free search of the Cultural Heritage Register and the Database may be obtained by contacting the Cultural Heritage Coordination Unit on (07) 3239 3647 or on the DERM website www.derm.qld.gov.au/cultural_heritage

49-Sch4 - Signature

Delegate

Nick Domalewski
A / Senior Planning Officer (SEQ Planning)
Delegate of the Chief Executive, Department of
Environment and Resource Management
21 January 2010

Enquiries:

Nick Domalewski
South East Region, Planning and Assessment Unit
Department of Environment and Resource Management
32 Tansey Street, BEENLEIGH QLD 4207
PO Box 1164, BEENLEIGH QLD 4207
Phone: 07 3884 8061
Fax: 07 3884 8024
Email: DACoordinationSEQSouth@derm.qld.gov.au

Attachment – DERM's Referral Agency Response to each jurisdiction including:

DERM Vegetation Management Concurrence Agency Response 2010/002877

DERM Contaminated Land Concurrence Agency Response SPCL00336210



Sustainable Planning Act 2009

DERM Permit¹ number: 2010/002739

Assessment manager reference:	MCUC/130/2010
Date application received:	12 April 2010
Permit type:	development permit
Date of decision:	26 October 2010
Decision:	The Chief Executive of the Department of Environment and Resource Management directs that the below condition must be imposed on any approval given by the Assessment Manager
Relevant laws and policies:	<i>Sustainable Planning Act 2009</i> <i>Vegetation Management Act 1999</i>
Jurisdiction(s):	Material Change of Use - Clearing vegetation <i>Sustainable Planning Regulation 2009</i> - Schedule 7, Table 3, item 10

Development Description

Property/Location		Development
Kingston Road, Slacks Creek	Lot 658 SL12298 - Logan City Council	Material Change of Use Outdoor Entertainment and Restaurant – Lot 658 on SL12298 – Logan City Council

Reasons for response

In accordance with section 289 of the *Sustainable Planning Act 2009*, the reasons for inclusion of conditions stated in this permit required by the concurrence agency response for the application are as follows.

1. Clearing as a result of the proposed Material Change of Use for Outdoor Entertainment and Restaurant will occur in least concern regional ecosystem 12.9-10.4
2. Therefore the application was assessed against Criteria Table F-2 of the *Concurrence Agency Policy for Material Change of Use – version 2*, 21 October 2010
3. The structure and function of least concern regional ecosystem 12.9-10.4 will be maintained as clearing for the proposed Material Change of Use will be minimal and restricted to the submitted plan
4. The application meets the *Concurrence Agency Policy for Material Change of Use – version 2*, 21 October 2010 as it meets Performance Requirements in Criteria Table F-2 of this Policy

¹ Permit includes licences, approvals, permits, authorisations, certificates, sanctions or equivalent/similar as required by legislation administered by the Department of Environment and Resource Management.

5. The purpose of the *Vegetation Management Act 1999* is to regulate the clearing of vegetation in a way that (among other outcomes) conserves remnant *Endangered* Regional Ecosystems, remnant *of Concern* Regional Ecosystems and remnant *Least Concern* Regional Ecosystems
6. The *Concurrence Agency Policy for Material Change of Use – version 2*, 21 October 2010 achieves the purpose of the *Vegetation Management Act 1999*
7. To ensure that a decision regarding the application is consistent with the purpose of the *Vegetation Management Act 1999*, it is required that the above condition be included

Delegate

49-Sch4 - Signature

James Collins
Acting Senior Vegetation Management Officer (VM1)
Bundaberg

Date: 26 October 2010

RTI DL RELEASE - EHP

CONDITIONS

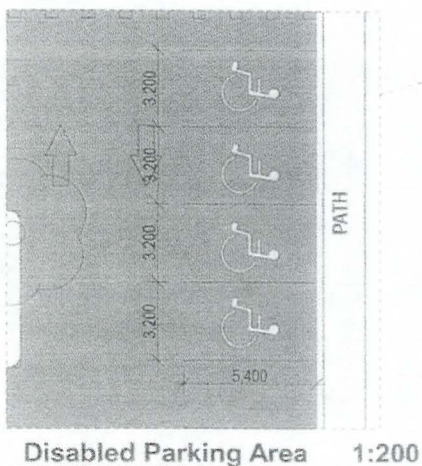
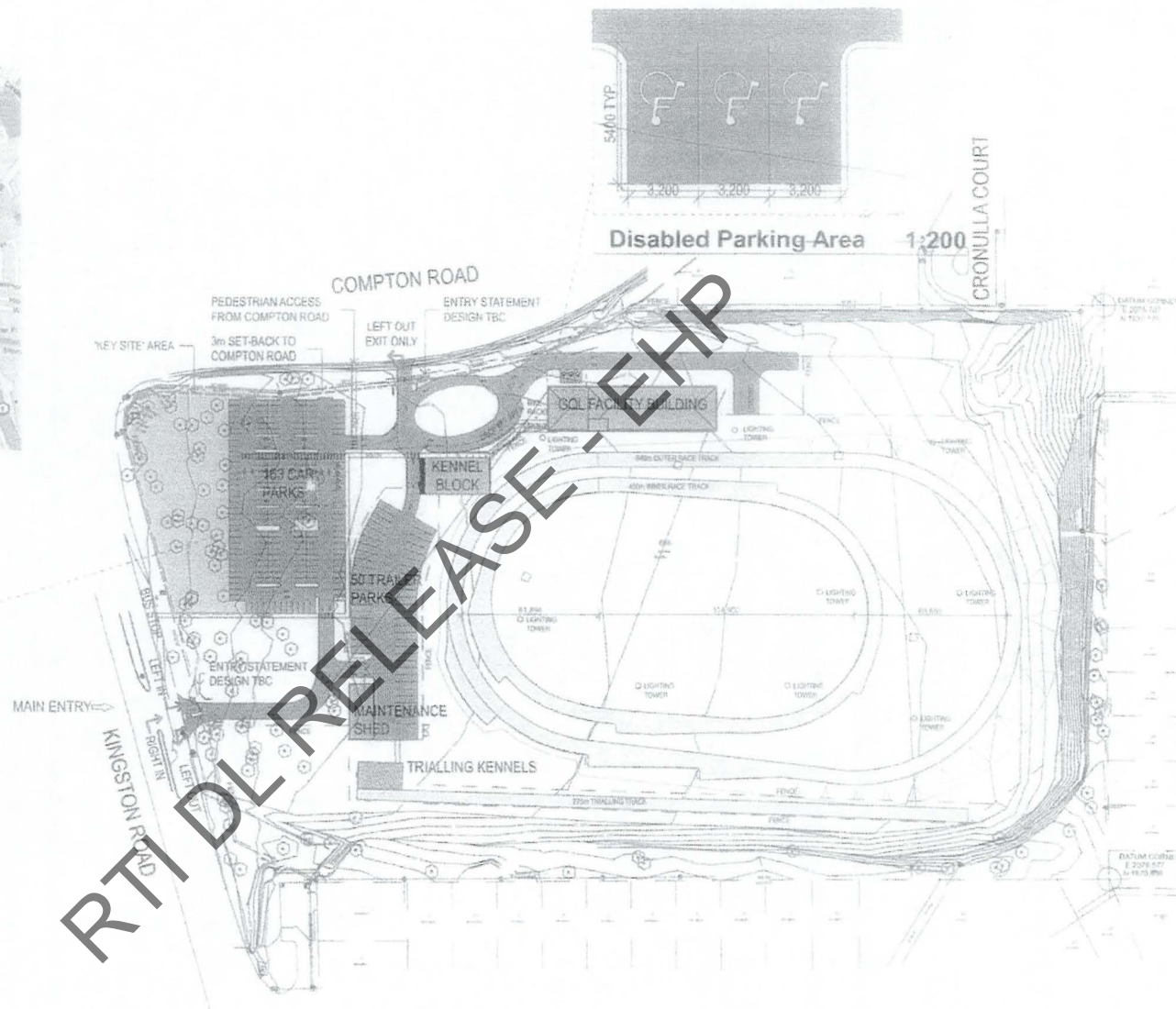
The Chief Executive of the Department of Environment and Resource Management directs that the following condition must be imposed on any approval given by the Assessment Manager:

- (a) The location of infrastructure as a result of this Material Change of Use approval shall be in accordance with the submitted Site Plan ML Design: *Logan Greyhound Facility, DA-001 –E, Job No.: GREY0001, Scale: 1:2000, Date: 28/06/2010.*

Site Plan ML Design: *Logan Greyhound Facility, DA-001 –E, Job No.: GREY0001, Scale: 1:2000, Date: 28/06/2010* is attached and forms part of this Referral Agency Response

END OF CONDITIONS

RTI DL RELEASE - EHP



PRELIMINARY
NOT FOR CONSTRUCTION

FACILITY BUILDING GFA: 2400m²
KENNEL BLOCK GFA: 363m²
TRIALLING KENNELS GFA: 170m²
MAINTENANCE SHED GFA: 270m²
TOTAL SITE GFA: 3203m²

LOGAN GREYHOUND FACILITY
GREYHOUNDS QUEENSLAND



MI Design
architecture master planning urban design interior design

Department of Environment
and Resource Management

LOGAN CITY COUNCIL	
RECEIVED	
BY BUSINESS PERFORMANCE UNIT	
TIME: 12:09	A.M. (P.M.)
DATE 28 / 1 / 2011	
REC. OFFICER: 49-Sch4 - Signature	

Sustainable Planning Act 2009

DERM Permit¹ Number: SPCL00336210

Council Application:	MCUC/130/2010
Date application received:	12 April 2010
Permit type:	Concurrence agency response, development permit
Decision:	The application is approved subject to no conditions
Relevant laws and policies:	<i>Environmental Protection Act 1994</i> and any related statutory instruments and subordinate legislation
Jurisdiction(s):	<i>Sustainable Planning Regulation 2009</i> - Schedule 3, Part 1, Table 2, Item 6

Development Description(s)

Property/Location		Development
Kingston Road SLACKS CREEK	(Lot 658 on SL12298)	Material Change of Use – Outdoor Entertainment Venue and Restaurant (greyhound race track).

Department of Environment and Resource Management is recognised as a concurrence agency under the *Sustainable Planning Act 2009* for the protection of the environment by the management of contaminated land.

¹ Permit includes licences, approvals, permits, authorisations, certificates, sanctions or equivalent/similar as required by legislation administered by the Department of Environment and Resource Management.

DERM Permit ¹ Number: SPCL00336210

Comments /Advice

At all times while the subject land is on the Environmental Management Register (EMR) the applicant must comply with the approved Site Management Plan (SMP) issued under the *Environmental Protection Act 1994* by the DERM – CLU. (see attached)

Conditions

NIL

END OF CONDITIONS

Delegate 49-Sch4 - Signature: **Date:** 17-1-2011

Kim Barry

Delegate, Chief Executive administering the *Environmental Protection Act 1994*

Department of Environment and Resource Management

RTI DL RELEASE - EHP



ANNEXURE 1 - SITE MANAGEMENT PLAN

LOT : 658 PLAN : SL12298 FILE REF : 901564 PRINTED: 18/01/2011

DATE OF EFFECT : 10/01/2011

1.0 SUMMARY OF CONTAMINATION

The site consists of Lot 658 on Plan SL12298 and is located on the corner of Compton Road and Kingston Road, Slacks Creek, Queensland. The site was formerly used as a municipal landfill ("the landfill") between the 1970s and 1980s. The landfill received a variety of wastes such as domestic waste, commercial and light industrial solid waste, sanitary solid waste, and construction and demolition waste.

The site is currently a grassed open space recreational area and is managed by Logan City Council and is to be developed as a Greyhound Racing Facility.

Contaminant concentrations within the surface (capping) soil material on the site are within acceptable limits and do not pose a risk to human health or the environment.

The maximum concentrations of contaminants observed in the Contaminated Site Investigation from perched groundwater (which includes leachate) within the Landfill, and deeper groundwater within the weathered sandstone on the site which exceeded environmental guidelines included the following.

Analyte	Maximum Concentration in Perched Groundwater within Landfill (µg/L)
Ammonia as N	228,000
Copper	25
Lead	48
Nickel	124
Zinc	463
TPH C ₁₀ - C ₃₆	730
1,4-Dichlorobenzene	47
2-Methylphenol	225
2,4-Dimethylphenol	4.6
2,4,5-Trichlorophenol	1

Analyte	Maximum Concentration in Groundwater within Weathered Sandstone (µg/L)
Ammonia as N	50,400
Copper	28
Lead	115
Nickel	100
Zinc	359

Logan City Council (LCC) has undertaken an ongoing landfill gas monitoring program (from 2000 to 2008) from monitoring wells installed around the boundary of the site (and not within the landfill). The monitoring program has detected low levels of methane gas (maximum concentration 1.7%) over this time period with concentrations which were well below the lower explosive limit (LEL) for methane

(5%). The monitoring program undertaken by LCC indicates that gas from the landfill is unlikely to pose an unacceptable risk to off-site receptors.

The maximum concentration of methane detected in boreholes which were screened within the landfill was 99.3%. The maximum concentration of methane detected in landfill vents installed on the site was 29%. All other VOCs detected were below human health guidelines.

The maximum concentration of carbon dioxide detected was 15.5%.

The elevated concentrations of methane which are present within the Landfill pose a potential risk to future site users as an asphyxiant and flammable gas. Future development of the site will require the implementation of landfill gas protection measures.

2.0 OBJECTIVES OF THE SITE MANAGEMENT PLAN

The objectives of this Site Management Plan (SMP) are to manage the impacted soils, groundwater and landfill gas on the site in a manner that protects human health and the environment.

3.0 ACHIEVEMENT AND MAINTENANCE OF OBJECTIVES

3.1 Responsibility. The owner of the land (as defined in the *Environmental Protection Act 1994* (EP Act) is to ensure that this SMP and any variations to the SMP approved or required by the administering authority are complied with. The obligations and conditions set out in this SMP bind the owner, from time to time, of the land.

3.2 Third Party Reviewer. A Third Party Reviewer (TPR) approved by DERM and operating in accordance with the DERM's Terms of Reference for TPR (June 2010) must be appointed for the duration of the site assessment and remediation.

3.3 Site Use. The site is currently used for recreational open space. The site is proposed to be redeveloped into a Greyhound Racing Facility, however, this use must not commence until assessment and remediation works described in the Remediation Action Plan (RAP) for the site attached in Appendix 1 have been completed, and a Statement of Suitability is issued by the QLD DERM specifying that the site is suitable for the intended use.

3.4 Provision of SMP to appropriate persons. The owner must provide all persons involved in building design and planning and all contractors and lessees conducting building and/or excavation works with a copy of the SMP prior to commencement of works. All persons occupying or working on the site must comply with the requirements of the SMP.

3.5 Site Capping. For the majority of the landfill, the capping material is comprised of a layer of silty sand (0-0.1 m thickness) and an underlying clay based material comprised of sandy clay to clayey sand (0.2-0.8 m thickness). The capping material along the eastern embankment of the landfill is comprised of well compacted clayey sand (0.2-0.5 m thickness). Through the implementation of the RAP the capping layer of the eastern embankment must be built up to provide a minimum thickness of 0.5 m using uncontaminated porous fill material which will not impede the venting of landfill gas.

The capping layer is to be maintained in sound condition at all times.

3.6 Soil Excavation and Removal. Any soil excavated on the site must be assessed for contaminants of concern to determine if the material is contaminated and to identify appropriate management and disposal/re-use options. Representative sampling and analysis of soil from any excavation in contaminated areas must be managed by a suitably qualified and experienced person in accordance with

Section 381 of the *Environmental Protection Act 1994* (EP Act). Contaminated soil must not be removed off-site without a disposal permit in accordance with Section 424 of the EP Act (or equivalent).

3.7 Unexpected Contamination. If during any site earthworks or excavation, offensive or noxious odours and/or evidence of gross contamination not previously detected is observed, site works are to cease in that area and action taken to immediately abate the environmental harm. The administering authority is to be notified in writing within two (2) business days of detection and advised of appropriate remedial action.

Any remedial action is to be developed by an appropriately qualified and experienced person in accordance with Section 381 of the EP Act.

3.8 General Environmental Protection. All site redevelopment works must be undertaken in accordance with general environmental protection measures and a Construction Environmental Management Plan (CEMP). These measures include the control of dust, noise, stormwater or sediment runoff, erosion, spillage from haulage trucks and odour releases involving the handling or movement of contaminated material.

3.9 Workplace Health and Safety. A Workplace Health and Safety Plan (WH&S plan), which conforms to the requirements of the *Workplace Health and Safety Act 1995*, is to be developed for any excavation works at the site. The WH&S plan must address site-specific hazards which have been identified in the RAP.

3.10 Underground Services. Where underground service trenches are constructed in contaminated areas, the trenches must be surrounded by a minimum of 0.3m of uncontaminated fill for minor services (<100mm in diameter) and 0.5m of uncontaminated fill for services greater than 100mm in diameter. Clean fill must also be placed above any services to the surface of the site. No services are to penetrate in to the body of the landfill but must be constructed within or above the capping layer. Maintenance of existing services should be conducted in accordance with this SMP.

3.11 Imported Fill Material. Any fill material that may be imported to the site in the future must be sampled and samples submitted for analysis for relevant potential contaminants by a suitably qualified and experienced person prior to delivery to the site. The frequency of the sampling and analysis required, and the acceptance criteria adopted for potential contaminants will depend on the source of the fill.

3.12 Use of Groundwater. Leachate and/or groundwater beneath the site must not be extracted. Use is prohibited.

4.0 MONITORING AND REPORTING

The monitoring of groundwater and landfill gas at the boundary of the site is to be undertaken throughout the duration of construction in accordance with the requirements of the RAP. A review of this SMP will be required following the implementation of the RAP and completion of site redevelopment works to determine groundwater and landfill gas monitoring requirements post-construction. Post-construction monitoring requirements must be agreed with the TPR and DERM prior to the commencement of commercial use of the site and is to include the monitoring of groundwater and landfill gas at the boundary of the site.

Records are to be kept of all inspections, any soil excavation in contaminated areas, disposal permits, validation testing and site management plan compliance for review by the administering authority from time to time.

This Site Management Plan (SMP) has been developed to manage site contamination risks present at the issue date. Subsequent uses of the site may result in the need to review the plan.

This SMP makes reference to an attachment RAP that is available from the Administering Authority if required.

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Logan Greyhound Facility

INFRASTRUCTURE SERVICING PLAN AND
SITE BASED STORMWATER MANAGEMENT PLAN

■ March 2010

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INFRASTRUCTURE SERVICING PLAN AND SITE BASED STORMWATER MANAGEMENT PLAN

■ March 2010

Sinclair Knight Merz
ABN 37 001 024 095
32 Cordelia Street
South Brisbane QLD 4101 Australia
PO Box 3848
South Brisbane QLD 4101 Australia
Tel: +61 7 3026 7100
Fax: +61 7 3026 7307
Web: www.skmconsulting.com

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1. Introduction

This report has been prepared by Sinclair Knight Merz (SKM) on behalf of Greyhounds Queensland Limited (GQL) to support a Development Application for an outdoor greyhound racing facility. The development is referred to in this report as the Logan Greyhound Facility.

1.1. Description of development

The proposed development is to be situated on 10.24 ha of designated public open space known as Cronulla Park in the suburb of Slacks Creek. The park is described as Lot 658 on SL12298, under the jurisdiction of Logan City Council.

The location of the development site with respect to the surrounding suburbs and road network is shown on **Figure A1 – Site Location**.

The proposed development includes the construction of a double storey main facility building with a grassed viewing area, kennel blocks and support buildings serviced by two-way internal roads with access for patron car parks, and dedicated parking area for trainers and employees. An inner and outer greyhound race track will be constructed as the main attraction, with a separate trialling track being formed adjacent to the main tracks.

1.2. Objective of report

The objective of this report is to outline the requirements and provision of infrastructure services and the stormwater management for the site so as to effectively demonstrate that the proposed development can be adequately serviced and support the development application of the proposed facility.

1.3. Scope of report

The scope of this report covers the infrastructure servicing and stormwater management associated with the site to substantiate and support a code compliance submission prepared by the lead consultant, ML Design.

This report considers the bulk earthworks, roadworks and parking layout, stormwater drainage (quantity and quality), sewerage reticulation, water reticulation, electrical and telecommunication services. Further detailed investigation and analysis is required at the Operational Works phase.

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2. Site Characteristics

2.1. Location

The proposed development site is in Slacks Creek and is located west of the M1 Motorway, approximately 20km south of Brisbane's CBD and 2.5km north of Logan Central. The intersection of two main arterial roads, Kingston Road and Compton Road define the development's western and northern boundaries. Compton Road bends away from the site to the north approximately halfway along the site's northern boundary.

Industrial lots are located along the proposed development's southern and eastern property boundaries. Additional industrial lots are also located at the north-east corner which is serviced by an industrial access road and turnaround area, known as Cronulla Court. The site is generally fenced along its northern and western boundaries, albeit is open to the public via existing open access points. Additional industrial lots are on the opposite sides of Kingston and Compton Roads.

2.2. Existing topography and drainage patterns

The highest point of the site is approximately RL34.5m Australian Height Datum (AHD) close to Kingston Road, falling to approximately RL22.2m adjacent to the north east corner industrial lots. The average gradients on the site are relatively flat ranging from 0.8% to 2.0% and the main form of drainage is a combination of overland sheet flows and open channel flows. The north east corner is steeper than the majority of the site with grades up to a maximum of 12.5% towards the east.

The site generally grades in a west to east direction, however during site inspections it was noted that several low bunds are present across the predominant gradient of the site (in a north-south configuration), which intercept and divert the overland flow towards the north and south into an existing open channel drain.

An open channel drain to the south and east separates the park from the adjoining industrial lots. The open channel drain conveys surface runoff from Kingston Road, cross-catchment flows from across Kingston Road and from several culverts from the south. The open channel eventually discharges into a large open chamber with its invert level (base) well below the level of the open channel base of RL 20.4m. Twin reinforced concrete pipes have been noted at the bottom of the chamber. The inlet structure is secured behind a fence and appears to be in private land. Logan City Council has advised the RCP sizes as 1200mm and this has been confirmed by the surveyor.

Based on Dial-Before-You-Dig information, the twin pipes appear to be located within a drainage easement which passes through an adjacent bread making factory, in a west-east direction. Review of the topographical survey information downstream of the pipes also indicates the presence of an

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overland flow path from the chamber through the factory's car park, onto Allgas Street to the east and finally into Slacks Creek. Refer to **Appendix D – Open Channel Calculations** for a sketch of the inlet structure.

The site inspections have also identified that parts of the park falls toward the north and north east and it was discovered that these areas do not ultimately discharge into the open channel drain. These areas discharge into an earth drain alongside Compton Road and into existing stormwater gully pits along Cronulla Court.

The existing topography and drainage patterns for Cronulla Park are shown on **Figure A2 – Existing Topography and Drainage Patterns**.

2.3. Existing land use & vegetation

The existing site is currently designated as an open space public park but was previously utilised as a managed landfill between 1970 and 1980. Based on preliminary geotechnical investigations, a low permeable clay capping layer was constructed when the landfill operations were completed to prevent infiltration into the waste material underneath, creating pollution potential beyond the site. Said investigations have indicated that the clay capping cover depths are not consistent, and range from 0.1m at the eastern embankment to 1.0m deep at the west.

It is understood that the landfilling operation was only associated with a proportion of the 10.24ha site. Geotechnical and contamination assessments of the site indicate that the landfill limits ended near the existing trees along Kingston Road to the west. The grass cover in the tree zone has been noted to be poor and sparse. A poorly maintained bituminous road within the tree zone provides vehicular access into the park.

Site inspections have indicated the majority of the area has been grassed at some point but the current condition has been noted as poor with large areas being worn and eroded exposing a compacted bare earth and/or clay layer. The general poor condition of the grass indicates the possibility of minimal depth of topsoil. As such, infiltration opportunities are expected to be limited.

More significant vegetation is limited to periodic clumps of thick grasses and small trees which are observed present in the north east corner of the existing site. The open channel drain running along the south and east boundaries is seen to be heavily vegetated on the park side with predominantly tall grasses and small shrubs. The base and opposite side batter adjacent the industrial lots remains sparsely vegetated and appears to be mostly exposed compacted earth.

The existing and condition of the vegetation at Cronulla Park can be seen on **Figure A3 – Aerial Photograph**.

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2.4. Proposed topography, land use & vegetation

The existing park's previous use as a landfill limits available options for major earthworks and the type of services that can be constructed.

As described in section 1.1, the development will consist of a double storey main building, kennel blocks and smaller support buildings, two racing tracks, a trialling track and associated support infrastructure such as roads, footpaths etc. The proposed main access will be from Kingston Road with a dedicated egress onto Compton Road. The proposed location of the access has taken into consideration the existing tree buffer zone along Kingston Road and existing median/opening geometry which is covered in a separate Traffic Impact Assessment report.

The construction of roads and vehicular parking as part of the development will further delineate and modify the site's existing drainage flow patterns. It will also mean removal of the north-south bunds currently present across the site which divert runoff toward the north and south.

The park's past land use as a managed landfill also limits options for standard stormwater conveyance networks incorporating gully pits, field inlets and underground pipes due to the existing clay capping layer protecting the landfill. For which it has been recommended that this capping depth's integrity is maintained throughout. An alternative solution in the form of vegetated trapezoidal swales that do not require excavation as deep as standard conveyance systems is proposed. The swales also provide a Water Sensitive Urban Design solution which provides benefits for water quality treatment. This is described further in section 5.

The development therefore creates an impact to the poorly grassed areas of the park, only with the vegetation along the open channel drain flowing north east remaining unaffected. Detailed landscaping proposals will be covered under future submissions by others.

The existing final discharge locations at the outlet headwall to the east, to Compton Road and Cronulla Court to the north will be maintained.

Preliminary discussions with Logan City Council noted that the existing infrastructure in proximity to the development is available and has adequate capacity for use by this development. Information from Dial-Before-You-Dig requests has not indicated locations of existing services being directly affected the development itself. In the event services are found which require diversion as the development progresses within the site boundaries, appropriate measures will be undertaken to protect or relocate the services with input from Logan City Council.

The proposed layout for the development of the Logan Greyhound Facility is shown on **Figure A4 –Developed Topography & Drainage Patterns.**

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2.5. Soils

At the time of writing a detailed geotechnical investigation is being finalised. The final geotechnical report will provide the analysis of existing soil characteristics, the clay capping layer and landfill depths for the site.

The site soil conditions on the site will be detailed in a separate geotechnical report by Sinclair Knight Merz.

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3. Earthworks

3.1. General Compliance

The earthworks to be carried out for the development will be in compliance with the standards for earthworks specified in Logan City Council's *Planning Scheme Policy No. 5 (Design and construction of work) 2006*, which will also requires compliance with *AS 3798:1996: Guidelines on earthworks for commercial and residential development*.

3.2. Preliminary activities

Prior to any building works commencing on site the existing grassed vegetation will be stripped within the working zone, grubbed of any remnant stumps and unsuitable material will be removed to a suitable location. Any grub holes will be adequately filled and compacted in accordance with appropriate council standards. Depending on the quality of the existing topsoil, there is the possibility that new topsoil may have to be imported. The areas of the site where minimal operational works will occur will not be cleared of existing grasses until completion of the works to minimise erosion. Care will be taken to ensure the clay capping cover is not penetrated. As a precautionary measure, the existing soils on site and imported material may be tested for fire ant infestation.

Extensive clearing is not anticipated but where necessary, the associated vegetation will be mulched and stockpiled at a nominated location within the site (outside of the work zone) for reuse in the landscaping works. Where possible, any existing trees are to be retained and damage minimised as part of the works. The maximum height of the stockpile will be limited to 1.5m to minimise the potential for combustion. Where areas are not to be developed, appropriate fencing or barriers will be provided before clearing commences. Clearing works will also be limited to within 5m from the boundaries where possible.

As described in section 2.5, the final geotechnical report will provide the analysis of existing soil characteristics and sub-strata conditions.

3.3. Bulk earthworks

3.3.1. Landfill clay capping

Based on preliminary geotechnical investigations, additional clay capping material may be imported to increase the clay capping layer depth on the eastern embankment on the site to a minimum of 0.5m depth. This requirement however is to be confirmed in the final geotechnical report. All reusable topsoil will be maintained and stockpiled as required.

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Method statements associated with the earthworks operations will be necessary to highlight the associated risks when working with the clay capping and therefore, should over-excavation occur (beyond the existing clay capping depth into landfill material), appropriate contamination management measures can be implemented.

3.3.2. Buildings, roads and race tracks

Prior to bulk earthworks commencing the existing topsoil will be stripped and stockpiled on the site at a location nominated by the superintendent. The location most suited would be out of the work zone and with minimal impact from external drainage catchments.

Measures will be employed by the civil contractor to minimise the generation of dust from the stockpile throughout the duration of the works. Following the completion of bulk earthworks the stockpile topsoil will be respread over the disturbed areas and stabilised by grassed seeding and/or hydro-mulching. The balance of the topsoil will be tested for potential reuse for landscaping.

An erosion and sedimentation management program will be employed on site to minimise the potential for erosion and the transportation of sediment from the site. A typical program will be described in section 5.7.10.

The bulk earthworks operations will include the establishment of a platform for the main building, kennel blocks, internal roads, vehicular parking layouts and for the racing / trialling tracks which will be designed in the Operational Works phase. A cut/fill investigation will be completed to minimise the requirement for importing excessive quantities of fill material. If required, a nominated haul route will be established to minimise the hauling distance and time period with consideration to surrounding land uses.

All fill material used for the development will be suitable fill material free of organic material and unwanted materials and will be sourced from reputable source.

The design of all bulk earthworks will limit developed batters to a maximum slope of 1 in 4, i.e. suitable for maintenance purposes. All batters required as part of the development will be no less than 1.5m from the development's real property boundaries. The appropriate treatment to batters will be grassed or turfed or otherwise in accordance with the batter treatment in Council Work Code, Table 5.3.10A (Batter treatments). The landscape treatment specified will be capable of achieving the required batter treatment within 3 months from completion.

For typical cross sections of the earthworks required for the track, refer to attached sketch in **Appendix A**.

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No retaining walls are anticipated to be included in the proposed development. Should retaining walls be deemed necessary during the Operational Works phase, the walls will not exceed minimum clearances as specified in the Logan Planning Scheme 2006, Chapter 5 – Assessment Criteria for Development of a Stated Purpose or of a Stated Type.

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4. Roadworks and carparks

The roadworks and carparks to be carried out for the assessable development will be in compliance with the standards for earthworks specified in Logan City Council's *Planning Scheme Policy No. 5 (Design and construction of work) 2006*.

4.1. Ingress / egress

The proposed site entry and exit to the development is from Kingston Road and egress to Compton Road with a dedicated egress onto Compton Road. Impacts to external roads will be addressed in a separate traffic report, *Logan Greyhound Facility: Traffic Impact Assessment* by Sinclair Knight Merz.

4.2. Internal roads

The internal road network within the development will provide access for the Logan Greyhound Facility patrons, trainers and employees of the facility.

The internal road formation is proposed to be 6.0m kerb to kerb minimum width with a one-way crossfall (typically 3%) and will cater for two-way vehicular movements. The roads are proposed to be flexible granular pavements with an Asphaltic Concrete (AC) surface. The category of road is designated as 'local access' with associated pavement depths kept in accordance with a design to reduce risk of over-excavating beyond the clay capping cover.

It is not anticipated that reinforced concrete hardstand areas will be required but a drop off area is to be provided adjacent to the main facility building and kennel block. Concrete footpaths are to be specified along the roads as required. The roads will be separated from the race tracks by a perimeter fence.

The internal road width and curve radii will be determined with considerations for swept path clearances for design vehicles. The road layout will be reviewed with consideration to a design vehicle specified in a separate Traffic Impact Assessment report referenced above.

The layout of internal roads and carparks are shown on **Figure A4 – Development Topography and Drainage Patterns**.

4.3. Vehicular parking

The development includes 165 number of patron car parks and 50 number of combined employee/greyhound trainer car parks. The car park dimensions will be typically 5.4m long and

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2.6m wide and the trailer parks to be 10.0m long by 3.2m wide. Design of the vehicular parks will be in accordance with the off-street parking codes under AS2890. The pavement will be similar to the flexible pavements with AC surface as per the internal roads. Designated concrete footpaths are to be provided to link the car parks to the main facility building and other areas of activities.

The layout of internal roads and carparks are shown on **Figure A4 – Development Topography & Drainage Patterns**.

4.4. Traffic impact study

Consideration to the impact of traffic movements generated by the development are detailed in the traffic report, *Logan Greyhound Facility: Traffic Impact Assessment* by Sinclair Knight Merz.

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5. Site Based Stormwater Management Plan

The proposed development site is located approximately 300m west of Slacks Creek which runs alongside the M1 Pacific Motorway. The stormwater drainage works to be carried out for the assessable development will be in compliance with the standards specified in Logan City Council's *Planning Scheme Policy No. 5 (Design and construction of work) 2006*.

5.1. Previous Studies

In discussions held with drainage officers in Logan City Council, it was ascertained that no stormwater management or infrastructure reporting was available for the area.

Logan City Council has also advised that the proposed development is not in a declared flooding zone. Refer to **Appendix G – Logan City Council Correspondence** for further details.

In the absence of previous studies or investigations, the basis for establishing strategies for stormwater conveyance and quality is by reference and compliance with Logan City Council's Policy guidelines.

5.2. Hydrologic Data

The hydrological analysis for the proposed development was completed by establishing a Runoff Routing and Flow Training Simulation (RAFTS) model. RAFTS is a runoff-routing modelling program which simulates flood hydrographs based on rainfall, catchment and channel inputs. It is also used for stormwater detention design. RAFTS is one of the various modelling software packages recommended for use by the *Queensland Urban Drainage Manual* (2007).

The results from RAFTS were validated against estimated peak discharge from the proposed development using the Rational Method of analysis.

The water quantity modelling is detailed further in **section 5.6**.

5.3. Hydraulic Data

The extent of hydraulic analysis is limited to the preliminary design of proposed detention basin(s) with the RAFTS software. Basin outlet characteristics were estimated using CulvertW. CulvertW was used to calculate the state-discharge curves of a specified low flow culvert and overflow weir for the detention basin(s). The required detention is discussed under **section 5.6.7**. A capacity check of the existing open channel within the site will be completed using Flowmaster which uses Mannings equation.

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The detailed design and hydraulic modelling of the proposed stormwater conveyance system and the final design of the detention basin will be reviewed and completed during the Operational Works phase.

5.4. Water Quality Data

Discussions held with Logan City Council officers did not identify records of water quality data for stormwater runoff from the existing site. As such, pollutant generation and treatment effectiveness was simulated using the Model for Urban Stormwater Improvement Conceptualisation (MUSIC) software. MUSIC allows the simulation of quality of runoff from catchments and the effect of a wide range of treatment facilities on the quality of runoff downstream.

The water quality modelling is detailed further in section 5.7.

5.5. Opportunities and constraints

5.5.1. Increase in discharge / runoff

As described in section 2.3, the existing site can be characterised as an undeveloped open space. Based on site inspections and knowledge of its past use as a managed landfill with a clay capping cover, the fraction impervious for the development has been estimated as a weighted average of 0.15 which is conservative. The previous managed landfill's protective clay capping cover also further limits infiltration. Vegetation retardance is expected to be minimal for most of the site due to the poor grass conditions and exposed earth / clay observed on site.

The proposed development with its associated paved roads, roofed area and footpaths will increase the amount of impervious area within the site.

The investigation of the extent of increase in runoff from the developed catchment is detailed in section 5.6.

5.5.2. Increase in generated pollutants

The impacts of development to an existing undeveloped catchment has the potential to create an increase in runoff, but also results in the introduction of a wide range of generated pollutants. During rainfall events these pollutants may be washed from the catchment surface and transported within the runoff. These pollutants have the potential to reduce the quality of stormwater discharging to downstream receiving water bodies.

The strategy to manage the levels of water pollutants generated by the proposed development is outlined in section 5.7.

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5.5.3. Limited potential for infiltration

Detailed geotechnical testing of the development site soils have not been completed at this time which will accurately identify the infiltration characteristics. Site inspections have indicated that the majority of the site has very poor grass cover. It is expected however, to bring about a minor increase in volume of runoff due to reduced infiltration opportunity and an increased nett peak discharge from the site.

Based on site observations and taking into consideration the site's previous use as a landfill, the potential of infiltration into the subsoil layer has been assessed as limited and restricted. Any infiltration into an ex-landfill site is to be minimised to reduce the risk of undermining the protective clay capping and to avoid contamination of receiving water bodies due to increased leachate.

5.5.4. Limited stormwater quantity and quality options

In addition to reducing infiltration, the presence of the clay capping places constraints on the selection of stormwater conveyance systems and available Water Sensitive Urban Design (WSUD) measures. Initial discussions with Logan City Council have indicated that certain WSUD measures may not be suitable, such as gross pollutant traps which require deep excavations have not been considered at this level of application. The site's ability to support these measures may be reconsidered once the final geotechnical report has been finalised.

Standard stormwater drainage systems utilising pits/chambers and pipes increase the risk of excavating beyond the clay cover into the landfill material underneath. As such, consideration has to be given to alternative options which have smaller depth footprints such as shallow vegetated swales. Alternatively, other options such as slot or grated channel drains may be considered in more detail as part of the Operational Works phase design.

5.5.5. Modification to existing drainage patterns

Inspections of the site have identified approximately half of Kingston Road along the site's western boundary as a contributing upstream catchment with associated runoff discharging as overland flow through the site. This section of Kingston Road is not kerbed and should be anticipated to remain that way during the construction and completion of the Logan Greyhound Facility.

The internal parking areas and roads will modify the existing overland flow path from Kingston Road. The configuration of the internal roads and carparks will be designed to promote the general flow direction is maintained as much as possible. The developed site will be self draining and all areas will be designed using a minimum crossfall of 1 in 100.

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The stormwater infrastructure works to be carried out for the assessable development will be in compliance with the standards for stormwater infrastructure specified in Logan City Council's *Planning Scheme Policy No. 5 (Design and construction of work) 2006*.

Refer to **Figure A4 – Developed Topography and Drainage Patterns** for additional information.

