

OUR REF: 5738-BAL
YOUR REF:

25 May 2018

City Development
Council of the City of Gold Coast
PO Box 5042
GOLD COAST MC QLD 9729

Attn: Development Assessment

To whom it may concern,

**RE: COMBINED OPERATIONAL WORKS APPLICATION – VEGETATION CLEARING
AND CHANGE TO GROUND LEVEL, M38 INDUSTRIAL PARK (YATALA)**

**Property: Lot 1 on RP6882, 60 Stapylton Jacobs Road, Lot 240 on WD31320, 82
Christensen Road, Stapylton QLD**

On behalf of KS8 Pty. Ltd we hereby lodge a combined Operational Works application over the abovementioned property. This application is being lodged in order to gain approval for Vegetation Clearing and Change to Ground Level over the balance land of the proposed M38 Industrial Park (Yatala).

Application Details:

Local Authority:	City of Gold Coast
Application Type:	Operational Works - Vegetation Clearing Operation Works - Change to Ground Level
Applicant:	KS8 Pty. Ltd
Owner:	William Arthur Hester and Patricia Ann Hester

In support of this Application, we provide the following:

- Duly completed and executed Planning Act 2017 DA Form 1;
- Duly completed and signed Land Owners' Consent;
- Duly completed City of Gold Coast's Operational Works Application Form;
- Duly completed City of Gold Coast's City Plan Version 4, Schedule 6.9 Land Development Guidelines' Appendix A and Appendix B;
- City of Gold Coast's Development Codes – Works for Vegetation Clearing and Change to Ground Level;
- Broad Geotechnical Assessment (Hester Site) dated February 2011 and prepared by Morrison Geotechnic;
- Vegetation Management Plan prepared by Gassman Development Perspectives; and
- Engineering Plans 5738 ENG BEB 001 to 153 and associated drawing transmittal.

The applicable application fee has been calculated in accordance with City of Gold Coast's Register of Fees and Charges 2017-18. Being:

• Change to Ground Level (Major Works: 5001m2 or more) =	\$ 3,216.00
• Vegetation Clearing (Tree Works DA) (50% as second component) =	\$ 485.00
TOTAL:	\$ 3,701.00

The works proposed as part of this Operational Works Application are consistent with City of Gold Coast's City Plan Version 4, Schedule 6.9 Land Development Guidelines.

Should you have any queries regarding the submitted documentation please contact the undersigned on phone: (07) 3807 3333.

Yours faithfully,

GASSMAN DEVELOPMENT PERSPECTIVES



MITCHELL GASSMAN

CIVIL PROJECT ENGINEER

City Plan code template

This code template supports the preparation of a development application against either the acceptable outcome(s) or performance outcome(s) contained in the code. Development assessment rules are outlined in **Section 5.3.3** of the City Plan.

Please note:

For assessment against the overall outcomes, refer to the appropriate code.

Note: The whole of the planning scheme is identified as the assessment benchmark for impact assessable development. This specifically includes assessment of impact assessable development against this strategic framework. The strategic framework may contain intentions and requirements that are additional to and not necessarily repeated in zone, overlay or other codes. In particular, the performance outcomes in zone codes address only a limited number of aspects, predominantly related to built form. Development that is impact assessable must also be assessed against the overall outcomes of the code as well as the strategic framework.

9.4.1 Change to ground level and creation of new waterways code

9.4.1.1 Application

This code applies to assessing operational work (change to ground level) and bulk earthworks undertaken as part of an operational work (works for infrastructure) application where indicated within **Part 5 Tables of assessment**.

When using this code, reference should be made to **Section 5.3.2** and, where applicable, **Section 5.3.3**, in **Part 5**.

All supporting information required shall be in accordance with **SC6.9 City Plan policy – Land development guidelines**.

9.4.1.2 Purpose

- (1) The purpose of the Change to ground level and creation of new waterways code is to protect the environment from impacts of earthworks and the creation or expansion of waterways.
- (2) The purpose of the code will be achieved through the following overall outcomes:
 - (a) Ground level changes are undertaken with geotechnically and ecologically sound practices.
 - (b) Development does not increase the risk of flood damage to life or property.
 - (c) Development does not increase the rate or volume of run-off during a flood.
 - (d) Soil disturbance and development of land containing potential and actual acid sulfate soils does not result in environmental damage.
 - (e) Construction phase erosion and sediment controls are implemented to minimise erosion and ensure total suspended solids in receiving waters meet the water quality objectives (*Environmental Protection (Water) Policy 2009*).
 - (f) Changes to existing ground levels, including the creation of new waterways do not adversely affect the amenity and landscape values.

- (g) The environment and public safety are protected from impacts arising from the creation or expansion of non-tidal artificial waterways, such as urban lakes.
- (h) Development does not adversely affect the quality of stormwater discharging from the development site.
- (i) The drainage capacity of the Woongoolba Flood Mitigation Scheme Area for rainfall events up to 1 in 10 year, 72 hours is maintained (contained within the Scheme drains within a 4 day period) and this capacity is not eroded due to cumulative impact of development.

9.4.1.2 Specific benchmarks for assessment

Table 9.4.1-1: Change to ground level and creation of new waterways code – for assessable development

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets <u>either</u> the performance outcome or overall outcome	Internal use
Finished surface levels			
PO1 The finished surface level is free draining and free from localised flooding.	AO1 Development is free draining and the surface gradient of the fill and/or excavated area is between 0.5% to 1.5%. OR For steep surface gradients, integration with the surrounding topography must be achieved so that the finished profile does not interrupt or materially change the surface water.	COMPLIES All earthworks have been designed to be free draining with lots graded towards proposed road reserve	
Stormwater drainage			
PO2 Development does not cause adverse stormwater drainage impacts on or off the site.	AO2.1 The change to ground level maintains flood conveyance through the site for flood events up to a 1 in 100 (Q100) year Average Recurrence Interval (ARI) storm event using the drainage strategy in accordance with SC6.9 City Plan policy –Land development guidelines .	COMPLIES The design caters for the outcomes sought by AO2.1	
	AO2.2 The change in ground level does not involve fill below the designated flood	COMPLIES No earthworks are proposed below the designated flood level	

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets <u>either</u> the performance outcome or overall outcome	Internal use
	level, unless approved as part of a development approval for material change of use or reconfiguration of a lot.		
	AO2.3 The change in ground level does not result in an alteration of overland flows onto other properties or create an increase in flood damage to other properties.	COMPLIES The earthworks have been designed to comply with AO2.3	
Woongoolba Flood Mitigation Scheme Catchment Area			
PO3 In the Woongoolba Flood Mitigation Scheme Catchment Area, shown on the Water catchments and dual reticulation overlay map , peak outflow and its timing for Q2, Q5 and Q10 for rainfall events up to 72 hours does not change as a result of development.	AO3 No acceptable outcome provided.	NOT APPLICABLE TO THIS APPLICATION	
Stormwater quantity			
PO4 Development ensures that there is no impact on local drainage systems, so that no damage is caused to any property upstream or downstream of the site.	AO4 A site stormwater quantity management plan is prepared by a suitably qualified professional and demonstrates: (a) achievable stormwater quantity control measures for discharge during both the construction and operational phases of development designed in accordance with the <i>Queensland Urban Drainage Manual (QUDM)</i> unless subject to specific requirements of SC6.9 City Plan policy – Land development guidelines ; and (b) on-site detention systems are designed to restrict peak outflows	COMPLIES On site sediment basins for the construction phase of works have been designed and documented in the submitted engineering drawings in accordance with the requirements of the State Planning Policy. A detailed SWMP will be prepared and lodged with Council for approval as part of subsequent ROL/MCU applications over the land.	

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets <u>either</u> the performance outcome or overall outcome	Internal use
	for Q2, Q5, Q10, Q20 Q50 and Q100 to pre-development conditions. OR A Site Stormwater Quantity Management Plan is consistent with that approved in a related development approval.		
Erosion and sediment control			
PO5 All construction and operational work is designed and managed with specific regard to the density, scale, layout and staging of development. All reasonable and practicable measures are taken to protect the environmental values of waters and the functionality of stormwater infrastructure from the impacts of erosion, turbidity and sedimentation, on and downstream of the development site.	AO5.1 An assessment is undertaken in accordance with the criteria in Table 9.4.1-2 – Erosion Management Assessment .	COMPLIES The necessary assessment has been undertaken	
	AO5.2 Where the Erosion hazard assessment has a risk score <u>less than or equal to 10</u>: a deemed-to-comply report is prepared by a suitably qualified person for Council's approval, including conceptual location and design drawings of each treatment measure in plan and section views, in accordance with the criteria within the guidelines entitled: <i>Urban Stormwater Quality Planning Guidelines by the Department of Environment and Heritage Protection</i> . OR Where the Erosion hazard assessment has a risk score <u>greater than 10</u>: an Erosion and Sediment Control Plan (ESCP) is prepared by a suitably qualified person for Council's approval	COMPLIES Erosion and Sediment Control Plans have been prepared as part of this application including detailed calculations for the sizing of the construction phase sediment basin to ensure ongoing compliance.	

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets <u>either</u> the performance outcome or overall outcome	Internal use
	in accordance with the: <i>Best Practice Erosion and Sediment Control International Erosion Control Association (ICEA) 2008, Australasia Chapter 2008</i> detailing the stormwater (quality and flow) treatment measure during the construction phase of development, demonstrating how the minimum design objectives in Table 9.4.1-3 Summary of design objectives for management of stormwater quality – construction phase are achieved including: (a) measures to ensure that the release of sediment-laden stormwater for the nominated design storm are minimised when the design storm is exceeded; (b) detailed design, installation, construction, monitoring and maintenance requirements of all approved proprietary products in accordance with local conditions and manufacturers recommendations; (c) detailing how the ESCP accompanying the Operational work (change to ground level) aligns with the Reconfiguration of lot staging.		
	AO5.3 Where development is on a lot less than 850m², provide an ESCP in accordance with SC6.9 City Plan policy – Land development guidelines.	NOT APPLICABLE Due to the size of the development	
	AO5.4 Where development is on a lot equal to	COMPLIES ESCP are included as part of this application	

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets <u>either</u> the performance outcome or overall outcome	Internal use
	or more than 850m ² , provide an ESCP in accordance with SC6.9 City Plan policy – Land development guidelines.		
Hydraulic considerations			
PO6 Any change to the level of the land does not have adverse flooding and drainage impacts.	AO6 A Hydraulic report is prepared by a suitably qualified professional to accord with the Council's hydraulic requirements, demonstrating that the change to the level of the land does not: (a) cause ponding on the site or nearby land; (b) increase flooding which adversely affects the safety or use of any land upstream and downstream; (c) adversely affect the flow of water in any overland flow path, or otherwise.	NOT APPLICABLE The subject site is not subject to flooding	
Geotechnical fill			
PO7 Material used as fill has the ability to adequately support future development of the land.	AO7 The fill material type, composition and source is geotechnically suitable and adequately compacted to support future development, in accordance with SC6.9 City Plan policy – Land development guidelines.	COMPLIES All earthworks are cut to fill within the subject site and will be supervised by a suitably qualified engineer.	
Geotechnical stability			
PO8 All earthworks are carried out in a location which is not at risk from geotechnical instability.	AO8 The site is free of compressible soils (e.g. soft clays underneath the site). OR Where the site is underlain by compressible soils, a Geotechnical	COMPLIES Morrison Geotechnic Pty Ltd (geotechnical engineer) has undertaken geotechnical investigations over the site and confirmed the suitability of the site for the proposed works.	

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets <u>either</u> the performance outcome or overall outcome	Internal use
	report is prepared by a suitably qualified professional demonstrating the treatment of compressible soils achieves a stable ground able to support future structures.		
Batters and retaining wall			
PO9 Batters and retaining walls do not create a negative visual impact on the area.	AO9 Batters and retaining walls are in accordance with SC6.9 City Plan policy – Land development guidelines.	COMPLIES All batters have been designed to comply	
Local amenity, noise and emissions			
PO10 Change to ground level or bulk earthwork activities do not impact on the amenity of the area.	AO10.1 Development work, which has the potential to generate dust is controlled by: (a) daily water spraying of exposed areas; (b) sealed roads; (c) protective covering of exposed areas; and (d) installing wind barriers.	TO BE COMPLIED WITH On site construction management best practices will ensure the amenity of the area is maintained during the construction phase.	
	AO10.2 All earthworks on the site is undertaken within the following days and hours: Day Hours Monday to Friday between 6am and 6pm Saturday between 7am and 6pm	TO BE COMPLIED WITH	
Managing contamination risk			
PO11 Any filling or excavation material does not result in the contamination of land.	AO11 All fill material is solid clean earth or clean inert material, free of organic, putrescible or refuse matter.	TO BE COMPLIED WITH All earthworks undertaken over the site will be supervised by a suitably qualified geotechnical engineer.	

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets <u>either</u> the performance outcome or overall outcome	Internal use					
Haulage activity and amenity								
PO12 Haulage activities do not impact on the amenity of the area.	AO12.1 Where transportation of fill material to or from the site is involved, the following applies: loads are covered; (a) spilled or wheel-tracked material is immediately cleaned from external roads; and (b) heavy vehicle traffic is controlled.	NOT APPLICABLE All proposed earthworks are cut to fill within the subject site.						
	AO12.2 All waste material, including vegetation from the site is disposed of in an approved location.	TO BE COMPLIED WITH						
	AO12.3 All haulage routes are approved: (a) for declared main roads – by the Department of Transport and Main Roads; (b) for all other roads – by the Council.	NOT APPLICABLE ALL PROPOSED EARTHWORKS ARE CUT TO FILL WITHIN THE SUBJECT SITE.						
	AO12.4 All haulage to and from the site is conducted within the following days and hours: <table><tr><td>Day</td><td>Hours</td></tr><tr><td>Monday to Friday</td><td>between 6am and 6pm</td></tr><tr><td>Saturday</td><td>between 7am and 6pm</td></tr></table>	Day	Hours	Monday to Friday	between 6am and 6pm	Saturday	between 7am and 6pm	NOT APPLICABLE ALL PROPOSED EARTHWORKS ARE CUT TO FILL WITHIN THE SUBJECT SITE.
Day	Hours							
Monday to Friday	between 6am and 6pm							
Saturday	between 7am and 6pm							
Created new waterways								
PO13 The waterway contributes to the amenity of the development and the surrounding area.	AO13.1 Created waterways within an Operational work (change to ground level) application are designed and managed for any of the following end-	NOT APPLICABLE No waterways are proposed to be constructed as part of this application						

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets <u>either</u> the performance outcome or overall outcome	Internal use
	uses: (a) amenity, aesthetics, landscaping or recreation; (b) flood management; (c) stormwater harvesting within an integrated water-cycle management plan; and (d) aquatic habitat.		
	AO13.2 The end-use of the created waterway is designed and operated to protect water environmental values.	NOT APPLICABLE NO WATERWAYS ARE PROPOSED TO BE CONSTRUCTED AS PART OF THIS APPLICATION	
PO14 The created waterway location is compatible with the land-use constraints of the site protecting water environmental values in existing natural waterways.	AO14.1 The created waterway within the Operational work (change to ground level) application achieves the following: (a) environmental values in downstream waterways are protected; (b) groundwater recharge areas are not affected; (c) the waterway location incorporates low-lying areas of a catchment connected to an existing watercourse; and (d) any existing areas of ponded water are included.	NOT APPLICABLE NO WATERWAYS ARE PROPOSED TO BE CONSTRUCTED AS PART OF THIS APPLICATION	
	AO14.2 Created waterways: (a) are located outside natural wetlands, watercourses and associated buffer areas; (b) avoid soil or sediment disturbance; and	NOT APPLICABLE NO WATERWAYS ARE PROPOSED TO BE CONSTRUCTED AS PART OF THIS APPLICATION	

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets <u>either</u> the performance outcome or overall outcome	Internal use
	(c) avoid alteration of the natural hydrologic regime in acid sulfate soil and nutrient hazard areas.		
PO15 The created waterway's location is compatible with existing tidal watercourses.	AO15 Where the created waterway is adjacent or connected to a tidal watercourse by a weir, lock, pumping system or similar: (a) there is sufficient flushing or a tidal range of >0.3m; OR (b) any tidal flow alteration does not adversely impact on the tidal watercourse; OR (c) there is no introduction of salt water into freshwater environments.	NOT APPLICABLE NO WATERWAYS ARE PROPOSED TO BE CONSTRUCTED AS PART OF THIS APPLICATION	
PO16 Created waterways are designed and managed to support the legislated environmental values and water quality objectives within <i>Environmental Protection (Water) Policy 2009</i> of connected receiving water environments.	AO16.1 The created waterway within the Operational work (change to ground level) application is designed, constructed and managed by a suitably qualified Registered Professional Engineer Queensland (RPEQ) with specific artificial waterway experience.	NOT APPLICABLE NO WATERWAYS ARE PROPOSED TO BE CONSTRUCTED AS PART OF THIS APPLICATION	
	AO16.2 The created waterway within the Operational work (change to ground level) application is supported by a Water Quality Management Plan, prepared by a suitably qualified professional, demonstrating the following: water quality of the created waterway is the same or higher standard as the existing water quality;	NOT APPLICABLE NO WATERWAYS ARE PROPOSED TO BE CONSTRUCTED AS PART OF THIS APPLICATION	

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets <u>either</u> the performance outcome or overall outcome	Internal use
	long-term maintenance of the water quality standard is achieved; and (a) breeding potential of biting insects is minimised.		
	AO16.3 The created waterway does not have deep, isolated holes that stratify and increase the possibility of algal blooms occurring.	NOT APPLICABLE NO WATERWAYS ARE PROPOSED TO BE CONSTRUCTED AS PART OF THIS APPLICATION	
	AO16.4 Pumping from a created waterway to maintain water quality is avoided.	NOT APPLICABLE NO WATERWAYS ARE PROPOSED TO BE CONSTRUCTED AS PART OF THIS APPLICATION	
	AO16.5 The created waterway is designed with a suitable outlet to ensure that flooding is possible, if required.	NOT APPLICABLE NO WATERWAYS ARE PROPOSED TO BE CONSTRUCTED AS PART OF THIS APPLICATION	
	AO16.6 Stormwater is treated before any stormwater enters a created waterway.	NOT APPLICABLE NO WATERWAYS ARE PROPOSED TO BE CONSTRUCTED AS PART OF THIS APPLICATION	
PO17 Operational work does not cause geotechnical bank instability, erosion, bed scour or revetment wall collapse to existing or newly created waterway.	AO17 Edge treatments certified by a suitably qualified person are in place during and post-construction phase to strengthen the embankment and protect from damage.	NOT APPLICABLE NO WATERWAYS ARE PROPOSED TO BE CONSTRUCTED AS PART OF THIS APPLICATION	
PO18 The waterway is managed and operated to achieve the water quality objectives (<i>Environmental Protection (Water) Policy 2009</i>) in natural watercourses.	AO18.1 Monitoring and maintenance programs manage the waterway to achieve the water quality objectives downstream.	NOT APPLICABLE NO WATERWAYS ARE PROPOSED TO BE CONSTRUCTED AS PART OF THIS APPLICATION	
	AO18.2 Aquatic weeds are managed to achieve a low percentage (less than 10%) coverage of the water surface area. Pests and vectors are managed by	NOT APPLICABLE NO WATERWAYS ARE PROPOSED TO BE CONSTRUCTED AS PART OF THIS APPLICATION	

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets <u>either</u> the performance outcome or overall outcome	Internal use
	avoiding stagnant water areas, providing for native fish predators, and, if necessary, other best practices for monitoring and treating pests.		
	AO18.3 The created waterway is managed and operated under agreement by an appropriate entity for the life of the waterway. A Waterway Management Plan is incorporated within the Community Management Statement for the principal body corporate that: identifies the waterway; (a) states the period of responsibility of the entity; (b) states a process for transfer of responsibility for the waterway; (c) states required actions for monitoring water quality of the waterway and receiving waters; (d) states required actions for maintaining the waterway to achieve the policy outcomes of the <i>Environmental Protection (Water) Policy 2009</i> and approval conditions; and (e) identifies funding sources for the above matters including bonds, headworks charges or levies.	NOT APPLICABLE NO WATERWAYS ARE PROPOSED TO BE CONSTRUCTED AS PART OF THIS APPLICATION	
Access to new waterways			
PO19 Created waterways are designed to provide maintenance access to revetment walls and cleaning of the waterway.	AO19 Access is provided to the waterways by: (a) dedication of land to the Crown; or (b) existing access arrangements.	NOT APPLICABLE NO WATERWAYS ARE PROPOSED TO BE CONSTRUCTED AS PART OF THIS APPLICATION	

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets <u>either</u> the performance outcome or overall outcome	Internal use
PO20 Created waterways to be transferred to public ownership are supported by infrastructure to ensure public safety.	AO20 Created waterways are designed to create a safe public asset by including: (a) warning signs; and (b) fenced areas restricting access to steep-sided embankments or large drops.	NOT APPLICABLE NO WATERWAYS ARE PROPOSED TO BE CONSTRUCTED AS PART OF THIS APPLICATION	

City Plan code template

This code template supports the preparation of a development application against either the acceptable outcome(s) or performance outcome(s) contained in the code. Development assessment rules are outlined in **Section 5.3.3** of the City Plan.

Please note:

For assessment against the overall outcomes, refer to the appropriate code.

Note: The whole of the planning scheme is identified as the assessment benchmark for impact assessable development. This specifically includes assessment of impact assessable development against this strategic framework. The strategic framework may contain intentions and requirements that are additional to and not necessarily repeated in zone, overlay or other codes. In particular, the performance outcomes in zone codes address only a limited number of aspects, predominantly related to built form. Development that is impact assessable must also be assessed against the overall outcomes of the code as well as the strategic framework.

9.4.14 Vegetation management code

9.4.14.1 Application

This code applies to assessing material change of use, reconfiguring a lot or operational work for development where indicated within Part 5 Tables of assessment.

When using this code, reference should be made to Section 5.3.2 and, where applicable, Section 5.3.3, in Part 5.

The requirements for accepted development in Part A of this code provide guidance on what is considered acceptable damage to assessable vegetation before it becomes assessable development. Each required outcome in Part A will apply to a particular circumstance. The table below outlines the applicable provision relating to the type of damage.

Damage type	Provision(s)
Vegetation close to property boundaries	RO1 – RO2
Vegetation close to buildings	RO3
Vegetation close to pool fencing	RO4
Pest species vegetation	RO5
Threatening vegetation	RO6
Damage to vegetation for fire safety	RO7
Damage on agricultural land	RO8
Vegetation maintenance	RO9

Damage type	Provision(s)
All damage not described in the required outcomes	PO1
Note: The required outcomes in Part A of this code will not apply to vegetation that is identified under a vegetation protection order or planted as an approved landscape plan or condition of approval.	
Note: For general guidance on pruning and managing the growth of vegetation refer to Australian Standards AS4373 – 2007 Pruning of Amenity Trees.	
Note: Vegetation clearing must not result in harm to native wildlife. Where native wildlife is present it is recommended that a licensed wildlife spotter/catcher be employed to oversee works.	

9.4.14.2 Purpose

- (1) The purpose of the Vegetation management code is to provide for the protection and management of assessable vegetation.
- (2) The purpose of the code will be achieved through the following overall outcomes:
 - (a) Vegetation of environmental, historical, cultural, visual and character significance is retained.
 - (b) Vegetation is retained to provide habitats for threatened flora and fauna, prevent erosion and ensure slope stabilisation.
 - (c) Damage to assessable vegetation is only undertaken if it directly obstructs approved development or is a threat to persons or property.
 - (d) Vegetation management plans are prepared for development which has the potential to cause damage to vegetation.
 - (e) Any potential damage caused to vegetation by development is extensively investigated and mitigated.

9.4.14.3 Specific benchmarks for assessment

Table 9.4.14-2: Vegetation management code – for assessable development

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets <u>either</u> the performance outcome or overall outcome	Internal use
Vegetation management plan			
PO1 Damage to assessable vegetation does not occur where the vegetation: (a) provides habitats for threatened flora and fauna; (b) is of historical, cultural or visual significance; (c) provides erosion prevention and slope stabilisation; (d) is necessary to maintain the	AO1 A Vegetation Management Plan, prepared by a suitably qualified person, is submitted as part of an Operational Work (Vegetation Clearing) application to show compliance with the Performance outcome. This plan includes, but is not limited to: (a) the location of the existing or approved dwellings, building or structures;	COMPLIES WITH AO1 A detailed VMP has been prepared and accompanies this operation works application for vegetation clearing.	

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets <u>either</u> the performance outcome or overall outcome	Internal use
character of the local area; or (e) assists in the conservation of the city's biodiversity. Note: A Vegetation Management Plan is the Council's preferred method of addressing the above outcome.	(b) the location of waterways, ridge tops and steep slopes (greater than 25%) on and adjacent to the site; (c) the location of the assessable vegetation to which the damage is proposed, and reasonable particulars of its vegetation type, including species, height and girth and whether it is: • habitat for threatened flora and fauna; • of historical, cultural, character or visual significance; • essential for erosion prevention and slope stabilisation, including within waterway buffers; • significant to the conservation of the city's biodiversity; • vegetation that contributes to waterway and wetland health. (d) a statement of the reasons for the damage and any relevant factors associated with the purpose of the proposed damage; (e) particulars of how vegetation to be retained will be protected during works in accordance with Australian Standard AS4970-2009 – <i>Protection of trees on development sites</i>; (f) particulars of how the vegetation is to be damaged and, if relevant, how the damaged material is to be removed or disposed of; (g) a plan indicating the location, size and species of replacement		

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets <u>either</u> the performance outcome or overall outcome	Internal use
	vegetation to compensate for the loss of damaged vegetation; and (h) a staging plan for clearing greater than 4ha of vegetation. Note: To remove a single tree on residential premises only a basic Vegetation Management Plan is required to be submitted to Council. The Vegetation Management Plan can be prepared by the property owner and may only require limited details about the above elements.		

FEBRUARY, 2011

JOB NO. GE11/002

MR WILLIAM AND MS PATRICIA HESTER

BROAD GEOTECHNICAL ASSESSMENT

PROPOSED INDUSTRIAL DEVELOPMENT

LOT 1 ON RP6882 AND LOT 240 ON W31320

STAPYLTON JACOBS WELL ROAD & CHRISTENSEN ROAD,

STAPYLTON

(HESTER SITE)

RECEIVED			
NOV 20 2011			
14 JAN 2012			
B.G.		D.R.	
G.H.		E.W.	✓
C.C.		M.R.	
D.L.		T.L.	
L.R.			



MORRISON
GEOTECHNIC

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Gold Coast Office
Job No.: GE11/002
Ref: 10969
Author: Leigh Bexley

21st February, 2011

Mr William Hester & Ms Patricia Hester
C/- Gassman Development Perspectives
79 Business Street
Yatala Qld 4207

ATTENTION MR BRENDON WALKINSHAW

FAX NO. 3287 5461

Dear Sir

RE: BROAD GEOTECHNICAL ASSESSMENT FOR PROPOSED INDUSTRIAL DEVELOPMENT - LOT 1 ON RP6882 AND LOT 240 ON W31320 (HESTER SITE), STAPYLTON-JACOBS WELL ROAD AND CHRISTENSEN ROAD, STAPYLTON

1.0 INTRODUCTION

This report presents the results of a broad geotechnical assessment carried out for a proposed staged industrial subdivision at Lot 1 on RP6882 and Lot 240 on W31320 (Hester Site), Stapylton-Jacobs Well Road and Christensen Road, Stapylton. The work was commissioned by the owners of the property Mr William Hester and Ms Patricia Hester.

From the information provided in a brief by Mr Brendon Walkinshaw of Gassman Development Perspectives, it is anticipated that the proposed development will involve the subdivision of numerous industrial Lots with associated roads. The earthworks for the proposed development will require minor cutting and filling works and possibly the construction of several minor retaining structures and batters. No lot layout or earthworks plan have been provided at this stage.

Based on correspondence with Mr Brendon Walkinshaw of Gassman Development Perspectives, our report contains the following:-

- Broad division of the site into identified Landform Units based on a combination of topography, surface features and slope stability, if appropriate.
- Broad assessment of subsurface profile in each identified Landform Unit, based on borehole drilling.
- Broad slope stability assessment of each identified Landform Unit.
- Drainage issues and impacts for development.



- Identification of the more significant geotechnical constraints or issues which would impact on future industrial development and design methodologies to overcome these. This includes issues such as identifying such features as soft compressible soils, wet zones, fill mounds etc.
- Broad recommendations for filling and excavations, including site preparation and stripping depths, bulk excavation conditions, temporary and permanent batter slope angles and recommendations for road construction.
- Preliminary foundation design parameters, including founding depths, allowable bearing pressures and estimated settlements for proposed structures.
- Broad recommendations for industrial development including the suitability and feasibility of the site for industrial development.

2.0 METHODOLOGY

A contour and site plan of the assessment zone (provided by Gassman Development Perspectives) was enlarged to a scale suitable for mapping the area of the site. A desk study of the Beenleigh 1 : 100 000 Geological Series Map, 9441 and contour plan was performed to identify rock types and major site features such as drainage lines, possible wet zones, and signs of recent or past instability such as slumps, hummocks, back scarps and scree debris fans that may not be visible from the ground surface.

A walk over survey of the site was performed by an Engineering Geologist from our Gold Coast office on the 2nd February 2011. This involved mapping and measuring features of significance to slope stability such as bedrock outcrops, slope angles and direction, erosion problems, surface and subsurface drainage, wet zones, vegetation density and the presence of irregular surface features such as slips, slumps, hummocks, back scarps, scree debris fans or any associated features. This was followed by the drilling of fourteen (14) boreholes (BH1 to BH14) at various locations across the site to assess soil profiles and depths to bedrock. One (1) Dynamic Cone Penetration (DCP) Test was also carried out in an area which was inaccessible with the drill rig. The boreholes were drilled to depths ranging between 0.4m and 3.0m below the existing ground surface using a utility mounted Jacro 200 drilling rig. The boreholes were logged by an engineering geologist from our Gold Coast office who also carried out pocket penetrometer assessments of q_u on the encountered clay soils. All borehole locations were recorded using a hand held GPS system.

From features identified in the desk study, walk over survey of the site and borehole drilling, the assessment area was divided into Landform Units based on landform and geomorphology. All identified features which may impact on the conceptual layout design for the development have been included, such as rock outcrops, seepage zones, drainage lines and zones of possible recent past instability.

A broad stability assessment of each identified Landform Unit has also been carried out. The slope stability assessment methodology adopted for this assessment generally follows the Gold Coast City Council (GCCC) 'Geotechnical Stability Assessment Guidelines' June 2007: Version 1.0. A stability assessment of the future earthworks has not been carried out as no earthworks plans have been provided.

Locations of features were mapped using a hand held GPS, cross referencing features such as boundary fence lines, houses, drainage swales, crests and dams. Some inaccuracy must be expected but would not be more than approximately 5 metres.

Contour plans of the site are presented in Appendix A to this report whilst site photographs are attached in Appendix B. The logs of the boreholes are presented in Appendix C. A SMEC Landslide Hazard Overlay Map showing areas of potential landslip hazard is attached in Appendix D. A Landform Unit Map showing the identified Landform Units, Landslide Hazard Risk Ratings for each Landform and borehole locations is attached to this report. An aerial photo of the site is also attached.

3.0 SITE CONDITIONS

3.1. Site Description

The site is typically triangular in shape with the site boundaries typically ranging between 900m and 1400m in length. The site topography comprises gently sloping terrain with several flat, low lying areas as well as several crests and ridges. The gently sloping terrain is evident throughout most of the site and typically ranges between 5° and 10° in slope gradient whilst the crests and ridges as well as the relatively flat terrain which is generally associated with the drainage swales is typically less than 5° .

No major drainage features are evident at the site. There are however several flat, wide drainage swales which align in an east to west lineation through the centre and southern portion of the site. Most surface water from rainfall events appears to flow as sheet flows across the surface of the gently sloping terrain and into these flat, wide drainage swales.

Surface levels at the site range from typically from RL10.0m within the flat terrain to the northwest and far east, up to RL29.0m within the slightly elevated terrain to the north and south.

The central portion of the site has mostly been cleared of vegetation and currently supports grass with a sparse cover of native tree vegetation whilst the remainder of the site to the north and south supports a moderate covering of native bush vegetation.

3.2. Landform Description

The site comprises gentle slopes throughout most of the site with several slightly elevated crests and ridges as well as several drainage swales. A review of the contour map and the walk over survey of the site has identified three distinct Landforms as well as the drainage swales. These Landforms are Gently Sloping Topography, Flat Topography and Crest and Ridges. Descriptions of each Landform are presented below. The interpreted locations and extents of the Landforms are shown on the attached Site Plan and Landform Unit Map. It must be noted that these locations and boundaries are intended to differentiate broadly between the identified Landforms on a large scale. On this basis, each Landform shown on the Site Plan and Landform Unit Map can be expected to contain topography or characteristics belonging to other Landforms.

3.2.1. Gently Sloping Topography

This Landform is the dominant Landform at the site and is evident throughout most areas. It is characterised by surface gradients typically ranging between 5° and 10° . The soil profile is shallow in this Landform with bedrock typically encountered at depths of less than 1.0m below the existing ground surface. This Landform typically supports a moderate covering of native bush vegetation with the exception of the central portion of the site which has been cleared of vegetation and supports grass. This Landform exhibits no signs of instability.

3.2.2. Flat Topography

This Landform is evident within the central and southern portion of the site, typically aligning in an east to west lineation. It is characterised by surface gradients of less than 5° and typically forms flat drainage swales which collect surface water flows from the upslope areas. Several dams are evident within this Landform. The soil profile is slightly deeper in this Landform with bedrock typically encountered at depths ranging between 1.5m and 3.0m below the existing ground surface. This Landform has typically been cleared of most tree vegetation in the central portion and supports a moderate covering of bush vegetation in the southern portion. This Landform contains no evidence of instability.

No surface water is evident within most of this Landform Unit. The exceptions are the dams and the drainage swale in the southern portion of the site at the location of DCP15. This swale is poorly drained and comprises a significant amount of pooled water at the surface.

3.2.3. Crest and Ridges

This Landform is typically evident in the far northern portion of the site as well as the cleared area being leased out (Lease A) in the central southern portion of the site. The crest and ridges are typically orientated in an east to west lineation and are characterised by being slightly elevated terrain with surface gradients of less than 5° . The soil profile is shallow in this Landform with bedrock typically encountered at depths of less than 1.0m below the existing ground surface. This Landform typically supports a moderate covering of native bush vegetation with the exception of the leased area which has been cleared of vegetation. This Landform contains no evidence of instability.

4.0 SUBSURFACE CONDITIONS

The site geology forms part of the Neranleigh Fernvale Beds and is Undifferentiated but thought to have been formed in the Silurian Geological Time Period. The regional geology of the site comprises greywacke, argillite, quartzite, chert, shale, sandstone and greenstone (Beenleigh 1:100 000 Geological Series, Sheet 9542).

Based on borehole drilling, the site geology consists of extremely weathered (XW) argillite and sandstone rock typically encountered at shallow depths of less than 1.0m below the existing ground surface which are overlain by residual and slopewash clay soils. The soil profile is slightly deeper in the drainage swales with bedrock encountered at depths typically ranging between 1.5m and 3.0m below the existing ground surface.