5.6. Water Quantity

5.6.1. Proposed strategy

The adopted strategy was to attenuate any increase of development discharge with detention basins up to and including Q100 storm events in accordance with the *Queensland Urban Drainage Manual* (2007). Additional water storage strategies for reuse will be considered in more detail as part of the Operational Works phase.

5.6.2. Proposed Methodology

The methodology adopted to analyse the magnitude of increase in discharge from the existing and developed catchment within RAFTS was by comparing the peak discharge flow rates for each design storm event including Q1, Q2, Q5, Q10, Q20, Q50 and Q100.

The results from RAFTS were then validated against the estimated peak discharge flows from the Rational Method based on the *Queensland Urban Drainage Manual* (2007).

5.6.3. RAFTS modelling

The RAFTS model was set up by dividing the site into sub-catchments based on drainage patterns and areas, strategic for comparison. Typical RAFTS model schematic consists of nodes which represent the sub-catchments' outlets and links that connects the nodes to the respective downstream sub-catchment nodes.

As described in **section 2.2**, there are three discharge locations from the site and these have been represented by the following nodes in the RAFTS modelling:

- node 'East Chamber';
- node 'Cronulla Court'; and
- node 'Compton Road'.

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5.6.4. Modelling scenarios

Three RAFTS modelling scenarios were investigated:

- **Existing** – for current undeveloped conditions. The results from this model provides the comparison basis for the attenuation strategy;
- **Developed (without detention)** – for the developed Logan Greyhound Facility but without stormwater detention. The results the quantify peak discharge runoff increase against existing conditions;
- **Developed (with detention)** – for the developed Logan Greyhound Facility but incorporating stormwater detention. The results from this model show the improved peak discharge runoff against existing conditions by the use of detention basins, which demonstrates no nett increase of peak discharge as a result of development at the three discharge locations.

The RAFTS schematics for both existing and developed scenarios are shown in **Figure B1 – Existing Catchments & RAFTS Schematic** and **Figure B2 – Developed Catchments & RAFTS Schematic**.

5.6.5. Modelling parameters

5.6.5.1. RAFTS global setup

RAFTS calculates the design storm events using the *Australian Rainfall and Runoff, 1987 (AR&R)* method. For this report, it was therefore necessary to input the applicable temporal pattern zone, geographic location, Average Recurrence Interval (ARI) and duration of the storm events. Standard temporal patterns for Zone 3 apply to the catchment. As such, skew locations, F2 and F50 coefficients required to setup RAFTS were estimated from relevant charts in Volume 2 of the AR&R. These are tabulated below:

Table 5.6.1 – Global RAFTS settings

Description	Value
F2 geographic factor	4.4
F50 geographic factor	17.25
Location skew	0.125
Temporal pattern zone	3

Design flows were calculated for the Q1, Q2, Q5, Q10, Q20, Q50 and Q100 storm events. Storms with rainfall durations of 10, 15, 20, 25, 30, 45, 60, 90 and 120 minutes were generated to establish the critical storm duration.

The distribution of rainfall over the catchment was considered constant due to the relatively small size of the catchment. The rainfall intensities derived from Intensity-Frequency-Duration curves were calculated at the centroid of the catchment, and therefore adopted as being applied across the whole catchment.

The RAFTS model was used to generate theoretical inflow hydrographs for each of the modelling scenarios.

The required Intensity Frequency Duration (IFD) values were calculated with reference recommended coefficients in Table 2.9.1B in Logan City Council's *Planning Scheme Policy no. 5*.

5.6.5.2. Sub-catchment parameters

The following parameters were assigned to represent the properties that effect rainfall excess during storm events for each sub-catchment.

Rainfall losses

An initial and continuing loss rate approach to estimate excess rainfall from the catchment was used. These losses are used to predict the runoff volume generated from the catchment in response to rainfall and include two components:

- Initial loss – a loss (mm) accounting for infiltration effects that is deducted from rainfall prior to the occurrence of surface runoff to pervious areas; and
- Continuing loss – a constant loss rate (mm/h) that is deducted from the rainfall over the duration of the storm to pervious areas.

These values were assigned to the pervious portion of the sub-catchments. Zero losses were applied to the impervious portion of the sub-catchments. The loss rates are shown below:

Table 5.6.2 – Initial & continuing loss rates for pervious areas

Storm Event (years)	Initial Loss (mm)	Continuing Loss (mm)
100	0	2.5
50	3	2.5
20/10	.5	2.5
5/2/1	10	2.5

Source: Australian Rainfall & Runoff: A Guide to Flood Estimation Vol. 1

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Percentage impervious

RAFTS allows a split catchment option for sub-catchments with different land use types. These are broadly classified as pervious and impervious surfaces. For this analysis, the first sub-catchment portion was set to represent the impervious area of the catchment and the second, the pervious catchment area. Assigning sub catchment percentages was determined from the Logan Greyhound Facility design layout in **Figure B2 – Developed Catchments & RAFTS Schematic**.

Surface roughness

Surface roughness is an empirical factor based on the average Manning's 'n' of the catchment surface. The weighted average for each sub-catchment for the existing situation was assessed by review of aerial photographs and a ground truth site inspection. Assumed values were assigned for each land use type in both existing and developed models with the typical Manning's values used in the RAFTS model as illustrated in **Table 5.6.3** below.

Table 5.6.3 – Typical land use surface roughness factors

Land Use Description	Manning's 'n' Roughness Factor	
	Impervious Areas	Pervious Areas
Poorly grassed areas	-	0.030
Bare compacted earth	-	0.025
Race Track (compacted sand)	-	0.025
Roof Concourse areas	0.012	-
Concrete / smooth Surface	0.013	-
Asphalt / roadways	0.015	-

Source: Road Drainage Design Manual (2002) Queensland Department of Main Roads, Table 4.5

Vectored slope

The vectored slope for the pervious and impervious areas of each sub-catchment was determined by estimating the average slope across the catchment surface.

The input parameters used in RAFTS for all the modelling scenarios are tabulated in **Appendix B – RAFTS Model Data**.

5.6.6. External catchments

As described in **section 2.2**, several culverts discharge flows from external catchments into the open channel drain flowing north east. As the open channel drain will not be modified by the proposed development, it was assumed that these external catchments have a neutral impact on the development itself for the purposes of RAFTS modelling. They were not included in the result

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comparisons in **section 5.6.9** in this report but are discussed separately under **sections 5.6.11** and **5.6.12**

5.6.7. Detention basin

The adopted attenuation strategy to attenuate post-developed peak discharge flows was by introduction of a detention basin. A dry detention basin does not store water once a rainfall event passes and as such, minimises the risk of infiltration potential into the clay capping layer.

Review of the developed layout has identified the most suitable location for a detention basin is at the south-western part of the site where the clay capping depth is understood to be thickest. The preliminary basin dimensions were estimated to be approximately rectangular in shape with 0.7m storage depth and maximum 1:4 side batters. The estimated required storage volume for a Q100 event was estimated to be 700m³. The exact plan configuration, storage depth and suitable impermeable lining material to further protect the clay capping layer, will be investigated in the Operational Works phase.

The configuration of the basin and outlet levels was modelled to achieve the required storage volume and flow attenuation. The preliminary outlet configuration consists of a low flow pipe modelled as a culvert and a high-level spillway modelled as a broad-crested weir using CulvertW software.

Refer to **Appendix B – RAFTS Model Data** for additional information on the basin storage and outlet characteristics.

5.6.8. Critical storm duration

The RAFTS model results were reviewed for each of the storm durations and storm events to identify the critical storm durations. The critical storm provides the highest peak discharge. The critical storm durations for the site range from 25, 60 to 90 minutes for the existing and developed scenarios. The results in the following section refer to the critical storm durations for particular storm events.

A summary of the critical storm durations are on the cover of **Appendix B – RAFTS Model Data**.

5.6.9. Peak Discharge Comparison

The RAFTS peak discharge results for the critical storm durations at each of the three outlets are shown in the following tables:

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Table 5.6.4 – RAFTS Peak Discharge Comparison at node ‘East Chamber’

Return Period ARI (years)	EAST HEADWALL				
	Pre-Developed (m ³ /s)	WITHOUT Basin (m ³ /s)	% Variance	WITH Basin (m ³ /s)	% Variance
1	0.817	0.963	+17.9%	0.749	-8.3%
2	1.215	1.438	+18.4%	1.156	-4.9%
5	1.782	2.021	+13.4%	1.620	-9.1%
10	2.314	2.564	+10.8%	2.074	-10.4%
20	2.791	3.098	+11.0%	2.605	-6.7%
50	3.355	3.713	+10.6%	3.292	-1.9%
100	3.921	4.322	+10.2%	3.921	0.0%

As shown in Table 5.6.4, the peak discharge as a result of development is higher than the existing scenario for all storm events up to and including the Q100 storm event. With a detention basin, the peak discharge has been attenuated to within existing values as demonstrated.

Table 5.6.5 – RAFTS Peak Discharge Comparison at node ‘Cronulla Court’

Return Period ARI (years)	CRONULLA COURT		
	Existing (m ³ /s)	Developed (m ³ /s)	% Variance
1	0.054	0.039	-27.8%
2	0.083	0.058	-30.1%
5	0.132	0.092	-30.3%
10	0.165	0.124	-24.8%
20	0.197	0.145	-26.4%
50	0.218	0.160	-26.6%
100	0.248	0.182	-26.6%

The results in Table 5.6.5 demonstrate that there is no nett increase of peak discharge of the developed scenario against existing conditions for all storm events up to and including a Q100 storm for discharge towards Cronulla Court. The reduction is due to the reconfiguration of the existing catchments in the developed scenario which resulted in a smaller contributing catchment area.

Table 5.6.6 – RAFTS Peak Discharge Comparison at node 'Compton Road'

Return Period ARI (years)	COMPTON ROAD		
	Existing (m ³ /s)	Developed (m ³ /s)	% Variance
1	0.202	0.190	-5.9%
2	0.297	0.263	-11.4%
5	0.423	0.357	-15.6%
10	0.546	0.440	-19.4%
20	0.666	0.521	-21.8%
50	0.789	0.600	-23.9%
100	0.916	0.708	-22.7%

The results in Table 5.6.6 demonstrate that there is no nett increase of peak discharge of the developed scenario against existing conditions for all storm events up to and including a Q100 storm for discharge towards Compton Road. The reduction is due to the reconfiguration of the existing catchments in the developed scenario which resulted in a smaller contributing catchment area.

5.6.10. RAFTS model validation – against Rational Method

To validate the RAFTS modelling results, peak discharge at the largest subcatchment which discharges into the headwall outlet were estimated using the Rational Method. Several parameters are required to represent each of the properties that effect rainfall excess during a storm event and these are described below.

5.6.10.1. Rational Method Parameters

To simulate the runoff characteristics of the catchment, several parameters are assigned to represent each of the properties that effect rainfall excess during a storm event. These parameters were determined for each sub-catchment and then incorporated into the Rational Method model.

Fraction impervious, f_i

The development site consists of a main facility building with associated support structures and road infrastructure including the race tracks. An average fraction impervious ratio was estimated based on requirements in the *Queensland Urban Drainage Manual* (2007) or QUDM (2007).



Coefficient of Runoff

The coefficient of runoff is determined by application of the estimated Fraction Impervious, 60min duration 10-year ARI rainfall intensity, 10-year ARI Coefficient of Runoff and the Frequency Factor for each respective ARI event as referenced from Section 4, QUDM (2007).

The fraction impervious for the development site was determined from aerial photographs, proposed development plan and site inspections.

Rainfall Intensity

The rainfall intensities adopted for the development has been based on Table 2.9.1B from Logan City Council's *Policy Number 5: Design and Construction of Work*.

Time of Concentration

The time of concentration for the pre-developed sub-catchments has been estimated by reference to Figure 4.07 for sheet flow and Figure 4.09 of QUDM (2007) for stream flows.

The time in concentration for the developed sub-catchments was estimated by application of remaining overland sheet flow, natural channel and vegetated swale flows as per the figures above.

Refer to **Figure C1 – Rational Method Catchment & Flow Path** under **Appendix C – Rational Method Calculations** for the supporting figures and calculations.

5.6.10.2. Results Comparison of existing scenarios

Table 5.6.7 shows comparison at the node 'East Chamber' as this is the main catchment outlet.

Table 5.6.7 – RAFTS & Rational Method validated at node 'East Chamber'

Return Period (Years)	EXISTING		
	RAFTS (m ³ /s)	Rational (m ³ /s)	% Variance (over Rational)
1	0.817	0.859	-4.9%
2	1.215	1.166	+4.2%
5	1.782	1.633	+9.1%
10	2.314	1.934	+19.7%
20	2.791	2.308	+20.9%
50	3.355	2.965	+13.1%
100	3.921	3.431	+14.3%



The comparison results in Table 5.6.7 demonstrate reasonable correlation between results from the RAFTS model and Rational Method. It therefore validates the parameters adopted in the RAFTS model to represent the catchment characteristics under developed conditions.

5.6.11. External catchments

Review of available topographical and Dial-Before-You-Dig information identified two external sub-catchments totalling an approximate size of 14.70 ha which contribute into the open channel. These catchments are well-developed and are composed of mixed use industrial and residential areas.

The external catchment contributes flow into the open channel via the following outlets, as identified from survey and site inspections:

- 2x835mm culvert at the south-west corner (flows from across Kingston Road)
- 1x225mm culvert from industrial lots to the south
- 1x375mm culvert from industrial lots to the south
- 1x1050mm culvert from an industrial lot easement to the south

Refer to **Figure D1** under **Appendix D – Open Channel Calculations** for the catchment extents.

5.6.12. Open channel capacity check

To assess the potential impacts from the Logan Greyhound Facility and to investigate the current discharge characteristic of the existing open channel drain flowing north east along the site, the capacity of the open channel was investigated at three locations:

- Node *PS1*
- Node *PS2*
- Node *PS3*

Estimates of discharge from the external catchments were completed using RAFTS. Additional nodes representing the external catchments were included in the development's RAFTS model and results at critical storm durations obtained for a Q100 storm event. The flows are tabulated in the following page:



Table 5.6.8 – RAFTS Q100 results at PS1, PS2 and PS3

Node	Contributing external catchment size (ha)	RAFTS discharge (External + Development) (m ³ /s)
PS1	8.860	7.736
PS2	5.840	11.446
PS3	Total of PS1 & PS2	12.869

The cross sections of the open channel at PS1, PS2 and PS3 were determined from survey data and used as inputs for Flowmaster, a software which calculates the flow using Mannings 'n' open channel calculations. Appropriate weighted mannings 'n' were estimated based on observations during site inspections and aerial photographs for the three locations.

The water elevation and available freeboard are as follows:

Table 5.6.9 – RAFTS results at PS1, PS2 and PS3 for a Q100 storm event

Node	Left channel bank level (m)	Flow water elevation (m)	Right channel bank level (m)	Freeboard to lowest bank (m)
PS1	RL 31.30	RL 30.19	RL 30.80	0.61
PS2	RL 30.00	RL 28.17	RL 29.00	0.83
PS3	RL 28.00	RL 24.62	RL 25.00	0.38

The results above demonstrate that the combined discharge from the development and the external catchments remains within the channel in a Q100 event, with no anticipated overtopping of the open channel banks.

Refer to Appendix D – Open Channel Calculations for Flowmaster results and channel section prints.

5.6.13. Inlet chamber at the east

As part of sound engineering practice, a simplified capacity check was carried out at the development's main final point of discharge at the existing twin 1200mm RCP inlet chamber. The check was completed using CulvertW software. The total Q100 discharge at the chamber was obtained from the RAFTS model used for the open channel.

Table 5.6.8 – RAFTS Q100 results at PS1, PS2 and PS3

Node	RAFTS discharge (External + Development) (m ³ /s)
Chamber	13.278

Due to unavailable detailed drainage information downstream of the twin 1200mm RCPs, conservative estimates were made for the pipes' longitudinal gradients and tailwater levels. A conservative longitudinal gradient of 1 in 500 and a tailwater level at the pipe obvert was selected. Other information such as weir width and levels (at the chamber lip) were estimated from survey data. A sketch of the chamber is included under **Appendix D – Open Channel Calculations**.

The simplified CulvertW analysis indicated the twin 1200mm diameter RCPs convey a part of the estimated Q100 discharge with the balance of flow overtopping the chamber, into the overland flow path easement described in section 2.2. The overland flow path easement (identified on Dial-Before-You-Dig information) traverses through the existing factory carpark, which then flows east into Allgas Street before finally discharging into Slacks Creek.

Refer to **Appendix D – Open Channel Calculations** for the RAFTS, Flowmaster results, cross-section results as well as the CulvertW results.

5.6.14. Open channel status

As the open channel conveys flows from external catchments and discharges into stormwater systems which are under Logan City Council jurisdiction, there is opportunity to designate an easement for the existing open channel with access to be provided from the Logan Greyhound Facility internal roads for maintenance by Council.

5.6.15. Downstream information survey

Further to the pre-lodgement discussion with Logan City Council on 12 November 2009, the potential exists for obtaining input from property owners located downstream of this open channel to determine incidences of flooding in the area during the Operational Works phase (such an exercise would however, only provide anecdotal evidence and could not be wholly relied upon).



5.7. Water Quality

5.7.1. Proposed strategy

The adopted strategy to reduce pollutant loadings resulting from the proposed Logan Greyhound Facility was by identifying opportunities for implementation Water Sensitive Urban Design (WSUD) measures within the site.

5.7.2. Proposed methodology

The adopted methodology was to review the development layout and taking into consideration site constraints to identify suitable types of WSUD measures and their locations within the development. The performance of the selected WSUD measures was then analysed in MUSIC v3 utilising a treatment train approach and in accordance with Best Management Practices (BMP). The results were then reviewed against Logan City Council's stormwater quality load reduction objectives, described under section 5.7.4 below.

5.7.3. Pollutants of concern

There are a range of pollutants that may be generated by a characteristic outdoor recreational development but the key pollutants that were targeted, in line with Logan City Council's stormwater quality load reduction objectives are:

- sediment (coarse and fine suspended solids, TSS);
- nutrients (phosphorus, TP and nitrogen, TN); and
- litter (gross pollutants).

5.7.4. Stormwater quality load reduction objectives

By reference to Logan City Council's *Stormwater Quality Conceptual Design Guidelines*, the Logan Greyhound Facility is classified as a 'high-risk' development due to the estimated impermeable surface area being in excess of 2000 square metres (m²).

The guidelines also specify the stormwater quality load reduction objectives in the table in the following page:

Table 5.7.1 – Stormwater quality load reduction objectives

Pollutant	Target
Total Suspended Sediment (TSS)	80%
Total Phosphorous (TP)	55%
Total Nitrogen (TN)	45%
Litter (5mm or greater)	90%

Source: *Stormwater Quality Conceptual Design Guidelines*, Logan City Council, Section 3

5.7.5. Existing conditions

Site inspections and survey information did not identify existing WSUD measures in place within the site.

5.7.6. Model for Urban Stormwater Improvement Conceptualisation (MUSIC)

To demonstrate the effectiveness of proposed WSUD measures, a Model for Urban Stormwater Improvement Conceptualisation (MUSIC) model was set-up to estimate pollutant loadings for the post-developed scenario and to simulate the performance of the proposed best management practices using a treatment train approach. MUSIC version 3 was used in the analysis.

To simulate rainfall, evaporation, land use characteristics, pollutant generation and WSUD measure performance, the MUSIC model was set-up using recommended parameters referenced in Brisbane City Council's *Guidelines for Pollutant Export Modelling in Brisbane Version 7 – Draft* (2003) and Healthy Waterway's *MUSIC Modelling Guidelines for South East Queensland – Draft 01* (Dec 2009).

The following input parameters were assessed and assigned for the specific development and treatment strategy.

5.7.6.1. Meteorological data – rainfall data set

Logan City Council's *Stormwater Quality Conceptual Design Guidelines* specifies that the appropriate meteorological template for MUSIC simulation in Logan City is similar to Brisbane, with continuous rainfall data for 10 years (from 1980 to 1990) at a six-minute time step.

5.7.6.2. Source nodes

Review of the development layout has identified two source nodes types; 'Commercial' and 'Rural Residential'. The source node types were selected after reference to Brisbane City Council's *Guidelines for Pollutant Export Modelling in Brisbane Version 7 – Draft* (2003). 'Commercial' nodes represent catchments with high impervious areas while 'Rural Residential' nodes represent open spaces or existing undeveloped areas.

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Where appropriate, land use within suitable sub-catchments in MUSIC were further sub-divided into roof, road and ground land use types to more accurately represent the development. For these locations, pollutant export parameters were updated in accordance with recommended values in the *MUSIC Modelling Guidelines for South East Queensland – Draft 01* (Dec 2009).

Refer to **Appendix E – MUSIC Model Data** for input details.

5.7.6.3. Soil characteristics

The soil properties of the source nodes were modelled in MUSIC by reference to Table 2.3 in Brisbane City Council's *Guidelines for Pollutant Export Modelling in Brisbane Version 7 – Draft* (2003) based on land use types.

5.7.6.4. Link routing

For the purposes of modelling, link routing was not adopted due to the relatively short distances across the site.

5.7.7. Water Sensitive Urban Design (WSUD) measures

As described in Table 5.7.1, the treatment train approach incorporating Best Management Practices was considered with the following potential WSUD measures.

5.7.7.1. Vegetated / grassed swales

The development layout with consideration to site conditions was assessed to identify suitable locations for swales.

Based on the site's past use as a managed landfill, it was considered that shallow vegetated swales would be the most appropriate system for implementation and will be the primary form of drainage capture and conveyance mechanism for the development. Shallow swales do not require extensive excavation and therefore this associated feature minimises risk of excavating beyond the landfill's protective clay capping. Suitability of proposed swale location however, will require confirmation based on geotechnical findings and advice as part of the Operational Works phase.

Swales also have potential to provide pollutant load reduction benefits. Where swales need to cross a road, cross-drainage culverts will be provided and designed for in the Operational Works phase.

5.7.7.2. Rainwater tanks

The main building in the Logan Greyhound Facility will have a roof rainwater harvesting strategy using rainwater tanks. The tanks are anticipated to be proprietary tanks located above ground and external to the building.

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Roof runoff is considered to be relatively clean water which is suitable for collection, storage and reuse for irrigation or non-potable water purposes. Roofwater harvesting also has the potential to reduce demands on the external potable water supply network and to reduce short duration peak stormwater discharge.

5.7.7.3. Bioretention basins / trenches

Review of the development layout identified several locations where bioretention could be implemented. Bioretention are particularly effective in the removal of nutrients from stormwater runoff. Suitability of the proposed bioretention locations however, will require confirmation based on geotechnical findings and advice as part of the Operational Works phase.

It is expected that the proposed bioretention areas would require an impermeable barrier such as a suitable HDPE liner around the filter media to minimise risk of infiltration beyond the protective clay capping, this is due to extended detention times typical to such WSUD measures.

5.7.7.4. Gross pollutant traps

Gross pollutant traps are particularly effective at pollutant load reduction of coarse and fine sediment, debris and gross litter. Commercially available proprietary devices are often the device of choice. Gross pollutant traps (GPT) however, were not considered in this assessment as these devices often have large depth footprints exceeding 1.0m which may increase risk of excavating beyond the protective clay capping layer.

There is opportunity however, to reassess the suitability of gross pollutant traps if required, during the development's Operational Works phase.

5.7.7.5. Buffer strips

The layout of the site was investigated to identify opportunities where runoff can be maintained as sheet flow and discharged through areas of well-grassed areas to further remove pollutants. Buffer strips are typically grassed areas placed between impervious areas such as car parks and a WSUD stormwater conveyance system such as swales or open channels, sometimes referred to as treatment gardens.

5.7.8. MUSIC treatment node summary

The following is a brief summary of the treatment nodes modelled in MUSIC. The location of these measures are shown in **Figure E1- Waster Sensitive Urban Design Measures (Layout)**, the MUSIC schematic in **Figure E2 – MUSIC Model Schematic** and the MUSIC inputs in **Figure E3 – MUSIC Model Inputs – Screenshots of Input Data**.



5.7.8.1. Vegetated / grassed swales

Swales were modelled in MUSIC as trapezoidal with typical 0.5% longitudinal gradient, 1.2m wide base and 1 in 4 side batters.

The existing open channel along the boundary was modelled as multiple lengths of swale which reflect the various vegetation condition of the open channel along its north east flow path.

5.7.8.2. Detention basins

The detention basin was modelled as a pond without an extended detention volume in MUSIC at the south-western part of the site.

5.7.8.3. Bioretention basins / trenches

Bioretention basins were modelled at three locations, one in the centre of the set-down turnaround area near the main building and the remaining two at the eastern end of both inner and outer tracks.

The finished levels at the eastern ends of the tracks are anticipated to be above existing ground levels on embankments which have potential to encourage ponding of stormwater runoff. As such, there is opportunity to implement a solution which not only discourage ground infiltration through the use of liners but also treat the runoff through bioretention filters at these locations.

A small bioretention trench was modelled at the downstream end of the swale capturing runoff from the main access road from Kingston Road. The trench discharges into the proposed detention basin nearby.

5.7.8.4. Rainwater tanks

A rainwater tank with an estimated storage of 15kL was included in the MUSIC model. No reuse was adopted for the purpose of this analysis. The parameters of the tank including reuse values will be defined with the hydraulic designers of the building as part of the Operational Works phase.

5.7.9. Maintenance of WSUD measures

Where WSUD measures require periodical maintenance, appropriate maintenance plans will be included in the Operational Works phase.

5.7.10. MUSIC model analysis and results

The MUSIC model was set-up by initially subdividing the site into sub-catchments which discharge into WSUD treatment measures using a treatment train approach. Appropriate parameters were then set for each source and treatment node with a total site receiving node added downstream of the development to represent the combined total site pollutant reduction performance. The site receiving node does not represent the physical site characteristics and is only used for information.

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5.7.10.1. MUSIC model results

The MUSIC results are shown in the table below:

Table 5.7.2 – Pollutant reduction performance

Pollutant	Target (%)	MUSIC Results (%)
Total Suspended Sediment (TSS)	80%	90.0%
Total Phosphorous (TP)	55%	74.4%
Total Nitrogen (TN)	45%	46.9%
Litter (5mm or greater)	90%	100.0%

As shown in Table 5.7.2, the strategy of implementing WSUD measures using a treatment train approach and utilising Best Management Practices has reduced the anticipated load of pollutants generated by the Logan Greyhound Facility to within acceptable WSUD standards.

The MUSIC model output results are shown in Figure E4 – MUSIC Model Results.

5.7.11. Erosion and Sedimentation Management

The management of erosion and sedimentation primarily throughout the construction phase is an integral component of the pollutant reduction strategy to maintain water quality. It is recognised that the highest load of erosion and hence suspended solids in the runoff occurs during the construction phase.

The proposed detention basin will be partially constructed and utilised as a temporary sediment basin during the construction phase (as part of the early bulk earthworks) for the majority of the vehicular park and internal road works.

The remainder of the construction works such as the tracks, building will be primarily erosion prevention by ground coverage and minimising sediment transportation via strategically placed sediment fences downstream of the works cut off drains.

The typical arrangement and application of erosion and sedimentation management measures proposed for the development site are shown on Figure E5 – Erosion and Sediment Control with typical erosion sediment control notes and details under Figures E6 and E7.

5.7.11.1. Construction implementation

To mitigate the potential of Water Sensitive Urban Design (WSUD) measures being compromised during construction and to ensure erosion and sediment transport is minimised during construction, the following construction implementation program is proposed:

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- Erosion and sedimentation control – to be implemented prior to commencement of bulk earthworks. Continuous monitoring until the development site is established and stabilised are required. Sediment basins are to be provided where proposed detention basins are not present. Sediment fences are to be installed along development site boundaries or at strategic locations;
- Sedimentation basins – all onsite stormwater runoff is to be diverted towards the detention basins as directed via cut-off drains with rock check dams to dissipate energy which reduces velocity and allows enhanced conditions for sediment to settle. These are to be completed prior to commencement of any works upstream;
- Vegetated swales – the proposed vegetated swales are to be completed following completion of the civil construction phase;
- Street sweeping – street sweeping of the road and car park surfaces is to occur following the completion of the building construction phase.

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6. Sewerage Reticulation

The sewage reticulation infrastructure works to be carried out for the assessable development will be in compliance with the standards for sewerage reticulation infrastructure specified in Logan City Council's *Planning Scheme Policy No. 5 (Design and construction of work) 2006*.

6.1. Demand

The sewage loads expected to be generated by the proposed Logan Greyhound Facility are primarily effluents from bathroom facilities and a kitchen. Also included is the runoff generated by the cleaning of dog holding pens contained within the main facility building.

For the purposes of estimating an approximate discharge, a typical sewage demand rate of 30 equivalent persons per hectare (EP/ha) has been used. The rate was selected after considering Brisbane City Council's typical demand rate for a sporting facility such as a stadium in the Brisbane City Council area. Brisbane City Council's conversion factor table for sewerage is attached under **Appendix F – Services Demand Calculations**.

The sewerage demand has been estimated to be 307.2EP or equivalent to a design flow of 4.44 l/s Peak Wet Weather Flow (PWWF) with Logan City Council's PWWF conversion of 1250L/EP/day.

6.2. Connection

The proposed internal hydraulic sewer connection for the development is the existing 225mm diameter trunk sewerage line located to the north of the proposed main facility building. From discussions held with Logan City Council officers at their offices on 25 October 2009, the existing sewerage system in the area has adequate capacity to accommodate the demand from the development. Reference is also made to an email attached under **Appendix F – Services Demand Calculations** advising general connection locations.

Inspections undertaken at the site have noted the inspection chamber lids of the existing 225mm sewerage line to the north at a lower level than proposed development. As such connection into the existing systems is not anticipated to be an issue. The as-constructed information for sewerage will be sourced from Logan City Council as part of the Operational Works phase.

Where the works do affect any nearby manhole or inspection chambers or other service points which are meant to be accessible, the lid levels of these existing service locations will be raised or lowered as required to match the proposed finished level of works.

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The existing layout and connection locations of the sewerage network are shown on **Figure F1 – Water and Sewerage Reticulation and Services Location Plan.**

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7. Water Reticulation

The water reticulation infrastructure works to be carried out for the assessable development will be in compliance with the standards for water reticulation infrastructure specified in Logan City Council's *Planning Scheme Policy No. 5 (Design and construction of work) 2006*.

7.1. Demand

The Logan Greyhound Facility building will require water supply for use of the toilets, kitchens and for washing of the holding pen area. It is however expected that water collected in rainwater tanks generated by roof runoff areas will be treated on site as appropriate and used to supplement non-potable water usage for the toilets and washing of kennels. The rainwater tanks will assist in minimising the demand for potable supply from Council water reticulation mains for building use.

In addition to the building, the development will also require water supply for watering of the racing track. The client, Greyhounds Queensland has advised that the anticipated usage for track watering has been estimate to be on average, 120kL/week for the winter season and up to 150kL/week for the summer season. This demand however, may be offset by alternative water storage and reuse facilities to be described in section 7.3 below.

The development has been assumed to be classified under the Centres Zone as per Table 2.7.1A in Logan City Council's *Policy No. 5 (Design & Construction of Work)* which specifies a demand peaking factor of 2.6 to be used. As such, the peak demand (Max Second) from the development has been estimated to be 3.33L/s or corresponding to 330 EP.

Table 7.1 – Water demand broken into components

Description	Flow (l/s)
Building – 21 WC, 6 urinals, 16 basins, 11 sinks (aerated tap), 1 sink (standard tap), 2 10mm taps	1.03
Track watering – average 150kL/week per year (summer)	0.25
Total	1.28 L/s

The supply of water from Council's water reticulation network has been assumed to be available at least to a minimum standard of service for fire fighting purposes. However, pressure flow tests may be required to confirm the available pressure during the Operational Works phase. The as-constructed information for the existing water supply reticulation network will be sourced from Logan City Council as part of the Operational Works phase.

Based on the BCA code, the building is classified as a 'Class 6' structure.

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Refer to **Appendix F – Services Demand Calculations** for the water demand estimation calculations and background information.

7.2. Connection point

The proposed connection of the water supply is a metered single connection to the existing 150mm diameter water line located near the intersection of Kingston Road and Compton Road. Dial-Before-You-Dig information has noted the potential need to extend the 150mm water reticulation line from the intersection to the main access of the site from Kingston Road. As such, works along Kingston Road may be a required depending on input from Council.

Preliminary discussions held with Logan City Council at their offices on 25 October 2009 have indicated there is adequate capacity and pressure in the existing water supply system to accommodate the demand from the development. Reference is also made to an email attached under **Appendix F** advising general connection locations. The existing water main size, connection points and service sizes will be confirmed during the operational works phase by submission of a Water Connection application to Logan City Council.

The existing layout and connection locations of the water reticulation network are shown on **Figure F1 – Water and Sewerage Reticulation Plan (Indicative)**.

7.3. Rainwater harvesting

To reduce dependence on Council's water supply system, alternative solutions have been investigated and are outlined below:

7.3.1. Rainwater tank(s)

The main building is proposed to have a roof rainwater harvesting tank which can provide a temporary supply of non-potable water for toilet use or localised landscaping irrigation. Other buildings such as the kennel block could also have a similar arrangement for localised general kennel cleaning and other non-potable use.

7.3.2. Non-potable water supply arrangement

One potential option to reduce use of Council water supply for track watering is to source water from external suppliers. The supplier may come in the form of a neighbouring business which is already generating excess water as a by-product of their daily operations.

Investigations undertaken found that a similar feasibility study on this option was commissioned by another greyhound racing facility in Victoria, the Meadows Greyhound Racing Club to potentially

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reuse the excess water generated by a neighbouring Salad Fresh factory. The study's key findings are:

- the source supplier must be able to provide a stable and sufficient amount of excess water to meet demand at the recipient facility in order to provide a beneficial offset against using Council water supply; and
- the water from the source must meet required treatment criteria before it can be used for track watering, which may require additional set up costs for treatment etc.

In addition to potential capital costs for treatment, other associated outlay may include capital cost of piped or conveyance system, storage tanks and cost associated with operation and maintenance of the above system. The Meadows Greyhound/Salad Fresh study concluded with a cost analysis which found the estimated total cost of setting up the system (with treatment included) would initially be much higher than sourcing water from Council supply. Agreements on cost sharing, maintenance, responsibilities will also be required between the relevant parties.

A discussion was held with the Meadows GRC's general manager to canvass their experience on the above study. From the discussion, the option above was received positively but the anticipated high initial capital cost and uncertainty of a long-term water supply resulted in the option not being progressed beyond the study phase.

The purpose of referencing the Meadows Greyhound/Salad Fresh study is that of Greyhound Queensland Limited's intent to investigate similar ventures and the commitment to incorporate a sustainable ethic in their operations in so far as track watering is concerned. Notwithstanding that opportunities are limited, further investigations will continue to the Operational Works phase of the development.

7.3.3. **Runoff from racing tracks**

There is potential for a system to capture and store stormwater runoff from the surface of the race tracks in the development. The proposed perimeter swales around the inner face of the two tracks could be utilised to convey captured stormwater runoff into collection points, which can either be fed via gravity or pumped into dedicated storage tanks.

The Meadows GRC uses a similar method to capture stormwater runoff and from the discussion with the management, the captured runoff is currently reused directly without treatment. They have noted however, that the quality of the captured runoff is poor as a result and would have implemented a treatment/filter system if given the opportunity to do so.

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There is also possibility of placing storage tanks underneath parts of the race tracks in particular the eastern bends of the tracks where the track surface is situated on fill earthworks. Further investigation will be required to also determine whether percolation through the track surface is a feasible option (which is a compacted sand-like material) in the Operational Works design phase.

7.3.4. Bore / groundwater supply

The option of using water from underground bores could be considered but consideration has to be taken on the site's past use as a managed landfill. Additional studies are likely to be required to determine groundwater characteristics and suitability of the groundwater supply for use however, this option would seem unlikely at this stage.

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8. Other Services

The proposed development is located within a relatively well developed area with current availability for utility services. It is proposed that the development site will be serviced from the existing electrical and telecommunications infrastructure with connections directly adjacent. The development is not anticipated to affect any existing services. Where it does, appropriate management measure to protect or divert the affected service will be undertaken with input from Logan City Council.

The infrastructure works to be carried out for the assessable development will be in compliance with the standards for services specified in Logan City Council's *Planning Scheme Policy No. 5 (Design and construction of work) 2006*.

8.1. Electricity

Dial-Before-You-Dig enquiries have indicated the presence of electrical supply cables near the intersection of Kingston and Compton Road. Liaison and a service supply agreement with Energex will be required to determine an appropriate supply connection point and the demand required. An electrical engineering consultant will be engaged to facilitate this process during the Operational Works Phase.

8.2. Telecommunications

Dial-Before-You-Dig enquiries have indicated the presence of Telstra communication lines near the intersection of Kingston and Compton Road and at the south of the site along Kingston Road. Liaison and a service supply agreement with Telstra or other communications providers will be required to determine an appropriate supply connection point and the demand required. An electrical communications engineering consultant will be engaged to facilitate this process during the Operational Works Phase.

8.3. Gas Supply

Dial-Before-You-Dig enquiries have not indicated the presence of gas supply lines near the development site. If gas is required, a specific gas supply agreement will need to be sourced from a nominated supplier.

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9. References

- Logan City Council (2006), Planning Scheme Policies; Policy Number 5 (Design and Construction of Work)
- Logan City Council (2006), Planning Scheme Policies; Policy Number 2 (Development Application for Work)
- Logan City Council, Stormwater Quality Conceptual Design Guidelines
- Brisbane City Council (November 1999), Design Guidelines for Stormwater Improvement Devices
- Brisbane City Council (February 2000), Sediment Basin Design Construction and Maintenance
- Brisbane City Council (March 2000), Guidelines on Identifying and Applying Water Quality objectives in Brisbane City
- Brisbane City Council (September 2000), *Site Based Management Plan Case Studies*
- Brisbane City Council (October 2000), *Water Quality Management Guidelines*
- Brisbane City Council (October 2003), Guidelines for Pollutant Export Modelling in Brisbane Version 7 (Draft)
- Department of Natural Resources & Water (2007), Queensland Urban Drainage Design Manual; Volume 1
- The Institution of Engineers Australia (1987), Australian Rainfall and Runoff: A Guide to Flood Estimation – Volume 1& 2
- AS2890.1 (2004): Off-Street Parking
- AS3500:1 (2003): Plumbing and Drainage – Water Services
- Sinclair Knight Merz (Aug 2009), Cronulla Park Redevelopment (Draft) – Report on Stage 1 Site Investigation
- Sinclair Knight Merz (July 2009), Cronulla Park Redevelopment (Draft) – Interim Summary Report on Supplementary Site Investigation
- Sinclair Knight Merz (Dec 2009), Logan Greyhound Facility – Traffic Impact Assessment
- Sinclair Knight Merz (Dec 2009), Logan Greyhound Facility – Contaminated Site Investigation

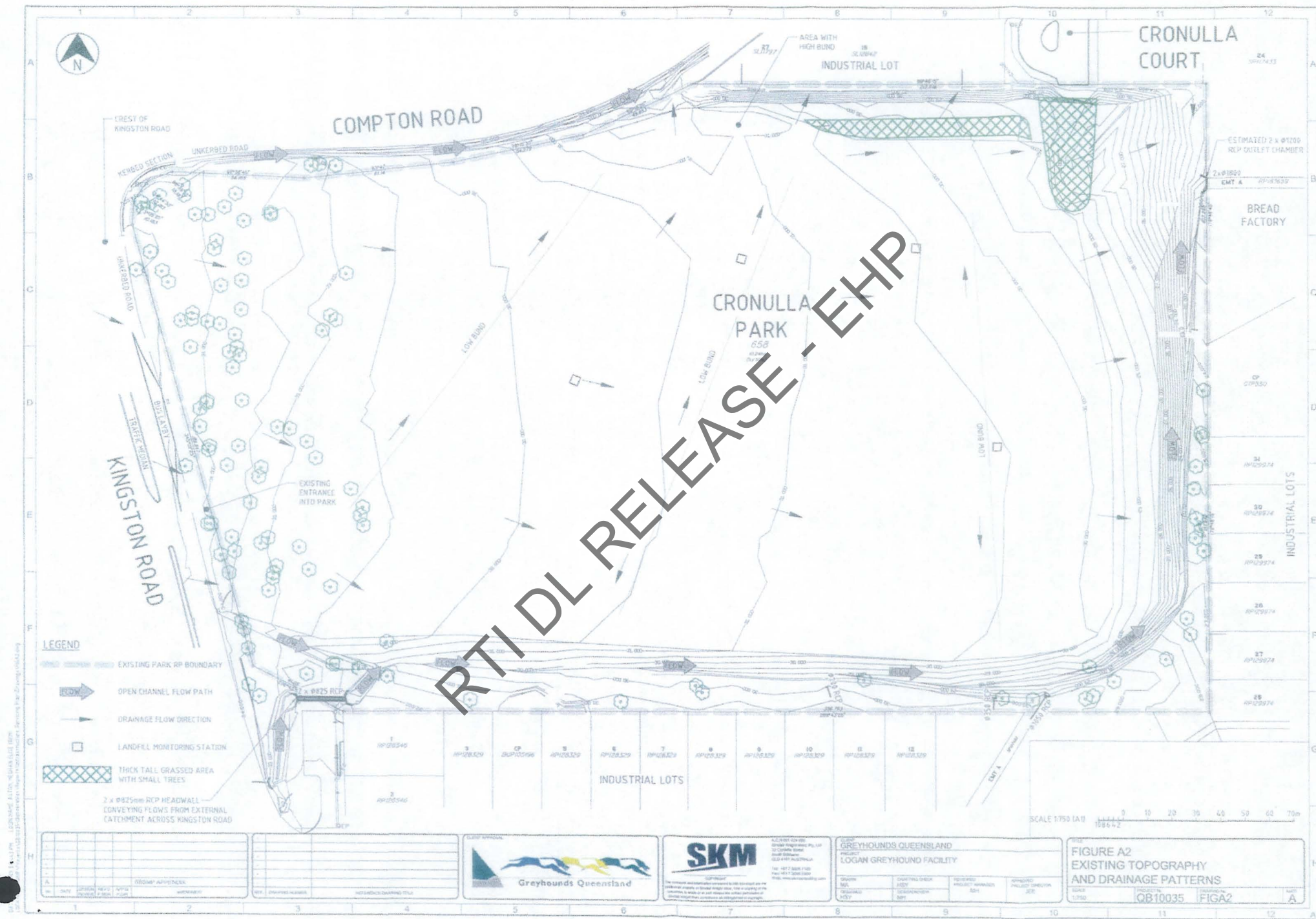
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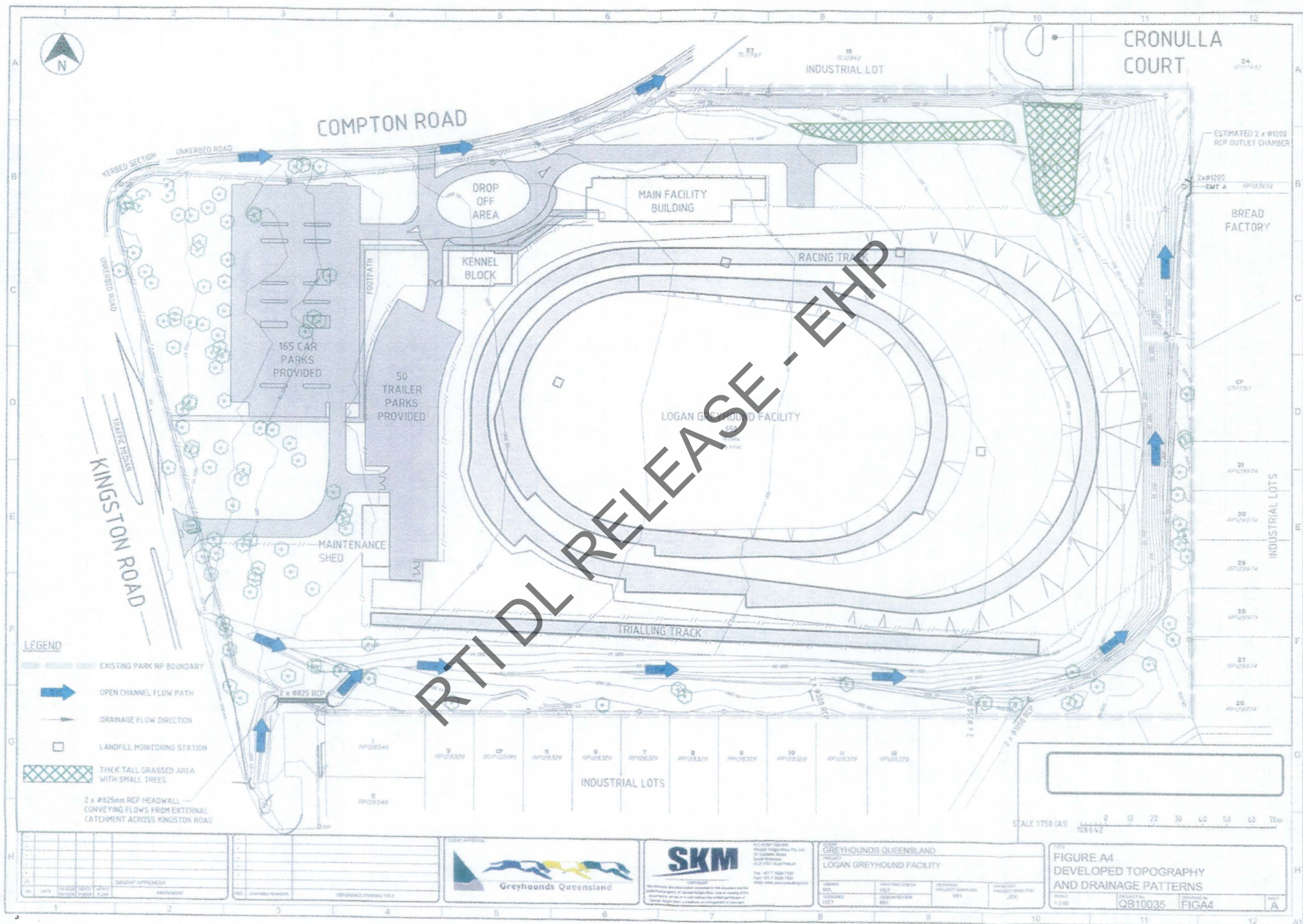


Appendix A Figures

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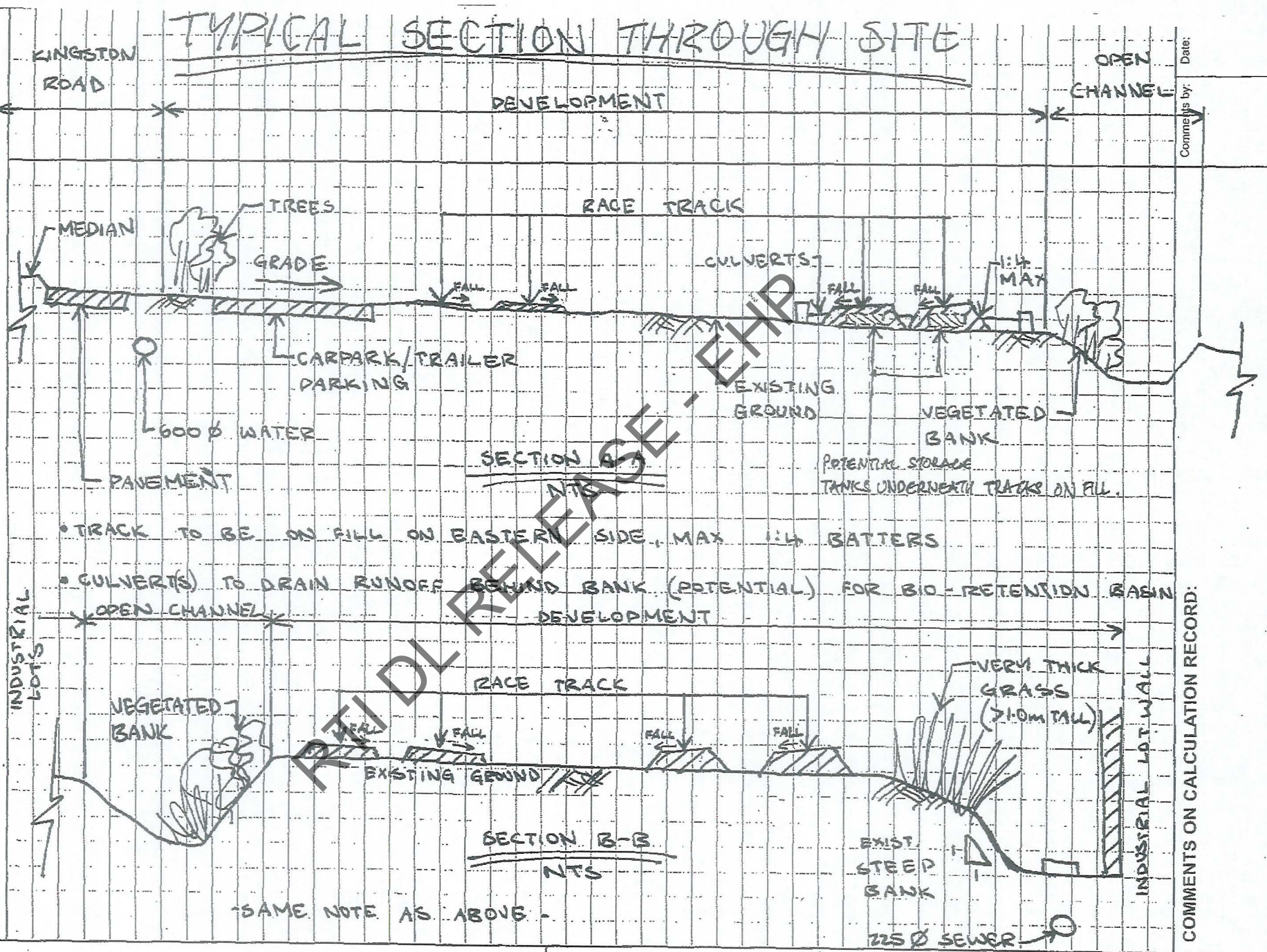
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Project No. _____
SHEET No. _____
PREPARED BY: MCA
CHECKED BY: HBY
DATE: 13/02/21
DATE: 19/02/22

PROJECT Q310035
TASK
WORK PACKAGE
ELEMENT
APPENDIX A



Comments by: _____
Date: _____

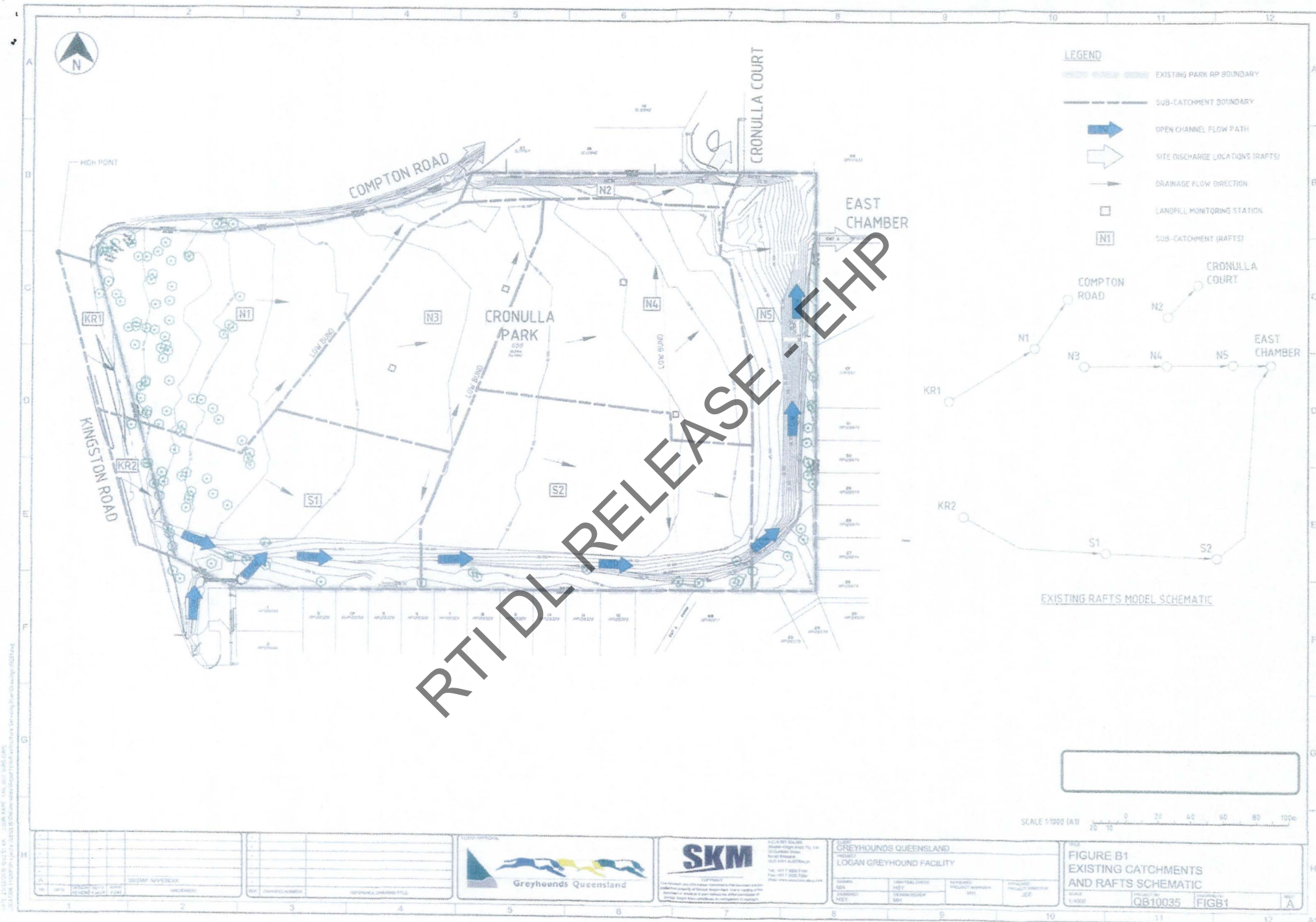


Appendix B RAFTS Model Data

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Enquiry Phone: Customer Service (07) 3412 5269
Please Quote File: 653425-1653425-2653425-3
Document Reference: 6980719/OSIPOWM:KELLYMEL
Property Key: 186941



3 February 2011

150 Wembley Road
Logan Central QLD 4114
PO Box 3226 Logan City DC QLD 4114



Department Of Transport And Main Roads
Floor 4 477 Boundary St
SPRING HILL QLD 4000

Council enquiries 07 3412 3412
Council fax 07 3412 3444
Email council@logan.qld.gov.au
Web www.logan.qld.gov.au
ABN 21 627 796 435

Dear Sir/Madam

DECISION NOTICE

DEVELOPMENT APPLICATION NO: MCUC/130/2010
PROPERTY DESCRIPTION: LOT 658 SL 12298
PROPERTY LOCATION: 146-178 KINGSTON ROAD, SLACKS CREEK QLD 4127

APPLICATION DESCRIPTION:

- MATERIAL CHANGE OF USE - OUTDOOR ENTERTAINMENT & RESTAURANT, OPERATIONAL WORKS (VEGETATION CLEARING), AND BUILDING WORKS (PRELIMINARY APPROVAL)**

Reference is made to the above development application.

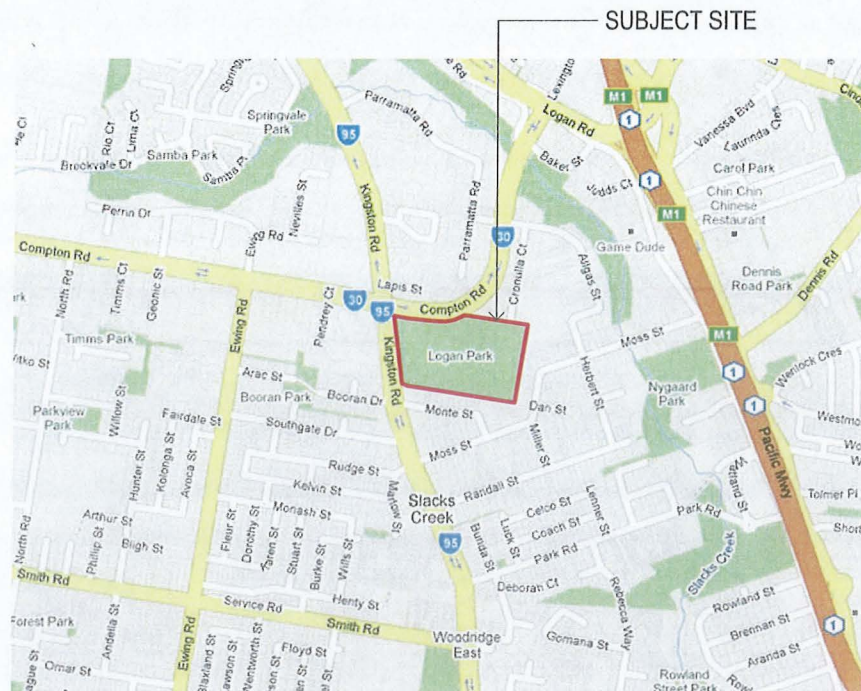
In accordance with Section 334 of the Sustainable Planning Act 2009, please find enclosed a copy of the Decision Notice and Development Permit issued by Council on 2 February 2011.

For further information about this application please contact Council on (07) 3412 5269 or via email on <mailto:bpuda@logan.qld.gov.au>.

Yours faithfully

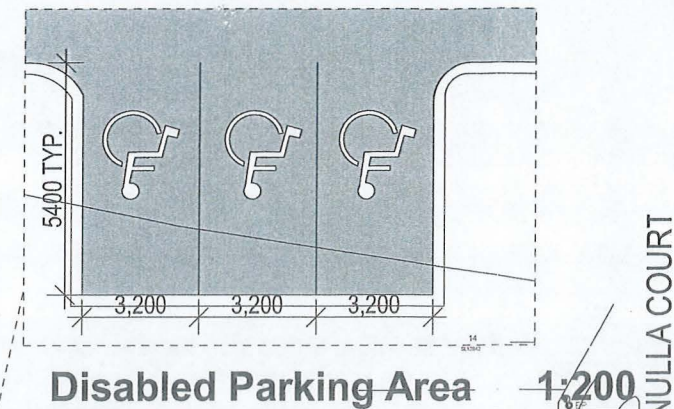
49-Sch4 - Signature

Christian Parks
Development Assessment Co-ordinator
(on behalf of Chris Rose, Chief Executive Officer)

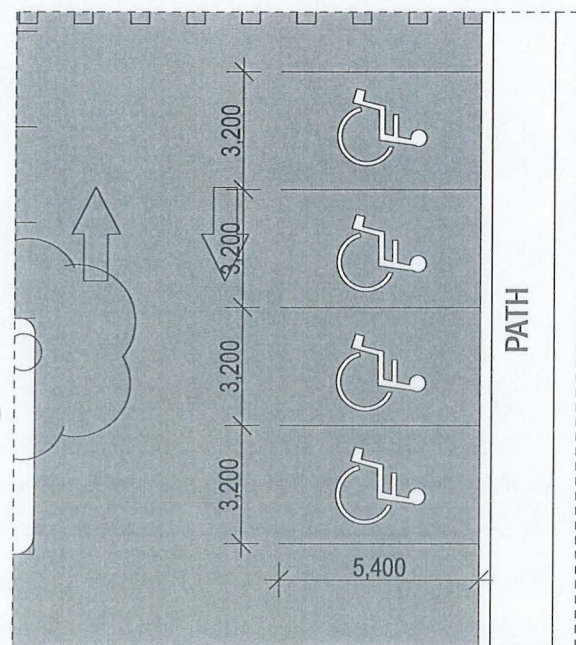


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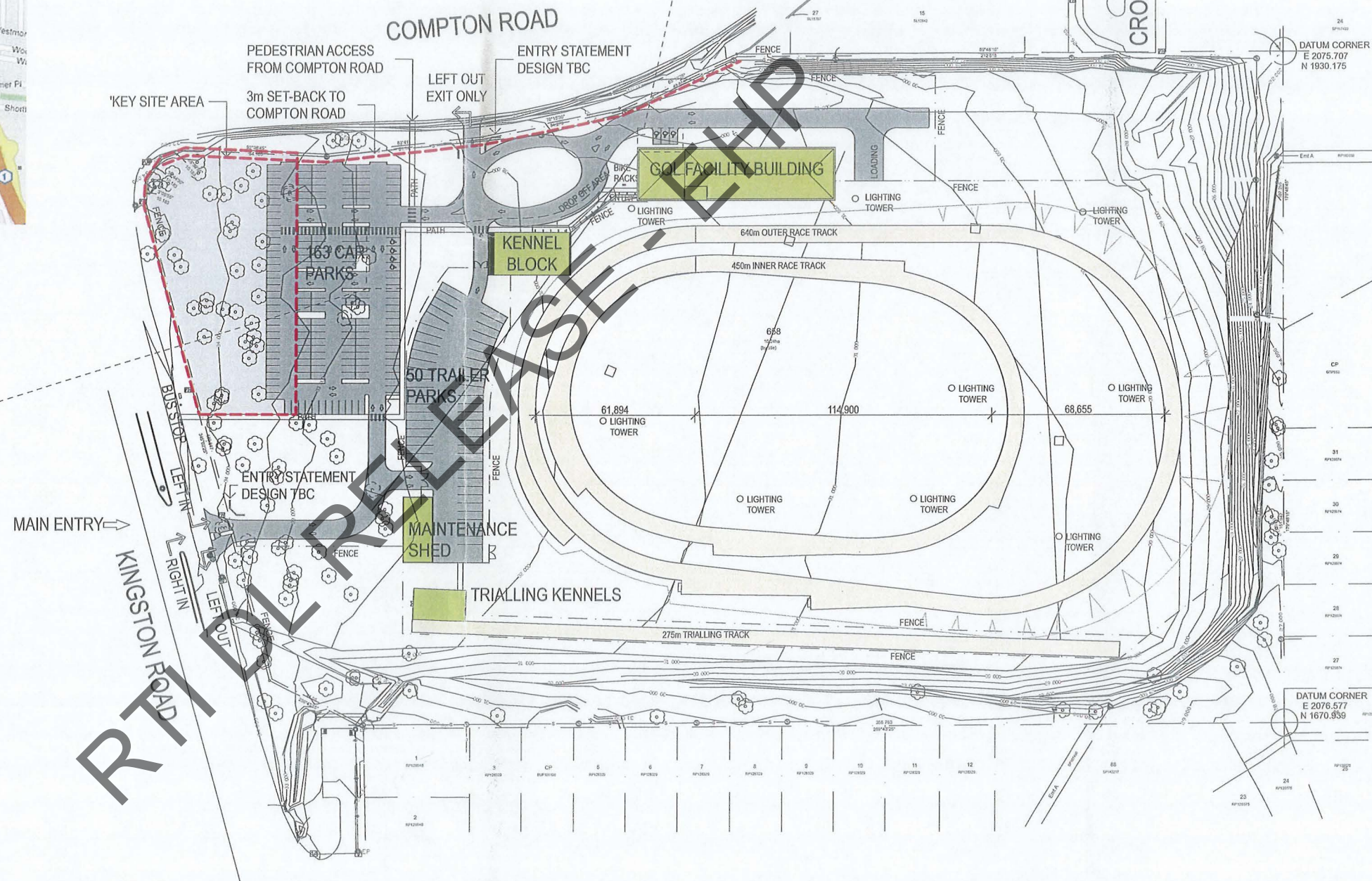
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Development Permit *MCUC/130/2010*



1 Location Plan



Disabled Parking Area 1:200



2 Site Plan

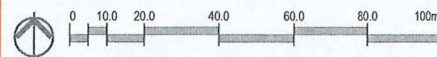
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FACILITY BUILDING GFA: 2400m²
KENNEL BLOCK GFA: 363m²
TRIALLING KENNELS GFA: 170m²
MAINTENANCE SHED GFA: 270m²
TOTAL SITE GFA: 3203m²

LOGAN GREYHOUND FACILITY
GREYHOUNDS QUEENSLAND

PRELIMINARY
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■ SITE PLAN -



SCALE- 1:2000 @ A3

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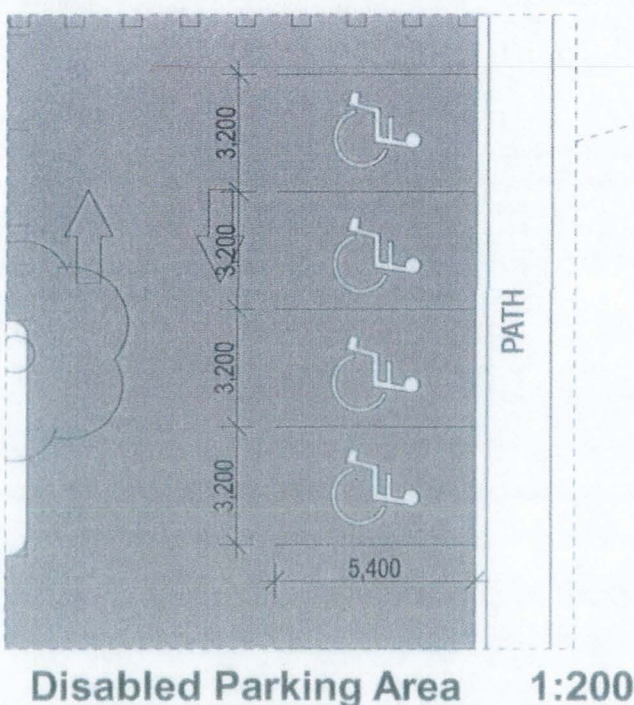
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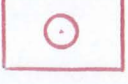
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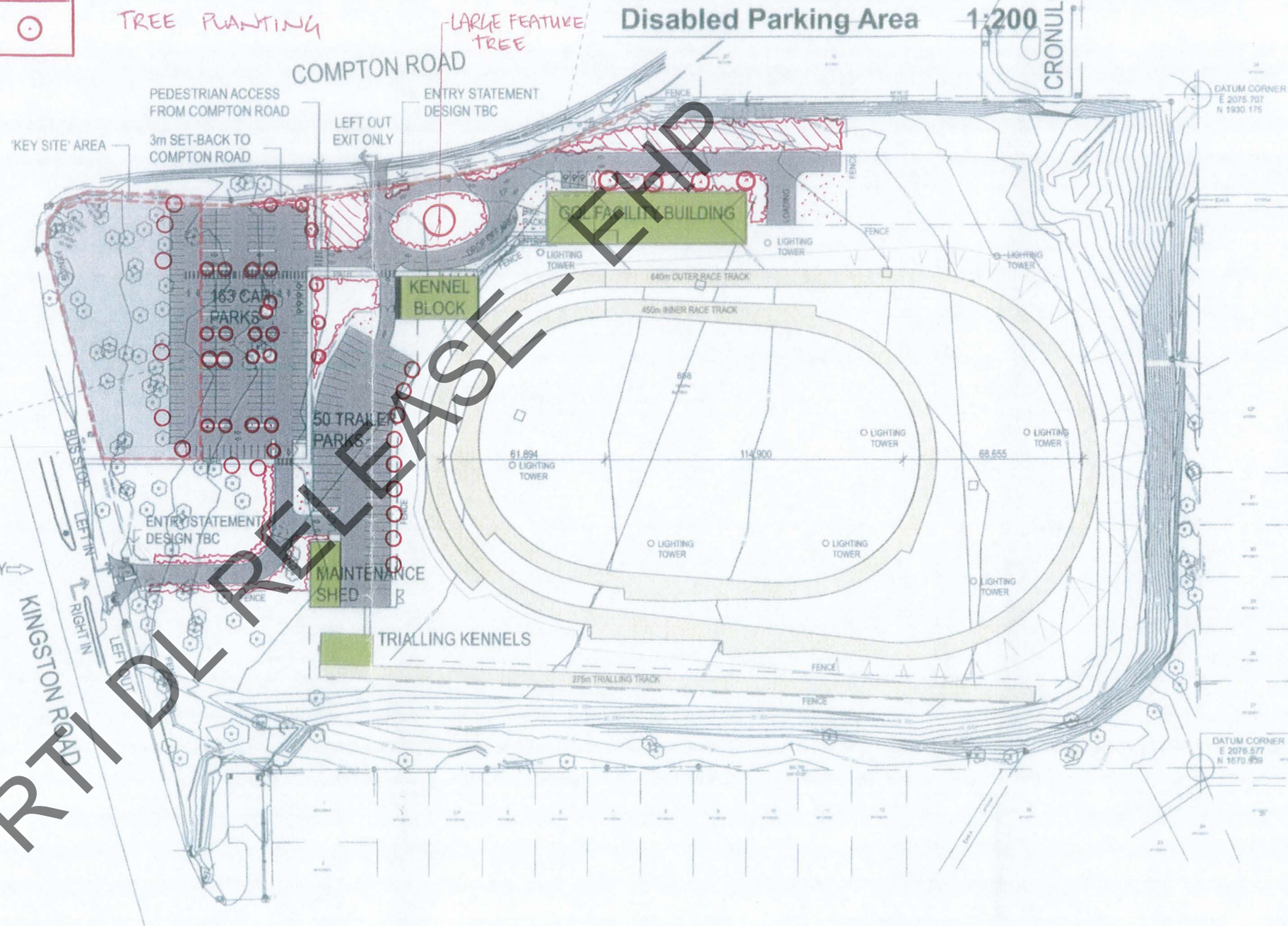


1 Location Plan



Disabled Parking Area 1:200

-  FORMAL FEATURE PLANTING
-  NATIVE REVEGETATION PLANTING
-  TURF AREAS
-  TREE PLANTING



2 Site Plan

1:2000

FACILITY BUILDING GFA:	2400m ²
KENNEL BLOCK GFA:	363m ²
TRIALLING KENNELS GFA:	170m ²
MAINTENANCE SHED GFA:	270m ²
TOTAL SITE GFA:	3203m ²

LOGAN GREYHOUND FACILITY
GREYHOUNDS QUEENSLAND

SITE PLAN - INDICATIVE LANDSCAPING AREAS



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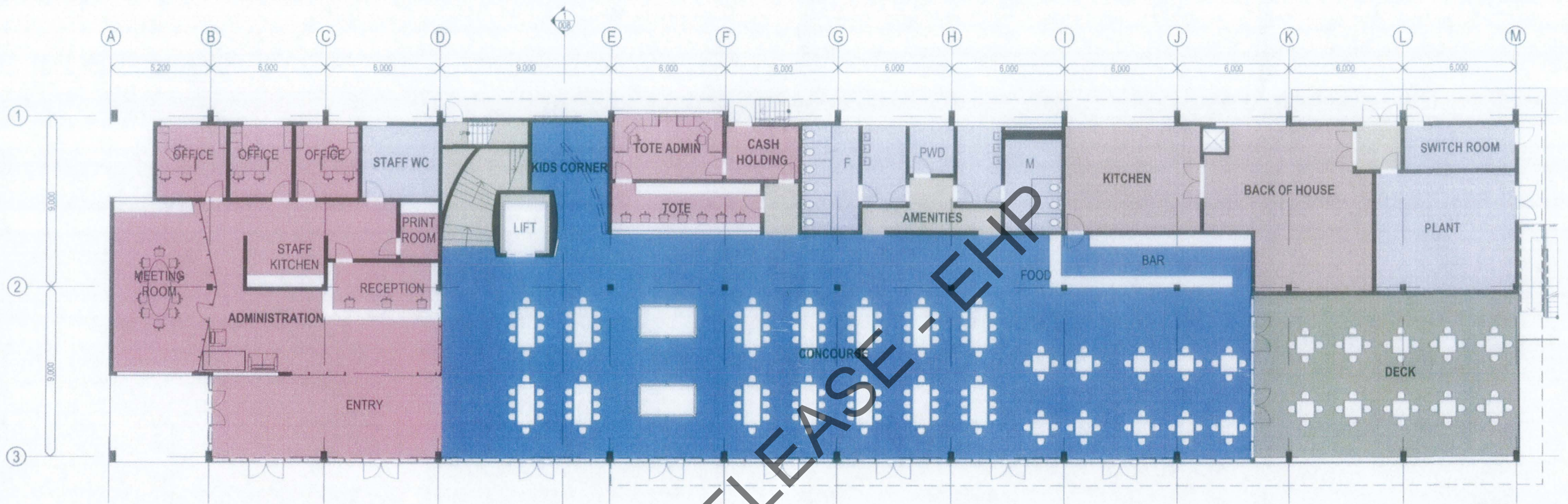
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1 GROUND FLOOR PLAN 1:200

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FLOOR PLANS - GQL FACILITY BUILDING

LOGAN GREYHOUND FACILITY
GREYHOUNDS QUEENSLAND



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ABN 80 102 482 304
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1 LEVEL 1 PLAN 1:200

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FLOOR PLANS - GQL FACILITY BUILDING