The subsurface conditions encountered in the boreholes are summarised in the following sections:-

4.1. Gently Sloping Topography (BH1, BH3, BH5, BH8, BH10, BH11, BH13 & BH14)

Topsoil: Comprising, moist, loose and medium dense, silty sand, extending to depths ranging between 0.1m and 0.25m, underlain by

Slopewash Soil: Comprising, moist, loose and medium dense, silty sand and silty gravelly sand, extending to depths of 0.3m and 0.35m in boreholes BH8 and BH13 only, underlain by

Moist, very stiff and hard, silty clay and sandy clay of typically high plasticity, extending to depths ranging between 0.4m and 0.7m, underlain by

Residual Soil: Comprising moist, very stiff and hard, silty clay and sandy clay of typically low to medium plasticity, extending to depths ranging between 0.7m and 0.9m, underlain by

Bedrock: Comprising extremely weathered (XW), very low and low strength argillite and sandstone extending to depths ranging in excess of 0.75m and 1.3m.

Boreholes BH1, BH3, BH5, BH8, BH10, BH11, BH13 and BH14 were terminated at depths ranging between 0.75m and 1.3m.

4.2. Flat Topography (BH2, BH6, BH9 and BH12)

Topsoil: Comprising moist, loose and medium dense, silty sand and moist, firm, silt of high plasticity, extending to depths ranging between 0.1m and 0.3m, underlain by

Slopewash/Alluvial Soil: Comprising wet, loose, silty sand and moist, firm and very stiff, silty clay and sandy clay of high plasticity, extending to depths ranging between 1.2m and 2.55m, underlain by

Residual Soil: Comprising moist, stiff to very stiff, very stiff and hard, silty clay and sandy clay of low to medium and medium plasticity, extending to depths ranging between 1.5m and 2.7m, underlain by

Bedrock: Comprising extremely weathered (XW), very low and low strength argillite and sandstone extending to depths ranging in excess of 2.0m and 3.0m.

Boreholes BH2, BH6, BH9 and BH12 were terminated at depths ranging between 2.0m and 3.0m.

4.3. Crests and Ridges (BH4 & BH7)

Topsoil: Comprising moist, loose and medium dense, silty sand, extending to depths ranging between 0.1m and 0.15m, underlain by

Slopewash Soil: Comprising moist, medium dense, silty gravelly sand, extending to depths of 0.3m and 0.4m, underlain by

Bedrock: Comprising extremely weathered (XW), very low and low strength sandstone extending to depths in excess of 0.4m and 1.3m.

Boreholes BH4 and BH7 were terminated at depths of 1.3m and 0.4m, respectively.

5.0 GROUNDWATER

During drilling operations, no groundwater was encountered in any of the boreholes. The exception is borehole BH2 which encountered wet soils at a depth of 0.3m, however no standing groundwater was recorded. It is anticipated that groundwater seepage may possibly be encountered at the location of borehole BH2, if excavations are left open for extended periods.

It should also be noted that the drainage swale in the southern portion of the site (DCP15), where no access was available for the drill rig, is also expected to encounter groundwater as this area is completely saturated at the surface.

6.0 STABILITY ASSESSMENT

There is no evidence of recent past slope instability involving small-scale or large-scale movements of significant quantities of soil or rock in a short duration event such as slips, slumps, debris slides or a landslide. There are however some weak, wet soils at the surface in some of the drainage swales that will need to be removed prior to filling or development.

The drainage swales at the site are open and wide and do not show any sign of erosion or instability. There is however minor evidence of erosion within the banks of the dams throughout the Flat Topography Landform. It is anticipated that the dams and drainage swales may be filled as part of the development of the industrial Lots which may initiate minor instability issues within these areas. Modification of these drainage swales for industrial development is acceptable providing drainage at the site is maintained. The recommendations regarding drainage issues stated in Section 8.0 of this report must be followed to minimise the potential for instability within the drainage swales which may be associated with the proposed industrial development.

Minor groundwater seepage was encountered in the drainage swale at the location of borehole BH2 and wet zones were observed at the surface of the drainage swale at the location of DCP15. These wet areas are located in flat or gently Sloping Topography and are not expected to impact on the stability of the site providing the weak surficial soils are removed prior to filling and drainage is implemented.

The risk of slope movement in the form of deep seated failures through the rockmass below the soil cover is considered to be very low. This is due to the gentle surface gradients, shallow depths to bedrock and favourable geology.

The site appears to be geotechnically stable at present with respect to slope stability. There are no major constraints or irregularities visible at the site which would impact on the proposed development. There is however potential for instability during and after construction for the lots located within the drainage swales. Drainage is important in these areas and must be addressed to minimise the potential for instability.

6.1. Generalised Slope Stability Assessment

A generalised slope stability assessment of each Landform Unit was carried out in accordance with the Gold Coast City Council (GCCC) 'Geotechnical Stability Assessment Guidelines' June 2007: Version 1.0. It must be noted that the boundaries between Landform Units are gradational and not abrupt. On this basis it should be expected that the Hazard Rating zones may encroach upon one another. Detailed small scale assessments of localised areas would be required to refine the stability zones on a Lot by Lot basis. Lot by Lot assessments are not expected to produce risk rating classifications significantly different to the broad scale assessments carried out for this study.

Calculations used in the generalised slope stability assessment have been based on the following factors:-

- Ground surface slope angle
- Slope shape
- Geology
- Depth of soil cover and soil type (eg. colluvium, residual)
- Presence of erosion features, surface irregularities or existing instability
- Seepage and drainage conditions as assessed during the walkover survey carried out for this study

The results of the generalised slope stability assessment for each Landform Unit is presented in Table 1.

Table 1 – Landslide Risk Hazard Ratings

Landform Unit	Relative Frequency	Hazard Risk Rating
Gently Sloping Topography	0.113	Very Low
Flat Topography	0.194	Low to Very Low
Crest and Ridges	0.016	Very Low

The Landform Units and associated Landslip Hazard Risk Ratings are shown in the attached Site Plan and Landform Unit Map.

6.2. Implications of Hazard Risk

The implications of hazard risk ratings are presented in the Gold Coast City Council (GCCC) 'Geotechnical Stability Assessment Guidelines' June 2007: Version 1.0 and reproduced in Table 2.

Table 2 – Implications of Hazard Classifications (AGS)

Hazard Rating	Implications
VH (Very High Hazard)	Extensive detailed investigation and research, planning and implementation of treatment options essential to reduce risk to acceptable levels.
H (High Hazard)	Detailed investigation, planning and implementation of treatment options required to reduce risk to acceptable levels.
M (Moderate Hazard)	Tolerable provided treatment plan is implemented to maintain or reduce risk. May be accepted. May require investigation and planning of treatment options.
L (Low Hazard)	Usually accepted. Treatment requirements and responsibility to be defined to maintain or reduce risk.
VL (Very Low Hazard)	Accepted. Managed by normal slope maintenance procedures.

In summary, the following comments can be made with respect to the slope stability of the site:

- The Gently Sloping Topography Landform has a Very Low Hazard Risk Rating.
- The Crest and Ridges Landform has a Very Low Hazard Risk Rating.
- The Flat Topography Landform has a Low to Very Low Hazard Risk Rating.
- There is no evidence of any slope instability which would impact on the proposed development. There is however, minor weak, wet soils at the surface in some drainage swales that will need to be removed and drainage installed prior to development.
- In all Landforms the risk of slope movement in the form of deep seated failures through the rockmass is considered to be very low due to the gentle surface gradients, shallow depths to bedrock and favourable geology.
- The site is assessed to be geotechnically stable at present with respect to slope stability.

7.0 GEOTECHNICAL ISSUES OR CONSTRAINTS FOR DEVELOPMENT

The existing site is considered to be suitable and feasible for industrial development as there are no major geotechnical issues or constraints which would impact on the proposed development. The site is relatively flat and there is no evidence of any major existing or recent past instability at the site. There is also no evidence of any soft compressible soils which would require preloading or any evidence of notable filling being placed on the site. There are, however, several geotechnical issues which must be addressed prior to development or earthworks on the site.

These issues include providing adequate drainage or maintaining existing drainage at the site, removal of several small fill mounds, removal of weak soils from the surface of the drainage swales and dewatering and removal of soft sediments associated with the existing dams. If significant earthworks are to be carried out there may also be issues associated with bulk excavations due to the presence of shallow bedrock. Recommendations to overcome or manage these minor geotechnical issues are described in the Sections below.

8.0 DRAINAGE ISSUES

Most of the site is well drained with no surface water evident within the Gently Sloping Topography or Crests and Ridges Landform Units. Drainage within the Flat Topography Landform Unit is expected to be poor to moderate. No surface water was evident within most of the Flat Topography Landform Unit, however due to the relatively flat surface gradients, surface water would be expected to saturate the surficial soils within the swales for several days after significant rainfall events. The drainage swale in the southern portion of the site at the location of DCP15 was saturated at the surface during this investigation indicating that drainage is poor at this location.

Properly designed, constructed and maintained surface and subsurface drainage is important to the long term performance of the site in terms of slope stability, soil creep and erosion. The ingress of surface water into the cleared terrain or structural fill platforms is assessed to be a potential trigger for instability at the site. Therefore, minimising the ingress of surface and subsurface water into these structural fill platforms and slopes is of significant importance as saturation of these materials can result in creep movements and slips.

If the drainage swales are to be filled, consideration should be given to the interception and diversion of surface water flows. Options include:-

- Maintaining the existing drainage lines by installing conduits such as pipes and culverts at the base of the fills within the drainage swales. Modification of the drainage swales is acceptable providing positive drainage is maintained.
- Intercepting runoff from the higher catchments and diverting the flows upslope of the site or along dedicated drainage easements within the site such as lined channels.

One of these options would particularly need to be applied to the poorly drained drainage swale in the southern portion of the site at the location of DCP15.

9.0 BULK EXCAVATION CONDITIONS

The information and advice presented in this section of the report is based on the conditions encountered in boreholes BH1 to BH14 only. Variations in these conditions will occur across the site and must be expected.

No information has been supplied by the Client regarding the extent or depth of excavations that may occur at the site. It is expected, however, that excavations will not exceed 5.0m in depth. Excavations up to 5.0m will require the removal of topsoil, natural soils and the extremely weathered (XW) to possibly slightly weathered (SW) sandstone and argillite rock.

Drilling refusal depths in the Gently Sloping Topography and Crest and Ridges Landform Units ranged between 0.4m and 1.3m below the existing ground surface whilst in the Flat Topography Landform Unit drilling refusal depths ranged between 2.0m and in excess of 3.0m. In the Gently Sloping Topography and Crest and Ridges Landform Units the natural soils and very low and low strength, extremely weathered (XW) sandstone and extremely weathered (XW) argillite rock can be excavated to depths of approximately 2.0m below the existing ground surface using conventional earthmoving equipment such as dozers and excavators. Excavations below a depth of approximately 2.0m will most probably encounter less weathered sandstone and argillite rock which should be excavatable to a depth of approximately 3.0m to 4.0m using D9 to D11 dozers fitted with ripper attachments or large excavators (32 tonne to 40 tonne) fitted with tiger tooth rock buckets. It should be noted that excavation to depths in excess of 3.0m to 4.0m below the existing ground surface will most likely encounter slightly weathered (SW), very high strength bedrock which may require the use of hydraulic rock hammers or drill and blast techniques to achieve the required excavation depths.

It should be noted that defects within the rock is a major factor in the rippability of the encountered rock. NMLC coring of the bedrock in the elevated portions of the site would need to be carried out below a depth of approximately 2.0m to assess the weathering, strength and defect patterns within the underlying rock and to provide an accurate assessment of the excavation conditions.

In the lower, Flat Topography Landform Unit the natural soils and very low and low strength, extremely weathered (XW) sandstone and argillite rock should be excavatable to depths of at least 4.0m below the existing ground surface using conventional earthmoving equipment such as dozers and excavators.

No significant groundwater problems are expected to be encountered during the excavation works. The exception is the drainage swale in the southern portion of the site at the location of DCP15 where there is a significant amount of water at the surface. Results of the DCP testing and nearby drilling, indicates that bedrock is relatively shallow at this location and groundwater seepage would not be expected from the underlying soils. Intercepting and diverting upslope surface water should therefore reduce surface water pooling in this area.

10.0 TEMPORARY AND PERMANENT BATTERS

Maximum safe cut batter angles for the different materials encountered on site are shown below in Table 3 for unsurcharged batters less than 3.0m high. Where surcharges are located within H(m) (height of the batter) of the top of the batter, then some reduction in the design angle will be required.

Table 3 – Safe Batter Angles for Cuts

Material	Short Term	Long Term
Silty Sand/Clayey Sand	35° (1V:1.5H)	26° (1V:2H)
Stiff and Very Stiff Clay Soils	40° (1V:1.2H)	26° (1V:2H)
Hard Clay Soils	45° (1V:1H)	26° (1V:2H)
XW Rock	60° (1V:0.6H)*	45° (1V:1H)*
Note: *Subject to inspection by experienced geotechnical engineer/engineering geologist. It should also be noted that soft or firm clay soils which are to be battered should be inspected onsite during excavations.		

Structural fill batters should be overconstructed and trimmed back at no steeper than 2(H):1(V) or 26°. It is recommended that for cut batters which only partially expose XW bedrock in the face, the cut should be battered to an angle of no steeper than 2(H):1(V) or 26° unless inspected by a geotechnical engineer or engineering geologist.

All exposed permanent batters should be properly vegetated and mulched to minimise erosion. Properly maintained vegetation should reduce the occurrence of surface erosion by impinging rainfall. Upslope surficial water flows should also be directed away from the batters limiting the ingress of water into the fill. The pavement drainage system may be sufficient for some batters.

11.0 PRESENCE OF SOFT COMPRESSIBLE SOILS

From results of borehole drilling at the site, no weak compressible soils were encountered. Potential settlements of the natural clay soils associated with the placement of fill are therefore expected to be minor (less than 20mm). It is therefore anticipated that no generalised subgrade replacement or preloading will be required in association with the placement of fill over the majority of the existing ground surface. At the time of this investigation there was, however, some moist to wet, loose and firm, topsoils extending to depths ranging between 0.20m and 0.80m within the drainage swales (Flat Topography Landform). There are also several dams which are expected to comprise minor wet, weak, compressible soils at the base of the dams. These areas will require treatment prior to the placement of fill. Recommendations for treatment of the surficial soils prior to the placement of fill material are described in the Section 12.0 below.

12.0 SITE PREPARATION AND STRIPPING DEPTHS

Prior to the placement of fill there are several issues and requirements which must be addressed regarding the surficial soils at the site. These issues include dams, trees, grass, minor fill mounds, weak surface soils and topsoil at the surface. This will most likely require the removal of the upper 0.2m to 0.35m of topsoil in most areas but ranging up to 0.80m in some drainage swales. Most boreholes indicate the presence of clays, which are stiff, very stiff or hard for soils deeper than typically 0.35m below the ground surface.

The following treatment action is recommended within the development area prior to the placement of structural fill on the site:-

- Remove all trees, grass, minor fill mounds and topsoil from the existing ground surface across the entire site which is expected to extend to depths ranging up to approximately 0.35m below the existing natural ground surface.
- The drainage swales at the locations of Borehole BH2 and DCP15 where some wet, weak soils are evident at the surface, the removal of up to 0.8m of the surficial soil may possibly be required.

In the central portion of the site there are several dams which range between approximately 10m and 25m in diameter. If these dams are to be filled the following treatment will be required prior to the placement of fill.

The following treatment is recommended for the dams in the central portion of the site prior to the placement of fill:-

- Dewater and remove all wet loose/soft material from the dam floor, as well as the dam wall.
- Replace with moisture conditioned controlled fill material compacted in thin layers to at least 98% SMDD.

13.0 RECOMMENDATIONS FOR ROAD CONSTRUCTION

Roads associated with the proposed development are expected to traverse drainage swales, contour across slopes and align directly up and down the slopes. In areas where the roads traverse gullies or larger drainage swales the installation of conduits such as pipes and culverts at the base of the fills may be required. In these areas soft or loose soils and moderate water flows may be encountered requiring appropriate design considerations. In areas where the roads contour the sloping ground surface, sidling filling with minor cutting may be required.

The following recommendations are appropriate for the design and construction of road fills:-

- Strip ground surface and remove all weak and wet areas associated with drainage swales.
- In areas where the sloping terrain is greater than 7° bench the foundation to minimise lateral creep of the fill.
- Place fill material in thin layers and compact to 100% SMDD using non dispersive fill material.
- Over construct the batter and trim back at 2(H) : 1(V) or flatter and topsoil, mulch and vegetate to avoid erosion.
- All drainage swale crossings should comprise pipes, culverts or bridges founding below weak soils and soils subject to erosion by water flows. Alternatively, if the drainage swale is to be filled, surface water can be intercepted upslope and redirected into dedicated drainage easements.

Prior to construction of the roadways on-grade or in cutting, the subgrade should be tyned to a depth of 200mm, moisture conditioned and compacted to at least 100% of the Standard Maximum Dry Density.

14.0 PRELIMINARY FOUNDATION DESIGN PARAMETERS

No information has been supplied by the Client regarding the type of buildings to be constructed or the loads that may be imposed by these buildings but it is anticipated that the proposed development would consist of industrial buildings.

Suitable footing systems include stiffened rafts, high level strips, pads or bored piles founding in structural fill, slopewash soils, alluvial soils, residual clay soils or extremely weathered (XW) bedrock below all topsoils and shallow alluvial and slopewash soils.

The design of the thickened portions of stiffened rafts forming strip and pad footings, and isolated strip and pad footings founding in structural fill or the stiff to very stiff, very stiff and hard, slopewash, alluvial or residual soils and XW bedrock can be based on the design parameters presented in Table 4. All footings should found at a minimum depth of 500mm below the finished ground surface. The total settlements of strip and pad footings less than 2.0m in width should be limited to less than 25mm.