LOGAN GREYHOUND FACILITY
GREYHOUNDS QUEENSLAND



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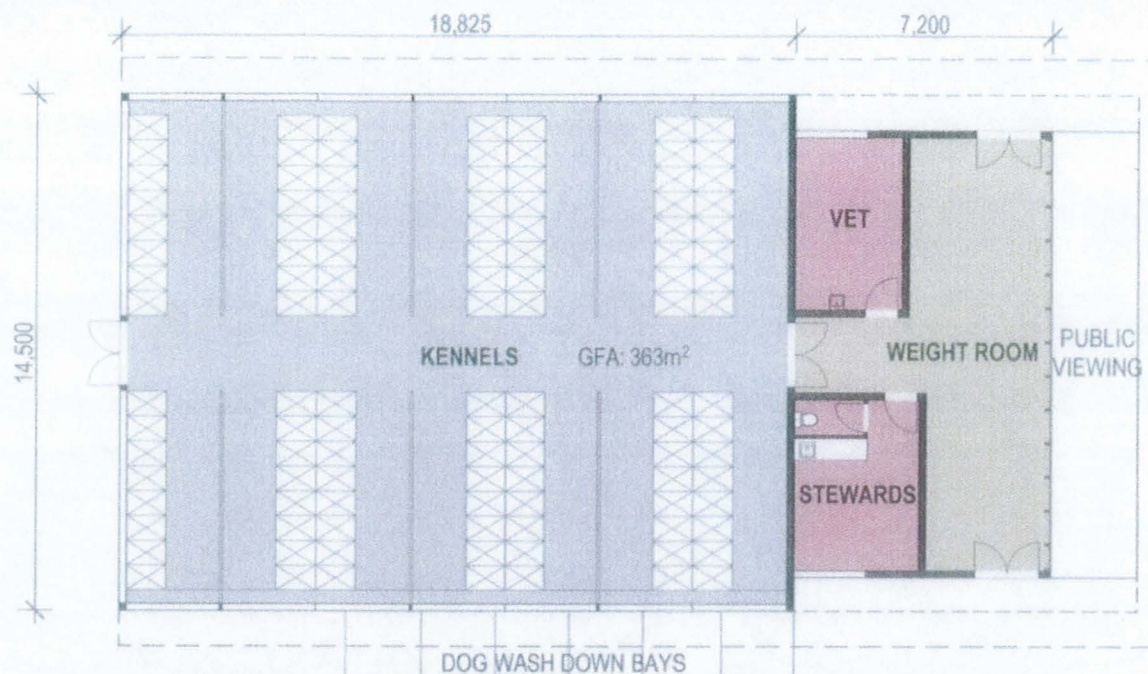
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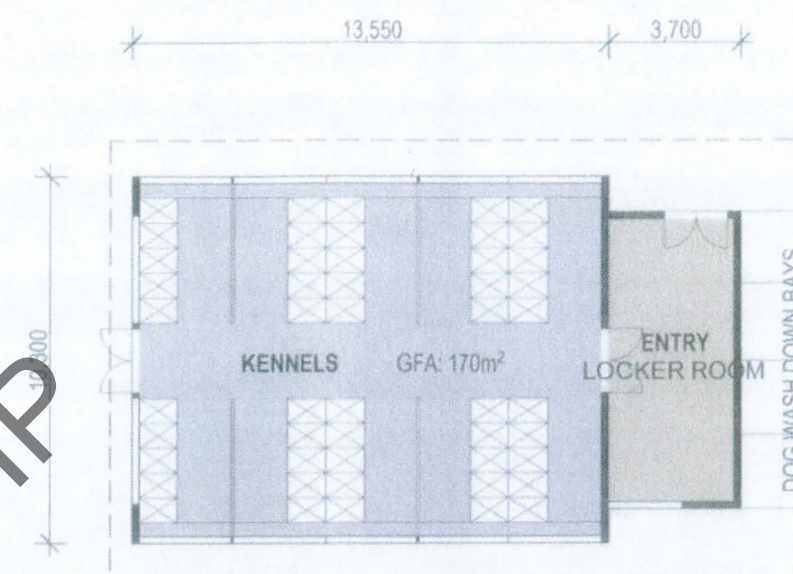
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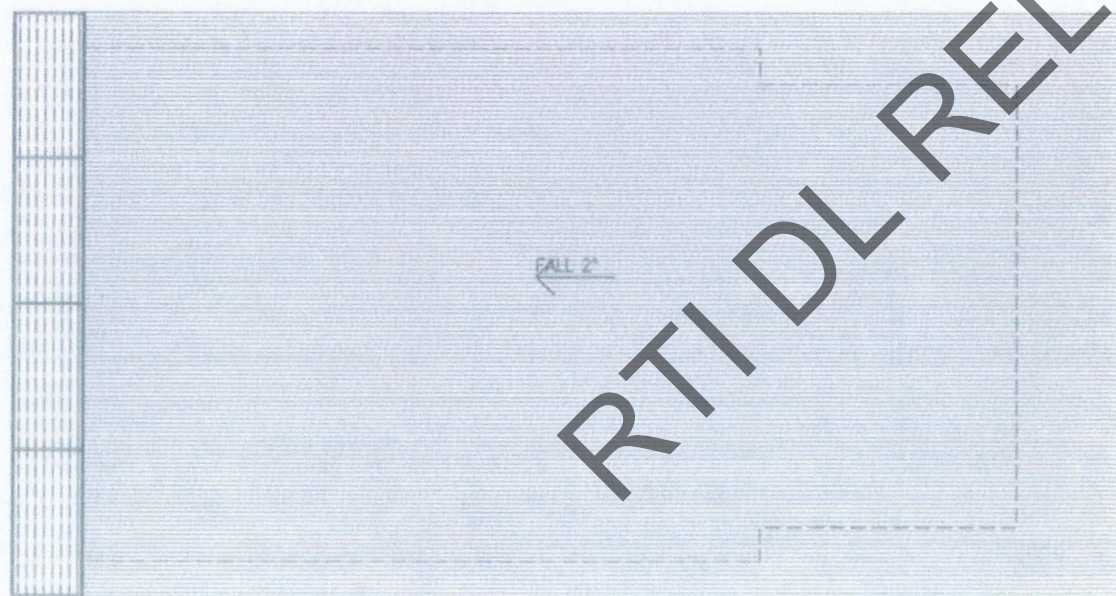
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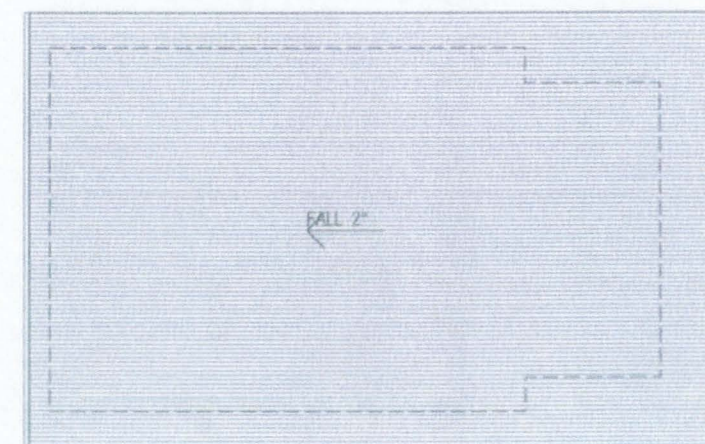
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3 TRIALING BLOCK FLOOR PLAN 1:200



2 KENNEL ROOF PLAN 1:200



4 TRIALING BLOCK ROOF PLAN 1:200

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FLOOR PLANS - KENNEL & TRIALING BLOCKS

LOGAN GREYHOUND FACILITY
GREYHOUNDS QUEENSLAND



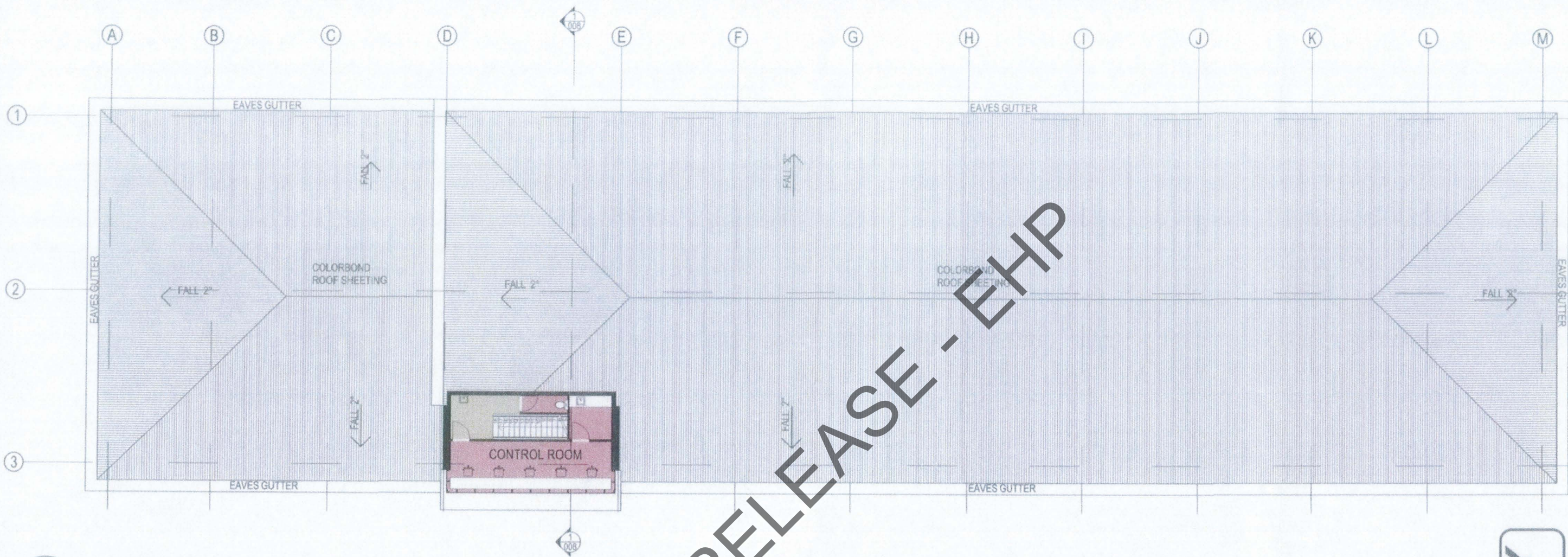
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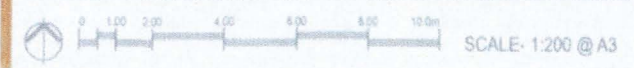
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FLOOR PLANS - GQL FACILITY BUILDING

LOGAN GREYHOUND FACILITY
GREYHOUNDS QUEENSLAND



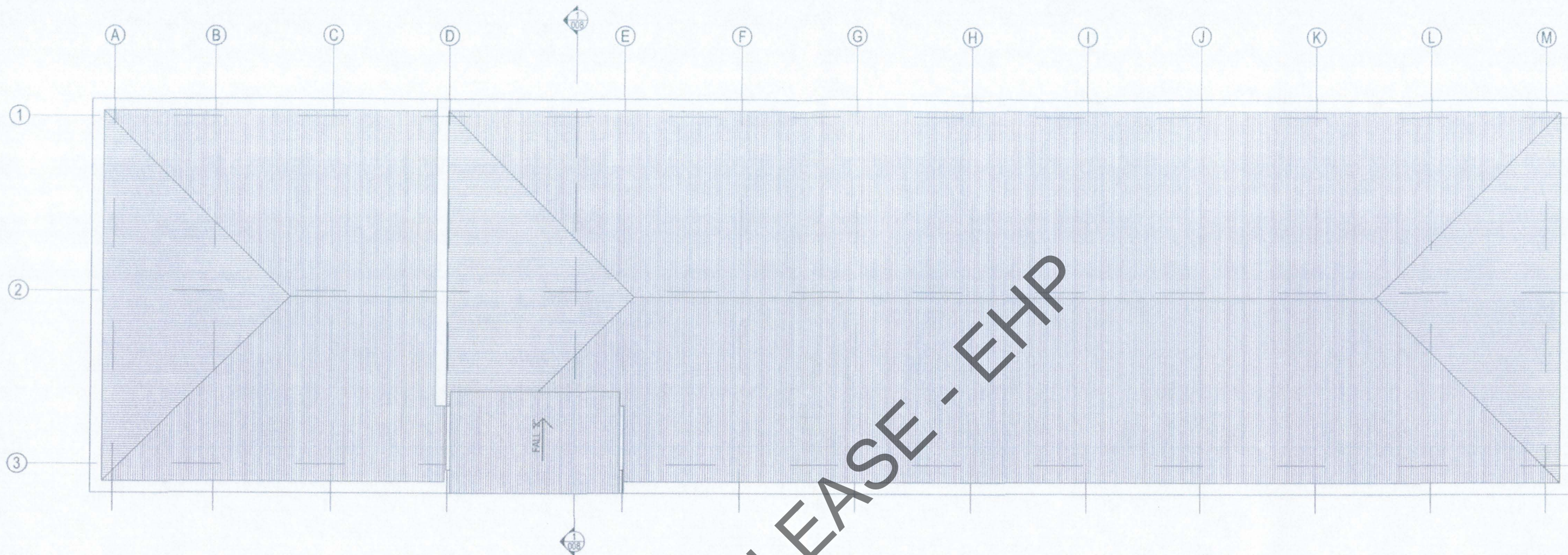
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1 ROOF PLAN 1:200

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ROOF PLANS - GQL FACILITY BUILDING

LOGAN GREYHOUND FACILITY
GREYHOUNDS QUEENSLAND



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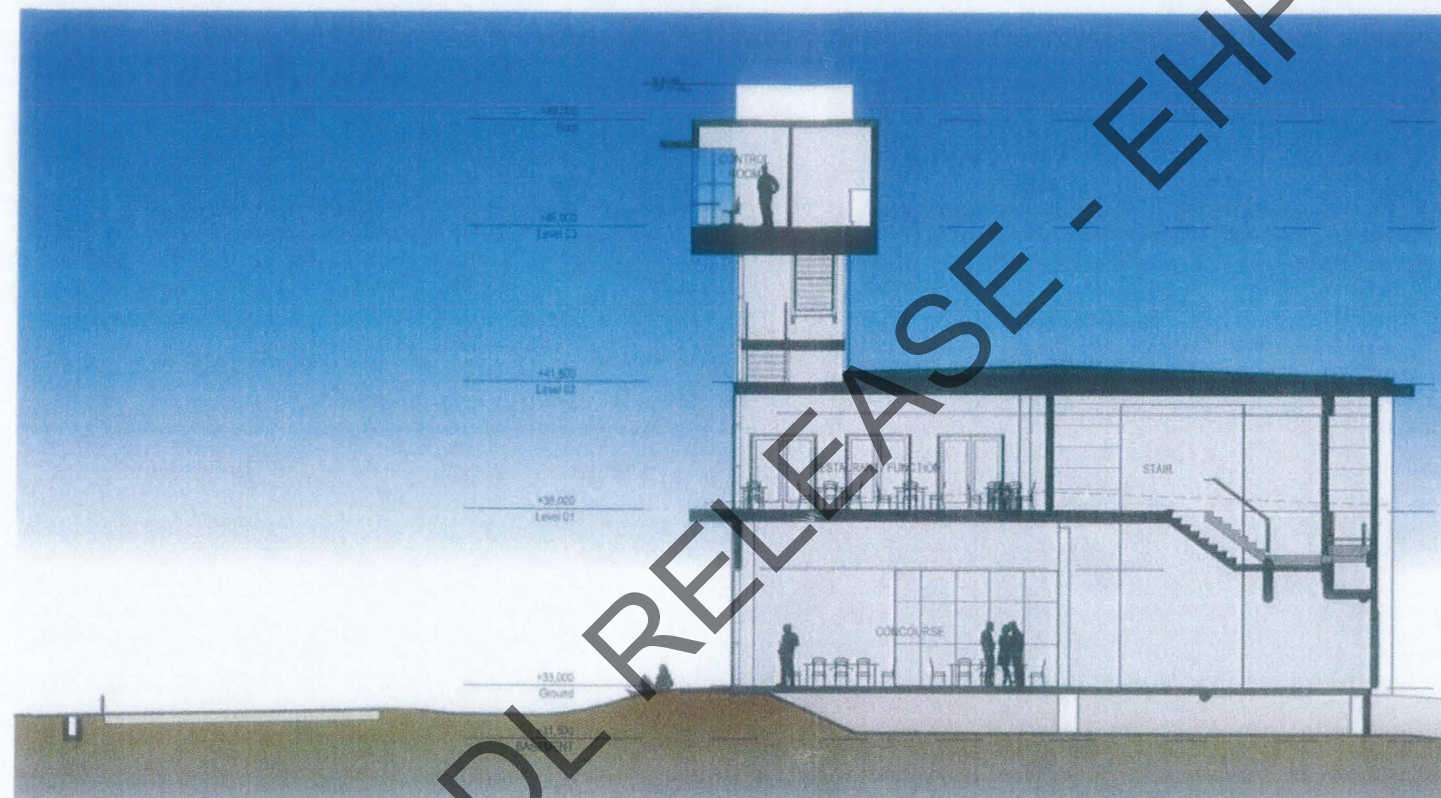
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1 SECTION 01 1:200

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LOGAN GREYHOUND FACILITY
GREYHOUNDS QUEENSLAND

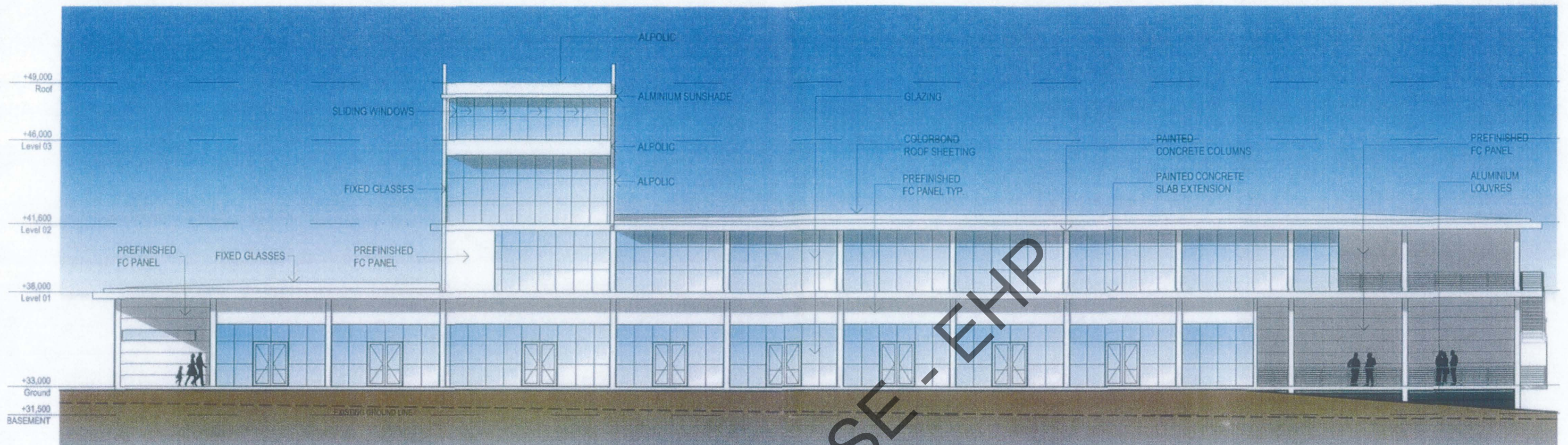


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2 WEST ELEVATION 1:200

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ELEVATIONS - GQL FACILITY BUILDING

LOGAN GREYHOUND FACILITY
GREYHOUNDS QUEENSLAND

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architecture | master planning | urban design | interior design

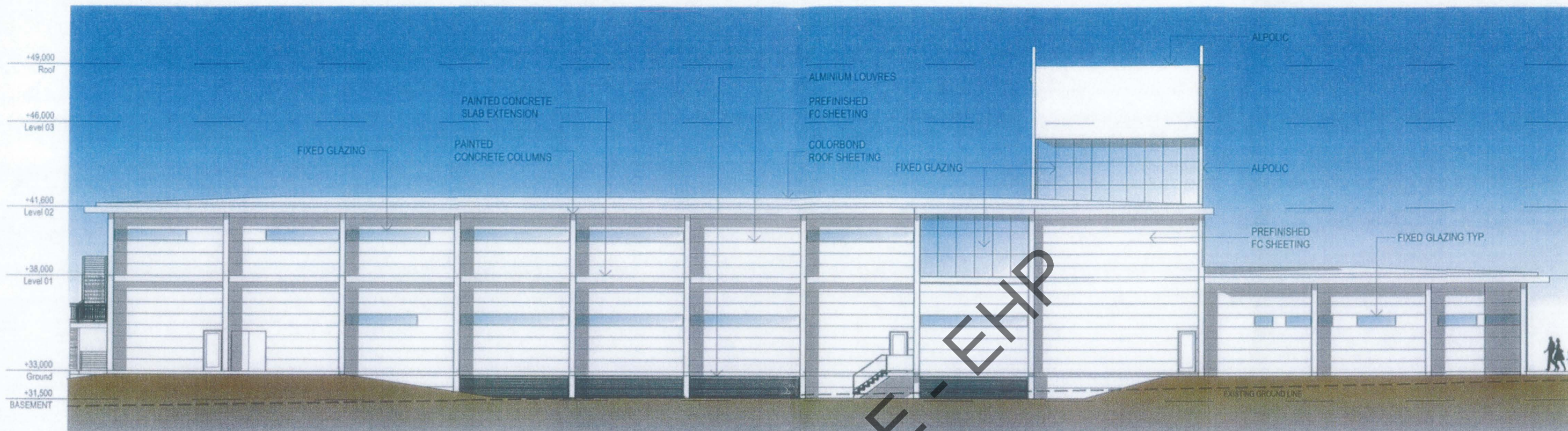
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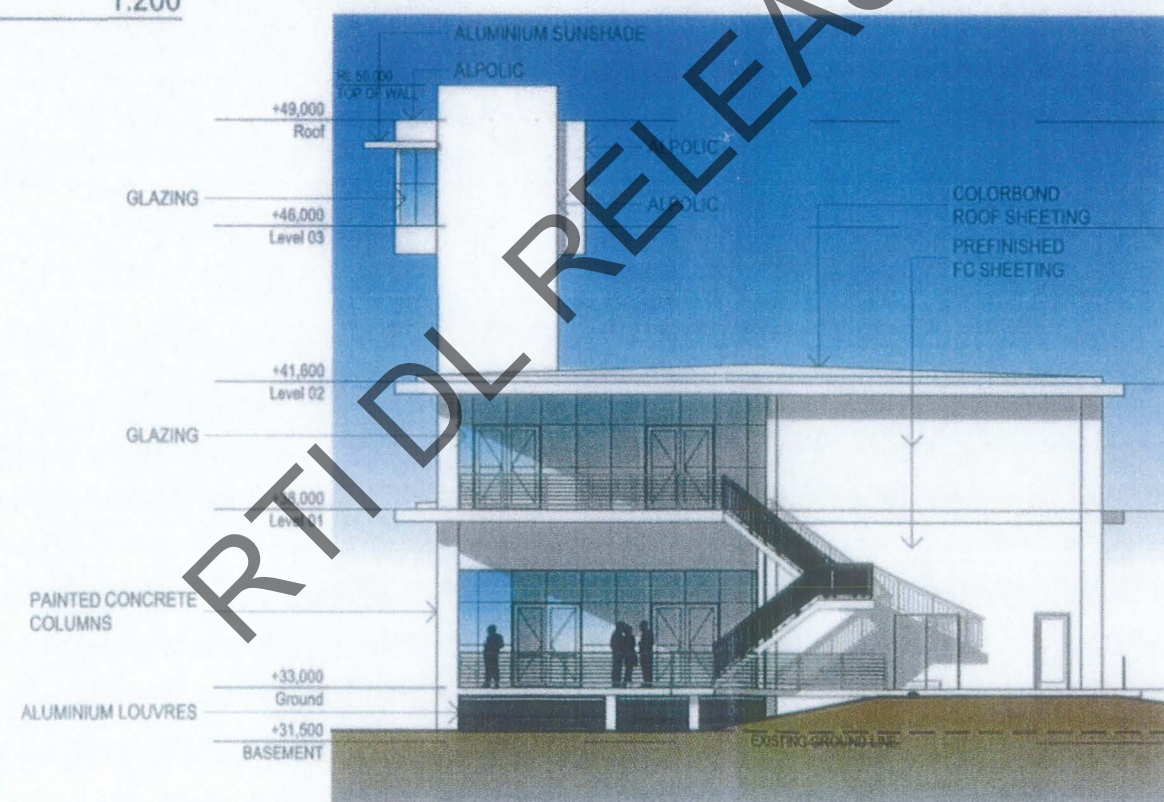
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2 EAST ELEVATION 1:200

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ELEVATIONS - GQL FACILITY BUILDING

LOGAN GREYHOUND FACILITY
GREYHOUNDS QUEENSLAND



ML Design Pty Ltd
ACN 100 402 304
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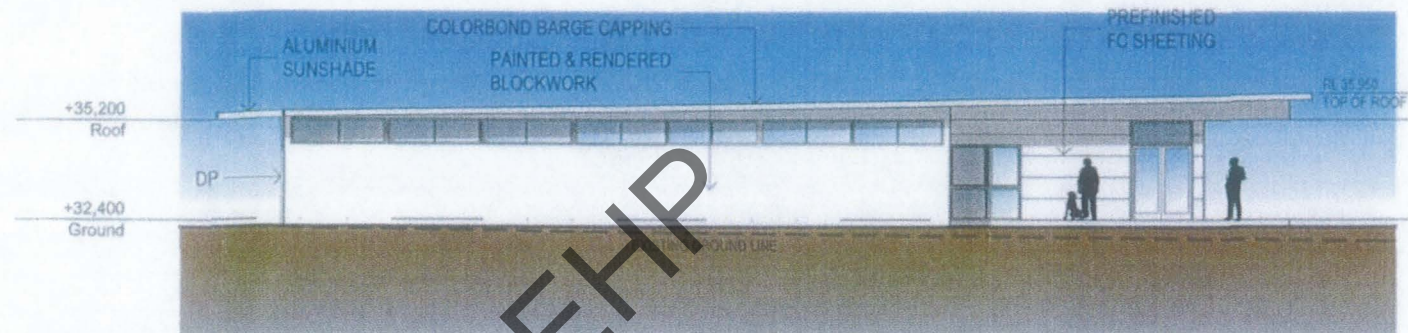
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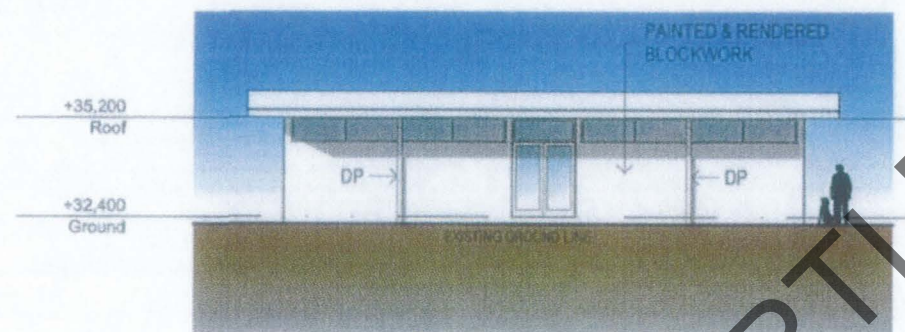


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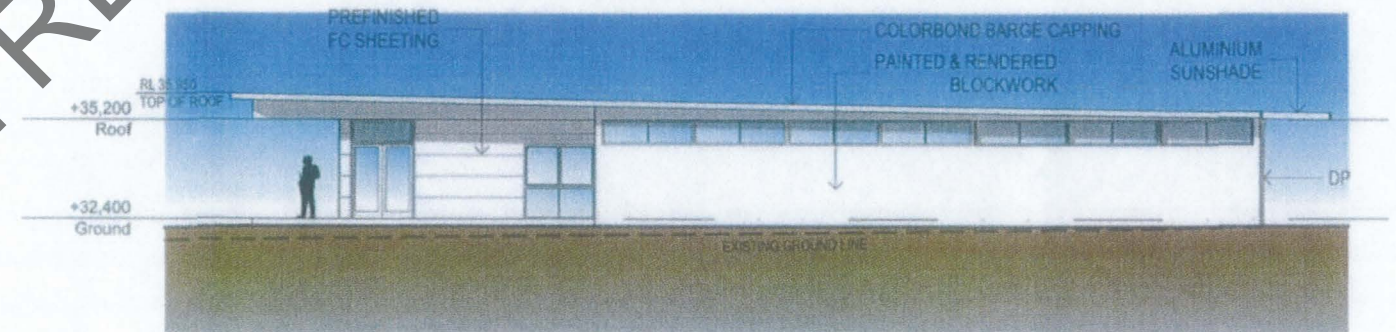


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3 WEST ELEVATION 1:200



4 NORTH ELEVATION 1:200

**PRELIMINARY
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ELEVATIONS - KENNEL BLOCK

LOGAN GREYHOUND FACILITY
GREYHOUNDS QUEENSLAND

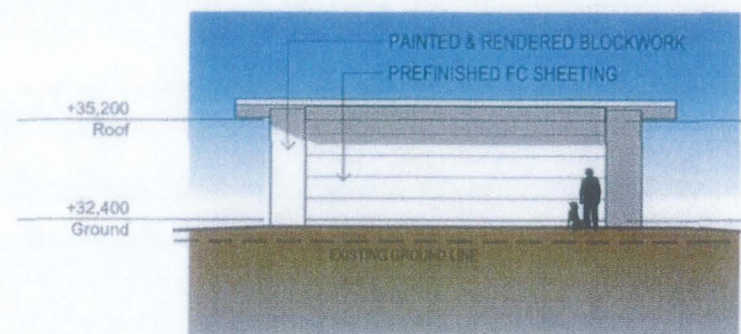


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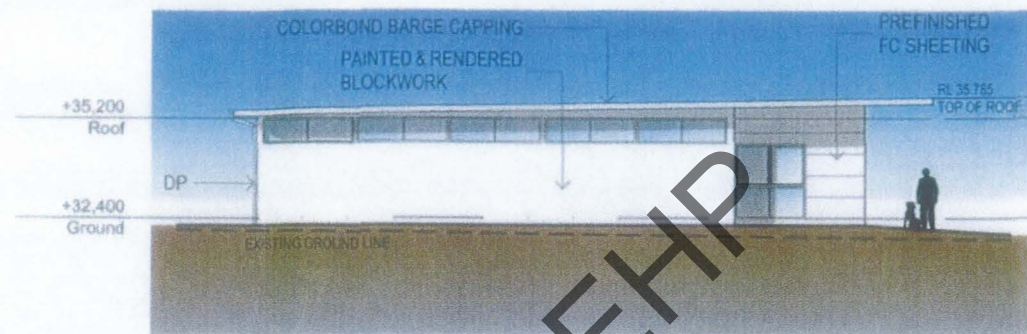
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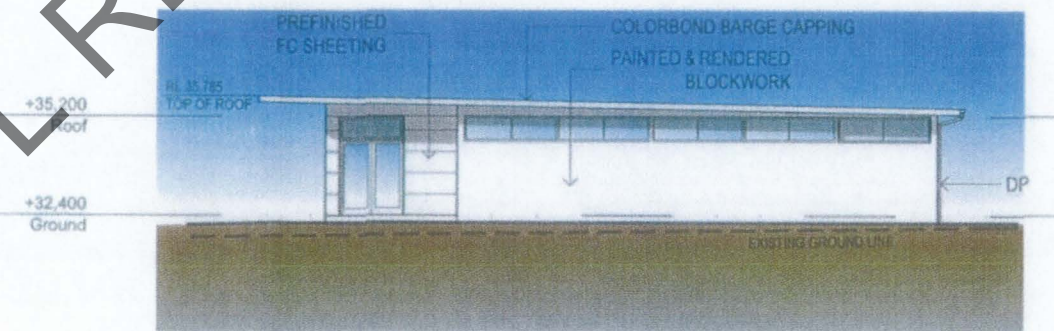
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2 SOUTH ELEVATION 1:200



3 WEST ELEVATION 1:200



4 NORTH ELEVATION 1:200

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PLAN OF DEVELOPMENT**

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Development referred to in

Development Permit *MCUC/130/2010*

PRELIMINARY
NOT FOR CONSTRUCTION

ELEVATIONS - TRIALING BLOCK

LOGAN GREYHOUND FACILITY
GREYHOUNDS QUEENSLAND



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SCALE: 1:200 @ A3

APPROVED FOR ISSUE: _____

18/03/2010 © DA-012 -C JOB NO: GREY0001

APPROVED
PLAN OF DEVELOPMENT

This is the Approved Plan of
Development referred to in

Development Permit max/13d/2d0



PRELIMINARY
NOT FOR CONSTRUCTION

PERSPECTIVES - 01

LOGAN GREYHOUND FACILITY
GREYHOUNDS QUEENSLAND



ML Design Pty Ltd
ACN 125 452 254
ABN 87 125 044 128
Plot Date: 18/03/2010
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APPROVED FOR ISSUE: _____

18/03/2010 © DA-013 -C JOB NO: GREY0001

Development Permit MCUC/130/2010



MLDesign
architecture | master planning | urban design | interior design

File Path: \\SRV001\140 Cuyamca Road Santa Cruz CA\Symposium\B1\Production\B1_Essays\ArchiCAD\papers\GRE-VS-BIM_Layla.DWG

18/03/2010 © DA-014 -C JOB NO: GREY0001

**APPROVED
PLAN OF DEVELOPMENT**

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Development referred to in
Development Permit MRUC/130/2010.



PRELIMINARY
NOT FOR CONSTRUCTION

■ **PERSPECTIVES - 03**

LOGAN GREYHOUND FACILITY
GREYHOUNDS QUEENSLAND



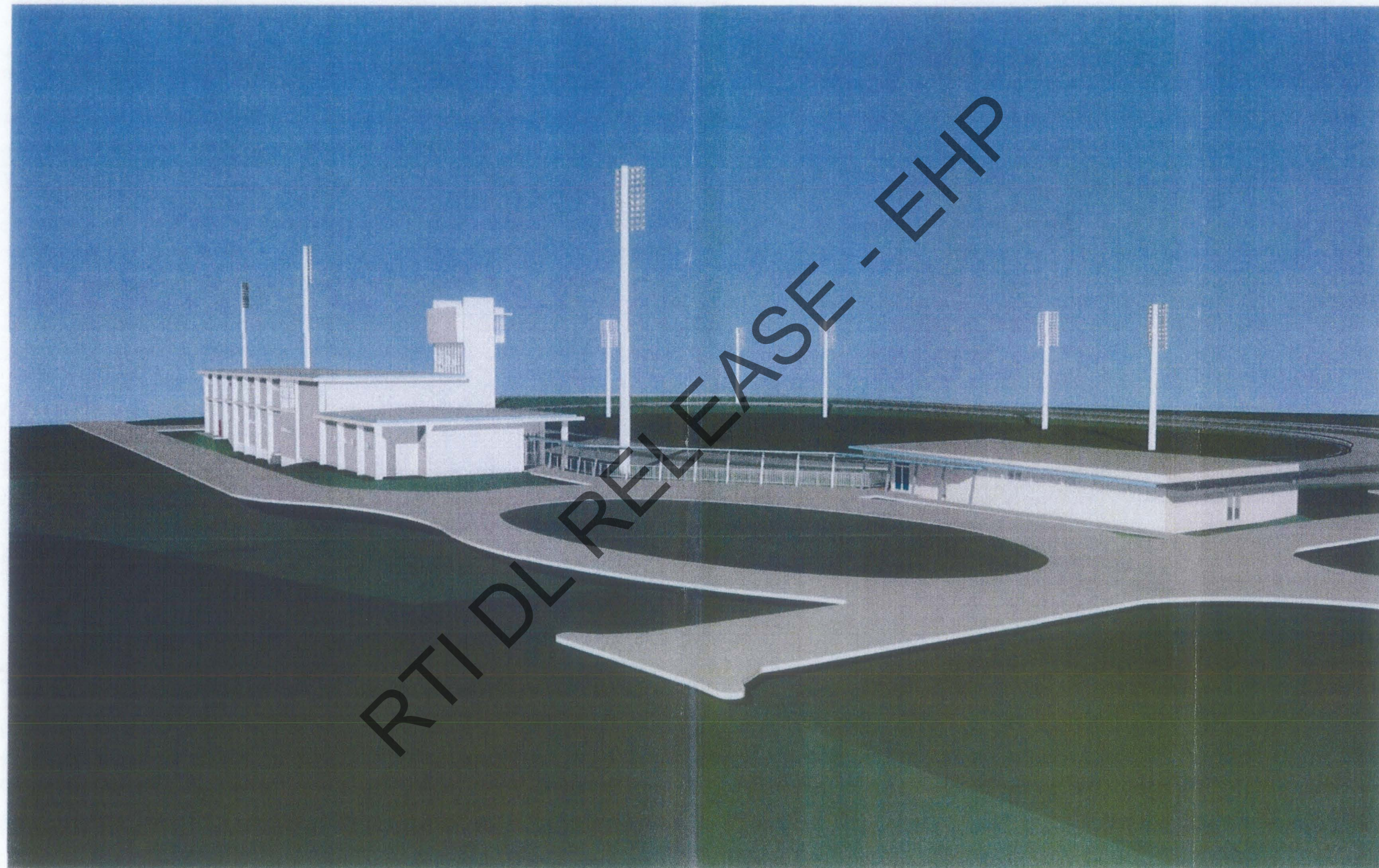
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ABN 58 155 568 325
File Date: 18/03/2010
File Path: P:\GREYHOUND\180 Campbell Road, St Albans Vic 3024\Drawings\ACN103482\GREYHOUND_Landsc.DWG

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APPROVED
PLAN OF DEVELOPMENT

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Development Permit MCUC/130/2010



PRELIMINARY
NOT FOR CONSTRUCTION

PERSPECTIVES - 04

LOGAN GREYHOUND FACILITY
GREYHOUNDS QUEENSLAND

MLDesign
architecture | master planning | urban design | interior design

ML Design Pty Ltd
ACN 105 460 204
ABN 55 105 460 204
Plot Date: 18/03/2010
File Path: P:\GREYHOUND\140 Currier Road, St Leonards, New South Wales\Drawings\Arch\CAD\Map\GREYHOUND Layout.DWG

APPROVED FOR ISSUE: _____

18/03/2010 © DA-016 -C JOB NO: GREY0001

APPROVED
PLAN OF DEVELOPMENT
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Development referred to in
Development Permit *MCU/130/2010*



PRELIMINARY
NOT FOR CONSTRUCTION

PERSPECTIVES - 05

LOGAN GREYHOUND FACILITY
GREYHOUNDS QUEENSLAND

MLDesign
architecture | master planning | urban design | interior design

ML Design Pty Ltd
ACN 100 492 304
ABN 88 154 048 238
Plot Date: 15/03/2010
File Path: P:\GREY0001 - 140 Gordon Road, Stacks Level 0 - Documents\01 - Production\01 - Drawings\AEC\GREY0001 - Layout DA.pdf

APPROVED FOR ISSUE

18/03/2010 © DA-017 -C JOB NO: GREY0001



**Queensland
Government**

Level 8, 400 George St • Brisbane, Queensland • GPO Box 2454 • Brisbane QLD 4001 • AUSTRALIA
http://www.derm.qld.gov.au/environmental_management/land/contaminated_land/

11 January 2011

Site ID: 3350
File Number: 901564
Enquiries to: Contaminated Land Unit
Telephone: (07) 3330 5685

COPY

RACING QUEENSLAND LIMITED
PO BOX 63
SANDGATE QLD 4017

CERTIFICATE OF APPROVAL OF A SITE MANAGEMENT PLAN

This document provides written notification that, in accordance with the *Environmental Protection Act 1994 (EP Act)*, a site management plan has been approved for the parcel of land described below, which is recorded on the Environmental Management Register (EMR). A copy of the suitability statement and the site management plan is attached.

Lot: 658 Plan: SL12298
Logan City Council

146-178 KINGSTON RD
SLACKS CREEK 4127

The owner may apply to the Department of Environment and Resource Management (DERM) to amend the site management plan in accordance with section 418 of the *EP Act*.

Under section 434 of the *EP Act*, a person must not contravene a site management plan.

The owner may apply for a review of, and appeal against, the decision to approve the site management plan within 14 days after receipt of this notice in accordance with sections 521 and 531 of the *EP Act*.

In accordance with the land being recorded on the EMR, the following requirements apply under section 421 of the *EP Act*:

If the owner proposes to dispose of the land to someone else, the owner must, before agreeing to dispose of the land, give written notice to the buyer:

if the particulars of the land are recorded in the EMR - that the particulars are recorded in the register; and
if the land is subject to a site management plan, details of the plan.

Further information regarding this notice may be obtained by contacting the Contaminated Land Unit, Department of Environment and Resource Management on telephone (07) 3330 5685. Further information about contaminated land matters may be obtained by visiting our web-site at: http://www.derm.qld.gov.au/environmental_management/land/contaminated_land/

49-Sch4 - Signature

Delegate or Administering Authority
Environmental Protection Act 1994

RTI DL RELEASE - EHP

ANNEXURE 1 - SITE MANAGEMENT PLAN

LOT : 658 PLAN : SL12298 FILE REF : 901564 PRINTED: 11/01/2011

DATE OF EFFECT : 10/01/2011

1.0 SUMMARY OF CONTAMINATION

The site consists of Lot 658 on Plan SL12298 and is located on the corner of Compton Road and Kingston Road, Slacks Creek, Queensland. The site was formerly used as a municipal landfill ("the landfill") between the 1970s and 1980s. The landfill received a variety of wastes such as domestic waste, commercial and light industrial solid waste, sanitary solid waste, and construction and demolition waste.

The site is currently a grassed open space recreational area and is managed by Logan City Council and is to be developed as a Greyhound Racing Facility.

Contaminant concentrations within the surface (capping) soil material on the site are within acceptable limits and do not pose a risk to human health or the environment.

The maximum concentrations of contaminants observed in the Contaminated Site Investigation from perched groundwater (which includes leachate) within the Landfill, and deeper groundwater within the weathered sandstone on the site which exceeded environmental guidelines included the following.

Analyte	Maximum Concentration in Perched Groundwater within Landfill (µg/L)
----------------	--

Ammonia as N	228,000
Copper	25
Lead	48
Nickel	124
Zinc	463
TPH C ₁₀ - C ₃₆	730
1,4-Dichlorobenzene	47
2-Methylphenol	225
2,4-Dimethylphenol	4.6
2,4,5-Trichlorophenol	1

Analyte	Maximum Concentration in Groundwater within Weathered Sandstone (µg/L)
----------------	---

Ammonia as N	50,400
Copper	28
Lead	115
Nickel	100
Zinc	359

Logan City Council (LCC) has undertaken an ongoing landfill gas monitoring program (from 2000 to 2008) from monitoring wells installed around the boundary of the site (and not within the landfill). The monitoring program has detected low levels of methane gas (maximum concentration 1.7%) over this time period with concentrations which were well below the lower explosive limit (LEL) for methane

(5%). The monitoring program undertaken by LCC indicates that gas from the landfill is unlikely to pose an unacceptable risk to off-site receptors.

The maximum concentration of methane detected in boreholes which were screened within the landfill was 99.3%. The maximum concentration of methane detected in landfill vents installed on the site was 29%. All other VOCs detected were below human health guidelines.

The maximum concentration of carbon dioxide detected was 15.5%.

The elevated concentrations of methane which are present within the Landfill pose a potential risk to future site users as an asphyxiant and flammable gas. Future development of the site will require the implementation of landfill gas protection measures.

2.0 OBJECTIVES OF THE SITE MANAGEMENT PLAN

The objectives of this Site Management Plan (SMP) are to manage the impacted soils, groundwater and landfill gas on the site in a manner that protects human health and the environment.

3.0 ACHIEVEMENT AND MAINTENANCE OF OBJECTIVES

3.1 Responsibility. The owner of the land (as defined in the *Environmental Protection Act 1994* (EP Act)) is to ensure that this SMP and any variations to the SMP approved or required by the administering authority are complied with. The obligations and conditions set out in this SMP bind the owner, from time to time, of the land.

3.2 Third Party Reviewer. A Third Party Reviewer (TPR) approved by DERM and operating in accordance with the DERM's Terms of Reference for TPR (June 2010) must be appointed for the duration of the site assessment and remediation.

3.3 Site Use. The site is currently used for recreational open space. The site is proposed to be redeveloped into a Greyhound Racing Facility, however, this use must not commence until assessment and remediation works described in the Remediation Action Plan (RAP) for the site attached in Appendix 1 have been completed, and a Statement of Suitability is issued by the QLD DERM specifying that the site is suitable for the intended use.

3.4 Provision of SMP to appropriate persons. The owner must provide all persons involved in building design and planning and all contractors and lessees conducting building and/or excavation works with a copy of the SMP prior to commencement of works. All persons occupying or working on the site must comply with the requirements of the SMP.

3.5 Site Capping. For the majority of the landfill, the capping material is comprised of a layer of silty sand (0-0.1 m thickness) and an underlying clay based material comprised of sandy clay to clayey sand (0.2-0.8 m thickness). The capping material along the eastern embankment of the landfill is comprised of well compacted clayey sand (0.2-0.5 m thickness). Through the implementation of the RAP the capping layer of the eastern embankment must be built up to provide a minimum thickness of 0.5 m using uncontaminated porous fill material which will not impede the venting of landfill gas.

The capping layer is to be maintained in sound condition at all times.

3.6 Soil Excavation and Removal. Any soil excavated on the site must be assessed for contaminants of concern to determine if the material is contaminated and to identify appropriate management and disposal/re-use options. Representative sampling and analysis of soil from any excavation in contaminated areas must be managed by a suitably qualified and experienced person in accordance with

Section 381 of the *Environmental Protection Act 1994* (EP Act). Contaminated soil must not be removed off-site without a disposal permit in accordance with Section 424 of the EP Act (or equivalent).

3.7 Unexpected Contamination. If during any site earthworks or excavation, offensive or noxious odours and/or evidence of gross contamination not previously detected is observed, site works are to cease in that area and action taken to immediately abate the environmental harm. The administering authority is to be notified in writing within two (2) business days of detection and advised of appropriate remedial action.

Any remedial action is to be developed by an appropriately qualified and experienced person in accordance with Section 381 of the EP Act.

3.8 General Environmental Protection. All site redevelopment works must be undertaken in accordance with general environmental protection measures and a Construction Environmental Management Plan (CEMP). These measures include the control of dust, noise, stormwater or sediment runoff, erosion, spillage from haulage trucks and odour releases involving the handling or movement of contaminated material.

3.9 Workplace Health and Safety. A Workplace Health and Safety Plan (WH&S plan), which conforms to the requirements of the *Workplace Health and Safety Act 1995*, is to be developed for any excavation works at the site. The WH&S plan must address site-specific hazards which have been identified in the RAP.

3.10 Underground Services. Where underground service trenches are constructed in contaminated areas, the trenches must be surrounded by a minimum of 0.3m of uncontaminated fill for minor services (<100mm in diameter) and 0.5m of uncontaminated fill for services greater than 100mm in diameter. Clean fill must also be placed above any services to the surface of the site. No services are to penetrate in to the body of the landfill but must be constructed within or above the capping layer. Maintenance of existing services should be conducted in accordance with this SMP.

3.11 Imported Fill Material. Any fill material that may be imported to the site in the future must be sampled and samples submitted for analysis for relevant potential contaminants by a suitably qualified and experienced person prior to delivery to the site. The frequency of the sampling and analysis required, and the acceptance criteria adopted for potential contaminants will depend on the source of the fill.

3.12 Use of Groundwater. Leachate and/or groundwater beneath the site must not be extracted. Use is prohibited.

4.0 MONITORING AND REPORTING

The monitoring of groundwater and landfill gas at the boundary of the site is to be undertaken throughout the duration of construction in accordance with the requirements of the RAP. A review of this SMP will be required following the implementation of the RAP and completion of site redevelopment works to determine groundwater and landfill gas monitoring requirements post-construction. Post-construction monitoring requirements must be agreed with the TPR and DERM prior to the commencement of commercial use of the site and is to include the monitoring of groundwater and landfill gas at the boundary of the site.

Records are to be kept of all inspections, any soil excavation in contaminated areas, disposal permits, validation testing and site management plan compliance for review by the administering authority from time to time.

This Site Management Plan (SMP) has been developed to manage site contamination risks present at the issue date. Subsequent uses of the site may result in the need to review the plan.

This SMP makes reference to an attachment RAP that is available from the Administering Authority if required.

RTI DL RELEASE - EHP



SUITABILITY STATEMENT

DATE PRINTED: 17/01/2011

APPLICANT

RACING QUEENSLAND LIMITED
PO BOX 63
SANDGATE QLD 4017

DATE OF ISSUE : 10/01/2011

PROPERTY DESCRIPTION

LOT : 658 PLAN : SL12298
146-178 KINGSTON RD
SLACKS CREEK 4127

Logan City Council
EMR Site ID: 3350 FILE REFERENCE: 901564

STUDIES UNDERTAKEN BY APPLICANT OR REQUESTED BY DIRECTOR

Preliminary Site Investigation and Management Plan for the former Compton Road Landfill site on Compton Road and Kingston - Beenleigh Road in Slacks Creeks, prepared by the CMPS&F Group of Companies, dated May 1995, (Doc No. RTW brm/NR951450006 / NB0199.007).

Logan Greyhound Facility for Cronulla Park, Slacks Creek, prepared by Sinclair Knight Merz (SKM), dated June 2010, (Doc No. I:/QENV/Projects/QE09537/Deliverables/Stage 2 Report/Final Report/Cronulla Park Stage 2 Report_H.docx).

Third Party Reviewer Certification Report for Logan Greyhound Facility, Slacks Creek, Queensland (Lot 658 SL12298), prepared by MACH1 Environmental Pty Ltd, dated June 2010, (Doc No. 09-002-017 RP1).

STATEMENT OF SUITABILITY

On the basis of the information supplied to this Department, the subject site is suitable for the following use(s) providing the site is used and managed as per the Site Management Plan attached as Annexure 1.

Parks, recreational open space and playing fields; includes secondary schools.

Other specific uses may be suitable for the site, please contact this Department for further advice. The suitability statement provides information on appropriate land uses at the date of effect. Subsequent uses of the site for notifiable activities or for situations where a hazardous contaminant is released into the soil may result in the need to review suitable uses or amend the attached site management plan.

ENVIRONMENTAL MANAGEMENT REGISTER

LOT : 658 PLAN : SL12298 is recorded on the Environmental Management Register with a Site Management Plan. A copy of the Site Management Plan is attached as Annexure 1.

49-Sch4 - Signature

Delegate of Administering Authority
Environmental Protection Act 1994

RTI DL RELEASE - EHP

APPENDIX 1

REMEDIATION ACTION PLAN

LOT 658 on Plan SL12298

1 INTRODUCTION

This Remediation Action Plan (RAP) is for Cronulla Park which is located on the corner of Compton Road and Kingston Road, Slacks Creek, Queensland. The land is described as Lot 658 on Plan SL12298 ("the site"). The site was formerly used as a municipal landfill ("the Landfill") between the 1970s and 1980s. The site is currently a grassed open space recreational area and is to be developed as a Greyhound Racing Facility ("the Project").

1.1 Purpose of the RAP

The purpose of this RAP is to provide an outline plan of activities, procedures and objectives to ensure the effective and controlled development of the Project on the site. It describes the methodologies and standards to be followed throughout the construction of the Project to ensure appropriate protection of human health and the environment.

1.2 Objective

The primary objective of the remediation program of the site is to make the site safe for the planned future use. This RAP summarises the current status of the site and provides strategies to remediate or manage impact on the site in a manner that protects human health and the environment.

2 BACKGROUND

2.1 Description of Proposed Development

The site is to be developed as Greyhound Racing Facility. The proposed development includes the construction of a double storey main facility building with a grassed viewing area, kennel blocks and support buildings serviced by two-way internal roads with access for patron car parks, and dedicated parking area for trainers and employees. An inner and outer greyhound race track will be constructed as the main attraction, with a separate trialling track being formed adjacent to the main tracks.

This RAP has been based on the contamination assessment report *Logan Greyhound Facility Cronulla Park Contaminated Site Investigation* (Sinclair Knight Merz, June 2010) ("the Contaminated Site Investigation").

2.2 Site Location & Topography

The site comprises 10.24 hectares of Crown Land located at the corner of Compton Road and Kingston Road, Slacks Creek, Queensland. The land is described as Lot 658 on Plan SL12298. The site is held in trust by Logan City Council (LCC), as gazetted on 25 June 1988. The designated purpose of the site is local government (entertainment and recreation).

The site and surrounding land slopes in an easterly direction towards Slacks Creek. Surface water discharges to Slacks Creek which is located approximately 320 m east of the site. The highest point of the site close to Kingston Road is approximately 34.5 m Australian Height Datum (AHD) and the site level falls to approximately 22.2 m AHD close to the north east corner industrial lots. The average gradients on the site are relatively flat ranging from 0.8 % to 2.0 %. The north east corner is steeper than the majority of the site with grades up to a maximum of 12.5 % towards the east.

2.3 Landfill Operation and Closure

A tributary of Slacks Creek historically ran through site. Prior to the commencement of the construction of the Landfill, the tributary was diverted around the site in an open drain located on the southern and eastern boundaries of the site.

The Landfill was formed using a method which involved the excavation of trenches, and then the placement and compaction of wastes within each trench. The quantity of waste received at the site is not known. The investigation however found the depth of waste to be up to approximately 10 m below ground level (bgl), and waste has been placed directly over natural ground strata including weathered sandstone, and sandstone.

The construction of the Landfill did not include the installation of a liner, or leachate and landfill gas collection system. This was confirmed during the undertaking of the Investigation.

Wastes which were accepted at the Landfill included:

- domestic waste;
- commercial and light industrial solid waste;
- sanitary solid waste; and
- construction and demolition waste.

The Landfill may have also received asbestos, and hazardous domestic wastes (e.g. paints and pesticides). The Landfill received approximately 2,000 to 3,000 animal carcasses including dogs, cats, cows and horses.

Wastes which were not accepted at the Landfill included:

- heavy industrial waste;
- hazardous solid waste;
- medical waste; and
- liquid waste (hazardous and non-hazardous).

The Landfill was capped using a clay based soil (refer to Section 2.3.2) in the 1980s, and additional capping material placed over the landfill in the 1990s. Four landfill gas vents were installed within the landfill following closure in the 1980s.

2.4 Geology

2.4.1 Regional Geology

The regional geology comprises alluvium soils, mainly clay, silt and gravel overlaying shale, siltstone and sandstone (with possible coal seams). The regional geology is part of the tertiary Oxley Group, a subset of the early tertiary continental basins of the area.

2.4.2 Site Conditions

Surface (Capping) Material

For the majority of the site, the surface material (capping layer) comprises a layer of silty sand (0-0.1 m thickness) and an underlying clay based material comprised of sandy clay to clayey sand (0.2-0.8 m thickness). Permeability tests of the clay based material within the surface material indicates that the permeability of this material varies between 10^{-6} and 10^{-8} m/s.

The surface material layer of the eastern embankment of the Landfill was found to be comprised of well compacted clayey sand (0.2-0.5 m thickness).

Waste Material

The thickness of waste materials encountered varied from 1.2 m to 10.5 m. Where encountered, waste materials (30-90%) were found to be mixed in a damp to saturated grey unconsolidated clay or sandy clay matrix (10-70%). The waste intersected in the investigation was domestic in origin, and appeared to contain infrequent (<5%) residual putrescible materials. Common items noted in the waste materials included plastic packaging, plastic bags, metal fragments and glass bottles. No regulated wastes were noted in the waste material intersected.

The waste materials have been placed directly over natural materials in the majority of exploratory boreholes.

Natural Material

The natural material was generally a sandy or silty clay of weathered sandstone. This was underlain by the coarse grained red and white low strength sandstone. The sandstone was incised with a medium strength siltstone in several locations across the site.

In background locations across the site (including in locations within the wooded area along the western portion of the site), the soil profile was a silty sandy clay material consistent with the weathered sandstone.

2.5 Hydrogeology

Two groundwater systems have been observed on the site. These include:

- groundwater within the weathered sandstone beneath the Landfill; and
- perched groundwater (which includes leachate) within the Landfill.

The perched water was observed to be in connection with the groundwater in the weathered sandstone, and these systems combine down-gradient of the site. These groundwater systems flow in a north-easterly direction towards Slacks Creek. Slacks Creek is located approximately 320 m east of the site, and is considered to be the main environmental receptor of groundwater from the site.

No registered operational bores (groundwater users) are located in the vicinity of the Site. The closest operational registered bore is approximately 0.7 km north of the Site (registration number – 134259).

3 EXTENT OF CONTAMINATION

3.1 Surface (Capping) Material

Concentrations of metals in surface (capping) material are not considered to pose a risk to human health or the environment.

The concentrations of all organic analytes, which included total petroleum hydrocarbon (TPH), volatile organic compounds (VOC), polycyclic aromatic hydrocarbons (PAH), phenols, polychlorinated biphenyls (PCB), organochlorine pesticides (OCP), and organophosphate pesticides (OCP), were below laboratory detection limits.

3.2 Groundwater

The maximum concentrations of contaminants observed in the Contaminated Site Investigation from perched groundwater (which includes leachate) within the Landfill, and deeper groundwater within the weathered sandstone on the site which exceeded environmental guidelines included the following.

Analyte	Maximum Concentration in Perched Groundwater within Landfill (µg/L)
Ammonia as N	228,000
Copper	25
Lead	48
Nickel	124
Zinc	463
TPH C10 - C36	730
1,4-Dichlorobenzene	47
2-Methylphenol	225
2,4-Dimethylphenol	4.6
2,4,5-Trichlorophenol	1

Analyte	Maximum Concentration in Groundwater within Weathered Sandstone (µg/L)
Ammonia as N	50,400
Copper	28
Lead	115
Nickel	100
Zinc	359

Metals

Elevated concentrations of copper, lead, nickel and zinc were found in groundwater samples from monitoring wells up-gradient of the Landfill, and within the Landfill. Metals found in groundwater are potentially associated with surrounding industrial land use, naturally occurring background conditions, or a combination of both these sources.

Ammonia

The concentration of ammonia in groundwater at the down-gradient boundary of the site (groundwater at this location includes both perched groundwater from the landfill and groundwater in the weathered sandstone) has attenuated from 39.9 mg/L in 2000 to approximately 10 mg/L in 2008-09 (note that the maximum ammonia concentration detected in perched groundwater (containing leachate) within the landfill was higher at 228 mg/L). Elevated concentrations of ammonia were detected in other monitoring wells along the eastern boundary of the Landfill; therefore the Landfill is the likely source of ammonia at the site. Ammonia can have a deleterious effect on aquatic ecosystem health. However factors such as dilution would lower the concentration of ammonia prior to discharge to the nearest receiving watercourse (Slacks Creek, 320 m east of the site).

Hydrocarbons

Elevated concentrations of hydrocarbons have been consistently detected in perched groundwater within the landfill. The analytical results and interpretation of the source hydrocarbons by the laboratory indicate that the elevated concentrations of hydrocarbons found in groundwater samples are predominately organic substances being produced by the Landfill through the decomposition of putrescible materials rather than petroleum based hydrocarbons (e.g. fuels or oils).

Semi-Volatile Organic Compounds (SVOC)

The majority of SVOCs including PAHs (with the exception of phenanthrene), pesticides (OC/OP), oxygenated compounds, fumigants, and PCB were not detected in any of the groundwater samples tested. Phenanthrene was detected in some of the samples analysed with concentrations which were within acceptable limits.

3.3 Landfill Gas

Historical Monitoring of Site Boundary Monitoring Wells

Logan City Council (LCC) has undertaken an ongoing landfill gas monitoring program (from 2000 to 2008) from monitoring wells installed around the boundary of the site (and not within the landfill). The monitoring program has detected low levels of methane gas (maximum concentration 1.7%) over this time period with concentrations which were well below the lower explosive limit (LEL) for methane (5%). The monitoring program undertaken by LCC indicates that gas from the landfill is unlikely to pose an unacceptable risk to off-site receptors.

Landfill Gas Monitoring During Contaminated Site Investigation

As part of the Contaminated Site Investigation gas monitoring wells were installed beneath the cap and within the Landfill. Six rounds of landfill gas monitoring were undertaken. Elevated concentrations of methane which exceeded the LEL were detected in some of the monitoring wells. The maximum concentration of methane detected in boreholes which were screened within the Landfill was 99.3%. All other VOCs detected were below human health guidelines.

The maximum concentration of carbon dioxide detected was 15.5%.

Landfill Vent Monitoring

Low or non-detectable concentrations of methane and carbon dioxide were detected from the monitoring ports attached to the landfill vents in the Contaminated Site Investigation. This may be attributed to atmospheric dilution in the vents, as evident from measured oxygen concentrations at approximately 21%. In one monitoring round, an elevated concentration of methane (29%) which exceeded the LEL was found in one of the vents; all other vents however had concentrations of methane which were below the LEL or below detection limits.

Implications for Proposed Development

Landfill gas, which includes methane, is considered to pose a potential risk to future site users as an asphyxiant and flammable gas. The primary risk to future site users will be the migration of gases along pathways created by foundations (including piles) and underground services or service trenches into buildings located on the site, or other confined spaces (e.g. service pits). There is also the potential for the development to modify landfill gas regimes (e.g. reduce venting rates at surface, and/or increase lateral gas migration) in areas of the site which are covered with low or semi-permeable surfaces such as car parks, roads and water retaining features. The proposed development requires the implementation of landfill gas protection measures described in Section 5, and the monitoring of landfill gas during construction (refer to Section 8.6).

4 ENVIRONMENTAL GUIDELINES

The remedial activities undertaken at the site must be performed in accordance with the following documents:

- *Draft Guidelines for the Assessment and Management of Contaminated Land in Queensland*, May 1998;
- *Guidelines issued under Schedule B of the National Environment Protection (Assessment of Site Contamination) Measure* (NEPM), National Environment Protection Council, December 1999;
- *Australian and New Zealand Guidelines for the Assessment and Management of Contaminated Sites* (ANZECC guidelines) published by the Australian and New Zealand Environment and Conservation Council/National Health and Medical Research Council, January 1992;
- *Australian Standard AS4482.1-2005 Guide to the investigation and sampling of sites with potentially contaminated soil - Non-volatile and semi-volatile compounds*; and
- *Australian Standard AS4482.2-1999 Guide to the sampling and investigation of potentially contaminated soil Part 2 - Volatile and semi volatile compounds*.

5 REMEDIATION PROGRAM

5.1 Overview

The key remedial measures required for the redevelopment of the site include:

- the building up of the capping layer in the eastern embankment of the site;
- the inclusion of gas protection measures in buildings
- the inclusion of porous media beneath and to the side of low or semi-permeable surfaces placed on the landfill such as car parks, access roads, and water storage areas to enable the venting of landfill gas;
- the re-construction of gas vents closed during the construction phase for the proposed development;
- the location of services above the capping material where practicable, and the entering of services from the side of buildings rather than through floor slabs;
- the use of sensitive construction and piling measures to minimise disturbance to the capping material;
- the use of low permeability materials or membranes for proposed water storage areas on the site;
- the undertaking of an ongoing landfill gas and groundwater monitoring program at the boundary of the site during and post development of the site; and
- confirmation that the former underground tank on the site has been removed.

These remedial measures are described in further detail as follows.

5.2 Capping Layer

The capping layer of the eastern embankment of the landfill was found to vary from 0.2-0.5 m in thickness. The capping layer of the eastern embankment must be built up to provide a minimum thickness of 0.5 m using uncontaminated porous fill material which will not impede the venting of landfill gas. Prior to the capping of this area additional probing must be undertaken to confirm the extent of capping required within the eastern embankment. A plan showing the extent of the area to be capped must be reviewed and consented to by the Third Party Reviewer (TPR) before submitting to Department of Environment and Resource Management (DERM) prior to construction.

5.3 Gas Protection

Main Facilities Building

The Main Facilities Building must be founded on piles and a slab suspended off-the-ground. An open void must be located between the slab and the ground to allow for the free venting of air beneath the building. This will mitigate the potential for gas ingress into the main building.

As a precautionary measure gas alarm(s) are to be fitted inside the building at appropriate location(s).

Kennel Block and Maintenance Shed

Gas protection measures for the Kennel Block and Maintenance Shed must include:

- well-constructed ground slab located above the capping layer;
- low-permeability gas/vapour membrane;
- the location of services above the capping layer and entering buildings from the side (rather than through floor slabs);
- passive in-ground venting through a granular layer beneath the floor slab and venting pipes, with the venting system being located above the capping layer and beneath the floor slab to allow for the venting of landfill gases; and
- gas alarm(s) at appropriate location(s) within each building.

Design drawings of the proposed gas protection measures must be reviewed and consented to by the TPR before submitting to DERM prior to the construction of buildings.

Boreholes drilled for the Preliminary Geotechnical Investigation within approximately 15 m of the proposed Kennel Block and Maintenance Shed show that ground in the vicinity these proposed structures is unlikely to contain waste materials. During the detailed design phase of the Project, gas monitoring must be undertaken at the location of these proposed buildings to characterise the Landfill gas regime within the shallow ground (i.e. within the cap) at these locations. Gas monitoring must be undertaken through the use of boreholes positioned at the proposed building locations, and the screening of the boreholes within the capping layer. Should the findings of landfill gas monitoring indicate that the gas regime at these locations is of low risk, the protection measures proposed may be amended subject to consent by the Third Party Reviewer (TPR) and DERM.

Low and Semi-Permeable Surfaces

Granular venting layers must be incorporated beneath and to the side of low or semi-permeable surfaces placed on the landfill such as car parks, access roads, and water storage areas. Plans showing the design of the venting layers must be reviewed and consented by the TPR prior to construction.

5.4 Landfill Gas Vents

The proposed development will involve the removal of two of the existing landfill gas vents. Two additional vents must be constructed to replace the vents being removed. Plans of the proposed two additional vents, including the location, design and proposed height must be reviewed and consented to by the Third Party Reviewer (TPR) and DERM prior to construction.

5.5 Services

Plans showing the location and elevation of proposed services must be reviewed and consented by the TPR prior to construction.

Services must be exposed to the atmosphere to vent potential landfill gases prior to a worker entering any confined spaces.

5.6 Construction Methods

Piling Methods

Piles will be founded on the sandstone strata beneath the site. Piling will require disturbance to the capping material. The capping material surrounding the piles must be resealed through packing a low permeability clay based material (e.g. bentonite) around the pile. Appropriate validation testing must be undertaken to confirm the effectiveness of the seal around the pile.

Racing Track

Preloading will be progressively undertaken over the racing area to accelerate the settlement process and stabilise the surrounding ground. Groundwater mounding may occur as a result of preloading, however it is not expected to result in any further risk to human health or the environment. Groundwater and landfill gas monitoring at the boundary of the site must be undertaken (refer to Section 8.6) during preloading to confirm that no unacceptable human health or environmental risk is occurring.

5.7 Stormwater and Surface Drainage

Stormwater collected from the surface of the site must be diverted to vegetated swales to capture litter, suspended solids and other matter prior to discharging into the drainage system. The swales constructed must not penetrate the waste material in the Landfill.

During periods of heavy rainfall, surface water must be captured and temporarily held within retention basins on-site. The retention basin must be lined with high density polyethylene (HDPE) liners or equivalent to prevent vertical seepage into the Landfill.

The drain skirting the south and east of the site is to be managed by LCC as an easement. It is proposed that some restoration of this drain be undertaken by LCC as part of the redevelopment. A plan of the restoration work must be reviewed and consented by the Third Party Reviewer (TPR) prior to undertaking works. The restoration work must not involve disturbance to the Landfill.

5.8 Off-site Disposal of Material

While not expected to be required, any soil material removed from the site is to be undertaken under disposal permit in accordance with S.424 of the EP Act.

An application for *Disposal Permit* must be accompanied by a sampling plan and associated results (including bore logs) clearly indicating the material and depth intended for removal. The *Disposal Permit* application must be reviewed and consented to by the TPR before submitting to DERM for approval.

5.9 Importation of Material to the Site

Imported fill used for the redevelopment of the site must be sampled and appropriately analysed at a rate agreed with the TPR to confirm the suitability of the fill prior to its importation to the site unless the source of the material can be demonstrated to be a clean source (e.g. licensed quarry).

6 HEALTH AND SAFETY

Prior to the works commencing, a Health and Safety Plan must be prepared by the contractor. The Health and Safety Plan must be prepared for the activities to be performed on the site where employees may be exposed to toxic or other hazardous compounds and elements. Specific requirements relating to dermal contact and inhalation as well as public safety, vehicle decontamination, protective clothing, equipment and appropriate safety controls must be addressed. Personnel working on the site must read and understand the Health and Safety Plan. All staff working on the site during remediation works must be inducted and sign relevant forms stating that induction has been carried out.

7 SUITABLY QUALIFIED PERSON TO CONDUCT / SUPERVISE WORKS

A person qualified in accordance with S.381 and S.395 of the *Environmental Protection Act 1994* (EP Act) must conduct all investigations, supervise all remediation works and compile reports required to complete the remediation program for the site.

8 ENVIRONMENTAL MANAGEMENT AND CONTROL

Prior to the works commencing a Construction Environmental Management Plan (CEMP) must be prepared and reviewed and consented to by the TPR before submitting to DERM. The CEMP must include but not be limited to the following.

The remediation program must be conducted with all due regard to the environment and to statutory requirements. In particular, in addition to any statutory compliances required, the contractor must be responsible for conducting remediation works with all due care to ensure compliance with the following conditions:

- Minimal air-borne dust is to be generated from the site. In the event of a dust complaint, mitigation measures such as watering must be used;
- Water containing any suspended matter or contaminants must be managed within the site in such a manner to minimise pollution of adjacent sites and waterways;
- Vehicles must be controlled so that minimal mud, soil or water will fall or be deposited on any public or private roadway or adjacent areas; and
- Noise levels must comply with the required statutory requirements.

The owner must ensure that the contractor's site manager/foreman is conversant with the contents of the RAP, conditions of Planning Approval, the CEMP and Health and Safety Plan. Additionally they must ensure that each employee or subcontractor involved with remediation is inducted into the requirements of the RAP, the CEMP and Health and Safety Plan.

8.1 Control of Stormwater Run-off

Remediation works must comply with requirements for stormwater management as outlined in Schedule B(9) of the NEPM. This includes stockpiling excavated soil/fill in a manner that shall prevent contamination from being transported off-site by stormwater.

The contractor must control surface waters on the site as follows:

- Divert clean stormwater run-off outside the site so that it does not flow through the site;
- Control drainage on the site by interception and redirecting clean run-off in a controlled manner;
- Stormwater collected from the site in trenches and sumps must be appropriately managed; and
- Silt fences must be erected at locations where stormwater may flow from the site.

Stormwater must be managed in accordance with any conditions of the Planning Approval.

8.2 Control of Soil/Fill and Sediment

Sediment released to surface waters must be minimised by the use of sediment controls such as diversion drains, hay bales and silt fencing. In particular, a silt fence must be located around the perimeter of stockpile material.

Soil awaiting off-site removal or reprofiling must be stockpiled in a manner and location so that it is not easily spread by wind or rain action. If adverse weather conditions are anticipated, stockpiles of contaminated soil must be covered. Stockpiles must be tagged and records maintained to track the disposal or reuse of soil from the site.

Any plant or equipment that handles contaminated soils must be inspected prior to leaving the site, and cleaned as necessary.

The requirements for the management of sediment and soil described in Schedule B(9) of the NEPM (from which the above control measures are drawn) must be complied with during remedial works.

8.3 Control of Noise

Noise levels must comply with statutory requirements, and any conditions of the Planning Approval, and with consideration to *Australian Standard AS 2436-1981 Guide to Noise Control on Construction, Maintenance and Demolition Sites*.

8.4 Control of Dust

Generation of dust must be kept to a minimum. Water used for dust suppression is to be managed in accordance with Section 6.3.1 and Section 6.3.2.

8.5 Odour Control

The level of odour generated during remedial activities is not expected to be a concern. However, in the unlikely event that odorous compounds are encountered, the contractor under the supervision of the person qualified in accordance with Section 6.2 must take all precautions to ensure that no obnoxious odours migrate from the site boundaries. To minimise odours, if encountered, only small volumes of the material must be excavated at any one time. Any fill containing significant quantities of odorous compounds must be placed in a bunded area and covered with plastic sheeting and sprayed with an odour suppressant as soon as possible.

8.6 Environmental Monitoring Program

An environmental monitoring program which includes the monitoring of landfill gas and groundwater at the boundary of the site (which includes landfill leachate) is to be undertaken during construction. The frequency of monitoring will be described in the environmental monitoring program and must show consideration to the construction program, with more frequent monitoring of landfill gas and groundwater occurring during sensitive works such as preloading of the racing track. The minimum frequency of monitoring during construction is planned to be monthly for landfill gas, and bi-monthly for groundwater. The results of monitoring are to be provided to the

TPR after each monitoring event. The environmental monitoring program must be reviewed and consented to by the TPR before submitting to DERM prior to the undertaking of any remediation or construction work on the site.

8.6.1 Sample Dispatch and Documentation

Samples must be collected in the appropriate containers and labelled to identify their origins as described by the Australian Standard AS4482.1-2005 and dispatched to the laboratory for analysis within 48 hours of collection. Chain of Custody documentation and handling must be performed in accordance with AS4482.1-2005 and the NEPM guidelines. Sample Receipt Advice documentation must be submitted in the validation report along with Chain of Custody documents.

8.6.2 Quality Assurance/Quality Control (QA/QC) Program

A field QA/QC program must be conducted in accordance with the NEPM, Australian Standard AS4482.1-2005 and EPA recommendations, to measure the precision of the field/laboratory analyses and to determine the accuracy of the primary laboratory's analyses.

Duplicate soil samples must be collected and analysed by the primary laboratory at a rate of one per twenty samples. Duplicate groundwater samples must be collected and analysed by the primary laboratory at a rate of one per sampling event or at a rate of one in twenty whichever is the lesser.

8.6.3 Decontamination Procedures

Decontamination procedures for sampling equipment, personnel and the general site must be in accordance with the Australian Standard AS 4482.1-2005 and the NEPM guidelines (Schedule B (9)).

9 VALIDATION

Prior to the undertaking of remediation a validation sampling program must be reviewed and consented to by the TPR. The validation sampling program must include but not limited to:

- Permeability testing and as built drawings of the capping material placed in the eastern embankment area and in association with piling;
- Imported fill material; and
- Completion reports and as building drawings for the gas protection measures to be installed in buildings.

10 REPORTING REQUIREMENTS

Within 60 days of the completion of all remediation and construction works, a report detailing works must be prepared by a suitably qualified person in accordance with S5.2 and submitted to the TPR for certification and subsequent submission to the DERM. The report must be in accordance with Chapter 7, Part 8 of the *Environmental Protection Act 1994* and the *Draft Guidelines for the Assessment and Management of Contaminated Land in Queensland* May (1998).

The report must include but not be limited to the documentation of the remediation works and construction activities.

The report must also include the results of the QA/QC program, Chain of Custody documentation and Sample Receipt Advices for all samples collected and copies of documentation validating the

appropriate handling, disposal and treatment of any contaminated soil, materials and water in accordance with DERM requirements.

11 STATEMENT OF SUITABILITY

Prior to the commencement of the commercial use of the site, a statement of suitability must be obtained from DERM. The Statement of Suitability must specify that the site is suitable for the intended use(s) and the site can be removed from the EMR or the site is to remain on the EMR and must be managed under a SMP.

12 THIRD PARTY REVIEW (TPR)

The site work and subsequent reporting must be reviewed by a DERM appointed Third Party Reviewer (TPR). All validation requirements must first be confirmed by the TPR and any clarification issues must be referred to the TPR prior to DERM. The TPR must review the CEMP and any other documentation or approval specified in this RAP.

RTI DL RELEASE - EHP

REFERENCES

Department of Environment (Queensland Environmental Protection Agency) (May 1998). *Draft Guidelines for the Assessment and Management of Contaminated Land in Queensland*.

National Environment Protection Council (1999). *National Environment Protection (Assessment of Site Contamination) Measure Schedule B (2) Guideline on Data Collection, Sample Design and Reporting*.

Standards Australia (2005). *Australian Standard AS4482.1-2005 Guide to the investigation and sampling of sites with potentially contaminated soil, Part 1: Non-volatile and semi-volatile compounds*.

Standards Australia (1999). *AS4482.2-1999 Guide to the sampling and investigation of potentially contaminated soil, Part 2: Volatile substances*.

RTI DL RELEASE - EHP

10th January 2011.

Dear Registrar,

Please recategorise Lot 658 SL12298 as Managed.

OWNER :

THE STATE OF QUEENSLAND
DEPARTMENT OF EMPLOYMENT,
ECONOMIC DEVELOPMENT AND INNOVATION
PO BOX 15168
BRISBANE CITY EAST QLD 4002

APPLICANT :

RACING QUEENSLAND LIMITED
PO BOX 63
SANDGATE QLD 4017

THIRD PARTY REVIEWER :

MR ROBIN WAGLAND
MACH1 ENVIRONMENTAL PTY LTD
PO BOX 320
FERNY HILLS QLD 4055

STUDIES :

\\line

Preliminary Site Investigation and Management Plan for the former Compton Road Landfill site on Compton Road and Kingston – Beenleigh Road in Slacks Creeks, prepared by the CMPS&F Group of Companies, dated May 1995, (Doc No. RTW.brm/NR951450006 / NB0199.007).

\\line\\line

Logan Greyhound Facility for Cronulla Park, Slacks Creek, prepared by Sinclair Knight Merz (SKM), dated June 2010, (Doc No. I:/QENV/Projects/QE09537/Deliverables/Stage 2 Report/Final Report/Cronulla Park Stage 2 Report_H.docx).

\\line\\line

Third Party Reviewer Certification Report for Logan Greyhound Facility, Slacks Creek, Queensland (Lot 658 SL12298), prepared by MACH1 Environmental Pty Ltd, dated June 2010, (Doc No. 09-002-017 RP1).

\\line\\line

SUITABLE USE :

\\line

Suitable as a recreational open space. The site is proposed to be redeveloped into a Greyhound Racing Facility, however, this use must not commence until assessment and remediation works described in the Remediation Action Plan (RAP) for the site attached in Appendix 1 have been completed, and a Statement of Suitability is issued by the QLD DERM specifying that the site is suitable for the intended use.

SITE MANAGEMENT PLAN

\\line\\line

\\b 1.0 SUMMARY OF CONTAMINATION\\b0

\\line\\line

The site consists of Lot 658 on Plan SL12298 and is located on the corner of Compton Road and Kingston Road, Slacks Creek, Queensland. The site was formerly used as a municipal landfill ("the Landfill") between the 1970s and 1980s. The landfill received a variety of wastes such as domestic waste, commercial and light industrial solid waste, sanitary solid waste, and construction and demolition waste.

\\line\\line

The site is currently a grassed open space recreational area and is managed by Logan City Council and is to be developed as a Greyhound Racing Facility.

\\line\\line

Contaminant concentrations within the surface (capping) soil material on the site are within acceptable limits and do not pose a risk to human health or the environment.

\\line\\line

The maximum concentrations of contaminants observed in the Contaminated Site Investigation from perched groundwater (which includes leachate) within the Landfill, and deeper groundwater within the weathered sandstone on the site which exceeded environmental guidelines included the following.