Table 4 – Design of Strip and Pad Footings

Footing	Allowable Bearing Pressures in Founding Material (kPa)			
	Structural Fill	Slopewash/Alluvial Soils	Residual Soil	XW Bedrock
Pads	100	100	150	400
Strips	100	100	125	300

As an alternative to high level strip and pad footings, consideration could be given to the installation of bored piles. Bored piles founding at least 4 pile diameters below the alluvial/slopewash soil surface, residual soil surface or XW bedrock surface but at a minimum depth of 2m can be designed for the allowable end bearing pressures and allowable shaft adhesion values presented in Table 5 below.

Table 5 – Design of Bored Pile Footings

Bored Pile Footings	Allowable Pressures in Founding Material (kPa)		
	Slopewash/Alluvial Soil	Residual Soil	XW Bedrock
Shaft Adhesion	15	20	35
End Bearing	250	350	800

The above shaft adhesion pressures can be adopted providing the piles are not cased, and the walls of the bored pile holes are not softened or otherwise affected by groundwater or the method of construction. The sides and bases of the bored pile holes must be thoroughly cleaned of all loose soil and rock debris and side smear using proper cleaning tools. The practice of using water and spinning the auger is not acceptable.

Groundwater seepage into bored pile holes is not expected but may possibly be encountered in the drainage swales if the boreholes are left open for an extended period. The groundwater seepage rates are not expected to be significant, however the use of liners or construction under bentonite or polymer drilling fluid should not be discounted in these areas. If the bored piles holes are drilled and the concrete poured immediately, the use of liners or construction under bentonite or polymer drilling fluid will most probably not be required.

Groundwater may possibly be encountered within and around the location of borehole BH2 and the drainage swale in the southern portion of the site at the location of DCP15. In these areas the use of liners or construction under bentonite or polymer drilling fluid may be required. Piles constructed using temporary liners must be dewatered prior to the placement of steel and concrete.

The total long term settlements of bored piles designed in accordance with the recommendations made above, are not expected to exceed 25mm.

15.0 BROAD RECOMMENDATIONS FOR INDUSTRIAL DEVELOPMENT

The proposed industrial development at the site is expected to involve minor cutting within the Gently Sloping Topography and Crests and Ridges Landform Units and minor filling within the Flat Topography Landform Unit to form a flat surface for an industrial subdivision. The industrial subdivision is expected to involve the development of industrial lots and associated access roads.

The relatively flat existing ground surface, the typical absence of soft compressible soils, the minimal amount of filling expected and the presence of suitable subsurface foundation material indicates that the proposed development is considered to be feasible and suitable with respect to the existing geotechnical conditions at the site. Minor treatment will be required in the dams and the drainage swales in the far north western portion of the site (BH2) and the southern portion of the site (DCP15) where some minor wet, weak soils are encountered near the surface. This is expected to involve the removal of up to 0.3m of surficial soil, but typically the removal of the upper 0.2m to 0.35m of topsoil in most other areas.

If the recommendations in this report are followed, including the drainage recommendations (Section 8.0) and the recommendations regarding the stripping of the surficial soils (Section 12.0), there will be no major geotechnical issues which will impact on the placement of fill at this site.

Development recommendations for building envelopes at the site are summarised below.

- The fill used in the construction of the batters is placed and compacted to at least 98% Standard Maximum Dry Density (commercial development) and is "Controlled Fill" in accordance with A.S. 2870 (Clause 6.4.2 (a)) – "Residential Slabs and Footings" and A.S. 3798.
- Upslope surficial water flows should also be directed away from the batters limiting the ingress of water into the fill. The pavement drainage system may be sufficient for some batters.
- For building envelopes located within sloping terrain, surface contour drains and subsoil drains should be installed to minimise infiltration of upslope surface run-off into the slopewash soils. These drains should be located upslope of the building pads and along roads and should discharge into the drainage corridors or swales via lined channels or pipes.
- All building pad runoff and roof water should be discharged into stormwater systems via a system of pipe conduits to minimise water infiltration into the slopes. Alternatively roof water can be discharged into roof water tanks for storage.
- Earthworks should take account of the sloping terrain and be limited to cuts and fills which can be adequately constructed by normal industry methods without resorting to specialised contractors.
- No development should take place within any surface irregularities such as washouts, erosion features or fill mounds. If development is to occur in these areas, surface irregularities must be removed prior to development and the drainage improved.
- Vegetation clearing must be kept to a minimum and topsoiling with non dispersive topsoil should be adopted. Revegetation should commence immediately after the completion of earthworks to minimise the potential for erosion.
- Batters are vegetated and mulched to minimise erosion. Properly maintained vegetation should reduce the occurrence of surface erosion by impingent rainfall.
- Where the ground surface slopes at 7° or more, the foundation is benched prior to filling.
- Fill slopes should be no steeper than 2(H):1(V) and be over-constructed and trimmed back to the design geometry to ensure compaction in the outer zones. Natural soil batters should also be no steeper than 2(H):1(V).
- All permanent excavations exceeding 1.0m should be supported by adequately engineered retaining walls incorporating drainage, or battered at appropriate angles.
- Building footings should be founded in structural fill platforms, weathered rock or stiff, very stiff or hard natural clays below any topsoils or weak soils.

- Water storage tanks must be located downslope of the building pads and must be constructed, operated and maintained in accordance with the suppliers requirements. Overflow must be directed to the stormwater system and not be allowed to run-off the slopes.
- Commercial design for all construction at the site should be carried out in accordance with the attached Guidelines for Hillside Construction.

16.0 LIMITS OF INVESTIGATION

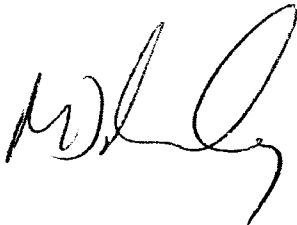
Recommendations given in this report are based on information supplied regarding the proposed building construction in conjunction with the findings of the investigation. Any change in construction type or in building location may require additional testing and/or make recommendations invalid.

Every reasonable effort has been made to locate test sites so that bores are representative of the soil conditions within the area to be investigated. The client should be made aware however, that this assessment has been based on limited site data using small diameter boreholes. In some cases, soil conditions can change dramatically over short distances, therefore even careful exploration programmes may not locate all the variations. If soil conditions differing from those shown on the log sheet are encountered during construction, this office should be advised immediately.

Unless otherwise stated in commissioning documents, any dimensions or slope directions and magnitudes should not be used for any building or costing calculations. Any sketch supplied should be considered only as approximate pictorial evidence of site work.

Please do not hesitate to contact the undersigned if you require any further information.

Yours faithfully

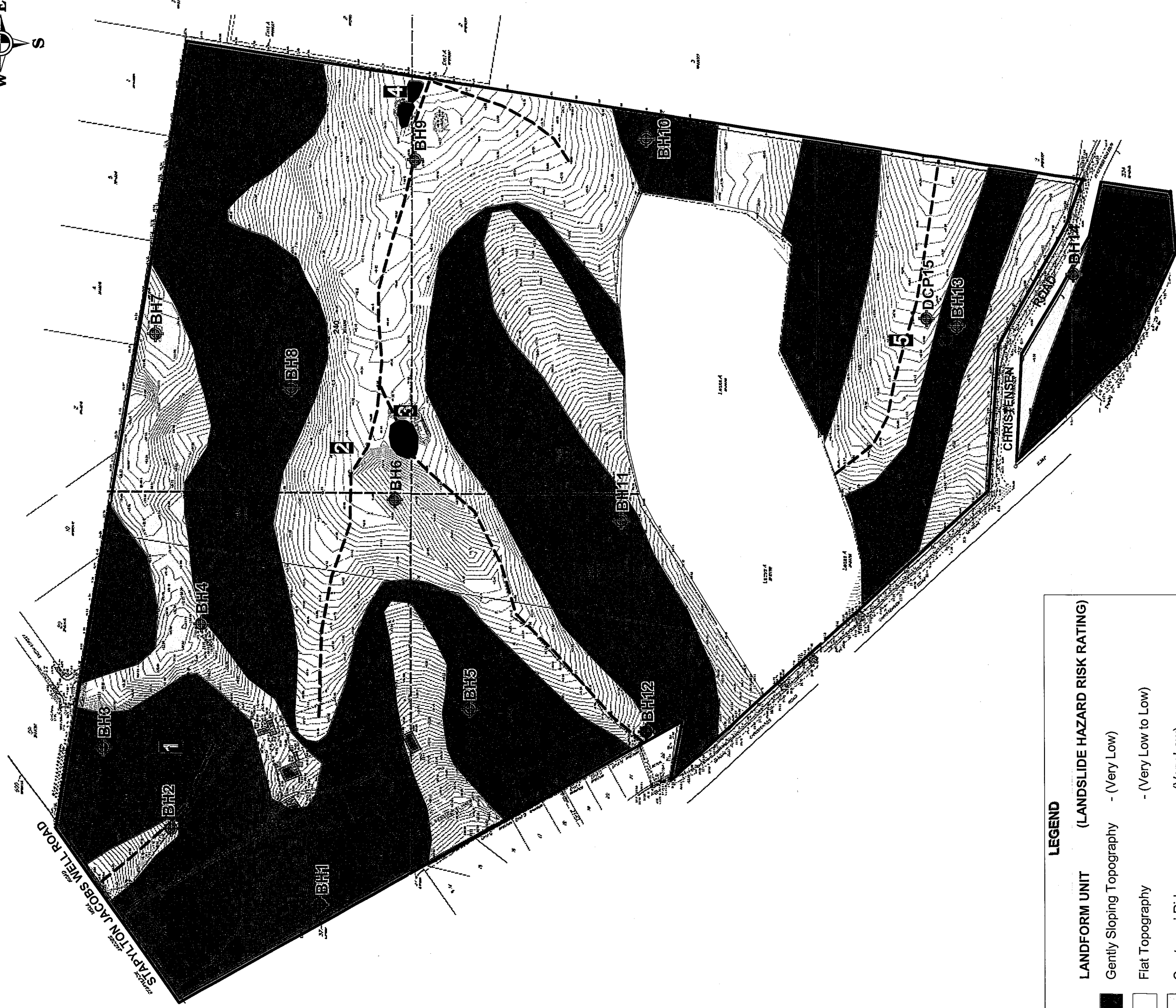
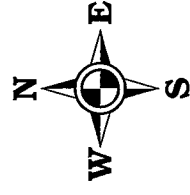


M D RILEY (RPEQ 5641)

for and on behalf of

MORRISON GEOTECHNIC PTY LIMITED

Encl Landform Unit Map and Borehole Location
 Aerial Photo
 Appendix A - Site Photographs
 Appendix B - Contour Plans
 Appendix C - Borehole Logs
 Appendix D - SMEC Landslip Hazard Overlay Map
Important Information About your Geotechnical Engineering Report



LEGEND

LANDFORM UNIT (LANDSLIDE HAZARD RISK RATING)

- Gently Sloping Topography - (Very Low)
- Flat Topography - (Very Low to Low)
- Crests and Ridges - (Very Low)

- Dam
- Drainage Lines
- Photo Plate Location
- Borehole Location



MORRISON GEOTECHNIC PTY LTD

ABN: 51 009 878 899

MORRISON
GEOTECHNIC

Unit 5/ 36 Lawrence Dr, Nerang 4211 Ph: 5596 1599
Email: goldcoastlab@morrisongeo.com.au Fax: 5527 2027

Engineers: D.Riley, J.Daly
& D.Dragun
Geologists: L.Bexley & R.Howchin
Laboratory: M.Morrison

Map Description

Client :	WILLIAM AND PATRICIA HESTER				
Project :	GEOTECHNICAL INVESTIGATION Proposed Industrial Development				
Location	60 STAPYLTON JACOBS WELL ROAD, STAPYLTON				
Project No :	GE11/002	Drawing No :	0931GE11/002	Scale :	1:4000 (A3)



Scale 1:8000 - Lengths are in Metres.



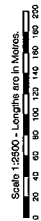

**development
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planning
design
environment
surveying
Brisbane Office
Level 13, 111 St. George's Road, Brisbane Q. 4000
P (07) 3257 0700
F (07) 3257 0700
M (07) 3257 0700
Gold Coast and Logan Office
78 Bunker Street, Yatala Q. 4207
P (07) 3257 0700
F (07) 3257 0700
M (07) 3257 0700
W www.garman.com.au

Hester site
staplyton jacob's well road
staplyton

date: 19-11-10
scale: 1:8000
design: BAW/S&H
plan: 5053 P 00 01

A P P E N D I X ' A '

CONTOUR PLANS

[illegible]

HESTER

CONTOUR AND DETAIL PLAN

Over Lot 1 on RP6882 and Lot
240 on WD31320

Parish of **ALBERT**
County of **Ward**
Local Govt **GOLD COAST**

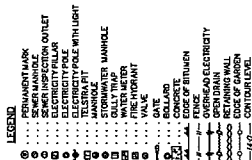
Surveyed Datum	A.H.D.	Date Surveyed	Jan 2011
Station	15218653	Surveyor	A. Macdonald
Interval	0.8	Drawn	S. Hall
Scale	No	Date Drafted	02-02-2011
Sign	PSM (13147)	Checked	
	PL 22.169	Designed	
		Drawn	
		Date Designed	



development perspectives

ACN 010 752 358
Dulwich, Oregon
Box 13
April 13, 2018
F: 503/32918150
F: 503/52117508
Oak Creek and Lopez Office
Acreside, Duckhorn Inn
16000 Highway 101
F: 503/32073224
F: 503/32073401
info@acnenergy.com

REFERENCE No. 5093-10



This plan has been prepared for the exclusive use of the client and is not to be used for any other purpose of the client or relied on by this plan or any other person. It is not to be used for any other purpose of the client or relied on by this plan or any other person. It is not to be used for any other purpose of the client or relied on by this plan or any other person.

HESTER

CONTOUR AND DETAIL PLAN

Over Lot 1 on RP6882 and Lot

County of *Ward*
Local Govt *GOLD COAST CITY COUNCIL*

LOCAL GOV. GOLD COAST CITY COUNCIL

Level Datum	A.H.D.	Date Surveyed Jan 2011
Vertical	(5216.83)	Surveyor A. Macdonald

on tour interval	0.2	Drawn	S. Holt
0.	No	Date Drawn	02-02-2011

NO	PG# 133471	Checked	DATE
10			05 14 00

Original	Revised (on AI original)
10/11/22	10/11/22

1:1000	Drawn
	Date Designed

1

development
design
drawing
development

**development
perspectives**
environment
surveying

ACN 010 722 3088

Dispersal Office
16th Fl
3770 Central Expressway, Suite 4000
San Jose, CA 95128

602/12517304
5 10/7/2016 17:30
5 10/7/2016 17:30

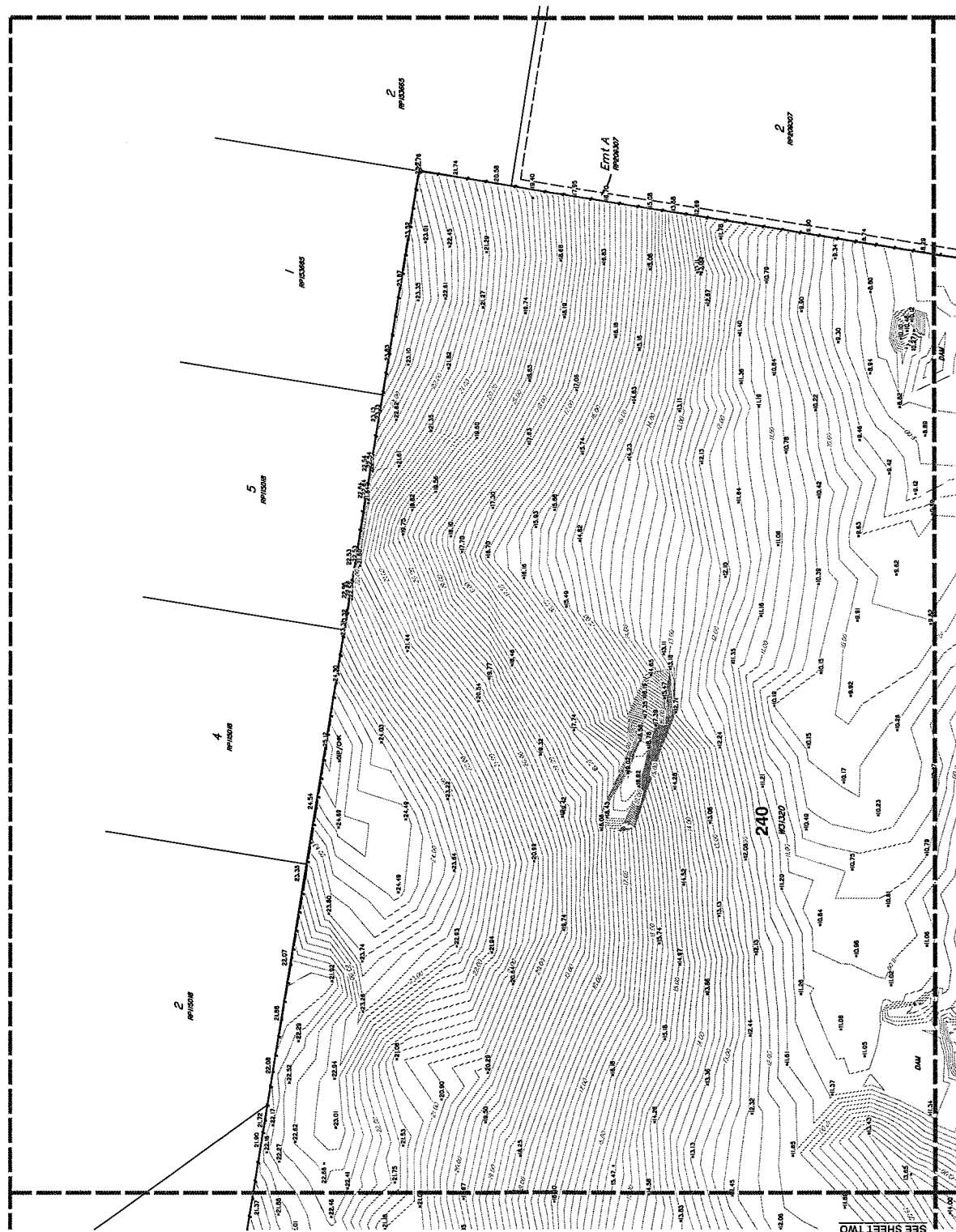
Gold Conch and Lagoon Oikos
Arizona Audubon Park
760 Hurricane Street, Yuma, AZ 85007

E (07) 56013221
 G (07) 22816601

[illegible]

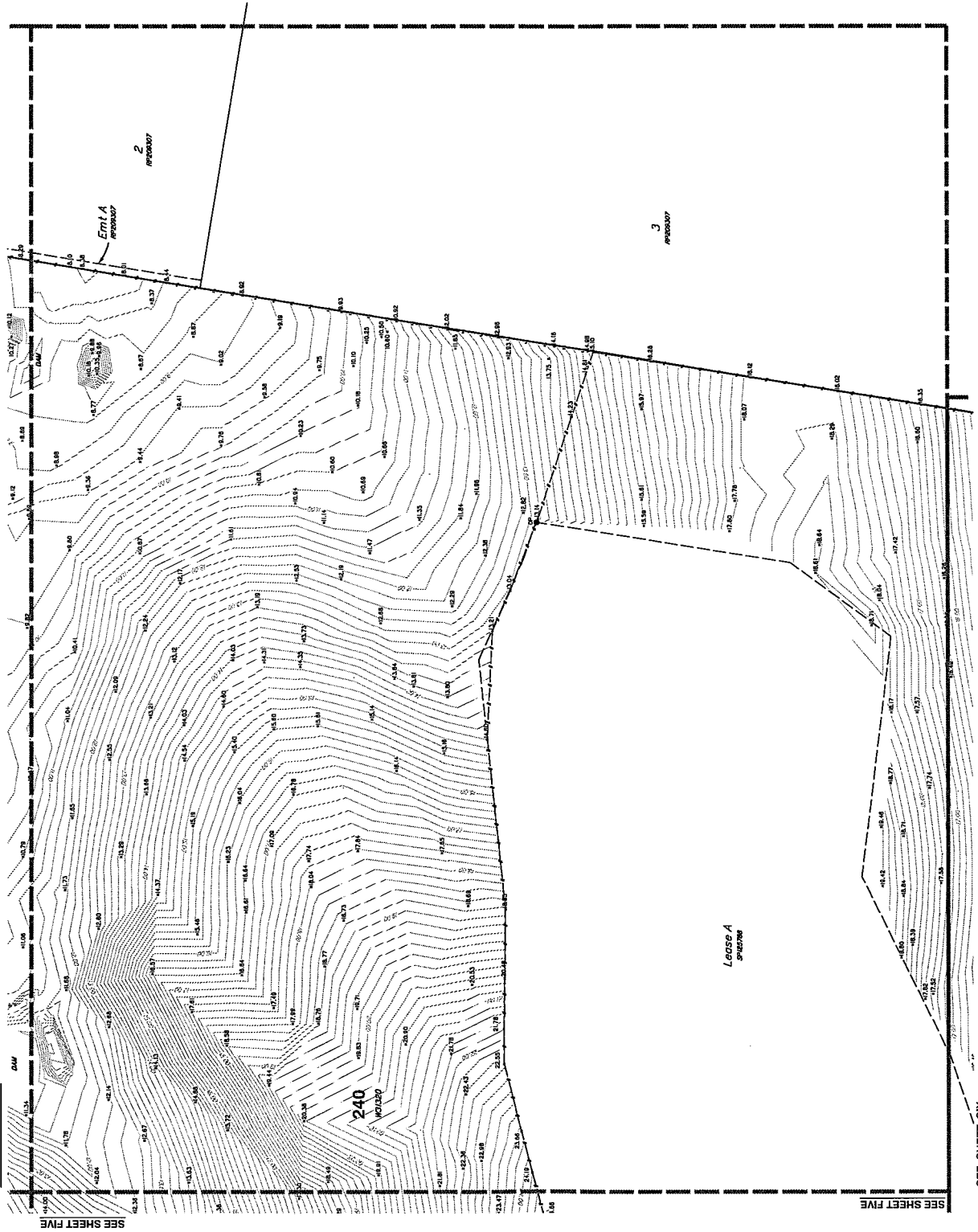
REFERENCE No. 5093-10

PLAN No. 5093 S CD 01



SEE SHEET FOUR

Scale 1:1000 - Longitudinal in Meters.



LEGEND

①	PERMANENT MARK
②	SEWER MANHOLE
③	SEWER INSPECTION OUTLET
④	SEWER MANHOLE
⑤	ELECTRICITY POLE
⑥	ELECTRICITY POLE WITH LIGHT
⑦	WATER TANK
⑧	WATER TANK WITH LIGHT
⑨	STORMWATER MANHOLE
⑩	WATER TOWER
⑪	WATER TOWER
⑫	FIRE HYDRANT
⑬	VALVE
⑭	GATE
⑮	CONCRETE
⑯	EDGE OF BITUMEN
⑰	OVERHEAD ELECTRICITY
⑱	OPEN DRAIN
⑲	WALL OF GARDEN
⑳	COUNTUR LEVEL

149

Notes

This plan has been prepared for the exclusive use of the client and is not to be used for any other purpose. The client is to be held responsible for the use of this plan and for any consequences arising from its use. The client is to be held responsible for the use of this plan and for any consequences arising from its use. The client is to be held responsible for the use of this plan and for any consequences arising from its use.

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A P P E N D I X ' B '

S I T E P H O T O G R A P H S

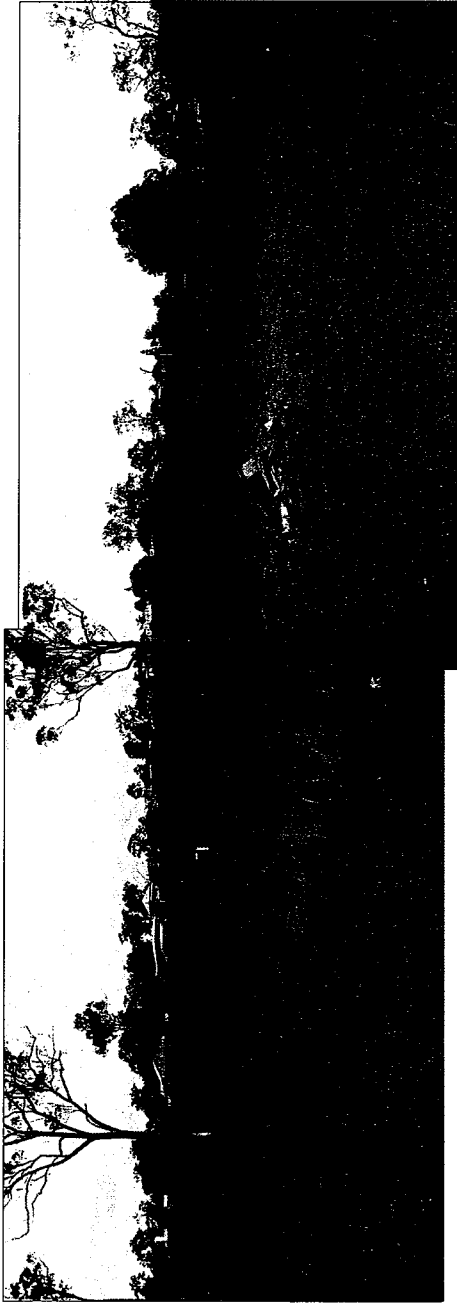


Plate 1 - Looking southwards over Gently Sloping Topography from north western corner of site.
Drainage swale in centre which is aligning left to right.

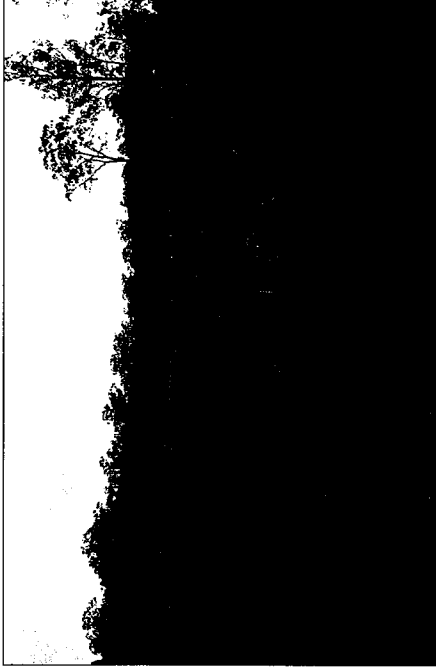


Plate 2 - Looking southwards over Flat Topography in the central northern portion of the site.

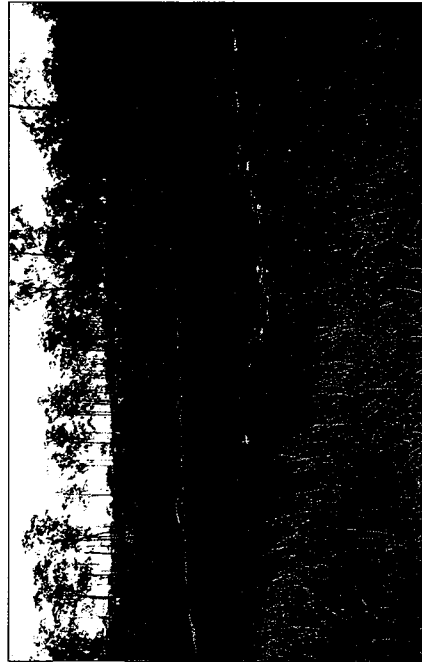


Plate 3 - Large dam within Flat Topography in the central northern portion of the site.



Plate 4 - Dam within Flat Topography in north eastern portion of the site.

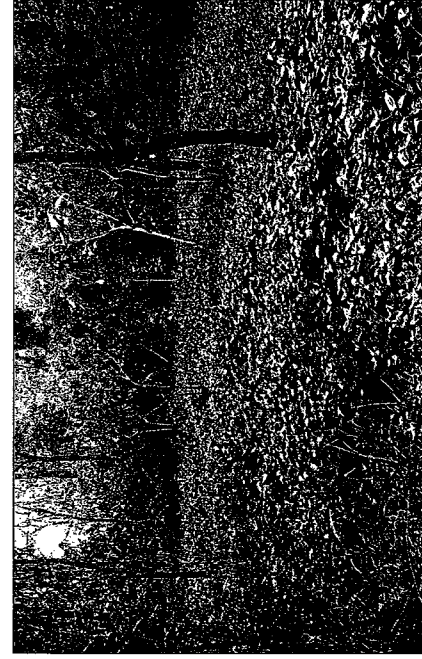


Plate 5 - Drainage swale (Flat Topography) in southern portion of the next adjacent to the location of DCP15.

A P P E N D I X ' C '

BOREHOLE LOGS



Morrison Geotechnic Pty Ltd

A.B.N. 051 009 878 899
PO Box 3063, Darra, QLD 4076
Phone: (07) 3279 0900 Fax: (07) 3279 0955

Engineering Log - Borehole

Borehole No.: **BH1**

Page: 1 of 1

Job Number: GE11/002

Client: W. Hester and P. Hester

Project: Geotechnical Investigation

Location: 60 Stapylton Jacobs Well Road, Stapylton

Easting: 523030.00

Drilling Rig: Jacro 200

Northing: 6932135.00

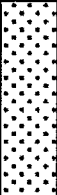
Driller: Morrison Geotechnic

RL:

Logged By: L. Bexley

Total Depth: 1.30

Date: 02/02/2011

Drilling Information				Material Description							Test Samples			
Drill Method	Water	RL	Hole Depth (m)	Soil Origin	Graphic Log	Classification Code	Description	Weathering	Moisture	Consistency - Density - Strength	DC Test Results	Test Depth	Tests	Sample/Result
TC bit with 100mm Dia. Auger			0.25	Topsoil		SM	Silty SAND: Medium dense, fine to medium grained sand, dark grey, trace of clay fines, moist		M	MD		0.4 –	– PP	– 200-220kPa
		0.55	Slope wash		CH	Sandy CLAY: Stiff to very stiff, high plasticity, grey mottled orange brown, fine to medium grained sand, moist		M	St-VSt					
		0.7	Residual		CL-CI	Sandy CLAY: As above but very stiff and low to medium plasticity		M	VSt					
		1.0	Bedrock		SST	SANDSTONE: Extremely weathered, very low strength, orange brown mottled grey	XW		VLS					
		1.2			SST	SANDSTONE: As above but low strength	XW		LS					
			1.3				1.30m: BOREHOLE TERMINATED AT TC REFUSAL							
			2.0											
			3.0											

Comments:

Authorised by:

Date:

Water	Weathering	Consistency	Density	Rock Strength	Tests & Results
Water level on date shown	RS Residual soil	VS Very soft	VL Very loose	ELS Extremely low	U50 Undisturbed 50mm diam tube.
Water inflow	XW Extremely weathered	S Soft	L Loose	D Disturbed sample.	D Disturbed sample.
Water outflow	DW Distinctly weathered	F Firm	MD Medium dense	VLS Very low	SPT Standard Penetration Test, N = number of blows to drive 50mm sampler 300mm with a 63.6kg hammer falling 762mm.
	SW Slightly weathered	St Stiff	D Dense	LS Low	PP Hand penetrometer estimate of unconfined compressive strength, kPa.
	FR Fresh	VSt Very stiff	VD Very dense	MS Medium	S Vane shear value kPa
		H Hard		HS High	DC Dynamic Cone test, 9.09kg hammer, fall 508mm, driving 20mm, 30 deg taper cone fitted to rods of smaller section.
		Moisture		VHS Very high	From AS1289-1993 Methods of Testing Soils for Engineering Purposes
		D Dry M Moist W Wet		EHS Extremely high	



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Engineering Log - Borehole

Borehole No.: **BH2**

Page: 1 of 1

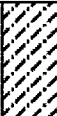
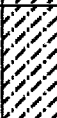
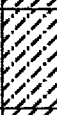
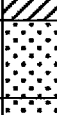
Job Number: GE11/002

Client: W. Hester and P. Hester

Project: Geotechnical Investigation

Location: 60 Stapylton Jacobs Well Road, Stapylton

Easting: 523113.00 Drilling Rig: Jacro 200
Northing: 6932298.00 Driller: Morrison Geotechnic
RL: Logged By: L. Bexley
Total Depth: 2.00 Date: 02/02/2011

Drilling Information				Material Description							Test Samples			
Drill Method	Water	RL	Hole Depth (m)	Soil Origin	Graphic Log	Classification Code	Description	Weathering	Moisture	Consistency - Density - Strength	DC Test Results	Test Depth	Tests	Sample/Result
TC bit with 100mm Dia. Auger				Topsoil		SM	Silty SAND: Loose, fine to medium grained sand, dark brown, trace of clay fines, moist		M	L				
			0.3	Slopewash		SM	Silty SAND: As above but dark grey and wet, with clay fines throughout, fine to coarse grained sand		W	L				
			0.6			SM	Silty SAND: As above but orange brown		W	L				
			0.85			CI-CH	Sandy CLAY: Stiff to very stiff, medium to high plasticity, orange brown streaked grey, fine to medium with some coarse grained sand, moist		M	St-VSt				
			1.2	Residual		CI	Sandy CLAY: As above but very stiff and grey mottled orange brown and medium plasticity		M	St-VSt		1.2 –	PP	200kPa
			1.5	Bedrock		SST	SANDSTONE: Extremely weathered, very low strength, grey	XW		VLS				
			1.7			SST	SANDSTONE: As above but orange brown mottled grey	XW		VLS				
			1.9			SST	SANDSTONE: As above but low strength	XW		LS				
			2.0											
							2.00m: BOREHOLE TERMINATED AT TC REFUSAL							
			3.0											

Comments:

Authorised by:

Date:

Water

▼ Water level
on date shown

► Water inflow

◄ Water outflow

Weathering

RS Residual soil

XW Extremely weathered

DW Distinctly weathered

SW Slightly weathered

FR Fresh

Consistency

VS Very soft

S Soft

F Firm

St Stiff

VSt Very stiff

H Hard

Density

VL Very loose

L Loose

MD Medium dense

D Dense

VD Very dense

Rock Strength

ELS Extremely low

VLS Very low

LS Low

MS Medium

HS High

VHS Very high

EHS Extremely high

Tests & Results

U50 Undisturbed 50mm diam tube.

D Disturbed sample.

SPT Standard Penetration Test, N = number of blows to drive 50mm sampler 300mm with a 63.6kg hammer falling 762mm.

PP Hand penetrometer estimate of unconfined compressive strength, kPa.

S Vane shear value kPa

DC Dynamic Cone test, 9.09kg hammer, fall 508mm, driving 20mm, 30 deg taper cone fitted to rods of smaller section.