\\line\\line

\\b Analyte

Maximum Concentration

\\line

in Perched Groundwater within Landfill (µg/L)\\b0

\\line

Ammonia as N

228,000

\\line

Copper

25

\\line

Lead

48

\\line

Nickel

124

\\line

Zinc

463

\\line

TPH C10 - C36

730

\\line

1,4-Dichlorobenzene

47

\\line

2-Methylphenol

225

\\line

2,4-Dimethylphenol

4.6

\\line

2,4,5-Trichlorophenol

1

\\line\\line

\\b Analyte

Maximum Concentration

\\line

in Groundwater within Weathered Sandstone (µg/L)\\b0

\\line

Ammonia as N

50,400

\\line

Copper

28

\\line

Lead

115

\\line

Nickel

100

Logan City Council (LCC) has undertaken an ongoing landfill gas monitoring program (from 2000 to 2008) from monitoring wells installed around the boundary of the site (and not within the landfill). The monitoring program has detected low levels of methane gas (maximum concentration 1.7%) over this time period with concentrations which were well below the lower explosive limit (LEL) for methane (5%). The monitoring program undertaken by LCC indicates that gas from the landfill is unlikely to pose an unacceptable risk to off-site receptors.

LineLine

The maximum concentration of methane detected in boreholes which were screened within the landfill was 99.3%. The maximum concentration of methane detected in landfill vents installed on the site was 29%. All other VOCs detected were below human health guidelines.

LineLine

The maximum concentration of carbon dioxide detected was 15.5%.

LineLine

The elevated concentrations of methane which are present within the Landfill pose a potential risk to future site users as an asphyxiant and flammable gas. Future development of the site will require the implementation of landfill gas protection measures.

LineLine

2.0 OBJECTIVES OF THE SITE MANAGEMENT PLAN

LineLine

The objectives of this Site Management Plan (SMP) are to manage the impacted soils, groundwater and landfill gas on the site in a manner that protects human health and the environment.

LineLine

3.0 ACHIEVEMENT AND MAINTENANCE OF OBJECTIVES

LineLine

3.1 Responsibility The owner of the land (as defined in the *Environmental Protection Act 1994* (EP Act) is to ensure that this SMP and any variations to the SMP approved or required by the administering authority are complied with. The obligations and conditions set out in this SMP bind the owner, from time to time, of the land.

LineLine

3.2 Third Party Reviewer A Third Party Reviewer (TPR) approved by DERM and operating in accordance with the EPA's Terms of Reference for TPR (June 2010) must be appointed for the duration of the site assessment and remediation.

LineLine

3.3 Site Use The site is currently used for recreational open space.

The site is proposed to be redeveloped into a Greyhound Racing Facility, however, this use must not commence until assessment and remediation works described in the Remediation Action Plan (RAP) for the site attached in Appendix 1 have been completed, and a Statement of Suitability is issued by the QLD DERM specifying that the site is suitable for the intended use.

LineLine

3.4 Provision of SMP to appropriate persons The owner must provide all persons involved in building design and planning and all contractors and lessees conducting building and/or excavation works with a copy of the SMP prior to commencement of works. All persons occupying or working on the site must comply with the requirements of the SMP.

LineLine

3.5 Site Capping For the majority of the Landfill, the capping material is comprised of a layer of silty sand (0-0.1 m thickness) and an underlying clay based material comprised of sandy clay to clayey sand (0.2-0.8 m thickness). The capping material along the eastern embankment of the Landfill is comprised of well compacted clayey sand (0.2-0.5 m thickness). Through the implementation of the RAP the capping layer of the eastern embankment must be built up to provide a minimum thickness of 0.5 m using uncontaminated porous fill material which will not impede the venting of landfill gas.

LineLine

The capping layer is to be maintained in sound condition at all times.

\\line\\line

Vi 3.6 Soil Excavation and Removal\\i0. Any soil excavated on the site must be assessed for contaminants of concern to determine if the material is contaminated and to identify appropriate management and disposal/re-use options. Representative sampling and analysis of soil from any excavation in contaminated areas must be managed by a suitably qualified and experienced person in accordance with Section 381 of the *Environmental Protection Act 1994* (EP Act). Contaminated soil must not be removed off-site without a disposal permit in accordance with Section 424 of the EP Act (or equivalent).

\\line\\line

Vi 3.7 Unexpected Contamination\\i0. If during any site earthworks or excavation, offensive or noxious odours and/or evidence of gross contamination not previously detected is observed, site works are to cease in that area and action taken to immediately abate the environmental harm. The administering authority is to be notified in writing within two (2) business days of detection and advised of appropriate remedial action.

\\line\\line

Any remedial action is to be developed by an appropriately qualified and experienced person in accordance with Section 381 of the EP Act.

\\line\\line

Vi 3.8 General Environmental Protection\\i0. All site redevelopment works must be undertaken in accordance with general environmental protection measures and a Construction Environmental Management Plan (CEMP). These measures include the control of dust, noise, stormwater or sediment runoff, erosion, spillage from haulage trucks and odour releases involving the handling or movement of contaminated material.

\\line\\line

Vi 3.9 Workplace Health and Safety\\i0. A Workplace Health and Safety Plan (WH&S plan), which conforms to the requirements of the *Workplace Health and Safety Act 1995*, is to be developed for any excavation works at the site. The WH&S plan must address site-specific hazards which have been identified in the RAP.

\\line\\line

Vi 3.10 Underground Services\\i0. Where underground service trenches are constructed in contaminated areas, the trenches must be surrounded by a minimum of 0.3m of uncontaminated fill for minor services (<100mm in diameter) and 0.5m of uncontaminated fill for services greater than 100mm in diameter. Clean fill must also be placed above any services to the surface of the site. No services are to penetrate in to the body of the landfill but must be constructed within or above the capping layer. Maintenance of existing services should be conducted in accordance with this SMP.

\\line\\line

Vi 3.11 Imported Fill Material\\i0. Any fill material that may be imported to the site in the future must be sampled and samples submitted for analysis for relevant potential contaminants by a suitably qualified and experienced person prior to delivery to the site. The frequency of the sampling and analysis required, and the acceptance criteria adopted for potential contaminants will depend on the source of the fill.

\\line\\line

Vi 3.12 Use of Groundwater\\i0. Leachate and/or groundwater beneath the site must not be extracted. Use is prohibited.

\\line\\line

\\b 4.0 MONITORING AND REPORTING\\b0

\\line\\line

The monitoring of groundwater and landfill gas at the boundary of the site is to be undertaken throughout the duration of construction in accordance with the requirements of the RAP. A review of this SMP will be required following the implementation of the RAP and completion of site redevelopment works to determine groundwater and landfill gas monitoring requirements post-construction. Post-construction monitoring requirements must be agreed with the TPR and DERM prior to the commencement of commercial use of the site and is to include the monitoring of groundwater and landfill gas at the boundary of the site.

\\line\\line

Records are to be kept of all inspections, any soil excavation in contaminated areas, disposal permits, validation testing and site management plan compliance for review by the administering authority from time to time.

\\line\\line

\b This Site Management Plan (SMP) has been developed to manage site contamination risks present at the issue date. Subsequent uses of the site may result in the need to review the plan.

\line\line

This SMP makes reference to an attachment RAP that is available from the Administering Authority if required.\b0

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Thanks,

Allen Johns

This document can be found via H:/Contaminated Land/Studies/901564/STUDIES.doc

RTI DL RELEASE - EHP

DRAFT SITE MANAGEMENT PLAN (SMP)

DATE:

LOT 658 on Plan SL12298
BNE

DERM FILE:

1.0 SUMMARY OF CONTAMINATION

The site consists of Lot 658 on Plan SL12298 and is located on the corner of Compton Road and Kingston Road, Slacks Creek, Queensland. The site was formerly used as a municipal landfill ("the Landfill") between the 1970s and 1980s. The landfill received a variety of wastes such as domestic waste, commercial and light industrial solid waste, sanitary solid waste, and construction and demolition waste.

The site is currently a grassed open space recreational area and is managed by Logan City Council and is to be developed as a Greyhound Racing Facility.

Contaminant concentrations within the surface (capping) soil material on the site are within acceptable limits and do not pose a risk to human health or the environment.

The maximum concentrations of contaminants observed in the Contaminated Site Investigation from perched groundwater (which includes leachate) within the Landfill, and deeper groundwater within the weathered sandstone on the site which exceeded environmental guidelines included the following.

Analyte	Maximum Concentration in Perched Groundwater within Landfill (µg/L)
Ammonia as N	228,000
Copper	25
Lead	48
Nickel	124
Zinc	463
TPH C10 - C36	730
1,4-Dichlorobenzene	47
2-Methylphenol	225
2,4-Dimethylphenol	4.6
2,4,5-Trichlorophenol	1

Analyte	Maximum Concentration in Groundwater within Weathered Sandstone (µg/L)
Ammonia as N	50,400
Copper	28
Lead	115
Nickel	100
Zinc	359

Logan City Council (LCC) has undertaken an ongoing landfill gas monitoring program (from 2000 to 2008) from monitoring wells installed around the boundary of the site (and not within the landfill). The monitoring program has detected low levels of methane gas (maximum concentration 1.7%) over this time period with concentrations which were well below the lower explosive limit (LEL) for methane (5%). The monitoring program undertaken by LCC indicates that gas from the landfill is unlikely to pose an unacceptable risk to off-site receptors.

The maximum concentration of methane detected in boreholes which were screened within the landfill was 99.3%. The maximum concentration of methane detected in landfill vents installed on the site was 29%. All other VOCs detected were below human health guidelines.

The maximum concentration of carbon dioxide detected was 15.5%.

The elevated concentrations of methane which are present within the Landfill pose a potential risk to future site users as an asphyxiant and flammable gas. Future development of the site will require the implementation of landfill gas protection measures.

2.0 OBJECTIVES OF THE SITE MANAGEMENT PLAN

The objectives of this Site Management Plan (SMP) are to manage the impacted soils, groundwater and landfill gas on the site in a manner that protects human health and the environment.

3.0 ACHIEVEMENT AND MAINTENANCE OF OBJECTIVES

3.1 Responsibility. The owner of the land (as defined in the *Environmental Protection Act 1994* (EP Act) is to ensure that this SMP and any variations to the SMP approved or required by the administering authority are complied with. The obligations and conditions set out in this SMP bind the owner, from time to time, of the land.

3.2 Third Party Reviewer. A Third Party Reviewer (TPR) approved by DERM and operating in accordance with the EPA's Terms of Reference for TPR (June 2010) must be appointed for the duration of the site assessment and remediation.

3.3 Site Use. The site is currently used for recreational open space.

The site is proposed to be redeveloped into a Greyhound Racing Facility, however, this use must not commence until assessment and remediation works described in the Remediation Action Plan (RAP) for the site attached in Appendix 1 have been completed, and a Statement of Suitability is issued by the QLD DERM specifying that the site is suitable for the intended use.

3.4 Provision of SMP to appropriate persons. The owner must provide all persons involved in building design and planning and all contractors and lessees conducting building and/or excavation works with a copy of the SMP prior to commencement of works. All persons occupying or working on the site must comply with the requirements of the SMP.

3.5 Site Capping. For the majority of the Landfill, the capping material is comprised of a layer of silty sand (0-0.1 m thickness) and an underlying clay based material comprised of sandy clay to clayey sand (0.2-0.8 m thickness). The capping material along the eastern embankment of the Landfill is comprised of well compacted clayey sand (0.2-0.5 m thickness). Through the implementation of the RAP the capping layer of the eastern embankment must be built up to provide a minimum thickness of 0.5 m using uncontaminated porous fill material which will not impede the venting of landfill gas.

The capping layer is to be maintained in sound condition at all times.

3.6 Soil Excavation and Removal. Any soil excavated on the site must be assessed for contaminants of concern to determine if the material is contaminated and to identify appropriate management and disposal/re-use options. Representative sampling and analysis of soil from any excavation in contaminated areas must be managed by a suitably qualified and experienced person in accordance with Section 381 of the *Environmental Protection Act 1994* (EP Act). Contaminated soil must not be removed off-site without a disposal permit in accordance with Section 424 of the EP Act (or equivalent).

3.7 Unexpected Contamination. If during any site earthworks or excavation, offensive or noxious odours and/or evidence of gross contamination not previously detected is observed, site works are to cease in that area and action taken to immediately abate the environmental harm. The administering authority is to be notified in writing within two (2) business days of detection and advised of appropriate remedial action.

Any remedial action is to be developed by an appropriately qualified and experienced person in accordance with Section 381 of the EP Act.

3.8 General Environmental Protection. All site redevelopment works must be undertaken in accordance with general environmental protection measures and a Construction Environmental Management Plan (CEMP). These measures include the control of dust, noise, stormwater or sediment runoff, erosion, spillage from haulage trucks and odour releases involving the handling or movement of contaminated material.

3.9 Workplace Health and Safety. A Workplace Health and Safety Plan (WH&S plan), which conforms to the requirements of the *Workplace Health and Safety Act 1995*, is to be developed for any excavation works at the site. The WH&S plan must address site-specific hazards which have been identified in the RAP.

3.10 Underground Services. Where underground service trenches are constructed in contaminated areas, the trenches must be surrounded by a minimum of 0.3m of uncontaminated fill for minor services (<100mm in diameter) and 0.5m of uncontaminated fill for services greater than 100mm in diameter. Clean fill must also be placed above any services to the surface of the site. No services are to penetrate in to the body of the landfill but must be constructed within or above the capping layer. Maintenance of existing services should be conducted in accordance with this SMP.

3.11 Imported Fill Material. Any fill material that may be imported to the site in the future must be sampled and samples submitted for analysis for relevant potential contaminants by a suitably qualified and experienced person prior to delivery to the site. The frequency of the sampling and analysis required, and the acceptance criteria adopted for potential contaminants will depend on the source of the fill.

3.12 Use of Groundwater. Leachate and/or groundwater beneath the site must not be extracted. Use is prohibited.

4.0 MONITORING AND REPORTING

The monitoring of groundwater and landfill gas at the boundary of the site is to be undertaken throughout the duration of construction in accordance with the requirements of the RAP. A review of this SMP will be required following the implementation of the RAP and completion of site redevelopment works to determine groundwater and landfill gas monitoring requirements post-construction. Post-construction monitoring requirements must be agreed with the TPR and DERM prior to the commencement of commercial use of the site and is to include the monitoring of groundwater and landfill gas at the boundary of the site.

Records are to be kept of all inspections, any soil excavation in contaminated areas, disposal permits, validation testing and site management plan compliance for review by the administering authority from time to time.

This Site Management Plan (SMP) has been developed to manage site contamination risks present at the issue date. Subsequent uses of the site may result in the need to review the plan.

This SMP makes reference to an attachment RAP that is available from the Administering Authority if required.

APPENDIX 1

REMEDIATION ACTION PLAN

LOT 658 on Plan SL12298 FILE REF

1 INTRODUCTION

This Remediation Action Plan (RAP) is for Cronulla Park which is located on the corner of Compton Road and Kingston Road, Slacks Creek, Queensland. The land is described as Lot 658 on Plan SL12298 ("the site"). The site was formerly used as a municipal landfill ("the Landfill") between the 1970s and 1980s. The site is currently a grassed open space recreational area and is to be developed as a Greyhound Racing Facility ("the Project").

1.1 Purpose of the RAP

The purpose of this RAP is to provide an outline plan of activities, procedures and objectives to ensure the effective and controlled development of the Project on the site. It describes the methodologies and standards to be followed throughout the construction of the Project to ensure appropriate protection of human health and the environment.

1.2 Objective

The primary objective of the remediation program of the site is to make the site safe for the planned future use. This RAP summarises the current status of the site and provides strategies to remediate or manage impact on the site in a manner that protects human health and the environment.

2 BACKGROUND

2.1 Description of Proposed Development

The site is to be developed as Greyhound Racing Facility. The proposed development includes the construction of a double storey main facility building with a grassed viewing area, kennel blocks and support buildings serviced by two-way internal roads with access for patron car parks, and dedicated parking area for trainers and employees. An inner and outer greyhound race track will be constructed as the main attraction, with a separate trialling track being formed adjacent to the main tracks.

This RAP has been based on the contamination assessment report *Logan Greyhound Facility Cronulla Park Contaminated Site Investigation* (Sinclair Knight Merz, June 2010) ("the Contaminated Site Investigation").

2.2 Site Location & Topography

The site comprises 10.24 hectares of Crown Land located at the corner of Compton Road and Kingston Road, Slacks Creek, Queensland. The land is described as Lot 658 on Plan SL12298. The site is held in trust by Logan City Council (LCC), as gazetted on 25 June 1988. The designated purpose of the site is local government (entertainment and recreation).

The site and surrounding land slopes in an easterly direction towards Slacks Creek. Surface water discharges to Slacks Creek which is located approximately 320 m east of the site. The highest point of the site close to Kingston Road is approximately 34.5 m Australian Height Datum (AHD) and the site level falls to approximately 22.2 m AHD close to the north east corner industrial lots. The average gradients on the site are relatively flat ranging from 0.8 % to 2.0 %. The north east corner is steeper than the majority of the site with grades up to a maximum of 12.5 % towards the east.

2.3 Landfill Operation and Closure

A tributary of Slacks Creek historically ran through site. Prior to the commencement of the construction of the Landfill, the tributary was diverted around the site in an open drain located on the southern and eastern boundaries of the site.

The Landfill was formed using a method which involved the excavation of trenches, and then the placement and compaction of wastes within each trench. The quantity of waste received at the site is not known. The investigation however found the depth of waste to be up to approximately 10 m below ground level (bgl), and waste has been placed directly over natural ground strata including weathered sandstone, and sandstone.

The construction of the Landfill did not include the installation of a liner, or leachate and landfill gas collection system. This was confirmed during the undertaking of the Investigation.

Wastes which were accepted at the Landfill included:

- domestic waste;
- commercial and light industrial solid waste;
- sanitary solid waste; and
- construction and demolition waste.

The Landfill may have also received asbestos, and hazardous domestic wastes (e.g. paints and pesticides). The Landfill received approximately 2,000 to 3,000 animal carcasses including dogs, cats, cows and horses.

Wastes which were not accepted at the Landfill included:

- heavy industrial waste;
- hazardous solid waste;
- medical waste; and
- liquid waste (hazardous and non-hazardous).

The Landfill was capped using a clay based soil (refer to Section 2.3.2) in the 1980s, and additional capping material placed over the landfill in the 1990s. Four landfill gas vents were installed within the landfill following closure in the 1980s.

2.4 Geology

2.4.1 Regional Geology

The regional geology comprises alluvium soils, mainly clay, silt and gravel overlaying shale, siltstone and sandstone (with possible coal seams). The regional geology is part of the tertiary Oxley Group, a subset of the early tertiary continental basins of the area.

2.4.2 Site Conditions

Surface (Capping) Material

For the majority of the site, the surface material (capping layer) comprises a layer of silty sand (0-0.1 m thickness) and an underlying clay based material comprised of sandy clay to clayey sand (0.2-0.8 m thickness). Permeability tests of the clay based material within the surface material indicates that the permeability of this material varies between 10^{-6} and 10^{-8} m/s.

The surface material layer of the eastern embankment of the Landfill was found to be comprised of well compacted clayey sand (0.2-0.5 m thickness).

Waste Material

The thickness of waste materials encountered varied from 1.2 m to 10.5 m. Where encountered, waste materials (30-90%) were found to be mixed in a damp to saturated grey unconsolidated clay or sandy clay matrix (10-70%). The waste intersected in the investigation was domestic in origin, and appeared to contain infrequent (<5%) residual putrescible materials. Common items noted in the waste materials included plastic packaging, plastic bags, metal fragments and glass bottles. No regulated wastes were noted in the waste material intersected.

The waste materials have been placed directly over natural materials in the majority of exploratory boreholes.

Natural Material

The natural material was generally a sandy or silty clay of weathered sandstone. This was underlain by the coarse grained red and white low strength sandstone. The sandstone was incised with a medium strength siltstone in several locations across the site.

In background locations across the site (including in locations within the wooded area along the western portion of the site), the soil profile was a silty sandy clay material consistent with the weathered sandstone.

2.5 Hydrogeology

Two groundwater systems have been observed on the site. These include:

- groundwater within the weathered sandstone beneath the Landfill; and
- perched groundwater (which includes leachate) within the Landfill.

The perched water was observed to be in connection with the groundwater in the weathered sandstone, and these systems combine down-gradient of the site. These groundwater systems flow in a north-easterly direction towards Slacks Creek. Slacks Creek is located approximately 320 m east of the site, and is considered to be the main environmental receptor of groundwater from the site.

No registered operational bores (groundwater users) are located in the vicinity of the Site. The closest operational registered bore is approximately 0.7 km north of the Site (registration number – 134259).

3 EXTENT OF CONTAMINATION

3.1 Surface (Capping) Material

Concentrations of metals in surface (capping) material are not considered to pose a risk to human health or the environment.

The concentrations of all organic analytes, which included total petroleum hydrocarbon (TPH), volatile organic compounds (VOC), polycyclic aromatic hydrocarbons (PAH), phenols, polychlorinated biphenyls PCB), organochlorine pesticides (OCP), and organophosphate pesticides (OCP), were below laboratory detection limits.

3.2 Groundwater

The maximum concentrations of contaminants observed in the Contaminated Site Investigation from perched groundwater (which includes leachate) within the Landfill, and deeper groundwater within the weathered sandstone on the site which exceeded environmental guidelines included the following.

Analyte	Maximum Concentration in Perched Groundwater within Landfill (µg/L)
Ammonia as N	228,000
Copper	25
Lead	48
Nickel	124
Zinc	463
TPH C10 - C36	730
1,4-Dichlorobenzene	47
2-Methylphenol	225
2,4-Dimethylphenol	4.6
2,4,5-Trichlorophenol	1

Analyte	Maximum Concentration in Groundwater within Weathered Sandstone (µg/L)
Ammonia as N	50,400
Copper	28
Lead	115
Nickel	100
Zinc	359

Metals

Elevated concentrations of copper, lead, nickel and zinc were found in groundwater samples from monitoring wells up-gradient of the Landfill, and within the Landfill. Metals found in groundwater are potentially associated with surrounding industrial land use, naturally occurring background conditions, or a combination of both these sources.

Ammonia

The concentration of ammonia in groundwater at the down-gradient boundary of the site (groundwater at this location includes both perched groundwater from the landfill and groundwater in the weathered sandstone) has attenuated from 39.9 mg/L in 2000 to approximately 10 mg/L in 2008-09 (note that the maximum ammonia concentration detected in perched groundwater (containing leachate) within the landfill was higher at 228 mg/L). Elevated concentrations of ammonia were detected in other monitoring wells along the eastern boundary of the Landfill; therefore the Landfill is the likely source of ammonia at the site. Ammonia can have a deleterious effect on aquatic ecosystem health. However factors such as dilution would lower the concentration of ammonia prior to discharge to the nearest receiving watercourse (Slacks Creek, 320 m east of the site).

Hydrocarbons

Elevated concentrations of hydrocarbons have been consistently detected in perched groundwater within the landfill. The analytical results and interpretation of the source hydrocarbons by the laboratory indicate that the elevated concentrations of hydrocarbons found in groundwater samples are predominately organic substances being produced by the Landfill through the decomposition of putrescible materials rather than petroleum based hydrocarbons (e.g. fuels or oils).

Semi-Volatile Organic Compounds (SVOC)

The majority of SVOCs including PAHs (with the exception of phenanthrene), pesticides (OC/OP), oxygenated compounds, fumigants, and PCB were not detected in any of the groundwater samples tested. Phenanthrene was detected in some of the samples analysed with concentrations which were within acceptable limits.

3.3 Landfill Gas

Historical Monitoring of Site Boundary Monitoring Wells

Logan City Council (LCC) has undertaken an ongoing landfill gas monitoring program (from 2000 to 2008) from monitoring wells installed around the boundary of the site (and not within the landfill). The monitoring program has detected low levels of methane gas (maximum concentration 1.7%) over this time period with concentrations which were well below the lower explosive limit (LEL) for methane (5%). The monitoring program undertaken by LCC indicates that gas from the landfill is unlikely to pose an unacceptable risk to off-site receptors.

Landfill Gas Monitoring During Contaminated Site Investigation

As part of the Contaminated Site Investigation gas monitoring wells were installed beneath the cap and within the Landfill. Six rounds of landfill gas monitoring were undertaken. Elevated concentrations of methane which exceeded the LEL were detected in some of the monitoring wells. The maximum concentration of methane detected in boreholes which were screened within the Landfill was 99.3%. All other VOCs detected were below human health guidelines.

The maximum concentration of carbon dioxide detected was 15.5%.

Landfill Vent Monitoring

Low or non-detectable concentrations of methane and carbon dioxide were detected from the monitoring ports attached to the landfill vents in the Contaminated Site Investigation. This may be attributed to atmospheric dilution in the vents, as evident from measured oxygen concentrations at approximately 21%. In one monitoring round, an elevated concentration of methane (29%) which exceeded the LEL was found in one of the vents; all other vents however had concentrations of methane which were below the LEL or below detection limits.

Implications for Proposed Development

Landfill gas, which includes methane, is considered to pose a potential risk to future site users as an asphyxiant and flammable gas. The primary risk to future site users will be the migration of gases along pathways created by foundations (including piles) and underground services or service trenches into buildings located on the site, or other confined spaces (e.g. service pits). There is also the potential for the development to modify landfill gas regimes (e.g. reduce venting rates at surface, and/or increase lateral gas migration) in areas of the site which are covered with low or semi-permeable surfaces such as car parks, roads and water retaining features. The proposed development requires the implementation of landfill gas protection measures described in Section 5, and the monitoring of landfill gas during construction (refer to Section 8.6).

4 ENVIRONMENTAL GUIDELINES

The remedial activities undertaken at the site must be performed in accordance with the following documents:

- *Draft Guidelines for the Assessment and Management of Contaminated Land in Queensland*, May 1998;
- *Guidelines issued under Schedule B of the National Environment Protection (Assessment of Site Contamination) Measure* (NEPM), National Environment Protection Council, December 1999;
- *Australian and New Zealand Guidelines for the Assessment and Management of Contaminated Sites* (ANZECC guidelines) published by the Australian and New Zealand Environment and Conservation Council/National Health and Medical Research Council, January 1992;
- *Australian Standard AS4482.1-2005 Guide to the investigation and sampling of sites with potentially contaminated soil - Non-volatile and semi-volatile compounds*; and
- *Australian Standard AS4482.2-1999 Guide to the sampling and investigation of potentially contaminated soil Part 2 - Volatile and semi volatile compounds*.

5 REMEDIATION PROGRAM

5.1 Overview

The key remedial measures required for the redevelopment of the site include:

- the building up of the capping layer in the eastern embankment of the site;
- the inclusion of gas protection measures in buildings
- the inclusion of porous media beneath and to the side of low or semi-permeable surfaces placed on the landfill such as car parks, access roads, and water storage areas to enable the venting of landfill gas;
- the re-construction of gas vents closed during the construction phase for the proposed development;
- the location of services above the capping material where practicable, and the entering of services from the side of buildings rather than through floor slabs;
- the use of sensitive construction and piling measures to minimise disturbance to the capping material;
- the use of low permeability materials or membranes for proposed water storage areas on the site;
- the undertaking of an ongoing landfill gas and groundwater monitoring program at the boundary of the site during and post development of the site; and
- confirmation that the former underground tank on the site has been removed.

These remedial measures are described in further detail as follows.

5.2 Capping Layer

The capping layer of the eastern embankment of the landfill was found to vary from 0.2-0.5 m in thickness. The capping layer of the eastern embankment must be built up to provide a minimum thickness of 0.5 m using uncontaminated porous fill material which will not impede the venting of landfill gas. Prior to the capping of this area additional probing must be undertaken to confirm the extent of capping required within the eastern embankment. A plan showing the extent of the area to be capped must be reviewed and consented to by the Third Party Reviewer (TPR) before submitting to Department of Environment and Resource Management (DERM) prior to construction.

5.3 Gas Protection

Main Facilities Building

The Main Facilities Building must be founded on piles and a slab suspended off-the-ground. An open void must be located between the slab and the ground to allow for the free venting of air beneath the building. This will mitigate the potential for gas ingress into the main building.

As a precautionary measure gas alarm(s) are to be fitted inside the building at appropriate location(s).

Kennel Block and Maintenance Shed

Gas protection measures for the Kennel Block and Maintenance Shed must include:

- well-constructed ground slab located above the capping layer;
- low-permeability gas/vapour membrane;
- the location of services above the capping layer and entering buildings from the side (rather than through floor slabs);
- passive in-ground venting through a granular layer beneath the floor slab and venting pipes, with the venting system being located above the capping layer and beneath the floor slab to allow for the venting of landfill gases; and
- gas alarm(s) at appropriate location(s) within each building.

Design drawings of the proposed gas protection measures must be reviewed and consented to by the TPR before submitting to DERM prior to the construction of buildings.

Boreholes drilled for the Preliminary Geotechnical Investigation within approximately 15 m of the proposed Kennel Block and Maintenance Shed show that ground in the vicinity these proposed structures is unlikely to contain waste materials. During the detailed design phase of the Project, gas monitoring must be undertaken at the location of these proposed buildings to characterise the Landfill gas regime within the shallow ground (i.e. within the cap) at these locations. Gas monitoring must be undertaken through the use of boreholes positioned at the proposed building locations, and the screening of the boreholes within the capping layer. Should the findings of landfill gas monitoring indicate that the gas regime at these locations is of low risk, the protection measures proposed may be amended subject to consent by the Third Party Reviewer (TPR) and DERM.

Low and Semi-Permeable Surfaces

Granular venting layers must be incorporated beneath and to the side of low or semi-permeable surfaces placed on the landfill such as car parks, access roads, and water storage areas. Plans showing the design of the venting layers must be reviewed and consented by the TPR prior to construction.

5.4 Landfill Gas Vents

The proposed development will involve the removal of two of the existing landfill gas vents. Two additional vents must be constructed to replace the vents being removed. Plans of the proposed two additional vents, including the location, design and proposed height must be reviewed and consented to by the Third Party Reviewer (TPR) and DERM prior to construction.

5.5 Services

Plans showing the location and elevation of proposed services must be reviewed and consented by the TPR prior to construction.

Deleted: in the vicinity of the vents

Deleted: during the construction process.

Deleted: proposed height which is planned to be less than

Deleted: 1 metre,

Deleted: before submitting to

Deleted: The height of the vents will be reduced from that of the existing vents to allow for improved viewing and the functioning of the site as a greyhound racing facility. This reduction in the height of the vents should not impair their functionality.

Services must be exposed to the atmosphere to vent potential landfill gases prior to a worker entering any confined spaces.

5.6 Construction Methods

Piling Methods

Piles will be founded on the sandstone strata beneath the site. Piling will require disturbance to the capping material. The capping material surrounding the piles must be resealed through packing a low permeability clay based material (e.g. bentonite) around the pile. Appropriate validation testing must be undertaken to confirm the effectiveness of the seal around the pile.

Racing Track

Preloading will be progressively undertaken over the racing area to accelerate the settlement process and stabilise the surrounding ground. Groundwater mounding may occur as a result of preloading, however it is not expected to result in any further risk to human health or the environment. Groundwater and landfill gas monitoring at the boundary of the site must be undertaken (refer to Section 8.6) during preloading to confirm that no unacceptable human health or environmental risk is occurring.

5.7 Stormwater and Surface Drainage

Stormwater collected from the surface of the site must be diverted to vegetated swales to capture litter, suspended solids and other matter prior to discharging into the drainage system. The swales constructed must not penetrate the waste material in the Landfill.

During periods of heavy rainfall, surface water must be captured and temporarily held within retention basins on-site. The retention basin must be lined with high density polyethylene (HDPE) liners or equivalent to prevent vertical seepage into the Landfill.

The drain skirting the south and east of the site is to be managed by LCC as an easement. It is proposed that some restoration of this drain be undertaken by LCC as part of the redevelopment. A plan of the restoration work must be reviewed and consented by the Third Party Reviewer (TPR) prior to undertaking works. The restoration work must not involve disturbance to the Landfill.

5.8 Off-site Disposal of Material

While not expected to be required, any soil material removed from the site is to be undertaken under disposal permit in accordance with S.424 of the EP Act.

An application for *Disposal Permit* must be accompanied by a sampling plan and associated results (including bore logs) clearly indicating the material and depth intended for removal. The *Disposal Permit* application must be reviewed and consented to by the TPR before submitting to DERM for approval.

5.9 Importation of Material to the Site

Imported fill used for the redevelopment of the site must be sampled and appropriately analysed at a rate agreed with the TPR to confirm the suitability of the fill prior to its importation to the site unless the source of the material can be demonstrated to be a clean source (e.g. licensed quarry).

6 HEALTH AND SAFETY

Prior to the works commencing, a Health and Safety Plan must be prepared by the contractor. The Health and Safety Plan must be prepared for the activities to be performed on the site where employees may be exposed to toxic or other hazardous compounds and elements. Specific requirements relating to dermal contact and inhalation as well as public safety, vehicle decontamination, protective clothing, equipment and appropriate safety controls must be addressed. Personnel working on the site must read and understand the Health and Safety Plan. All staff working on the site during remediation works must be inducted and sign relevant forms stating that induction has been carried out.

7 SUITABLY QUALIFIED PERSON TO CONDUCT / SUPERVISE WORKS

A person qualified in accordance with S.381 and S.395 of the *Environmental Protection Act 1994* (EP Act) must conduct all investigations, supervise all remediation works and compile reports required to complete the remediation program for the site.

8 ENVIRONMENTAL MANAGEMENT AND CONTROL

Prior to the works commencing a Construction Environmental Management Plan (CEMP) must be prepared and reviewed and consented to by the TPR before submitting to DERM. The CEMP must include but not be limited to the following.

The remediation program must be conducted with all due regard to the environment and to statutory requirements. In particular, in addition to any statutory compliances required, the contractor must be responsible for conducting remediation works with all due care to ensure compliance with the following conditions:

- Minimal air-borne dust is to be generated from the site. In the event of a dust complaint, mitigation measures such as watering must be used;
- Water containing any suspended matter or contaminants must be managed within the site in such a manner to minimise pollution of adjacent sites and waterways;
- Vehicles must be controlled so that minimal mud, soil or water will fall or be deposited on any public or private roadway or adjacent areas; and
- Noise levels must comply with the required statutory requirements.

The owner must ensure that the contractor's site manager/foreman is conversant with the contents of the RAP, conditions of Planning Approval, the CEMP and Health and Safety Plan. Additionally they must ensure that each employee or subcontractor involved with remediation is inducted into the requirements of the RAP, the CEMP and Health and Safety Plan.

8.1 Control of Stormwater Run-off

Remediation works must comply with requirements for stormwater management as outlined in Schedule B(9) of the NEPM. This includes stockpiling excavated soil/fill in a manner that shall prevent contamination from being transported off-site by stormwater.

The contractor must control surface waters on the site as follows:

- Divert clean stormwater run-off outside the site so that it does not flow through the site;
- Control drainage on the site by interception and redirecting clean run-off in a controlled manner;
- Stormwater collected from the site in trenches and sumps must be appropriately managed; and
- Silt fences must be erected at locations where stormwater may flow from the site.

Stormwater must be managed in accordance with any conditions of the Planning Approval.

8.2 Control of Soil/Fill and Sediment

Sediment released to surface waters must be minimised by the use of sediment controls such as diversion drains, hay bales and silt fencing. In particular, a silt fence must be located around the perimeter of stockpile material.

Soil awaiting off-site removal or reprofiling must be stockpiled in a manner and location so that it is not easily spread by wind or rain action. If adverse weather conditions are anticipated, stockpiles of contaminated soil must be covered. Stockpiles must be tagged and records maintained to track the disposal or reuse of soil from the site.

Any plant or equipment that handles contaminated soils must be inspected prior to leaving the site, and cleaned as necessary.

The requirements for the management of sediment and soil described in Schedule B(9) of the NEPM (from which the above control measures are drawn) must be complied with during remedial works.

8.3 Control of Noise

Noise levels must comply with statutory requirements, and any conditions of the Planning Approval, and with consideration to *Australian Standard AS 2436-1981 Guide to Noise Control on Construction, Maintenance and Demolition Sites*.

8.4 Control of Dust

Generation of dust must be kept to a minimum. Water used for dust suppression is to be managed in accordance with Section 6.3.1 and Section 6.3.2.

8.5 Odour Control

The level of odour generated during remedial activities is not expected to be a concern. However, in the unlikely event that odorous compounds are encountered, the contractor under the supervision of the person qualified in accordance with Section 6.2 must take all precautions to ensure that no obnoxious odours migrate from the site boundaries. To minimise odours, if encountered, only small volumes of the material must be excavated at any one time. Any fill containing significant quantities of odorous compounds must be placed in a bunded area and covered with plastic sheeting and sprayed with an odour suppressant as soon as possible.

8.6 Environmental Monitoring Program

An environmental monitoring program which includes the monitoring of landfill gas and groundwater at the boundary of the site (which includes landfill leachate) is to be undertaken during construction. The frequency of monitoring will be described in the environmental monitoring program and must show consideration to the construction program, with more frequent monitoring of landfill gas and groundwater occurring during sensitive works such as preloading of the racing track. The minimum frequency of monitoring during construction is planned to be monthly for landfill gas, and bi-monthly for groundwater. The results of monitoring are to be provided to the

TPR after each monitoring event. The environmental monitoring program must be reviewed and consented to by the TPR before submitting to DERM prior to the undertaking of any remediation or construction work on the site.

8.6.1 Sample Dispatch and Documentation

Samples must be collected in the appropriate containers and labelled to identify their origins as described by the Australian Standard AS4482.1-2005 and dispatched to the laboratory for analysis within 48 hours of collection. Chain of Custody documentation and handling must be performed in accordance with AS4482.1-2005 and the NEPM guidelines. Sample Receipt Advice documentation must be submitted in the validation report along with Chain of Custody documents.

8.6.2 Quality Assurance/Quality Control (QA/QC) Program

A field QA/QC program must be conducted in accordance with the NEPM, Australian Standard AS4482.1-2005 and EPA recommendations, to measure the precision of the field/laboratory analyses and to determine the accuracy of the primary laboratory's analyses.