From AS1289-1993 Methods of Testing Soils for Engineering Purposes



Morrison Geotechnic Pty Ltd

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PO Box 3063, Darra, QLD 4076
Phone: (07) 3279 0900 Fax: (07) 3279 0955

Engineering Log - Borehole

Borehole No.: **BH3**

Page: 1 of 1

Job Number: GE11/002

Client: W. Hester and P. Hester

Project: Geotechnical Investigation

Location: 60 Stapylton Jacobs Well Road, Stapylton

Easting: 523201.00 Drilling Rig: Jacro 200
Northing: 6932372.00 Driller: Morrison Geotechnic
RL: Logged By: L. Bexley
Total Depth: 0.85 Date: 02/02/2011

Drilling Information				Material Description							Test Samples			
Drill Method	Water	RL	Hole Depth (m)	Soil Origin	Graphic Log	Classification Code	Description	Weathering	Moisture	Consistency - Density - Strength	DC Test Results	Test Depth	Tests	Sample/Result
TC bit with 100mm Dia. Auger				Topsoil		SM	Silty SAND: Medium dense, fine to medium grained sand, dark brown, moist		M	MD				
			0.2	Slopewash		CH	Sandy CLAY: Very stiff, high plasticity, orange brown mottled grey, fine to medium grained sand, moist, some fine to medium gravel		M	VSt				
			0.6	Residual		CL-CI	Sandy CLAY: As above but hard, and low to medium plasticity		M	H				
			0.75	Bedrock		SST	SANDSTONE: Extremely weathered, low strength, grey mottled orange	XW		LS				
			0.85											
			1.0				0.85m: BOREHOLE TERMINATED AT TC REFUSAL							
			2.0											
					</									

Comments:

Authorised by:

Date:

Water	Weathering	Consistency	Density	Rock Strength	Tests & Results
Water level on date shown	RS Residual soil	VS Very soft	VL Very loose	ELS Extremely low	U50 Undisturbed 50mm diam tube.
Water inflow	XW Extremely weathered	S Soft	L Loose	LS Low	D Disturbed sample.
Water outflow	DW Distinctly weathered	F Firm	MD Medium dense	VLS Very low	SPT Standard Penetration Test, N = number of blows to drive 50mm sampler 300mm with a 63.6kg hammer falling 762mm.
	SW Slightly weathered	St Stiff	D Dense	MS Medium	PP Hand penetrometer estimate of unconfined compressive strength, kPa.
	FR Fresh	VSt Very stiff	VD Very dense	HS High	S Vane shear value kPa
		H Hard		VHS Very high	DC Dynamic Cone test, 9.09kg hammer, fall 508mm, driving 20mm, 30 deg taper cone fitted to rods of smaller section.
				EHS Extremely high	From AS1289-1993 Methods of Testing Soils for Engineering Purposes



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PO Box 3063, Darra, QLD 4076
Phone: (07) 3279 0900 Fax: (07) 3279 0955

Engineering Log - Borehole

Borehole No.: **BH4**

Page: 1 of 1

Job Number: GE11/002

Client: W. Hester and P. Hester

Project: Geotechnical Investigation

Location: 60 Stapylton Jacobs Well Road, Stapylton

Easting: 523334.00

Drilling Rig: Jacro 200

Northing: 6932265.00

Driller: Morrison Geotechnic

RL:

Logged By: L. Bexley

Total Depth: 1.30

Date: 02/02/2011

Drilling Information				Material Description				Test Samples			
Drill Method	Water	RL	Hole Depth (m)	Soil Origin	Graphic Log	Classification Code	Description	Weathering	Moisture	Consistency - Density - Strength	DC Test Results
TC bit with 100mm Dia. Auger			0.1	Topsoil		SM	Silty SAND: Medium dense, fine to medium grained sand, dark brown, moist		M	MD	
			0.4	Slopewash		SM	Silty Gravelly SAND: Medium dense, fine to coarse gravel, fine to medium grained sand, orange brown, moist		M	MD	
			1.0	Bedrock		SST	SANDSTONE: Extremely weathered, very low strength, orange brown mottled grey	XW		VLS	
			1.2			SST	SANDSTONE: As above but low strength	XW		LS	
			1.3				1.30m: BOREHOLE TERMINATED AT TC REFUSAL				
			2.0								
			3.0								

Comments:

Authorised by:

Date:

Water	Weathering	Consistency	Density	Rock Strength	Tests & Results
Water level on date shown Water inflow Water outflow	RS Residual soil XW Extremely weathered DW Distinctly weathered SW Slightly weathered FR Fresh	VS Very soft S Soft F Firm St Stiff VSt Very stiff H Hard Moisture D Dry M Moist W Wet	VL Very loose L Loose MD Medium dense D Dense VD Very dense	ELS Extremely low VLS Very low LS Low MS Medium HS High VHS Very high EHS Extremely high	U50 Undisturbed 50mm diam tube. D Disturbed sample. SPT Standard Penetration Test, N = number of blows to drive 50mm sampler 300mm with a 63.6kg hammer falling 762mm. PP Hand penetrometer estimate of unconfined compressive strength, kPa. S Vane shear value kPa DC Dynamic Cone test, 9.09kg hammer, fall 508mm, driving 20mm, 30 deg taper cone fitted to rods of smaller section. From AS1289-1993 Methods of Testing Soils for Engineering Purposes



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Phone: (07) 3279 0900 Fax: (07) 3279 0955

Engineering Log - Borehole

Borehole No.: **BH5**

Page: 1 of 1

Job Number: GE11/002

Client: W. Hester and P. Hester

Project: Geotechnical Investigation

Location: 60 Stapylton Jacobs Well Road, Stapylton

Easting: 523241.00

Drilling Rig: Jacro 200

Northing: 6931971.00

Driller: Morrison Geotechnic

RL:

Logged By: L. Bexley

Total Depth: 1.00

Date: 02/02/2011

Drilling Information				Material Description							Test Samples			
Drill Method	Water	RL	Hole Depth (m)	Soil Origin	Graphic Log	Classification Code	Description	Weathering	Moisture	Consistency - Density - Strength	DC Test Results	Test Depth	Tests	Sample/Result
TC bit with 100mm Dia. Auger			0.2	Topsoil		SM	Silty SAND: Medium dense, fine to medium grained sand, dark grey, moist		M	MD				
			0.7	Slopewash		CH	Silty CLAY: Very stiff, high plasticity, orange brown mottled grey and brown, some fine to medium grained sand, moist		M	VSt				
			0.9	Residual		CL-CI	Silty CLAY: As above but hard, and low to medium plasticity		M	H				
			1.0	Bedrock		ARG	ARGILLITE: Extremely weathered, low strength, dark grey	XW		LS				
			2.0				1.00m: BOREHOLE TERMINATED AT TC REFUSAL							
			3.0											

Comments:

Authorised by:

Date:

Water	Weathering	Consistency	Density	Rock Strength	Tests & Results
Water level on date shown	RS Residual soil	VS Very soft	VL Very loose	ELS Extremely low	U50 Undisturbed 50mm diam tube.
Water inflow	XW Extremely weathered	S Soft	L Loose	low	D Disturbed sample.
Water outflow	DW Distinctly weathered	F Firm	MD Medium dense	VLS Very low	SPT Standard Penetration Test, N = number of blows to drive 50mm sampler 300mm with a 63.6kg hammer falling 762mm.
	SW Slightly weathered	St Stiff	D Dense	LS Low	PP Hand penetrometer estimate of unconfined compressive strength, kPa.
	FR Fresh	VSt Very stiff	VD Verv dense	MS Medium	S Vane shear value kPa
		H Hard		HS High	DC Dynamic Cone test, 9.09kg hammer, fall 508mm, driving 20mm, 30 deg taper cone fitted to rods of smaller section.
		Moisture		VHS Very high	From AS1289-1993 Methods of Testing Soils for Engineering Purposes
		D Dry M Moist W Wet		EHS Extremely high	



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Engineering Log - Borehole

Borehole No.: **BH6**

Page: 1 of 1

Job Number: GE11/002

Client: W. Hester and P. Hester

Project: Geotechnical Investigation

Location: 60 Stapylton Jacobs Well Road, Stapylton

Easting: 523467.00

Drilling Rig: Jacro 200

Northing: 6932054.00

Driller: Morrison Geotechnic

RL:

Logged By: L. Bexley

Total Depth: 2.10

Date: 02/02/2011

Drilling Information				Material Description					Test Samples					
Drill Method	Water	RL	Hole Depth (m)	Soil Origin	Graphic Log	Classification Code	Description	Weathering	Moisture	Consistency - Density - Strength	DC Test Results	Test Depth	Tests	Sample/Result
TC bit with 100mm Dia. Auger			0.1	Topsoil		ML	SILT: Loose, some fine grained sand, dark grey/ black, moist		M	L				
			0.3	Slopewash		ML	SILT: As above but grey		M	L				
			1.0			CH	Silty CLAY: Very stiff, high plasticity, orange brown mottled grey, trace of fine grained sand, moist		M	VSt				
			1.2	Residual		CI	Sandy CLAY: Very stiff, medium plasticity, light grey mottled orange brown, fine to coarse grained sand, moist		M	VSt				
			1.5	Bedrock		SST	SANDSTONE: Extremely weathered, very low strength, orange brown mottled grey	XW		VLS				
			2.0			SST	SANDSTONE: As above but low strength	XW		LS				
			2.1				2.10m: BOREHOLE TERMINATED AT TC REFUSAL							
			3.0											

Comments:

Authorised by:

Date:

Water

Water level on date shown

Water inflow

Water outflow

Weathering

RS Residual soil
XW Extremely weathered
DW Distinctly weathered
SW Slightly weathered
FR Fresh

Consistency

VS Very soft
S Soft
F Firm
St Stiff
VSt Very stiff
H Hard

Density

VL Very loose
L Loose
MD Medium dense
D Dense
VD Very dense

Rock Strength

ELS Extremely low
VLS Very low
LS Low
MS Medium
HS High
VHS Very high
EHS Extremely high

Tests & Results

U50 Undisturbed 50mm diam tube.
D Disturbed sample.
SPT Standard Penetration Test, N = number of blows to drive 50mm sampler 300mm with a 63.6kg hammer falling 762mm.
PP Hand penetrometer estimate of unconfined compressive strength, kPa.
S Vane shear value kPa
DC Dynamic Cone test, 9.09kg hammer, fall 508mm, driving 20mm, 30 deg taper cone fitted to rods of smaller section.
From AS1289-1993 Methods of Testing Soils for Engineering Purposes



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Engineering Log - Borehole

Borehole No.: **BH7**

Page: 1 of 1

Job Number: GE11/002

Client: W. Hester and P. Hester

Project: Geotechnical Investigation

Location: 60 Stapylton Jacobs Well Road, Stapylton

Easting: 523647.00 Drilling Rig: Jacro 200
Northing: 6932318.00 Driller: Morrison Geotechnic
RL: Logged By: L. Bexley
Total Depth: 0.40 Date: 02/02/2011

Drilling Information				Material Description							Test Samples			
Drill Method	Water	RL	Hole Depth (m)	Soil Origin	Graphic Log	Classification Code	Description	Weathering	Moisture	Consistency - Density - Strength	DC Test Results	Test Depth	Tests	Sample/Result
TC bit with			0.1	Top soil		SM	Silty SAND:Medium dense, fine to medium grained sand, brown, moist		M	MD				
			0.2	Slope wash		SM	Silty Gravelly SAND: Medium dense, fine to medium grained sand, orange brown, fine to coarse gravel, moist		M	MD				
			0.3	Bedrock		SST	SANDSTONE:Extremely weathered, low strength, orange brown mottled grey	XW		LS				
			0.4				0.40m: BOREHOLE TERMINATED AT TC REFUSAL							
			1.0											
			2.0											
			3.0											

Comments:

Authorised by:

Date:

Water	Weathering	Consistency	Density	Rock Strength	Tests & Results
Water level on date shown Water inflow Water outflow	RS Residual soil XW Extremely weathered DW Distinctly weathered SW Slightly weathered FR Fresh	VS Very soft S Soft F Firm St Stiff VSt Very stiff H Hard	VL Very loose L Loose MD Medium dense D Dense VD Verv dense	ELS Extremely low VLS Very low LS Low MS Medium HS High VHS Very high EHS Extremely high	U50 Undisturbed 50mm diam tube. D Disturbed sample. SPT Standard Penetration Test, N = number of blows to drive 50mm sampler 300mm with a 63.6kg hammer falling 762mm. PP Hand penetrometer estimate of unconfined compressive strength, kPa. S Vane shear value kPa DC Dynamic Cone test, 9.09kg hammer, fall 508mm, driving 20mm, 30 deg taper cone fitted to rods of smaller section. From AS1289-1993 Methods of Testing Soils for Engineering Purposes
		Moisture			
		D Dry M Moist W Wet			



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Engineering Log - Borehole

Borehole No.: **BH8**

Page: 1 of 1

Job Number: GE11/002

Client: W. Hester and P. Hester

Project: Geotechnical Investigation

Location: 60 Stapylton Jacobs Well Road, Stapylton

Easting: 523588.00

Drilling Rig: Jacro 200

Northing: 6932168.00

Driller: Morrison Geotechnic

RL:

Logged By: L. Bexley

Total Depth: 0.95

Date: 02/02/2011

Drilling Information				Material Description						Test Samples				
Drill Method	Water	RL	Hole Depth (m)	Soil Origin	Graphic Log	Classification Code	Description	Weathering	Moisture	Consistency - Density - Strength	DC Test Results	Test Depth	Tests	Sample/Result
TC bit with 100mm Dia. Auger			0.1	Topsoil		SM	Silty SAND: Medium dense, fine to medium grained sand, dark brown, moist		M	MD	0.5 –	PP	350kPa	
			0.3	Slopewash		SM	Silty Gravelly SAND: Medium dense, fine to medium grained sand, dark brown, fine to coarse gravel, moist		M	MD				
			0.6	Residual		CH	Sandy CLAY: Very stiff, high plasticity, orange brown mottled grey and brown, fine to medium grained sand, moist		M	VSt				
			0.8	Bedrock		CL-CI	Sandy CLAY: As above but hard, and low to medium plasticity, fine to coarse grained sand		M	H				
			0.95	Bedrock		SST	SANDSTONE: Extremely weathered, low strength, orange brown, some quartz veining	XW		LS				
			1.0	0.95m: BOREHOLE TERMINATED AT TC REFUSAL										
			2.0											
			3.0											

Comments:

Authorised by:

Date:

Water	Weathering	Consistency	Density	Rock Strength	Tests & Results
Water level on date shown	RS Residual soil	VS Very soft	VL Very loose	ELS Extremely low	U50 Undisturbed 50mm diam tube.
Water inflow	XW Extremely weathered	S Soft	L Loose	LS Low	D Disturbed sample.
Water outflow	DW Distinctly weathered	F Firm	MD Medium dense	VLS Very low	SPT Standard Penetration Test, N = number of blows to drive 50mm sampler 300mm with a 63.6kg hammer falling 762mm.
	SW Slightly weathered	St Stiff	D Dense	MS Medium	PP Hand penetrometer estimate of unconfined compressive strength, kPa.
	FR Fresh	VSt Very stiff	VD Verv dense	HS High	S Vane shear value kPa
		H Hard		VHS Very high	DC Dynamic Cone test, 9.09kg hammer, fall 508mm, driving 20mm, 30 deg taper cone fitted to rods of smaller section.
				EHS Extremely high	From AS1289-1993 Methods of Testing Soils for Engineering Purposes
		Moisture			
		D Dry M Moist W Wet			



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Engineering Log - Borehole

Borehole No.: **BH9**

Page: 1 of 1

Job Number: GE11/002

Client: W. Hester and P. Hester

Project: Geotechnical Investigation

Location: 60 Stapylton Jacobs Well Road, Stapylton

Easting: 523834.00

Drilling Rig: Jacro 200

Northing: 6932033.00

Driller: Morrison Geotechnic

RL:

Logged By: L. Bexley

Total Depth: 3.00

Date: 02/02/2011

Drilling Information				Material Description							Test Samples				
Drill Method	Water	RL	Hole Depth (m)	Soil Origin	Graphic Log	Classification Code	Description	Weathering	Moisture	Consistency - Density - Strength	DC Test Results	Test Depth	Tests	Sample/Result	
TC bit with 100mm Dia. Auger				Topsoil		MH	SILT: Firm, high plasticity, dark grey/ black, some fine grained sand, moist		M	F		0.8 –	PP	250kPa	
			0.2			CH	Silty CLAY: Firm, high plasticity, dark grey mottled orange brown, trace of fine grained sand, moist,		M	F					
			0.4			CH	Silty CLAY: As above but stiff to very stiff and brown mottled orange brown.		M	St-VSt					
			0.6			CH	Silty CLAY: As above but very stiff and grey mottled orange brown		M	VSt					
			1.0												
			1.1			CH	Silty CLAY: As above but dark grey mottled orange brown		M	VSt					
			2.0												
			2			CH	Sandy CLAY: Very stiff, high plasticity, dark grey mottled orange brown, fine to medium grained sand, moist		M	VSt					
			2.4			CH	Silty CLAY: Very stiff, high plasticity, dark grey, some orange brown mottling, moist		M	VSt					
			2.55			Residual	CL-CI	Silty CLAY: As above but hard and low to medium plasticity		M					H
2.7	Bedrock	ARG	ARGILLITE: Extremely weathered, very low strength, dark grey	XW			VLS								
3.0									2.5 –	PP	260kPa				

Comments:						3.00m: BOREHOLE TERMINATED						Authorised by:			
												Date:			
Water		Weathering		Consistency		Density		Rock Strength		Tests & Results					
▼ Water level on date shown		RS	Residual soil	VS	Very soft	VL	Very loose	ELS	Extremely low	U50	Undisturbed 50mm diam tube.				
		XW	Extremely weathered	S	Soft	L	Loose	VLS	Very low	D	Disturbed sample.				
▶ Water inflow		DW	Distinctly weathered	F	Firm	MD	Medium dense	LS	Low	SPT	Standard Penetration Test, N = number of blows to drive 50mm sampler 300mm with a 63.6kg hammer falling 762mm.				
				St	Stiff			MS	Medium	PP	Hand penetrometer estimate of unconfined compressive strength, kPa.				
◀ Water outflow		SW	Slightly weathered	VSt	Very stiff	D	Dense	HS	High	S	Vane shear value kPa				
		FR	Fresh	H	Hard	VD	Verv dense	VHS	Very high	DC	Dynamic Cone test, 9.09kg hammer, fall 508mm, driving 20mm, 30 deg taper cone fitted to rods of smaller section.				
				Moisture				EHS	Extremely high		From AS1289-1993 Methods of Testing Soils for Engineering Purposes				
				D Dry	M Moist	W Wet									



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Engineering Log - Borehole

Borehole No.: **BH10**

Page: 1 of 1

Job Number: GE11/002

Client: W. Hester and P. Hester

Project: Geotechnical Investigation

Location: 60 Stapylton Jacobs Well Road, Stapylton

Easting: 523856.00 Drilling Rig: Jacro 200
Northing: 6931780.00 Driller: Morrison Geotechnic
RL: Logged By: L. Bexley
Total Depth: 1.00 Date: 02/02/2011

Drilling Information				Material Description						Test Samples				
Drill Method	Water	RL	Hole Depth (m)	Soil Origin	Graphic Log	Classification Code	Description	Weathering	Moisture	Consistency - Density - Strength	DC Test Results	Test Depth	Tests	Sample/Result
TC bit with 100mm Dia. Auger			0.25	Topsoil		SM	Silty SAND: Medium dense, fine to medium grained sand, dark grey moist		M	MD				
				Slopewash		CH	Sandy CLAY: Very stiff, high plasticity, grey streaked orange brown and dark grey, fine grained sand, moist		M	VSt		0.5 –	PP	300kPa
			0.7	Residual		CL-CI	Sandy CLAY: As above but hard and low to medium plasticity		M	H				
			0.9	Bedrock		SST	SANDSTONE: Extremely weathered, low strength, grey	XW		LS				
			1.0											
			2.0				1.00m: BOREHOLE TERMINATED AT TC REFUSAL							
			3.0											

Comments:

Authorised by:

Date:

Water	Weathering	Consistency	Density	Rock Strength	Tests & Results
Water level on date shown	RS Residual soil	VS Very soft	VL Very loose	ELS Extremely low	U50 Undisturbed 50mm diam tube.
Water inflow	XW Extremely weathered	S Soft	L Loose	LS Low	D Disturbed sample.
Water outflow	DW Distinctly weathered	F Firm	MD Medium dense	VLS Very low	SPT Standard Penetration Test, N = number of blows to drive 50mm sampler 300mm with a 63.6kg hammer falling 762mm.
	SW Slightly weathered	St Stiff	D Dense	MS Medium	PP Hand penetrometer estimate of unconfined compressive strength, kPa.
	FR Fresh	VSt Very stiff	VD Very dense	HS High	S Vane shear value kPa
		H Hard		VHS Very high	DC Dynamic Cone test, 9.09kg hammer, fall 508mm, driving 20mm, 30 deg taper cone fitted to rods of smaller section.
				EHS Extremely high	From AS1289-1993 Methods of Testing Soils for Engineering Purposes



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Engineering Log - Borehole

Borehole No.: **BH11**

Page: 1 of 1

Job Number: GE11/002

Client: W. Hester and P. Hester

Project: Geotechnical Investigation

Location: 60 Stapylton Jacobs Well Road, Stapylton

Easting: 523444.00

Drilling Rig: Jacro 200

Northing: 6931806.00

Driller: Morrison Geotechnic

RL:

Logged By: L. Bexley

Total Depth: 1.00

Date: 02/02/2011

Drilling Information				Material Description						Test Samples				
Drill Method	Water	RL	Hole Depth (m)	Soil Origin	Graphic Log	Classification Code	Description	Weathering	Moisture	Consistency - Density - Strength	DC Test Results	Test Depth	Tests	Sample/Result
TC bit with 100mm Dia. Auger				Topsoil		SM	Silty SAND: Medium dense, fine with some medium grained sand, grey, moist		M	MD				
			0.2	Slope wash		CI-CH	Sandy CLAY: Very stiff, medium to high plasticity, grey mottled orange brown, fine to medium grained sand, moist		M	VSt		0.3 –	PP	370kPa
			0.4	Residual		CL-CI	Sandy CLAY: As above but hard and low to medium plasticity		M	H		0.6 –	PP	>600kPa
			0.7	Bedrock		SST	SANDSTONE: Extremely weathered, very low strength	XW		VLS				
			0.9			SST	SANDSTONE: As above but low strength	XW		LS				
			1.0											
							1.00m: BOREHOLE TERMINATED AT TC REFUSAL							
			2.0											
			3.0											

Comments:

Authorised by:

Date:

Water

Water level on date shown

Water inflow

Water outflow

Weathering

RS Residual soil

XW Extremely weathered

DW Distinctly weathered

SW Slightly weathered

FR Fresh

Consistency

VS Very soft

S Soft

F Firm

St Stiff

VSt Very stiff

H Hard

Density

VL Very loose

L Loose

MD Medium dense

D Dense

VD Very dense

Rock Strength

ELS Extremely low

VLS Very low

LS Low

MS Medium

HS High

VHS Very high

EHS Extremely high

Tests & Results

U50 Undisturbed 50mm diam tube.

D Disturbed sample.

SPT Standard Penetration Test, N = number of blows to drive 50mm sampler 300mm with a 63.6kg hammer falling 762mm.

PP Hand penetrometer estimate of unconfined compressive strength, kPa.

S Vane shear value kPa

DC Dynamic Cone test, 9.09kg hammer, fall 508mm, driving 20mm, 30 deg taper cone fitted to rods of smaller section.

From AS1289-1993 Methods of Testing Soils for Engineering Purposes



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Engineering Log - Borehole

Borehole No.: **BH12**

Page: 1 of 1

Job Number: GE11/002

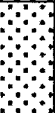
Client: W. Hester and P. Hester

Project: Geotechnical Investigation

Location: 60 Stapylton Jacobs Well Road, Stapylton

Easting: 523205.00
Northing: 6931780.00
RL: 3.00
Total Depth: 3.00

Drilling Rig: Jacro 200
Driller: Morrison Geotechnic
Logged By: L. Bexley
Date: 02/02/2011

Drilling Information				Material Description							Test Samples			
Drill Method	Water	RL	Hole Depth (m)	Soil Origin	Graphic Log	Classification Code	Description	Weathering	Moisture	Consistency - Density - Strength	DC Test Results	Test Depth	Tests	Sample/Result
TC bit with 100mm Dia. Auger				Topsoil		SM	Silty SAND: Medium dense, fine to medium grained sand, dark grey brown, moist		M	MD				
			0.3	Slopewash		SM	Silty SAND: As above but grey with some orange brown streaking		M	MD				
		0.5			CH	Sandy CLAY: Very stiff, high plasticity, orange brown mottled grey, fine to medium grained sand, moist		M	VSt		0.6 –	PP	250kPa	
		0.9		CI	Sandy CLAY: As above but medium plasticity		M	VSt						
		1.1		CH	Sandy CLAY: As above but high plasticity, and grey streaked orange brown		M	VSt						
		2.0												
		2.5	Residual		CI	Sandy CLAY: As above but medium plasticity and orange brown mottled grey, and fine to coarse grained sand		M	VSt					
		2.7	Bedrock		SST	SANDSTONE: Extremely weathered, very low strength, orange brown	XW		VLS					
		3.0												

3.00m: BOREHOLE TERMINATED

Comments:

Authorised by:

Date:

Water	Weathering	Consistency	Density	Rock Strength	Tests & Results
Water level on date shown	RS Residual soil	VS Very soft	VL Very loose	ELS Extremely low	U50 Undisturbed 50mm diam tube.
Water inflow	XW Extremely weathered	S Soft	L Loose	low	D Disturbed sample.
Water outflow	DW Distinctly weathered	F Firm	MD Medium dense	VLS Very low	SPT Standard Penetration Test, N = number of blows to drive 50mm sampler 300mm with a 63.6kg hammer falling 762mm.
	SW Slightly weathered	St Stiff	D Dense	LS Low	PP Hand penetrometer estimate of unconfined compressive strength, kPa.
	FR Fresh	VSt Very stiff	VD Very dense	MS Medium	S Vane shear value kPa
		H Hard		HS High	DC Dynamic Cone test, 9.09kg hammer, fall 508mm, driving 20mm, 30 deg taper cone fitted to rods of smaller section.
				VHS Very high	From AS1289-1993 Methods of Testing Soils for Engineering Purposes
				EHS Extremely high	



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Engineering Log - Borehole

Borehole No.: **BH13**

Page: 1 of 1

Job Number: GE11/002

Client: W. Hester and P. Hester

Project: Geotechnical Investigation

Location: 60 Stapylton Jacobs Well Road, Stapylton

Easting: 523652.00 Drilling Rig: Jacro 200
Northing: 6931439.00 Driller: Morrison Geotechnic
RL: Logged By: L. Bexley
Total Depth: 0.75 Date: 02/02/2011

Drilling Information				Material Description							Test Samples			
Drill Method	Water	RL	Hole Depth (m)	Soil Origin	Graphic Log	Classification Code	Description	Weathering	Moisture	Consistency - Density - Strength	DC Test Results	Test Depth	Tests	Sample/Result
TC bit with 100mm Dia.				Topsoil		SM	Silty SAND: Loose, fine to medium grained sand, dark brown, moist		M	L				
			0.2	Slopewash		SM	Silty SAND: As above but grey		M	L				
		0.35	CH			Sandy CLAY: Very stiff, high plasticity, grey mottled orange brown, fine to medium grained sand, moist		M	VSt					
			0.6	Residual		CL	Sandy CLAY: As above but hard and low plasticity, orange brown mottled grey		M	H				
			0.7	Bedrock		CL			M	H				
			0.75			SST	SANDSTONE: Extremely weathered, very low strength, orange brown mottled grey	XW		VLS				
			1.0				0.75m: BOREHOLE TERMINATED AT TC REFUSAL							
			2.0											
			3.0											

Comments:

Authorised by:

Date:

Water	Weathering	Consistency	Density	Rock Strength	Tests & Results
▼ Water level on date shown	RS Residual soil	VS Very soft	VL Very loose	ELS Extremely low	U50 Undisturbed 50mm diam tube.
► Water inflow	XW Extremely weathered	S Soft	L Loose	LS Low	D Disturbed sample.
◄ Water outflow	DW Distinctly weathered	F Firm	MD Medium dense	VLS Very low	SPT Standard Penetration Test, N = number of blows to drive 50mm sampler 300mm with a 63.6kg hammer falling 762mm.
	SW Slightly weathered	St Stiff	D Dense	MS Medium	PP Hand penetrometer estimate of unconfined compressive strength, kPa.
	FR Fresh	H Hard	VD Very dense	HS High	S Vane shear value kPa
		Moisture		VHS Very high	DC Dynamic Cone test, 9.09kg hammer, fall 508mm, driving 20mm, 30 deg taper cone fitted to rods of smaller section.
		D Dry M Moist W Wet		EHS Extremely high	From AS1289-1993 Methods of Testing Soils for Engineering Purposes



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Engineering Log - Borehole

Borehole No.: **BH14**

Page: 1 of 1

Job Number: GE11/002

Client: W. Hester and P. Hester

Project: Geotechnical Investigation

Location: 60 Stapylton Jacobs Well Road, Stapylton

Easting: 523707.00

Drilling Rig: Jacro 200

Northing: 6931312.00

Driller: Morrison Geotechnic

RL:

Logged By: L. Bexley

Total Depth: 1.10

Date: 02/02/2011

Drilling Information				Material Description							Test Samples			
Drill Method	Water	RL	Hole Depth (m)	Soil Origin	Graphic Log	Classification Code	Description	Weathering	Moisture	Consistency - Density - Strength	DC Test Results	Test Depth	Tests	Sample/Result
TC bit with 100mm Dia. Auger			0.15	Topsoil		SM	Silty SAND: Loose, fine grained sand, dark grey, moist		M	L				
				Slopewash		CH	Sandy CLAY: Hard, high plasticity, grey mottled orange brown and light grey, fine to medium grained sand, moist		M	H				
			0.7	Residual		CL-CI	Sandy CLAY: As above but low to medium plasticity		M	H				
			1.0	Bedrock		SST	SANDSTONE: Extremely weathered, low strength, grey mottled orange brown	XW		LS				
			1.1				1.10m: BOREHOLE TERMINATED AT TC REFUSAL							
			2.0											
			3.0											

Comments:

Authorised by:

Date:

Water	Weathering	Consistency	Density	Rock Strength	Tests & Results
Water level on date shown	RS Residual soil	VS Very soft	VL Very loose	ELS Extremely low	U50 Undisturbed 50mm diam tube.
Water inflow	XW Extremely weathered	S Soft	L Loose	LS Low	D Disturbed sample.
Water outflow	DW Distinctly weathered	F Firm	MD Medium dense	VLS Very low	SPT Standard Penetration Test, N = number of blows to drive 50mm sampler 300mm with a 63.6kg hammer falling 762mm.
	SW Slightly weathered	St Stiff	D Dense	MS Medium	PP Hand penetrometer estimate of unconfined compressive strength, kPa.
	FR Fresh	H Hard	VD Very dense	HS High	S Vane shear value kPa
				VHS Very high	DC Dynamic Cone test, 9.09kg hammer, fall 508mm, driving 20mm, 30 deg taper cone fitted to rods of smaller section.
				EHS Extremely high	From AS1289-1993 Methods of Testing Soils for Engineering Purposes
		Moisture			
		D Dry M Moist W Wet			



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Engineering Log - DCP Test

DCP No.: **DCP15**

Page: 1 of 1

Job Number: GE11/002

Client: W. Hester and P. Hester

Project: Geotechnical Investigation

Location: 60 Stapylton Jacobs Well Road, Stapylton

Easting: 523660.00

Drilling Rig:

Northing: 6931473.00

Driller: Morrison Geotechnic

RL:

Logged By: L. Bexley

Total Depth: 1.40

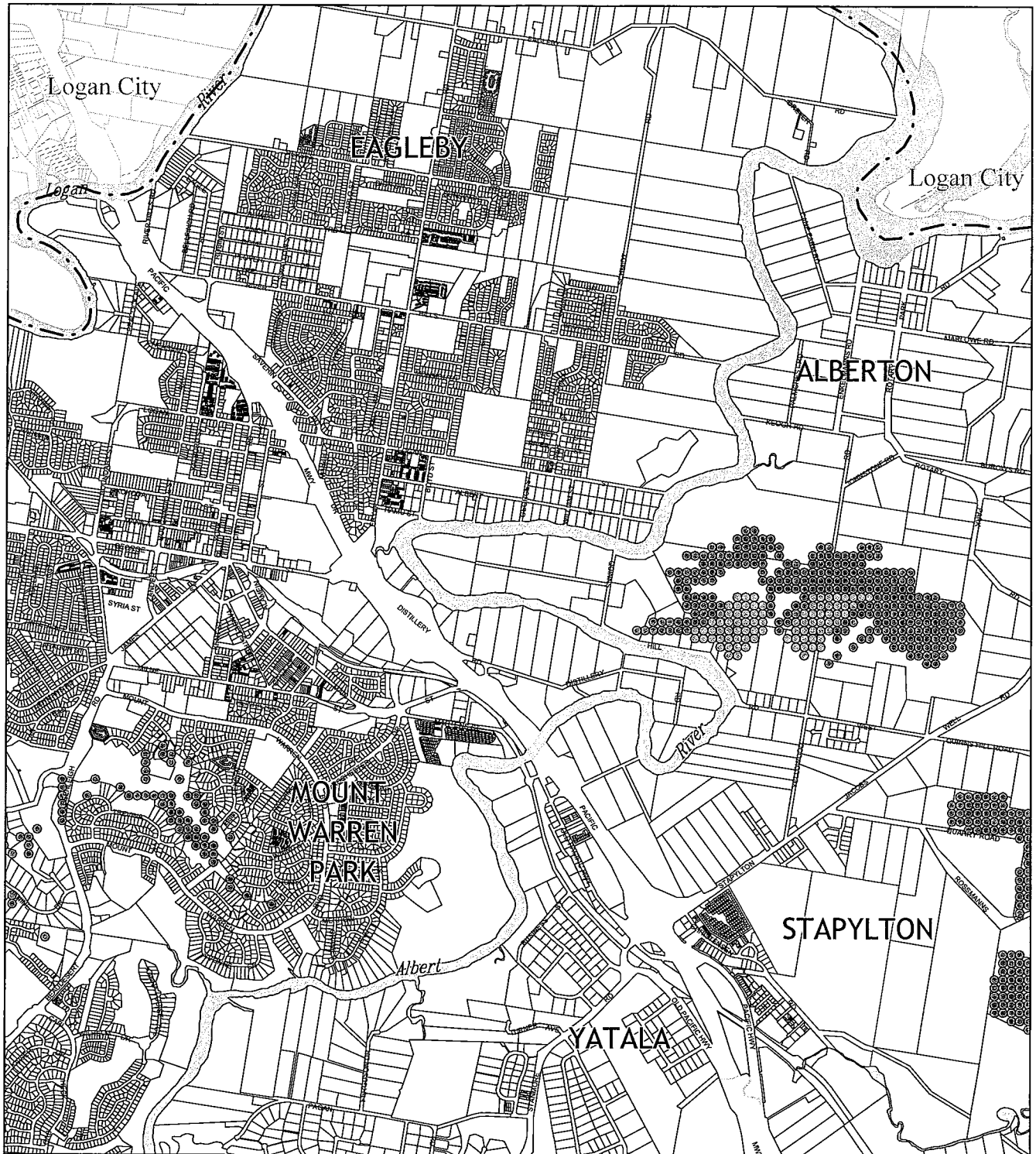
Date: 02/02/2011

Drilling Information				Material Description							Test Samples			
Drill Method	Water	RL	Hole Depth (m)	Soil Origin	Graphic Log	Classification Code	Description	Weathering	Moisture	Consistency - Density - Strength	DC Test Results	Test Depth	Tests	Sample/Result
			1.0				DCP test indicates bedrock encountered at a depth of approximately 1.2m.				0			
											0			
											1			
											0			
											2			
											2			
											3			
											3			
											6			
											6			
											7			
											10			
											13			
											15			
			2.0				1.40m: DCP TERMINATED							
			3.0											

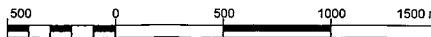
Comments:						Authorised by:	
						Date:	
Water	Weathering	Consistency	Density	Rock Strength	Tests & Results		
▼ Water level on date shown	RS Residual soil	VS Very soft	VL Very loose	ELS Extremely low	U50 Undisturbed 50mm diam tube.		
▶ Water inflow	XW Extremely weathered	S Soft	L Loose	VLS Very low	D Disturbed sample.		
◀ Water outflow	DW Distinctly weathered	F Firm	MD Medium dense	LS Low	SPT Standard Penetration Test, N = number of blows to drive 50mm sampler 300mm with a 63.6kg hammer falling 762mm.		
	SW Slightly weathered	St Stiff	D Dense	MS Medium	PP Hand penetrometer estimate of unconfined compressive strength, kPa.		
	FR Fresh	H Hard	VD Verv dense	HS High	S Vane shear value kPa		
		Moisture		VHS Very high	DC Dynamic Cone test, 9.09kg hammer, fall 508mm, driving 20mm, 30 deg taper cone fitted to rods of smaller section.		
		D Dry M Moist W Wet		EHS Extremely high	From AS1289-1993 Methods of Testing Soils for Engineering Purposes		

A P P E N D I X ' D '

SMEC LANDSLIP HAZARD OVERLAY MAP



Legend



-  VERY HIGH RISK OF INSTABILITY
-  HIGH RISK OF INSTABILITY
-  MODERATE RISK OF INSTABILITY
-  VERY LOW RISK OF INSTABILITY

INFORMATION IS BASED UPON GOLD COAST CITY COUNCIL DATA TO DATE. FOR FURTHER INFORMATION, A GEOTECHNICAL STUDY SHOULD BE UNDERTAKEN.