Duplicate soil samples must be collected and analysed by the primary laboratory at a rate of one per twenty samples. Duplicate groundwater samples must be collected and analysed by the primary laboratory at a rate of one per sampling event or at a rate of one in twenty whichever is the lesser.

8.6.3 Decontamination Procedures

Decontamination procedures for sampling equipment, personnel and the general site must be in accordance with the Australian Standard AS 4482.1-2005 and the NEPM guidelines (Schedule B (9)).

9 VALIDATION

Prior to the undertaking of remediation a validation sampling program must be reviewed and consented to by the TPR. The validation sampling program must include but not limited to:

- Permeability testing and as built drawings of the capping material placed in the eastern embankment area and in association with piling;
- Imported fill material; and
- Completion reports and as building drawings for the gas protection measures to be installed in buildings.

10 REPORTING REQUIREMENTS

Within 60 days of the completion of all remediation and construction works, a report detailing works must be prepared by a suitably qualified person in accordance with S5.2 and submitted to the TPR for certification and subsequent submission to the DERM. The report must be in accordance with Chapter 7, Part 8 of the *Environmental Protection Act 1994* and the *Draft Guidelines for the Assessment and Management of Contaminated Land in Queensland* May (1998).

The report must include but not be limited to the documentation of the remediation works and construction activities.

The report must also include the results of the QA/QC program, Chain of Custody documentation and Sample Receipt Advices for all samples collected and copies of documentation validating the

appropriate handling, disposal and treatment of any contaminated soil, materials and water in accordance with DERM requirements.

11 STATEMENT OF SUITABILITY

Prior to the commencement of the commercial use of the site, a statement of suitability must be obtained from DERM. The Statement of Suitability must specify that the site is suitable for the intended use(s) and the site can be removed from the EMR or the site is to remain on the EMR and must be managed under a SMP.

12 THIRD PARTY REVIEW (TPR)

The site work and subsequent reporting must be reviewed by a DERM appointed Third Party Reviewer (TPR). All validation requirements must first be confirmed by the TPR and any clarification issues must be referred to the TPR prior to DERM. The TPR must review the CEMP and any other documentation or approval specified in this RAP.

RTI DL RELEASE - EHP

REFERENCES

Department of Environment (Queensland Environmental Protection Agency) (May 1998). *Draft Guidelines for the Assessment and Management of Contaminated Land in Queensland*.

National Environment Protection Council (1999). *National Environment Protection (Assessment of Site Contamination) Measure Schedule B (2) Guideline on Data Collection, Sample Design and Reporting*.

Standards Australia (2005). *Australian Standard AS4482.1-2005 Guide to the investigation and sampling of sites with potentially contaminated soil, Part 1: Non-volatile and semi-volatile compounds*.

Standards Australia (1999). *AS4482.2-1999 Guide to the sampling and investigation of potentially contaminated soil, Part 2: Volatile substances*.

RTI DL RELEASE - EHP

STATUTORY DECLARATION

(INVESTIGATOR and REPORT PREPARER)



RECEIVED

7-9-10

49-Sch4 - Signature

Contaminated
land

Address of Site Investigated: Cronulla Park, cnr Kingston and Compton Roads, Slacks Creek, QLD

Real Property Description: Lot 658 on Plan SL12298

Title of Report(s): *Logan Greyhound Facility, Cronulla Park: Contaminated Site Investigation.*
Final Report by Sinclair Knight Merz for Greyhounds Queensland Limited,
June 2010.

I, Richard A Graham of Sinclair Knight Merz, 32 Cordelia Street, South Brisbane, in the State of Queensland, do solemnly and sincerely declare that;

- I was the investigator and preparer of the site investigation report described above;
- I am an Environmental Auditor (Contaminated Land) appointed by the Victorian Environment Protection Authority and a Fellow of the Environment Institute of Australia and New Zealand and my qualifications and experience are deemed to be appropriate for the purpose of this investigation and report preparation;
- I have not knowingly included any false, misleading or incomplete information in the report;
- I have not knowingly failed to reveal any relevant information or document to the administering authority; and

I certify that:

- The report addresses the relevant matters for the investigation and is factually correct; and
- The opinions expressed in it are honestly and reasonably held.

And I make this solemn declaration conscientiously believing the same to be true and by virtue of the provision of the *Oaths Act 1867*.

Signature ... 49-Sch4 - Signature

Name RICHARD ALAN GRAHAM

Taken and Declared before me at ARMADALE, VIC this 3rd day of SEPTEMBER 2010

Witness (Justice of the Peace / Commissioner for Declarations)

Signature 49-Sch4 - Signature

Name (& JP Number if applicable)

Amanda Woods CPA
2057494

George Ria

From: Mortleman Amy
Sent: Wednesday, 8 September 2010 10:05 AM
To: PALM; George Ria
Subject: ATT: Ria George - Can you please add STAT DEC for Lot 658 SL12298 (File 901564) to site investigation application, PALM has.

Attachments: sl12298.PDF; sl12298.PDF

Hi Ria,

Kim Barry has asked me to forward a copy of the attached STAT DEC for Lot 658 SL12298 below, it relates to a site investigation on file 901564 Vol 1, Kim said the file / paperwork is with you. Can you please attach this to the application you have.



sl12298.PDF (30 KB)

If you have any questions, please contact me on 3330 5687.

Kind Regards,

Amy Mortleman
Administration Assistant ~ Contaminated Land Unit
Department of Environment and Resource Management
Ph: 3330 5687 **Fax:** 3330 5754
Location: Level 8 / 400 George Street
Postal Address: GPO Box 2454
Brisbane QLD 4001
Website: http://www.derm.qld.gov.au/environmental_management/land/contaminated_land/

From: Mortleman Amy
Sent: Tuesday, 7 September 2010 12:51 PM
To: Barry Kim
Subject: I have attached below a copy of the STAT DEC you requested from Jeremy Wicks for Lot 658 SL12298

Hi Kim,

I have attached below a copy of the STAT DEC you requested from Jeremy Wicks for Lot 658 SL12298 (Cronulla Park, cnr Kingston and Compton Roads, Slacks Creek), it was hand delivered in today.

Please refer to attachment below :



sl12298.PDF (30 KB)

I have put a copy on file 901564-3, it's on your desk.

Kind Regards,

Amy Mortleman
Administration Assistant ~ Contaminated Land Unit
Department of Environment and Resource Management
Ph: 3330 5687 **Fax:** 3330 5754
Location: Level 8 / 400 George Street
Postal Address: GPO Box 2454

Brisbane QLD 4001

Website: http://www.derm.qld.gov.au/environmental_management/land/contaminated_land/

RTI DL RELEASE - EHP

STATUTORY DECLARATION

(INVESTIGATOR and REPORT PREPARER)



RECEIVED
7-9-10

49-Sch4 - Signature

*Contaminated
land*

Address of Site Investigated: Cronulla Park, cnr Kingston and Compton Roads, Slacks Creek, QLD
Real Property Description: Lot 658 on Plan SL12298
Title of Report(s): *Logan Greyhound Facility, Cronulla Park: Contaminated Site Investigation.*
Final Report by Sinclair Knight Merz for Greyhounds Queensland Limited,
June 2010.

I, Richard A Graham of Sinclair Knight Merz, 32 Cordelia Street, South Brisbane, in the State of Queensland, do solemnly and sincerely declare that;

- I was the investigator and preparer of the site investigation report described above;
- I am an Environmental Auditor (Contaminated Land) appointed by the Victorian Environment Protection Authority and a Fellow of the Environment Institute of Australia and New Zealand and my qualifications and experience are deemed to be appropriate for the purpose of this investigation and report preparation;
- I have not knowingly included any false, misleading or incomplete information in the report;
- I have not knowingly failed to reveal any relevant information or document to the administering authority; and

I certify that:

- The report addresses the relevant matters for the investigation and is factually correct; and
- The opinions expressed in it are honestly and reasonably held.

And I make this solemn declaration conscientiously believing the same to be true and by virtue of the provision of the *Oaths Act 1867*.

49-Sch4 - Signature

Signature ..

Name

RICHARD ALAN GRAHAM

Taken and Declared before me at *ARMADALE, VIC* this *3rd* day of *SEPTEMBER* 2010

Witness (Justice of the Peace / Commissioner for Declarations)

Signature

49-Sch4 - Signature

Name (& JP Number if applicable)

Amanda Woods CPA
2057494

☐ For Regional Information & Filing

☒ Regional Action Required

Admin. Office: Contaminated Land Unit, Southern Region

Project No: 347288

Client No: 648379

EMR/CLR ID No: 3350

Permit No: CLEA00843410

Ecoaccess Customer Service Unit

Application: 439091

CROW No: 36834

Application for Assessment of a Site Investigation Report (Contaminated Land) Checklist

Date Received:

13 / 08 / 10

Date Application Deemed Valid:

17 / 08 / 10

Due Date (20 Business Days
After Application Deemed
Valid):

Due Date for report that has had
a Third Party Review (5 Business
Days after received): This applies
to sites requesting removal from
the Register.

22 / 08 / 10

(If TPR recommends an SMP refer
to Contam Land ASAP!)

Due Date for Decision of IPA Application
(20 Business Days):

/ /

Third Party Reviewer: Robin Wagland.
MACH1 Environmental

Applicant Name: Greyhounds Queensland Limited Contact:

Location: 658/SL42298 Coordinator: Ria George

Updated Crow + Added to Ecotrack - CAIL

Receipt details: Fees correct ☐ N/A ☐

Payment Method:

Receipt No Date/...../2009

Cheque ☐ EFT ☐ Cash ☐ Credit ☐

Amount Paid \$

Cheque No:

Receipt sent to client Yes ☐ No ☐

Drawer (if other than the applicant):

COST CENTRE/CODE:

CONTAMINATED
LAND SECTION
23 AUG 2010

Record of consultation

Applicant name:

Date	Person Contacted:	Robin Wagland.	Phone No:	0420931207
	Information Requested:			
	Response:			
	Ecoaccess CSU Staff:			

13/8/10. Forms A+B: LM 2 CB or email forms to Palm.

17/8/10. Received. Apps now valued.

Ria.

Date	Person Contacted:		Phone No:	
	Information Requested:			
	Response:			
	Ecoaccess CSU Staff:			

Date	Person Contacted:		Phone No:	
	Information Requested:			
	Response:			
	Ecoaccess CSU Staff:			

Date	Person Contacted:		Phone No:	
	Information Requested:			
	Response:			
	Ecoaccess CSU Staff:			

Bring Up Details Report

347288 - All or part of the land is on the EMR or CLR/146-178 Kingston Road, Slacks Creek/Greyhounds Qld Ltd

Ref:	65213	Created Date:	18-AUG-10
Status:	Submitted	Closed Date:	
Assigned To:	BARRY, Kim	Due Date:	20-AUG-10
Email Address:	Kim.Barry@derm.qld.gov.au	Reminder Date:	
Project Director:	BARRY, Kim		
Project Manager:			
CC:			
CC:			
Subject:	Application Number 439091		

Comments: Project Number: 347288
Permit Number: CLEA00843410
TPR (If applicable): Mach 1 Environmental
Client: Racing Queensland Limited
Lot on Plan: Lot 658 on plan SL12298
Location: Cronulla Park, Corner of Kingston and Compton Roads, Slacks Creek
Report Title (if any): Third Party Reviewer Certification Report:
Logan Greyhound Facility, Slacks Creek, Queensland (Lot 658 on Plan SL12298)
Application Date: 17 August 2010

Dear Kim

An application has been received for an Assessment of Site Investigation Report. The application will be forwarded to the Contaminated Land Unit on the 21/07/10.

Regards, Gail Jacobson



Project Running Report

Project Ref 347288	Project Name All or part of the land is on the EMR or CLR/146-178 Kingston Road, Slacks Creek/Greyhounds Qld Ltd	Status Active	Project Director JOHNS, Allen	Project Manager NOT, Allocated	Office Responsible ES - TO - Contaminated Land - Southern - Bne
------------------------------	---	-------------------------	---	--	--

Assessing Officers

Name

JOHNS, Allen
BARRY, Kim

Applications: 3

Date	Status	Decision
12-APR-2010	Application Validation	Level 2

Primary Clients

Name	Address Line 1	Address Line 2	Suburb	Postcode	State
Greyhounds Qld Ltd	C/-ML Design	GPO Box 714	BRISBANE	4001	QLD

Primary Contact

Name	Contact Number
Logan City Council	07 3412 5645

Activities

Name

All or part of the land is on the EMR or CLR



Project Running Report

Date
12-APR-2010

Status
Application Validation

Decision
Level 2

Notifiable activity or industrial activity

RTI DL RELEASE - EHP



Project Running Report

Date 12-APR-2010 Status Application Validation Decision Level 2

Veg Clearing - Op Work - AM

Locations

Name	Address Line 1	Address Line 2	Suburb	Postcode	State
146-178 Kingston Road, Slacks Creek					

Agency Interests/Ratings

Category	Type	Rating
Biodiversity	Biodiversity - rare and threatened species	Unknown (default)
Land	Land - erosion/stability	Unknown (default)
Biodiversity	Biodiversity - rare and threatened species	Unknown (default)

Permits: 2

Permit Ref	Permit Type	Status
SPCL00336210	Concurrence Response for a MCU involving contaminated land.	Assessment
SPCR00336310	Concurrence Response for a lot that is 2ha or larger.	Assessment

Date 19-JUL-2010 Status Assessment Decision Level 2

Primary Clients

Name	Address Line 1	Address Line 2	Suburb	Postcode	State
Racing Queensland Limited					

Primary Contact

Name	Contact Number
Racing Queensland Limited	07 3869 9739

Activities

Name
Assessment Of Site Investigation Report For Land On Emr/clr

Locations

Name	Address Line 1	Address Line 2	Suburb	Postcode	State
146-178 Kingston Road, Slacks Creek					

Agency Interests/Ratings

Category	Type	Rating
----------	------	--------

Permits: 1

Permit Ref	Permit Type	Status
CLEA00747310	Site Report Assessment for Land on the Environmental Management Register or Contaminated Land Register	Assessment

Date 17-AUG-2010 Status Assessment Decision Level 2

Primary Clients

Name	Address Line 1	Address Line 2	Suburb	Postcode	State
Racing Queensland Limited					

Primary Contact

18/8/10

49-Sch4 - Signature



Project Running Report

Date 17-AUG-2010 **Status** Assessment **Decision** Level 2

Name	Contact Number
Racing Queensland Limited	07 3869 9739

Activities

Name
Assessment Of Site Investigation Report For Land On Emr/clr

Locations

Name	Address Line 1	Address Line 2	Suburb	Postcode	State
146-178 Kingston Road, Slacks Creek					

Agency Interests/Ratings

Category	Type	Rating

Permits: 1

Permit Ref	Permit Type	Status
CLEA00843410	Site Report Assessment for Land on the Environmental Management Register or Contaminated Land Register	Assessment

RTI DL RELEASE - EHP

George Ria

From: Robin Wagland [robin@mach1environmental.com.au]
Sent: Tuesday, 17 August 2010 2:04 PM
To: PALM
Subject: Ref No 347288 FAO Ria
Follow Up Flag: Follow up
Flag Status: Red
Attachments: Cronulla Park Receipt.pdf; Cronulla Park Part A.pdf; Cronulla Park Part B.pdf

Ria,

Apologies, I missed your call on Friday.

The TPR report submitted was to accompany a previous submission dated 16 July 2010 (see attached documentation). My report is the TPR covering report for the works.

I trust this is all you require, however, feel free to call or return email if you need anything else.

Kind regards,

Robin.

Robin Wagland
Principal
Third Party Reviewer

MACH1 Environmental Pty Ltd
 Tel + 61 (0)7 3351 0468
 Fax + 61 (0)7 3351 0351
 Mob + 61 49-Sch4 - Mobile phone



Tel: +61 (0)7 3351 0468
 Fax: +61 (0)7 3351 0351

PO Box 320
 Ferny Hills, QLD 4055
www.mach1environmental.com.au

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If you or your employer does not consent to internet e-mail messages of this kind, please notify us immediately.

All reasonable precautions have been taken to ensure no viruses are present in this e-mail. As our company cannot accept responsibility for any loss or damage arising from the use of this e-mail or attachments we recommend that you subject these to your virus checking procedures prior to use. The views, opinions, conclusions and other information expressed in this electronic mail are not given or endorsed by the company unless otherwise indicated by an authorised representative independent of this message.

RECEIVED

17 AUG 2010

PaLM

Application form — Part B

Environmental Protection Act 1994

Submission of a site investigation / validation report

This form asks for activity specific details in relation to an application under Sections 375 and 390 of the *Environmental Protection Act 1994* for an assessment of a site investigation/validation report. Please read the information sheets and any guidelines included with your application kit to understand the environmental management and conservation issues, policies and procedures that relate to the activities proposed.

Note: Your application must be accompanied by a General Details – Part A form.

1. Lodgement details

Complete this section only if form not lodged by applicant

NAME Jeremy Wicks	TELEPHONE 3026 7526
COMPANY/ORGANISATION Sinclair Knight Merz	
POSTAL ADDRESS PO Box 3848, South Brisbane Qld 4101	
EMAIL jwicks@skm.com.au	FACSIMILE 3026 7306

2. Site owner's details

An Agent's address is not acceptable

NAME Crown Land (currently gazetted to Logan City Council)	TELEPHONE +61 7 3412 3412
POSTAL ADDRESS PO Box 3226, Logan City DC Qld 4114	FACSIMILE +61 7 3412 3444

3. Site details

If you require additional space, attach the information on a separate sheet marked "Site Details."

STREET ADDRESS Cronulla Park, Corner of Kingston and Compton Roads, Slacks Creek	
LOT(S) 658	PLAN(S) SL12298
LOCAL GOVERNMENT AUTHORITY Logan City Council	

DEPARTMENT OF ENVIRONMENT AND RESOURCE MANAGEMENT

Application form Contact and Land Details Part A

16-7-2010
\$104800
HB CEC DERM

Application form requirements

1. **Part A:** Contact and land details will need to be completed.
2. **Part B:** Application specific form will need to be completed.
3. Payment of the prescribed application fee, if relevant. A refund of application fees will not be given. (Details of fees are available on the Department of Environment and Resource Management (DERM) website or from a regional DERM office)
4. All parts of this application form need to be completed accurately. Otherwise your application may be returned to you to complete.

Important information

All applications will be processed having regard to the requirements of the *Land Act 1994* and related legislation, approved policies and procedures and the requirements of all other agencies with an interest in the land.

Preferably applications should be lodged in the Department of Environment and Resource Management (DERM) regional office nearest to which the land is located. If this is not possible applications may be lodged at your nearest DERM office.

In terms of the Freedom of Information Act interested parties may seek access to DERM records and view relevant documents.

Information on this form, and any attachments, is being collected to process and assess your application under the *Land Act 1994*. The consideration of your application may involve consultation, and if so details of your application may be disclosed to third parties. They will not be otherwise disclosed outside the department unless required or authorised by law.



Dept. of Environment and Resource M'ment
Customer Service Centre
160 Ann Street Brisbane
ABN 46 640 294 485

TAX INVOICE ABN 87 221 158 786
Invoice No. Date Time
IN218862 16/07/10 14:01:19

0706 Cont Land Repor 1 1,048.00

Total Amount Incl GST 1,048.00

Payment Amount 1,048.00
Change 0.00

GST Amount 0.00

* indicates taxable supply.

Thank-you for visiting

EPA Customer Service Centre.

Please come again.

RTI DL RELEASE EHP

Application form
Contact and Land Details
Part A

Application form requirements

1. **Part A:** Contact and land details will need to be completed.
2. **Part B:** Application specific form will need to be completed.
3. Payment of the prescribed application fee, if relevant. A refund of application fees will not be given. (Details of fees are available on the Department of Environment and Resource Management (DERM) website or from a regional DERM office)
4. All parts of this application form need to be completed accurately, otherwise your application may be returned to you to complete.

Important information

All applications will be processed having regard to the requirements of the *Land Act 1994* and related legislation, approved policies and procedures and the requirements of all other agencies with an interest in the land.

Preferably applications should be lodged in the Department of Environment and Resource Management (DERM) regional office nearest to which the land is located. If this is not possible applications may be lodged at your nearest DERM office.

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Information on this form, and any attachments, is being collected to process and assess your application under the *Land Act 1994*. The consideration of your application may involve consultation, and if so details of your application may be disclosed to third parties. They will not be otherwise disclosed outside the department unless required or authorised by law.

Contact details

Lodger Details and Mailing Address

A lodger is only required when a solicitor, bank, consultant etc lodges the application on behalf of the applicant.

Full Name / Company Name	
Jeremy Wicks / Sinclair Knight Merz	
Postal Address	PO Box 3848, South Brisbane Qld 4101
Phone number	3026 7526
Mobile phone	49-Sch4 - Mobile phone
Email	jwicks@skm.com.au
Fax	3026 7306

Applicant(s) Details and Mailing Address

If the applicant is a Corporation, either the Australian Company number, Australian Registered Body number or the Australian Business number must be shown.

Full Name / Company Name	
Racing Queensland Limited	
If a Corporation then record ☐ ACN ☐ ARBN ☒ ABN	52 142 786 874
Postal Address	PO Box 63 Sandgate QLD 4017
Phone number	3869 9739
Mobile phone	49-Sch4 - Mobile phone
Email	dbeavis@racingqueensland.com.au
Fax	3269 6404

Future correspondence should be sent to



Lodger



Applicant

Details of land for which the application is being lodged

1. Select the type of land for which the application is being lodged.

- ☐ Permit
- ☐ Lease
- ☐ Licence
- ☒ Trust Land Reserve/Deed of Grant in Trust (DOGIT)
- ☐ Road
- ☐ Unallocated State Land (USL)

go to 2

2. Enter the description of the land for which the application is being lodged. If this application concerns a road, enter the description of the land adjoining the road.

Schedule 1		
You must enter either the Lot on Plan or Title Reference of the land for which the application is being lodged.		
Lot	Plan	Title Reference
658	SL12298	

go to 3

The details of the land can be found on a current copy of the Title or on your rates notice. If insufficient space, please add additional description as an attachment.

3. Enter additional details of the land

Dealing number

Tenure type

Crown Land

Tenure number

Local Government

Logan City Council

Other details of land location (optional)

THIS FORM MUST BE ACCOMPANIED BY THE RELEVANT PART B APPLICATION FORM.

RECEIVED

17 AUG 2010

PaLM

Application form — Part B

Environmental Protection Act 1994

Submission of a site investigation / validation report

This form asks for activity specific details in relation to an application under Sections 375 and 390 of the *Environmental Protection Act 1994* for an assessment of a site investigation/validation report. Please read the information sheets and any guidelines included with your application kit to understand the environmental management and conservation issues, policies and procedures that relate to the activities proposed.

Note: Your application must be accompanied by a General Details – Part A form.

1. Lodgement details

Complete this section only if form not lodged by applicant

NAME Jeremy Wicks	TELEPHONE 3026 7526
COMPANY/ORGANISATION Sinclair Knight Merz	
POSTAL ADDRESS PO Box 3848, South Brisbane Qld 4101	
EMAIL jwicks@skm.com.au	FACSIMILE 3026 7306

2. Site owner's details

An Agent's address is not acceptable.

NAME Crown Land (currently gazetted to Logan City Council)	TELEPHONE +61 7 3412 3412
POSTAL ADDRESS PO Box 3226, Logan City DC Qld 4114	FACSIMILE +61 7 3412 3444

3. Site details

If you require additional space, attach the information on a separate sheet marked "Site Details."

STREET ADDRESS Cronulla Park, Corner of Kingston and Compton Roads, Slacks Creek	
LOT(S) 658	PLAN(S) SL12298
LOCAL GOVERNMENT AUTHORITY Logan City Council	

Application form – Part B
Submission of a site investigation / validation report

NOTIFIABLE ACTIVITY/POSSIBLE CONTAMINATING ACTIVITY Landfill	
CURRENT LAND USE Local Government (Entertainment and Recreation)	PROPOSED LAND USE Greyhound Racing Facility
STREET ADDRESS	
LOT(S)	PLAN(S)
LOCAL GOVERNMENT AUTHORITY	
NOTIFIABLE ACTIVITY/POSSIBLE CONTAMINATING ACTIVITY	
CURRENT LAND USE	PROPOSED LAND USE

4. Details of report

4.1 Is a development application pending under the *Sustainable Planning Act 2009*?

☐ NO

☒ YES

4.2 The attached report contains (as per the *Draft Guidelines for the Assessment and Management of Contaminated Land in Queensland May 1998*)

☒ Stage 1 and Stage 2 investigation

☐ Stage 3 and Stage 4 remediation and validation report

If previous submissions have been made quote:
Ref no. _____

5. Payment

The applicable fee¹ of \$ 1048.00

☐ is enclosed with this application (cheque, money order etc.); or

☐ was paid by electronic funds transfer (EFT) on _____; and

☐ details required in the information sheet *Electronically paying fees to the Department of Environment and Resource Management (DERM)* were included.

The payment was for:

☐ this application only and the EFT identification code is: _____ / _____; or

☐ this and other applications. A payment notification (from the final page of the information sheet *Electronically paying fees to the Department of Environment and Resource Management (DERM)*²) was

¹ The fee is \$466.60 per lot where the land is used exclusively for residential purposes and is not the subject of a development application. For any other lot the fee is \$1048 per lot.

Application form – Part B
Submission of a site investigation / validation report

sent to DERM and a copy is attached.

Note: An incomplete application (including applications that do not include the fee, or sufficient detail to show that the fee has been paid where fees are paid by EFT) may be invalid. Invalid applications will be returned without processing and will only be processed if resubmitted with all invalidating issues addressed.

6. Applicant checklist

- ☒ Application form(s) completed and signed.
- ☒ Permit fees paid or enclosed (if applicable).
- ☒ Enclosed statutory declarations by investigators, preparers and owners as per Section 383 of the *EP Act*. Note: It is an offence under s480 of the *EP Act* to give to the administering authority or an authorised person a document containing information that you know is false, misleading or incomplete in a material particular.
- ☒ Enclosed signed consultant's report (as per Guidelines for the Assessment and Management of Contaminated Land in Queensland).
- ☒ Enclosed legible copy/copies of proof of ownership of site/s clearly showing the full name(s) of the registered proprietor(s) e.g. current certificates of Title or Title Searches.
- ☒ Enclosed legible copy/copies of all relevant registered plans (available from the Titles Section, Department of Environment and Resource Management) clearly showing location of the site/s and current registered plan details.
- ☒ Enclosed copy of a street map/area map clearly showing location of property.

Please return your completed application kit to:

Permit and Licence Management
Implementation and Support Unit
Department of Environment and Resource Management
GPO Box 2454
Brisbane Queensland 4001

Enquiries: **1300 130 372**
Facsimile: (07) 3896 3342
palm@derm.qld.gov.au

Office use only	
Account code	WFZYNBCO01/43311

² Available at www.derm.qld.gov.au or through the Permit and Licence Management (phone 1300 130 372).

FOR INTERNAL USE ONLY

**DEPARTMENT OF ENVIRONMENT AND RESOURCE
MANAGEMENT**

SEARCH RESPONSE

**ENVIRONMENTAL MANAGEMENT REGISTER (EMR)
CONTAMINATED LAND REGISTER (CLR)**

Transaction ID: 1248222
2010

EMR Site Id: 3350

13 August

This response relates to a search request received for the site:

Lot: 658

Plan: SL12298

EMR RESULT

The above site IS included on the Environmental Management Register.

Lot: 658

Plan: SL12298

Address:

146-178 KINGSTON RD
SLACKS CREEK 4127

The site has been subject to the following Notifiable Activity pursuant to section 374 of the *Environmental Protection Act 1994*.

LANDFILL - disposing of waste (excluding inert construction and demolition waste).

CLR RESULT

The above site is NOT included on the Contaminated Land Register.

ADDITIONAL ADVICE

EMR/CLR Searches may be conducted online through the State Government Website www.smartservice.qld.gov.au or Citec Confirm www.confirm.com.au.

If you have any queries in relation to this search please phone (07) 3330 5687.

Lindi Bowen

Registrar, Contaminated Land Unit

To execute a new search, select the "Back" button on the browser twice



QNTIME Version 1.5

[QNTIME](#) > [Specific Parcel Search](#) > [Specific Parcel Report](#)**Specific Parcel Report**

Lot: 658 on Plan: SL12298
Parcel: on Segment:

DCDB:**Tenure:**

FH

Description:

FREEHOLD

CISP:**Previous Plan Details:**

Plan	Registered Description
SL12298	12/02/1988 LOT 658

ATS:**Title Reference:**

50809734

Registered Owner:

THE STATE OF QUEENSLAND

Tenure Reference:**Original Deed of Grant:**

1. 40060275

Lease Purpose:**Reserve Purpose:****Area:****Lease Conditions:****Commencement Date:****Trustees:****Interests:****Previous Title References:**

40060275

QVAS:**Registered Owner:**

THE STATE OF QUEENSLAND

Address:

146-178 KINGSTON RD, SLACKS CREEK QLD 4127

Primary Land Use Code:

VACANT URBAN LAND(1)

Secondary Land Use Code:

STATE(SECONDARY LAND USE ONLY)(54)

TAS:

Tenure Reference	Commenced	Land Use Code	Land Use Description	Legislative Ref.
SL 6/50456 /	1989-03-01	1516	BUSINESS (ENTERTAINMENT AND RECREATION)	Land Act 1962

[View on Keymap](#)[Back to Search](#)

Logged in as jonesmm

[Disclaimer](#)

© The State of Queensland (Department of Environment and Resource Management) 2010.

[Queensland Government Gateway](#)

To whom it may concern :

RECEIVED

13 AUG 2010

PaLM

Can you please lodge
TPR Application with
Palm - ecotrack.

If you have any
questions, please contact
me on 3330 5687.

RTI DL RELEASE - EHP

Thanks,

Amy

Mattelman

Ph # 25687

Contaminated
Land.

STATUTORY DECLARATION



Address of Site Investigated: Corner Compton Road and Kingston Road,
Slacks Creek, QLD 4127.
Real Property Description: Lot 658 on SL12298.
Title of Report: Third Party Reviewer Certification Report:
Logan Greyhound Facility, Slacks Creek,
Queensland (Lot 658 on SL12298) 28 July 2010.

I, Robin Wagland, of MACH1 Environmental Pty Ltd (Ferry Hills, QLD 4055) in the State of Queensland, do solemnly and sincerely declare that:

1. I was the Third Party Reviewer appointed by the Queensland Government Department of Environment and Resources, Contaminated Land Unit for the Slacks Creek site described above.
2. Information was collected and collated by Sinclair Knight Merz Pty Ltd in their report titled: - *Logan Greyhound Facility, Cronulla Park, Contaminated Site Investigation*, dated June 2010, Report No. QE09537 and additional Site Management Plan (SMP) and Remediation Action Plan (RAP) dated 6 August 2010.
3. I am a member of the Environment Institute of Australia and New Zealand and my qualifications and experience (submitted previously to the DERM) are relevant to this investigation.
4. I have not knowingly included any false, misleading or incomplete information in the report.
5. I certify that the site has been assessed to a standard such that the health and environmental risks associated with the contamination at the site may be safely managed under the conditions of the attached Site Management Plan (SMP).
6. I recommend that Lot 658 on SL12298 remain on the EMR as a managed site until remediation has been undertaken under conditions of the attached draft SMP and Remediation Action Plan (RAP).
7. I certify the site is suitable for vacant use.

And I make this solemn declaration conscientiously believing the same to be true and by virtue of the provisions of the Oaths Act 1867

49-Sch4 - Signature

Signature

Name

Mr Robin M Wagland

Taken and declared before me at KEPPARA this 6th day of August 2010

Witness (Justice of the Peace/Commissioner for Declarations/Solicitor)

Signature

Name

49-Sch4 - Signature

RAYMOND DAVID SUTER



RECEIVED

13 AUG 2010

PaLM

6 August 2010

Kim Barry

Queensland Government
Department of Environment and Resource Management
PALM
PO Box 15155
City East,
QLD 4002



Via email and Post: kim.barry@derm.gov.qld.au

Document Ref: 09-002-017 TPR Certification Report

Dear Kim,

Re: Third Party Reviewer Certification Report, Logan Greyhound Facility, Slacks Creek, Queensland (Lot 658 on Plan SL12298)

Introduction

Robin Wagland of MACH1 Environmental Pty Ltd (MACH1), was commissioned by Greyhounds Queensland Limited (GQL) to undertake a Third Party Review (TPR) of the environmental investigation works for the site at located at the corner of Compton Road and Kingston Road, Slacks Creek, Queensland, known as Lot 658 on Plan SL12298 herein called the site. This Certification Letter Report relates only to the final draft Site Management Plan (SMP) and Remediation Action Plan (RAP) completed by Sinclair Knight Merz Pty Ltd (SKM) on 5 August 2010. The associated assessment report for the site previously completed by SKM was dated June 2010 and titled. *Logan Greyhound Facility, Cronulla Park Contaminated Site Investigation* Reference No. No.QE9537 and was submitted to DERM on 16 July 2010. This previous report was submitted with a TPR Certification report, concluding that the site was to remain on the Department of Environment and Resource Management (DERM) Environmental Management Register (EMR).

Upon completion of a search of the EMR and Contaminated Land Register (CLR), the Lot was noted to be on the EMR due to the notifiable activity of landfilling.

Under DERM guidelines outlined in the Terms of Reference¹, Mr Robin Wagland submitted an application for approval as a TPR for the site. This was confirmed in the DERM acceptance letter dated 18 June 2010 provided in **Attachment A**.

¹ Terms of Reference for Use of a Third Party Reviewer (TPR) for assessment and management of site contamination.
Approved 15/02/08.

This Certification Letter Report has been prepared to assist the DERM in the review of the work completed by SKM.

Scope of Work

Robin Wagland undertook the following scope of works as part of the TPR process:

- Review of the SKM Contaminated Site Investigation (previously submitted to DERM 16/07/10).
- Site inspections to confirm the investigation findings.
- Detailed review of the final draft SMP and RAP including provision of comments.
- Production of a TPR Certification Letter.

The final draft SMP and RAP were reviewed by Robin Wagland who was approved as TPR for the site in the DERM acceptance letter dated 18 June 2010. The following comments have been provided to inform DERM of the provision of a final draft SMP and RAP to be put in place for the ongoing management of the site. The TPR can concur that the both the final draft SMP and RAP are of sufficient standard to meet the requirements of the Queensland guidelines. It should further be noted that the initial draft SMP and RAP was discussed between us in our meeting of 29 July 2010. The comments made during this meeting have now been included in the attached version.

Document Review

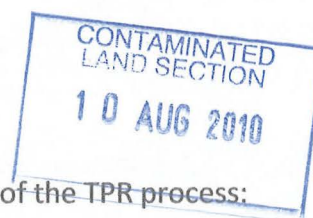
As part of the TPR role, the investigation report has been reviewed and previously submitted with a TPR Certification Report (on 7 July 2010). This letter relates only to the final draft SMP and RAP (attached as **Attachment B**).

The TPR report is also accompanied by a Statutory Declaration, attached as **Attachment C**.

Site Details

The details of the site are as follows:

- | | |
|-----------------------------|---|
| • Site Location | Corner of Compton Road and Kingston Road, Slacks Creek, Queensland. |
| • Real Property Description | Lot 658 on SL12298 |
| • Site Owner | Queensland Government (Logan City Council) |
| • Local Council | Logan City Council |



TPR Review Comments

The TPR comments on the results of the recent investigations are summarised as follows:

- The site history was suitably completed in accordance with current guidelines.
- Interpretation of the results has been in accordance with the HIL 'A' levels and accepted DERM guidelines.
- The coverage of the investigation is deemed suitable given the nature of the site and historical investigation work undertaken. This provides sufficient coverage of the extent of the landfill material to allow the finalisation of a draft SMP and RAP.
- It is further agreed that the additional investigation of the waste material of the former landfill will provide no additional benefit to the final draft SMP or RAP.
- The previous data validation was considered acceptable.
- The investigation of landfill gas was suitable to determine that a risk is still present associated with the former waste material which requires management.
- The investigations of the underlying groundwaters were sufficient to determine that the limited impact noted would be unlikely to impact the nearest potential receptor, Slacks Creek (located 320m from the site).

The TPR comments regarding the conclusions and recommendations of the most recent investigations are summarised as follows:

- The investigation work completed on site had been suitably summarised.
- The soil sampling program achieved suitable coverage to determine the extent of any soils impact in the capping layer (which was not found to exist).
- The conclusions drawn were a fair reflection of the work completed and the investigation undertaken complies with the requirements of the appropriate guidelines.
- The TPR concurs with the previous SKM conclusions, based on the results of their investigations, that the site can be remediated under a remediation plan, then subsequently managed under a SMP, however, if approval were required for a Development Application, a formal SMP and RAP would be needed.
- At the stage of review of the previous investigation works, it was concluded that the site should remain on the EMR and was suitable for vacant use. Prior to commencement of any other use at the site, a RAP and SMP should be produced to safely manage the site. The RAP and SMP will require TPR and DERM review and if appropriate, approval.
- A suitably worded and appropriate Statutory Declaration was provided by SKM for the previous work completed recently and this was signed by a Suitably Qualified Person (SQP), being Rick Graham of SKM.

Following submission of the investigation work, the TPR has subsequently been provided with an initial draft SMP and RAP for the site. This has been reviewed initially and discussed in our meeting of 29 July 2010. Suggested amendments have been made to the SMP and RAP and this was resubmitted to the TPR on 5 August 2010. The TPR comments regarding the revised final draft SMP and RAP are summarised as follows:

- The wording of the final draft SMP and RAP are suitable and are a fair reflection of the site conditions.
- The site is suitable for its current vacant land use under the management conditions outlined within the final draft SMP and RAP.
- The conditions of the final draft SMP and RAP are appropriate within the context of the most recent DERM templates.
- Upon completion of the RAP, the site should be suitable for management under conditions of a revised SMP.
- Future monitoring requirements outlined in the final draft SMP and RAP are appropriate for the levels of contamination (both landfill gas and groundwater/leachate).

The main conclusions that can be drawn from the final draft SMP and RAP include the following:

- The site was confirmed as being listed on the EMR.
- The quality and scope of the work undertaken by SKM was sufficient to identify the potential sources of contamination at the site, delineating the extent of the landfill and providing justification for further building design details as part of the RAP.
- The monitoring requirements appear appropriate for contamination levels recorded.
- The future landfill gas protection measures appear appropriate based on the building details provided and the site conditions recorded.

Thus, based on the previous investigation undertaken by SKM and the conditions outlined in the final draft SMP and RAP, the TPR recommends that Lot 658 on SL12298 should remain on the EMR and is suitable for its present vacant land use under the management of a SMP and RAP.

Future uses of the site will require a Suitability Statement from DERM.

We trust that this TPR review is suitable to allow the DERM to progress with their decision making process for the site. This TPR letter has been designed to accompany the SKM final draft SMP and RAP, attached to this TPR Letter report.

In the meantime, should you have any queries relating to the TPR review or the SKM work, please do not hesitate to contact me further.

Kind regards,

49-Sch4 - Signature

.....

Robin Wagland
MACH1 Environmental Pty Ltd
Third Party Reviewer

RTI DL RELEASE - EHP

Attachment A
TPR Approval Letter

RTI DL RELEASE - EHP

RECEIVED 20 JUN 2010



Enquiries Greg O'Brien
Telephone (07) 33305709
Your reference
Our reference BNE7447

Department of
Environment and Resource
Management

18 June 2010

Mr Robin Wagland
MACH 1 Environmental
PO Box 320
Ferny Hills Qld 4055

Dear Mr Wagland,

**APPOINTMENT AS THIRD PARTY REVIEWER: GREYHOUND FACILITY,
FORMER LANDFILL, CNR COMPTON AND KINGSTON ROADS SLACKS
CREEK, L658 SL12298**

Department of Environment and Resource Management (DERM) advises that, following panel review under the TPR Terms of Reference (TOR), your application dated 2 June 2010 is accepted to act as TPR for the above site.

This approval is conditional on the following:

1. The acceptance applies to the subject site only and to site investigation and validation work conducted and certified by a person whose qualifications and experience are acceptable to DERM under the above provisions.
2. The requirements of the Terms of Reference, *Use of a third party reviewer (TPR) for assessment and management of site contamination*, (TOR) 15 February 2008 must be complied with in relation to all site activities undertaken.
3. The DERM is to be advised in writing within 5 days of final execution of all contractual documents associated with your engagement by the site owner and other relevant parties.

This acceptance does not infer that your services as TPR will be accepted for any other site. Applications for other sites will be assessed according to the TOR. Should you require any additional information, please contact the undersigned or the DERM project officer for any relevant site.

Yours sincerely,

49-Sch4 - Signature

Greg O'Brien
Chief Scientific Advisor, Environmental Operations

Page 1 of 1

400 George Street Brisbane
Queensland 4000 Australia
GPO Box 2454
Brisbane Qld 4001
Telephone 61 7 33305709
Facsimile 61 7 33305754
Website www.derm.qld.gov.au
ABN 87 221 158 786

Attachment B
Final Draft SMP and RAP

RTI DL RELEASE - EHP

DRAFT SITE MANAGEMENT PLAN (SMP)**DATE:****LOT 658 on Plan SL12298
BNE****DERM FILE:****1.0 SUMMARY OF CONTAMINATION**

The site consists of Lot 658 on Plan SL12298 and is located on the corner of Compton Road and Kingston Road, Slacks Creek, Queensland. The site was formerly used as a municipal landfill ("the Landfill") between the 1970s and 1980s. The landfill received a variety of wastes such as domestic waste, commercial and light industrial solid waste, sanitary solid waste, and construction and demolition waste.

The site is currently a grassed open space recreational area and is managed by Logan City Council and is to be developed as a Greyhound Racing Facility.

Contaminant concentrations within the surface (capping) soil material on the site are within acceptable limits and do not pose a risk to human health or the environment.

The maximum concentrations of contaminants observed in the Contaminated Site Investigation from perched groundwater (which includes leachate) within the Landfill, and deeper groundwater within the weathered sandstone on the site which exceeded environmental guidelines included the following.

Analyte	Maximum Concentration in Perched Groundwater within Landfill (mg/L)
Ammonia as N	228
Copper	0.025
Lead	0.048
Nickel	0.124
Zinc	0.463
TPH C10 - C36	0.73
1,4-Dichlorobenzene	0.047
2-Methylphenol	0.225
2,4-Dimethylphenol	0.0046
2,4,5-Trichlorophenol	0.001

Analyte	Maximum Concentration in Groundwater within Weathered Sandstone (mg/L)
Ammonia as N	50.4
Copper	0.028
Lead	0.115
Nickel	0.1
Zinc	0.359

Logan City Council (LCC) has undertaken an ongoing landfill gas monitoring program (from 2000 to 2008) from monitoring wells installed around the boundary of the site (and not within the landfill). The monitoring program has detected low levels of methane gas (maximum concentration 1.7%) over this time period with concentrations which were well below the lower explosive limit (LEL) for methane (5%). The monitoring program undertaken by LCC indicates that gas from the landfill is unlikely to pose an unacceptable risk to off-site receptors.

The maximum concentration of methane detected in boreholes which were screened within the landfill was 99.3%. The maximum concentration of methane detected in landfill vents installed on the site was 29%. All other VOCs detected were below human health guidelines.

The maximum concentration of carbon dioxide detected was 15.5%.

The elevated concentrations of methane which are present within the Landfill pose a potential risk to future site users as an asphyxiant and flammable gas. Future development of the site will require the implementation of landfill gas protection measures.

2.0 OBJECTIVES OF THE SITE MANAGEMENT PLAN

The objectives of this Site Management Plan (SMP) are to manage the impacted soils, groundwater and landfill gas on the site in a manner that protects human health and the environment.

3.0 ACHIEVEMENT AND MAINTENANCE OF OBJECTIVES

3.1 Responsibility. The owner of the land (as defined in the *Environmental Protection Act 1994* (EP Act) is to ensure that this SMP and any variations to the SMP approved or required by the administering authority are complied with. The obligations and conditions set out in this SMP bind the owner, from time to time, of the land.

3.2 Third Party Reviewer. A Third Party Reviewer (TPR) approved by DERM and operating in accordance with the EPA's Terms of Reference for TPR (February 2008) must be appointed for the duration of the site assessment and remediation.

3.3 Site Use. The site is currently used for recreational open space. The site is to be used for commercial use subject to the completion of the Remediation Action Plan (RAP) in Appendix 1 (attachment) being deemed successful by DERM/ TPR or relevant authority.

3.4 Provision of SMP to appropriate persons. The owner must provide all persons involved in building design and planning and all contractors and lessees conducting building and/or excavation works with a copy of the SMP prior to commencement of works. All persons occupying or working on the site must comply with the requirements of the SMP.

3.5 Site Capping. For the majority of the Landfill, the capping material is comprised of a layer of silty sand (0-0.1 m thickness) and an underlying clay based material comprised of sandy clay to clayey sand (0.2-0.8 m thickness). The capping material along the eastern embankment of the

Landfill is comprised of well compacted clayey sand (0.2-0.5 m thickness). Through the implementation of the RAP the capping layer of the eastern embankment must be built up to provide a minimum thickness of 0.5 m using uncontaminated fill material.

The capping layer is to be maintained in sound condition at all times.

3.6 Soil Excavation and Removal. Any soil excavated on the site must be assessed for contaminants of concern to determine if the material is contaminated and to identify appropriate management and disposal/re-use options. Representative sampling and analysis of soil from any excavation in contaminated areas must be managed by a suitably qualified and experienced person in accordance with Section 381 of the *Environmental Protection Act 1994* (EP Act). Contaminated soil must not be removed off-site without a disposal permit in accordance with Section 424 of the EP Act (or equivalent).

3.7 Unexpected Contamination. If during any site earthworks or excavation, offensive or noxious odours and/or evidence of gross contamination not previously detected is observed, site works are to cease in that area and action taken to immediately abate the environmental harm. The administering authority is to be notified in writing within two (2) business days of detection and advised of appropriate remedial action.

Any remedial action is to be developed by an appropriately qualified and experienced person in accordance with Section 381 of the EP Act.

3.8 General Environmental Protection. All site redevelopment works must be undertaken in accordance with general environmental protection measures and a Construction Environmental Management Plan (CEMP). These measures include the control of dust, noise, stormwater or sediment runoff, erosion, spillage from haulage trucks and odour releases involving the handling or movement of contaminated material.

3.9 Workplace Health and Safety. A Workplace Health and Safety Plan (WH&S plan), which conforms to the requirements of the *Workplace Health and Safety Act 1995*, is to be developed for any excavation works at the site. The WH&S plan must address site-specific hazards which have been identified in the RAP.

3.10 Underground Services. Where underground service trenches are constructed in contaminated areas, the trenches must be surrounded by a minimum of 0.3m of uncontaminated fill for minor services (<100mm in diameter) and 0.5m of uncontaminated fill for services greater than 100mm in diameter. Clean fill must also be placed above any services to the surface of the site. No services are to penetrate in to the body of the landfill but must be constructed within or above the capping layer. Maintenance of existing services should be conducted in accordance with this SMP.

3.11 Imported Fill Material. Any fill material that may be imported to the site in the future must be sampled and samples submitted for analysis for relevant potential contaminants by a suitably qualified and experienced person prior to delivery to the site. The frequency of the sampling and analysis required, and the acceptance criteria adopted for potential contaminants will depend on the source of the fill.

3.12 *Use of Groundwater.* Leachate and/or groundwater beneath the site must not be extracted and/or used for irrigation, consumption, domestic, or other commercial use.

4.0 MONITORING AND REPORTING

The monitoring of groundwater and landfill gas at the boundary of the site is to be undertaken throughout the duration of construction in accordance with the requirements of the RAP. A review of this SMP will be required following the implementation of the RAP and completion of site redevelopment works to determine groundwater and landfill gas monitoring requirements post-construction. Post-construction monitoring requirements must be agreed with the TPR and DERM prior to the commencement of commercial use of the site and is to include the monitoring of groundwater and landfill gas at the boundary of the site.

Records are to be kept of all inspections, any soil excavation in contaminated areas, disposal permits, validation testing and site management plan compliance for review by the administering authority from time to time.

This Site Management Plan (SMP) has been developed to manage site contamination risks present at the issue date. Subsequent uses of the site may result in the need to review the plan.

This SMP makes reference to an attachment RAP that is available from the Administering Authority if required.

APPENDIX 1

REMEDIATION ACTION PLAN

LOT 658 on Plan SL12298 FILE REF

1 INTRODUCTION

This Remediation Action Plan (RAP) is for Cronulla Park which is located on the corner of Compton Road and Kingston Road, Slacks Creek, Queensland. The land is described as Lot 658 on Plan SL12298 ("the site"). The site was formerly used as a municipal landfill ("the Landfill") between the 1970s and 1980s. The site is currently a grassed open space recreational area and is to be developed as a Greyhound Racing Facility ("the Project").

1.1 Purpose of the RAP

The purpose of this RAP is to provide an outline plan of activities, procedures and objectives to ensure the effective and controlled development of the Project on the site. It describes the methodologies and standards to be followed throughout the construction of the Project to ensure appropriate protection of human health and the environment.

1.2 Objective

The primary objective of the remediation program of the site is to make the site safe for the planned future use. This RAP summarises the current status of the site and provides strategies to remediate or manage impact on the site in a manner that protects human health and the environment.

2 BACKGROUND

2.1 Description of Proposed Development

The site is to be developed as Greyhound Racing Facility. The proposed development includes the construction of a double storey main facility building with a grassed viewing area, kennel blocks and support buildings serviced by two-way internal roads with access for patron car parks, and dedicated parking area for trainers and employees. An inner and outer greyhound race track will be constructed as the main attraction, with a separate trialling track being formed adjacent to the main tracks.

This RAP has been based on the contamination assessment report *Logan Greyhound Facility Cronulla Park Contaminated Site Investigation* (Sinclair Knight Merz, June 2010) ("the Contaminated Site Investigation").

2.2 Site Location & Topography

The site comprises 10.24 hectares of Crown Land located at the corner of Compton Road and Kingston Road, Slacks Creek, Queensland. The land is described as Lot 658 on Plan SL12298. The site is held in trust by Logan City Council (LCC), as gazetted on 25 June 1988. The designated purpose of the site is local government (entertainment and recreation).

The site and surrounding land slopes in an easterly direction towards Slacks Creek. Surface water discharges to Slacks Creek which is located approximately 320 m east of the site. The highest point of the site close to Kingston Road is approximately 34.5 m Australian Height Datum (AHD) and the site level falls to approximately 22.2 m AHD close to the north east corner industrial lots. The average gradients on the site are relatively flat ranging from 0.8 % to 2.0 %. The north east corner is steeper than the majority of the site with grades up to a maximum of 12.5 % towards the east.

2.3 Landfill Operation and Closure

A tributary of Slacks Creek historically ran through site. Prior to the commencement of the construction of the Landfill, the tributary was diverted around the site in an open drain located on the southern and eastern boundaries of the site.

The Landfill was formed using a method which involved the excavation of trenches, and then the placement and compaction of wastes within each trench. The quantity of waste received at the site is not known. The investigation however found the depth of waste to be up to approximately 10 m below ground level (bgl), and waste has been placed directly over natural ground strata including weathered sandstone, and sandstone.

The construction of the Landfill did not include the installation of a liner, or leachate and landfill gas collection system. This was confirmed during the undertaking of the Investigation.

Wastes which were accepted at the Landfill included:

- domestic waste;
- commercial and light industrial solid waste;
- sanitary solid waste; and
- construction and demolition waste.

The Landfill may have also received asbestos, and hazardous domestic wastes (e.g. paints and pesticides). The Landfill received approximately 2,000 to 3,000 animal carcasses including dogs, cats, cows and horses.

Wastes which were not accepted at the Landfill included:

- heavy industrial waste;
- hazardous solid waste;
- medical waste; and
- liquid waste (hazardous and non-hazardous).

The Landfill was capped using a clay based soil (refer to Section 2.3.2) in the 1980s, and additional capping material placed over the landfill in the 1990s. Four landfill gas vents were installed within the landfill following closure in the 1980s.

2.3 Geology

2.3.1 Regional Geology

The regional geology comprises alluvium soils, mainly clay, silt and gravel overlaying shale, siltstone and sandstone (with possible coal seams). The regional geology is part of the tertiary Oxley Group, a subset of the early tertiary continental basins of the area.

2.3.2 Site Conditions

Surface (Capping) Material

For the majority of the site, the surface material (capping layer) comprises a layer of silty sand (0-0.1 m thickness) and an underlying clay based material comprised of sandy clay to clayey sand (0.2-0.8 m thickness). Permeability tests of the clay based material within the surface material indicates that the permeability of this material varies between 10^{-6} and 10^{-8} m/s.

The surface material layer of the eastern embankment of the Landfill was found to be comprised of well compacted clayey sand (0.2-0.5 m thickness).

Waste Material

The thickness of waste materials encountered varied from 1.2 m to 10.5 m. Where encountered, waste materials (30-90%) were found to be mixed in a damp to saturated grey unconsolidated clay or sandy clay matrix (10-70%). The waste intersected in the investigation was domestic in origin, and appeared to contain infrequent (<5%) residual putrescible materials. Common items noted in the waste materials included plastic packaging, plastic bags, metal fragments and glass bottles. No regulated wastes were noted in the waste material intersected.

The waste materials have been placed directly over natural materials in the majority of exploratory boreholes.

Natural Material

The natural material was generally a sandy or silty clay of weathered sandstone. This was underlain by the coarse grained red and white low strength sandstone. The sandstone was incised with a medium strength siltstone in several locations across the site.

In background locations across the site (including in locations within the wooded area along the western portion of the site), the soil profile was a silty sandy clay material consistent with the weathered sandstone.

2.4 Hydrogeology

Two groundwater systems have been observed on the site. These include:

- groundwater within the weathered sandstone beneath the Landfill; and
- perched groundwater (which includes leachate) within the Landfill.

The perched water was observed to be in connection with the groundwater in the weathered sandstone, and these systems combine down-gradient of the site. These groundwater systems flow in a north-easterly direction towards Slacks Creek. Slacks Creek is located approximately 320 m east of the site, and is considered to be the main environmental receptor of groundwater from the site.

No registered operational bores (groundwater users) are located in the vicinity of the Site. The closest operational registered bore is approximately 0.7 km north of the Site (registration number – 134259).

3 EXTENT OF CONTAMINATION

3.1 Surface (Capping) Material

Concentrations of metals in surface (capping) material are not considered to pose a risk to human health or the environment.

The concentrations of all organic analytes, which included total petroleum hydrocarbon (TPH), volatile organic compounds (VOC), polycyclic aromatic hydrocarbons (PAH), phenols, polychlorinated biphenyls PCB), organochlorine pesticides (OCP), and organophosphate pesticides (OCP), were below laboratory detection limits.

3.2 Groundwater

The maximum concentrations of contaminants observed in the Contaminated Site Investigation from perched groundwater (which includes leachate) within the Landfill, and deeper groundwater within the weathered sandstone on the site which exceeded environmental guidelines included the following.

Analyte	Maximum Concentration in Perched Groundwater within Landfill (mg/L)
Ammonia as N	228
Copper	0.025
Lead	0.048
Nickel	0.124
Zinc	0.463
TPH C10 - C36	0.73
1,4-Dichlorobenzene	0.047
2-Methylphenol	0.225
2,4-Dimethylphenol	0.0046
2,4,5-Trichlorophenol	0.001

Analyte	Maximum Concentration in Groundwater within Weathered Sandstone (mg/L)
Ammonia as N	50.4
Copper	0.028
Lead	0.115
Nickel	0.1
Zinc	0.359

Metals

Elevated concentrations of copper, lead, nickel and zinc were found in groundwater samples from monitoring wells up-gradient of the Landfill, and within the Landfill. Metals found in groundwater are potentially associated with surrounding industrial land use, naturally occurring background conditions, or a combination of both these sources.

Ammonia

The concentration of ammonia in groundwater at the down-gradient boundary of the site (groundwater at this location includes both perched groundwater from the landfill and groundwater in the weathered sandstone) has attenuated from 39.9 mg/L in 2000 to approximately 10 mg/L in 2008-09 (note that the maximum ammonia concentration detected in perched groundwater (containing leachate) within the landfill was higher at 228 mg/L). Elevated concentrations of ammonia were detected in other monitoring wells along the eastern boundary of the Landfill; therefore the Landfill is the likely source of ammonia at the site. Ammonia can have a deleterious effect on aquatic ecosystem health. However factors such as dilution would lower the concentration of ammonia prior to discharge to the nearest receiving watercourse (Slacks Creek, 320 m east of the site).

Hydrocarbons

Elevated concentrations of hydrocarbons have been consistently detected in perched groundwater within the landfill. The analytical results and interpretation of the source hydrocarbons by the laboratory indicate that the elevated concentrations of hydrocarbons found in groundwater samples are predominately organic substances being produced by the Landfill through the decomposition of putrescible materials rather than petroleum based hydrocarbons (e.g. fuels or oils).

Semi-Volatile Organic Compounds (SVOC)

The majority of SVOCs including PAHs (with the exception of phenanthrene), pesticides (OC/OP), oxygenated compounds, fumigants, and PCB were not detected in any of the groundwater samples tested. Phenanthrene was detected in some of the samples analysed with concentrations which were within acceptable limits.

3.3 Landfill Gas

Historical Monitoring of Site Boundary Monitoring Wells

Logan City Council (LCC) has undertaken an ongoing landfill gas monitoring program (from 2000 to 2008) from monitoring wells installed around the boundary of the site (and not within the landfill). The monitoring program has detected low levels of methane gas (maximum concentration 1.7%) over this time period with concentrations which were well below the lower explosive limit (LEL) for methane (5%). The monitoring program undertaken by LCC indicates that gas from the landfill is unlikely to pose an unacceptable risk to off-site receptors.

Landfill Gas Monitoring During Contaminated Site Investigation

As part of the Contaminated Site Investigation gas monitoring wells were installed beneath the cap and within the Landfill. Six rounds of landfill gas monitoring were undertaken. Elevated concentrations of methane which exceeded the LEL were detected in some of the monitoring wells. The maximum concentration of methane detected in boreholes which were screened within the Landfill was 99.3%. All other VOCs detected were below human health guidelines.

The maximum concentration of carbon dioxide detected was 15.5%.

Landfill Vent Monitoring

Low or non-detectable concentrations of methane and carbon dioxide were detected from the monitoring ports attached to the landfill vents in the Contaminated Site Investigation. This may be attributed to atmospheric dilution in the vents, as evident from measured oxygen concentrations at approximately 21%. In one monitoring round, an elevated concentration of methane (29%) which exceeded the LEL was found in one of the vents; all other vents however had concentrations of methane which were below the LEL or below detection limits.

Implications for Proposed Development

Landfill gas which includes methane, is considered to pose a potential risk to future site users as an asphyxiant and flammable gas. The primary risk to future site users will be the migration of gases along pathways created by foundations (including piles) and underground services or service trenches into buildings located on the site, or other confined spaces (e.g. service pits). There is also the potential for the development to modify landfill gas regimes (e.g. reduce venting rates at surface, and/or increase lateral gas migration) in areas of the site which are covered with low or semi-permeable surfaces such as car parks, roads and water retaining features. The proposed development requires the implementation of landfill gas protection measures described in Section 5, and the monitoring of landfill gas during construction (refer to Section 8.6).

4 ENVIRONMENTAL GUIDELINES

The remedial activities undertaken at the site must be performed in accordance with the following documents:

- *Draft Guidelines for the Assessment and Management of Contaminated Land in Queensland*, May 1998;
- *Guidelines issued under Schedule B of the National Environment Protection (Assessment of Site Contamination) Measure* (NEPM), National Environment Protection Council, December 1999;
- *Australian and New Zealand Guidelines for the Assessment and Management of Contaminated Sites* (ANZECC guidelines) published by the Australian and New Zealand Environment and Conservation Council/National Health and Medical Research Council, January 1992;
- *Australian Standard AS4482.1-2005 Guide to the investigation and sampling of sites with potentially contaminated soil - Non-volatile and semi-volatile compounds*; and
- *Australian Standard AS4482.2-1999 Guide to the sampling and investigation of potentially contaminated soil Part 2 - Volatile and semi volatile compounds*.

5 REMEDIATION PROGRAM

5.1 Overview

The key remedial measures required for the redevelopment of the site include:

- the building up of the capping layer in the eastern embankment of the site;
- the inclusion of gas protection measures in buildings;
- the inclusion of porous media beneath and to the side of low or semi-permeable surfaces placed on the landfill such as car parks, access roads, and water storage areas to enable the venting of landfill gas;
- the re-construction of gas vents closed during the construction phase for the proposed development;
- the location of services above the capping material where practicable, and the entering of services from the side of buildings rather than through floor slabs;
- the use of sensitive construction and piling measures to minimise disturbance to the capping material;
- the use of low permeability materials or membranes for proposed water storage areas on the site;
- the undertaking of an ongoing landfill gas and groundwater monitoring program at the boundary of the site during and post development of the site; and
- confirmation that the former underground tank on the site has been removed.

These remedial measures are described in further detail as follows.

5.2 Capping Layer

The capping layer of the eastern embankment of the landfill was found to vary from 0.2-0.5 m in thickness. The capping layer of the eastern embankment must be built up to provide a minimum thickness of 0.5 m using uncontaminated porous fill material which will not impede the venting of landfill gas. Prior to the capping of this area additional probing must be undertaken to confirm the extent of capping required within the eastern embankment. A plan showing the extent of the area to be capped must be reviewed and consented to by the Third Party Reviewer (TPR) before submitting to Department of Environment and Resource Management (DERM) prior to construction.

5.3 Gas Protection

Main Facilities Building

The Main Facilities Building must be founded on piles and a slab suspended off-the-ground. An open void must be located between the slab and the ground to allow for the free venting of air beneath the building. This will mitigate the potential for gas ingress into the main building.

As a precautionary measure gas alarm(s) are to be fitted inside the building at appropriate location(s).

Kennel Block and Maintenance Shed

Gas protection measures for the Kennel Block and Maintenance Shed must include:

- well-constructed ground slab located above the capping layer;
- low-permeability gas/vapour membrane;
- the location of services above the capping layer and entering buildings from the side (rather than through floor slabs);
- passive in-ground venting through a granular layer beneath the floor slab and venting pipes, with the venting system being located above the capping layer and beneath the floor slab to allow for the venting of landfill gases; and
- gas alarm(s) at appropriate location(s) within each building.

Design drawings of the proposed gas protection measures must be reviewed and consented to by the TPR before submitting to DERM prior to the construction of buildings.

Boreholes drilled for the Preliminary Geotechnical Investigation within approximately 15 m of the proposed Kennel Block and Maintenance Shed show that ground in the vicinity these proposed structures is unlikely to contain waste materials. During the detailed design phase of the Project, gas monitoring must be undertaken at the location of these proposed buildings to characterise the Landfill gas regime within the shallow ground (i.e. within the cap) at these locations. Gas monitoring must be undertaken through the use of boreholes positioned at the proposed building locations, and the screening of the boreholes within the capping layer. Should the findings of landfill gas monitoring indicate that the gas regime at these locations is of low risk, the protection measures proposed may be amended subject to consent by the Third Party Reviewer (TPR) and DERM.

Low and Semi-Permeable Surfaces

Granular venting layers must be incorporated beneath and to the side of low or semi-permeable surfaces placed on the landfill such as car parks, access roads, and water storage areas. Plans showing the design of the venting layers must be reviewed and consented by the TPR prior to construction.

5.4 Landfill Gas Vents

The proposed development will involve the removal of two of the existing landfill gas vents. Two additional vents must be constructed in the vicinity of the vents being removed during the construction process. Plans of the proposed two additional vents must be reviewed and consented to by the Third Party Reviewer (TPR) before submitting to DERM prior to construction.

The height of the vents will be reduced to allow for improved viewing and the functioning of the site as a greyhound racing facility. A reduction in the height of the vents should not impair their functionality.

5.5 Services

Plans showing the location and elevation of proposed services must be reviewed and consented by the TPR prior to construction.

Services must be exposed to the atmosphere to vent potential landfill gases prior to a worker entering any confined spaces.

5.6 Construction Methods

Piling Methods

Piles will be founded on the sandstone strata beneath the site. Piling will require disturbance to the capping material. The capping material surrounding the piles must be resealed through packing a low permeability clay based material (e.g. bentonite) around the pile. Appropriate validation testing must be undertaken to confirm the effectiveness of the seal around the pile.

Racing Track

Preloading will be progressively undertaken over the racing area to accelerate the settlement process and stabilise the surrounding ground. Groundwater mounding may occur as a result of preloading, however it is not expected to result in any further risk to human health or the environment. Groundwater and landfill gas monitoring at the boundary of the site must be undertaken (refer to Section 8.6) during preloading to confirm that no unacceptable human health or environmental risk is occurring.

5.7 Stormwater and Surface Drainage

Stormwater collected from the surface of the site must be diverted to vegetated swales to capture litter, suspended solids and other matter prior to discharging into the drainage system. The swales constructed must not penetrate the waste material in the Landfill.

During periods of heavy rainfall, surface water must be captured and temporarily held within retention basins on-site. The retention basin must be lined with high density polyethylene (HDPE) liners or equivalent to prevent vertical seepage into the Landfill.

The drain skirting the south and east of the site is to be managed by LCC as an easement. It is proposed that some restoration of this drain be undertaken by LCC as part of the redevelopment. A plan of the restoration work must be reviewed and consented by the Third Party Reviewer (TPR) prior to undertaking works. The restoration work must not involve disturbance to the Landfill.

5.8 Off-site Disposal of Material

While not expected to be required, any soil material removed from the site is to be undertaken under disposal permit in accordance with S.424 of the EP Act.

An application for *Disposal Permit* must be accompanied by a sampling plan and associated results (including bore logs) clearly indicating the material and depth intended for removal. The *Disposal Permit* application must be reviewed and consented to by the TPR before submitting to DERM for approval.

5.9 Importation of Material to the Site

Imported fill used for the redevelopment of the site must be sampled and appropriately analysed at a rate agreed with the TPR to confirm the suitability of the fill prior to its importation to the site unless the source of the material can be demonstrated to be a clean source (e.g. licensed quarry).

6 HEALTH AND SAFETY

Prior to the works commencing, a Health and Safety Plan must be prepared by the contractor. The Health and Safety Plan must be prepared for the activities to be performed on the site where employees may be exposed to toxic or other hazardous compounds and elements. Specific requirements relating to dermal contact and inhalation as well as public safety, vehicle decontamination, protective clothing, equipment and appropriate safety controls must be addressed. Personnel working on the site must read and understand the Health and Safety Plan. All staff working on the site during remediation works must be inducted and sign relevant forms stating that induction has been carried out.

7 SUITABLY QUALIFIED PERSON TO CONDUCT / SUPERVISE WORKS

A person qualified in accordance with S.381 and S.395 of the *Environmental Protection Act 1994* (EP Act) must conduct all investigations, supervise all remediation works and compile reports required to complete the remediation program for the site.

8 ENVIRONMENTAL MANAGEMENT AND CONTROL

Prior to the works commencing a Construction Environmental Management Plan (CEMP) must be prepared and reviewed and consented to by the TPR before submitting to DERM. The CEMP must include but not be limited to the following:

The remediation program must be conducted with all due regard to the environment and to statutory requirements. In particular, in addition to any statutory compliances required, the contractor must be responsible for conducting remediation works with all due care to ensure compliance with the following conditions:

- Minimal air-borne dust is to be generated from the site. In the event of a dust complaint, mitigation measures such as watering must be used;
- Water containing any suspended matter or contaminants must be managed within the site in such a manner to minimise pollution of adjacent sites and waterways;
- Vehicles must be controlled so that minimal mud, soil or water will fall or be deposited on any public or private roadway or adjacent areas; and
- Noise levels must comply with the required statutory requirements.

The owner must ensure that the contractor's site manager/foreman is conversant with the contents of the RAP, conditions of Planning Approval, the CEMP and Health and Safety Plan. Additionally they must ensure that each employee or subcontractor involved with remediation is inducted into the requirements of the RAP, the CEMP and Health and Safety Plan.

8.1 Control of Stormwater Run-off

Remediation works must comply with requirements for stormwater management as outlined in Schedule B(9) of the NEPM. This includes stockpiling excavated soil/fill in a manner that shall prevent contamination from being transported off-site by stormwater.

The contractor must control surface waters on the site as follows:

- Divert clean stormwater run-off outside the site so that it does not flow through the site;
- Control drainage on the site by interception and redirecting clean run-off in a controlled manner;
- Stormwater collected from the site in trenches and sumps must be appropriately managed; and
- Silt fences must be erected at locations where stormwater may flow from the site.

Stormwater must be managed in accordance with any conditions of the Planning Approval.

8.2 Control of Soil/Fill and Sediment

Sediment released to surface waters must be minimised by the use of sediment controls such as diversion drains, hay bales and silt fencing. In particular, a silt fence must be located around the perimeter of stockpile material.

Soil awaiting off-site removal or reprofiling must be stockpiled in a manner and location so that it is not easily spread by wind or rain action. If adverse weather conditions are anticipated, stockpiles of contaminated soil must be covered. Stockpiles must be tagged and records maintained to track the disposal or reuse of soil from the site.

Any plant or equipment that handles contaminated soils must be inspected prior to leaving the site, and cleaned as necessary.

The requirements for the management of sediment and soil described in Schedule B(9) of the NEPM (from which the above control measures are drawn) must be complied with during remedial works.

8.3 Control of Noise

Noise levels must comply with statutory requirements, and any conditions of the Planning Approval, and with consideration to *Australian Standard AS 2436-1981 Guide to Noise Control on Construction, Maintenance and Demolition Sites*.

8.4 Control of Dust

Generation of dust must be kept to a minimum. Water used for dust suppression is to be managed in accordance with Section 6.3.1 and Section 6.3.2.

8.5 Odour Control

The level of odour generated during remedial activities is not expected to be a concern. However, in the unlikely event that odorous compounds are encountered, the contractor under the supervision of the person qualified in accordance with Section 6.2 must take all precautions to ensure that no obnoxious odours migrate from the site boundaries. To minimise odours, if encountered, only small volumes of the material must be excavated at any one time. Any fill containing significant quantities of odorous compounds must be placed in a bunded area and covered with plastic sheeting and sprayed with an odour suppressant as soon as possible.

8.6 Environmental Monitoring Program

An environmental monitoring program which includes the monitoring of landfill gas and groundwater at the boundary of the site (which includes landfill leachate) is to be undertaken during construction. The frequency of monitoring will be described in the environmental monitoring program and must show consideration to the construction program, with more frequent monitoring of landfill gas and groundwater occurring during sensitive works such as preloading of the racing track. The minimum frequency of monitoring during construction is planned to be monthly for landfill gas, and bi-monthly for groundwater. The results of monitoring are to be provided to the TPR after each monitoring event. The environmental monitoring program must be reviewed and consented to by the TPR before submitting to DERM prior to the undertaking of any remediation or construction work on the site.

8.6.1 Sample Dispatch and Documentation

Samples must be collected in the appropriate containers and labelled to identify their origins as described by the Australian Standard AS4482.1-2005 and dispatched to the laboratory for analysis within 48 hours of collection. Chain of Custody documentation and handling must be performed in accordance with AS4482.1-2005 and the NEPM guidelines. Sample Receipt Advice documentation must be submitted in the validation report along with Chain of Custody documents.

8.6.2 Quality Assurance/Quality Control (QA/QC) Program

A field QA/QC program must be conducted in accordance with the NEPM, Australian Standard AS4482.1-2005 and EPA recommendations, to measure the precision of the field/laboratory analyses and to determine the accuracy of the primary laboratory's analyses.

Duplicate soil samples must be collected and analysed by the primary laboratory at a rate of one per twenty samples. Duplicate groundwater samples must be collected and analysed by the primary laboratory at a rate of one per sampling event or at a rate of one in twenty whichever is the lesser.

8.6.3 Decontamination Procedures

Decontamination procedures for sampling equipment, personnel and the general site must be in accordance with the Australian Standard AS 4482.1-2005 and the NEPM guidelines (Schedule B (9)).

9 VALIDATION

Prior to the undertaking of remediation a validation sampling program must be reviewed and consented to by the TPR. The validation sampling program must include but not limited to:

- Permeability testing and as built drawings of the capping material placed in the eastern embankment area and in association with piling;
- Imported fill material; and
- Completion reports and as building drawings for the gas protection measures to be installed in buildings.

10 REPORTING REQUIREMENTS

Within 60 days of the completion of all remediation and construction works, a report detailing works must be prepared by a suitably qualified person in accordance with S5.2 and submitted to the

TPR prior to approval and subsequent submission to the DERM. The report must be in accordance with Chapter 7, Part 8 of the *Environmental Protection Act 1994* and the *Draft Guidelines for the Assessment and Management of Contaminated Land in Queensland* May (1998).

The report must include but not be limited to the documentation of the remediation works and construction activities.

The report must also include the results of the QA/QC program, Chain of Custody documentation and Sample Receipt Advices for all samples collected and copies of documentation validating the appropriate handling, disposal and treatment of any contaminated soil, materials and water in accordance with DERM requirements.

11 STATEMENT OF SUITABILITY

Prior to the commencement of the commercial use of the site, a statement of suitability must be obtained from DERM. The Statement of Suitability must specify that the site is suitable for the intended use(s) and the site can be removed from the EMR or the site is to remain on the EMR and must be managed under a SMP.

12 THIRD PARTY REVIEW (TPR)

The site work and subsequent reporting must be reviewed by a DERM appointed Third Party Reviewer (TPR). All validation requirements must first be confirmed by the TPR and any clarification issues must be referred to the TPR prior to DERM. The TPR must review the CEMP and any other documentation or approval specified in this RAP.

RTI DL RELEASE - EHP

REFERENCES

Department of Environment (Queensland Environmental Protection Agency) May 1998 *Draft Guidelines for the Assessment and Management of Contaminated Land in Queensland*,

National Environment Protection Council (1999), *National Environment Protection (Assessment of Site Contamination) Measure Schedule B (2) Guideline on Data Collection, Sample Design and Reporting*.

Australian Standard AS4482.1-2005 Guide to the investigation and sampling of sites with potentially contaminated soil - Non-volatile and semi-volatile compounds;

Standards Australia (1999), *AS4482.2 Guide to the sampling and investigation of potentially contaminated soil, Part 2 - Volatile substances*.

RTI DL RELEASE - EHP

Attachment C
TPR Statutory Declaration

RTI DL RELEASE - EHP

STATUTORY DECLARATION

Address of Site Investigated: Corner Compton Road and Kingston Road,
Slacks Creek, QLD 4127.
Real Property Description: Lot 658 on SL12298.
Title of Report: Third Party Reviewer Certification Report:
Logan Greyhound Facility, Slacks Creek,
Queensland (Lot 658 on SL12298) 28 July 2010.

I, Robin Wagland, of MACH1 Environmental Pty Ltd (Ferny Hills, QLD 4055) in the State of Queensland, do solemnly and sincerely declare that:

1. I was the Third Party Reviewer appointed by the Queensland Government Department of Environment and Resources, Contaminated Land Unit for the Slacks Creek site described above.
2. Information was collected and collated by Sinclair Knight Merz Pty Ltd in their report titled: - *Logan Greyhound Facility, Cronulla Park, Contaminated Site Investigation*, dated June 2010, Report No. QE09537 and additional Site Management Plan (SMP) and Remediation Action Plan (RAP) dated 6 August 2010.
3. I am a member of the Environment Institute of Australia and New Zealand and my qualifications and experience (submitted previously to the DERM) are relevant to this investigation.
4. I have not knowingly included any false, misleading or incomplete information in the report.
5. I certify that the site has been assessed to a standard such that the health and environmental risks associated with the contamination at the site may be safely managed under the conditions of the attached Site Management Plan (SMP).
6. I recommend that Lot 658 on SL12298 remain on the EMR as a managed site until remediation has been undertaken under conditions of the attached draft SMP and Remediation Action Plan (RAP).
7. I certify the site is suitable for vacant use.

And I make this solemn declaration conscientiously believing the same to be true and by virtue of the provisions of the Oaths Act 1867

49-Sch4 - Signature

Signature

Name

Taken and declared before me at KEPPARA Q this 6th day of August 2010

Witness (Justice of the Peace/Commissioner for Declarations/Solicitor)

49-Sch4 - Signature

Signature

Name

RAYMOND DAVID SUTER