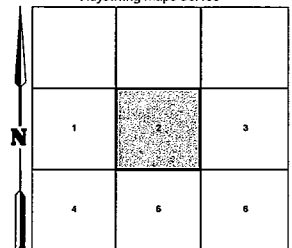
© Gold Coast City Council 2008

Based on Cadastral Data provided with the permission of the Department of Natural Resources and Water. (Current as at March 2008)
While every care is taken to ensure the accuracy of this data, the Gold Coast City Council makes no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and disclaims all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damage) and costs which you might incur as a result of the data being inaccurate or incomplete in any way and for any reason.

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Adjoining Maps Series



Important Information About Your Geotechnical Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

The following information is provided to help you manage your risks.

Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical engineering study conducted for a civil engineer may not fulfill the needs of a construction contractor or even another civil engineer. Because each geotechnical engineering study is unique, each geotechnical engineering report is unique, prepared *solely* for the client. *No one except you* should rely on your geotechnical engineering report without first conferring with the geotechnical engineer who prepared it. *And no one—not even you—*should apply the report for any purpose or project except the one originally contemplated.

A Geotechnical Engineering Report Is Based on A Unique Set of Project-Specific Factors

Geotechnical engineers consider a number of unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, *do not rely on a geotechnical engineering report* that was:

- not prepared for you,
- not prepared for your project,
- not prepared for the specific site explored, or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical engineering report include those that affect:

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light industrial plant to a refrigerated warehouse,

- elevation, configuration, location, orientation, or weight of the proposed structure,
- composition of the design team, or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.*

Subsurface Conditions Can Change

A geotechnical engineering report is based on conditions that existed at the time the study was performed. *Do not rely on a geotechnical engineering report* whose adequacy may have been affected by: the passage of time; by man-made events, such as construction on or adjacent to the site; or by natural events, such as floods, earthquakes, or groundwater fluctuations. *Always* contact the geotechnical engineer before applying the report to determine if it is still reliable. A minor amount of additional testing or analysis could prevent major problems.

Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions *only* at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an *opinion* about subsurface conditions throughout the site. Actual subsurface conditions may differ—sometimes significantly—from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide construction observation is the most effective method of managing the risks associated with unanticipated conditions.

A Report's Recommendations Are *Not* Final

Do not overrely on the construction recommendations included in your report. *Those recommendations are not final*, because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations only by observing actual subsurface conditions revealed during construction. *The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's recommendations if that engineer does not perform construction observation.*

A Geotechnical Engineering Report Is Subject To Misinterpretation

Other design team members' misinterpretation of geotechnical engineering reports has resulted in costly problems. Lower that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Contractors can also misinterpret a geotechnical engineering report. Reduce that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing construction observation.

Do Not Redraw the Engineer's Logs

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize that separating logs from the report can elevate risk.*

Give Contractors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make contractors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give contractors the complete geotechnical engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise contractors that the report was not prepared for purposes of bid development and that the

report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure contractors have sufficient time to perform additional study.* Only then might you be in a position to give contractors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

Read Responsibility Provisions Closely

Some clients, design professionals, and contractors do not recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that have led to disappointments, claims, and disputes. To help reduce such risks, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations", many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

The equipment, techniques, and personnel used to perform a *geoenvironmental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical engineering report does not usually relate any geoenvironmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures.* If you have not yet obtained your own geoenvironmental information, ask your geotechnical consultant for risk management guidance. *Do not rely on an environmental report prepared for someone else.*

Rely on Your Geotechnical Engineer for Additional Assistance

Membership in ASFE exposes geotechnical engineers to a wide array of risk management techniques that can be of genuine benefit for everyone involved with a construction project. Confer with your ASFE-member geotechnical engineer for more information.

ASFE PROFESSIONAL FIRMS PRACTICING IN THE GEOSCIENCES

8811 Colesville Road Suite G106 Silver Spring, MD 20910

Telephone: 301-565-2733 Facsimile: 301-589-2017

email: info@asfe.org www.asfe.org

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IIGER06983.5M

Our reference: PN163781/01/DA1
MCU201701550
Your reference: 5738

Decision notice— change application approval including amended suite of development conditions for MCU201100650

(Given under section 83(1) of the *Planning Act 2016*.)

The Council of the City of Gold Coast received your minor change application made under section 78 of the *Planning Act 2016* on 26 October 2017 for the development approval dated 04 March 2013.

Date of decision notice: 23 November 2017

Applicant details

Applicant name: KS8 Pty Ltd
C/- Gassman Development Perspectives

Applicant contact details: PO Box 392
BEENLEIGH QLD 4207

Application details

Application number: MCU201701550

Approval sought: Minor change

Details of the change: Amend the table of development in relation to the size of the lots (4,000m² to 2,000m²) to bring the approval in line with the current City Plan.

Original Application number: MCU201100650

Details of original decision: Preliminary Approval for making a Material Change of Use to override the planning scheme for industry uses

Date of original decision: 04 March 2013

Location details

Street address: 31 Yellowwood Road, 60 Stapylton Jacobs Well Road and 82 Christensen Road, Stapylton

Real property description: Lot 4 on RP6843 , Lot 1 on RP6882 and Lot 240 on W31320

Decision

Date of decision: 21 November 2017

Decision details: Under Delegated Authority, the Manager of the City Development Branch of Council has resolved to Approve the change in full and amend the existing conditions of approval and/or impose new conditions

- Condition B 2 a – Amend
- Condition C 1 a – Amend
- Condition 69 – Cancel

Affected Entity(s) for the application

Not applicable – no part of the application required referral to an affected entity.

Details of the approval

Preliminary Approval

Material Change of Use

Conditions

New and/or amended conditions of approval for a preliminary approval for a material change of use for Industry Uses are enclosed in this notice.

A full suite of development conditions for the development approval is also enclosed in this notice.

Further development permits

The following development permits are required to be obtained before the development can be carried out:

- Development Permit
- Operational Works

Notwithstanding the above, other approvals/development permits may be required.

Properly made submissions

Not applicable—No part of the application required public notification.

Approved plans and drawings

The approved change(s) does not affect the approved plans and drawings. The original approved plans and drawings are attached and are identified in the conditions imposed by Council in the amended suite of development conditions.

Appeal rights

Applicant	You have appeal rights in relation to this decision. An appeal may be made against a responsible entity's decision for a change application. An appeal must be started within 20 business days after this notice is given to you. An appeal may be made to the Planning and Environment Court or, for certain matters which are identified in section 1(2) of Schedule 1 of the <i>Planning Act 2016</i>, to a development tribunal. An appeal is started by lodging a notice of appeal with the registrar of the Planning and Environment Court or a development tribunal, as applicable. The notice of appeal must be in the approved form, succinctly state the grounds of the appeal and be accompanied by the required fee. An appellant to the Planning and Environment Court must give a copy of the notice of appeal, within 10 business days after the appeal is started, to the persons identified in section 230(3) of the <i>Planning Act 2016</i>. A person who is appealing to the Planning and Environment Court must comply with the rules of the court that apply to the appeal. An extract of Chapter 6, Part 1 and Schedule 1 of the <i>Planning Act 2016</i> is attached to this notice, which sets out further information about the appeal rights.
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For further information please contact Thalia Allsop, Planner, on p: 07 5582 8866 or via email mail@goldcoast.qld.gov.au who will be pleased to assist.

AUTHORISED BY

Sheena Phillips
A/ Supervisor (North)
For the Chief Executive Officer
Council of the City of Gold Coast

Enc:
New and/or amended conditions imposed by Council, as the Responsible Entity
Amended suite of development conditions for development approval MCU201701550

Attach:
Stamped approved plans and drawings for development approval MCU201100650

New and/or amended conditions imposed by Council as the Responsible Entity

Condition B 2 a F: Reconfiguration of a Lot currently reads:

B Under Delegated Authority the Manager of the City Development Branch gives a new decision notice approving the issue of preliminary approval for material change of use to override the Planning Scheme for Industry Uses, subject to the following conditions:

2 The following variations to the effect of the planning scheme:

a Type of assessment

The following tables of development vary the effect of Section A/B/C/D/E/F/G of the Yatala Enterprise Area Local Area Plan Table of Development for determining the type of assessment for the approved material change of use and operational work relating to the approved material change of use:

F: RECONFIGURATION OF A LOT

Exempt	Self Assessable	Code Assessable	Impact Assessable
Precinct A and B (Low Impact and Service Industry and General Impact Business and Industry)			
		Results in no lots with an area less than 4,000m ² ; OR Entails only a Community Title Subdivision (including Standard Format Plan and/or Volumetric Lots), or a Volumetric Lot within a building, or a leasehold subdivision of an existing approved development	

Is changed to read as follows:

B Under Delegated Authority the Manager of the City Development Branch gives a new decision notice approving the issue of preliminary approval for material change of use to override the Planning Scheme for Industry Uses, subject to the following conditions:

2 The following variations to the effect of the planning scheme:

a Type of assessment

The following tables of development vary the effect of Section A/B/C/D/E/F/G of the Yatala Enterprise Area Local Area Plan Table of Development for determining the type of assessment for the approved material change of use and operational work relating to the approved material change of use:

F: RECONFIGURATION OF A LOT

Exempt	Self Assessable	Code Assessable	Impact Assessable
Precinct A and B (Low Impact and Service Industry and General Impact Business and Industry)			
		Results in no lots with an area less than 2,000m ² ; OR Entails only a Community Title Subdivision (including Standard Format Plan and/or Volumetric Lots), or a Volumetric Lot within a building, or a leasehold subdivision of an existing approved development	

Condition C 1 currently reads:

C The conditions that attach to this preliminary approval are as follows:

APPROVED PLANS/DRAWINGS/documents

1 Amended plans/drawings/documents to be submitted

Amended plans/drawings must be submitted generally in accordance with:

Plan No.	Title	Date	Prepared by
5093 P 00 12A	Landuse Classification and Staging Plan	06/11/2012	Gassman Development Perspectives
N/A	Generations Industrial Park Place Code	November 2012	Gassman Development Perspectives

Showing the following amendments to the Landuse Classification and Staging Plan;

- i Demonstrate the provision of a reserve area 20metres wide for the length of the eastern property boundary. This area is to be labelled as 'Covenant Area' on the Landuse Classification and Staging Plan;
- ii Demonstrate the provision of a minimum ten (10) metre wide buffer for the length of the western property boundary of Precinct A and six (6) metres wide for the entire length of the subject site adjoining the Stapylton Jacobs Well Road frontage;
- iii Include a notation on the Landuse Classification and Staging Plan that states 'the landscaped buffer areas shall be established and maintained for the life of the development. No building works are to occur within the landscape buffer areas unless otherwise approved by the Chief Executive Officer;'
- iv Include a notation on the Landuse Classification and Staging Plan that states 'roadworks and land dedication associated with Road 1, Christensen Road, Eastern Service Road and Christensen Road South will be subject to the detailed design for Stage 4 of the development;'
- v Include a notation on the Landuse Classification and Staging Plan that states 'lot access on the southern side of Christensen Road South is subject to further evaluation and approval following the detailed design of roadworks in Stage 4 of the development;'
- vi Delete the reference to 'completion year;' and
- vii Include a notation on the plan that states 'development within Precinct C shall not occur until all other development within the remaining area of the Generations Industrial Park is exhausted.'

Showing the following amendments to the Generations Industrial Park Place Code:

- viii The inclusion of the words 'Any use, not listed in Table A Material Change of Use Table of Development, should be considered undesirable or inappropriate in the Precinct to which the Table of Development applies. Any Material Change of Use not individually listed in the relevant Table of Development will be treated as an Impact Assessable development';
- ix The inclusion of the words 'Development within Precinct C shall not occur until all other development within the remaining area of the Generations Industrial Park is exhausted';
- x The inclusion of the following within the Precinct A Place Code Intent statement of the Generations Industrial Park Place Code:
 - A 'Strict building and operational restrictions, including building design, building construction and hours of operation and delivery and collection activities, apply to development within Precinct A. The 10metre wide landscaped buffer to be established along the western property boundary of Precinct A shall be established to minimise the potential detrimental impacts of development within Precinct A on the adjoining residential development;'
- xi Deletion of the reference to Service Station from the Low Impact Industry definitions within the section 3.3 of the Generations Industrial Park Place Code;

- xii Deletion of the reference to 'Dangerous Goods' from the Low Impact Industry definitions within section 3.3 of the Generations Industrial Park Place Code;
- xiii The deletion of 'Family Accommodation' from the Table of Development as such a use is not considered appropriate;
- xiv The deletion of Detached Dwelling, Working from Home, Low Rise Commercial tourist Accommodation, Child Care Centres and Ecotourism Facility Specific Development Codes from the 'Relevant Code' tables listed in the Generations Industrial Park Place Code;
- xv Amend within section 6.3 Development Requirements, to include a new Acceptable Solution in association with PC4 that states that 'buildings shall be setback 50 metres from the adjoining property boundary of the Stapylton Landfill.' The 50 metres shall be inclusive of the vegetated buffer area adjoining the eastern property boundary;
- xvi Amend within section 6.3 Development Requirements, Acceptable Solution AS4.3 to replace the reference to dot-points with lettering;
- xvii Amend within section 6.3 Development Requirements, to include a new Acceptable Solution and associated Performance Criteria for Development that is self assessable, code assessable or impact assessable. The AS is to state 'For development located within Precinct C an Environmental Management Plan (EMP) has been prepared and approved by Council and the development complies with the requirements of the EMP. The EMP is to be prepared in accordance with the Planning Scheme Policy 10 – Guidelines for Preparing Management Plans and Plans of Development.' The associated PC is to state 'The environmental mitigation methods for the development as detailed within an Environmental Management Plan must take into account and seek to ameliorate any negative aspects of the existing amenity of the local area having regard, but not limited, to the impact of noise, hours of operation, visual amenity, odour, emissions and dust';
- xviii Amend within section 6.3 Development Requirements, Acceptable Solution AS21.6 of the Generations Code to reference a twenty (20) metre wide north-south buffer;
- xix Amend within section 6.3 Development Requirements, Acceptable Solution AS28 to state that the minimum area for subdivision within Precinct C is one (1) hectare;
- xx Amend within section 6.3 Development Requirements, to include an additional Acceptable Solution in relation to Performance Criteria PC28 to state 'The number of allotments and tenancies located within Precinct C is minimised';
- xxi Amend within section 6.3 Development Requirements, Performance Criteria PC28 to include the statement 'The number of allotments within Precinct C is controlled to minimise the number of premises exposed to any environmental nuisance from the nearby landfill and associated heavy industrial uses';
- xxii Amend within section 6.3 Development Requirements, Performance Criteria PC43 to include reference to dust and vibration;
- xxiii Include within section 6.3 Development Requirements, for development that is self assessable, code assessable or impact assessable, under the heading of 'Refuse Facilities' a Performance Criteria that states 'Refuse facilities must be provided on site to service the needs of the development' and corresponding Acceptable Solutions that state as follows:
 - A 'Provision is made for the storage of refuse on site and access for the removal of refuse in accordance with 'Solid Waste Management Policy for New Developments;'
 - B 'The refuse storage area is not less than three metres to the frontage of the site and not less than 1.5 metres from any other site boundary;'
 - C 'The refuse storage area is enclosed on three sides, with a screen wall extending 0.2 metres above the height of the refuse receptacles;' and
 - D 'The refuse storage area is effectively screened from view with landscaping.'

- xxiv Include within section 6.3 Development Requirements, for development that is self assessable, code assessable or impact assessable, an Acceptable Solution that states that 'the building design and construction of development within Precinct A shall be in accordance with the approved Acoustic Report prepared by TTM Group dated 20 April 2011 (reference: 34418 R03)' and a corresponding Performance Criteria that states that 'All buildings within Precinct A must be acoustically treated, to minimise nuisance to the adjoining and surrounding residential development;' and
- xxv Include within section 6.3 Development Requirements, for development that is self assessable, code assessable or impact assessable, an Acceptable Solution that states that 'the hours of operation and the delivery and collection activities for development within Precinct A are restricted to between 7:00am and 8:00pm Monday to Friday' or to the satisfaction of the Chief Executive Officer and a corresponding Performance Criteria that states that 'All activities within Precinct A must be undertaken within appropriate hours, to minimise nuisance to the adjoining and surrounding residential development'.

Is changed to read as follows:

C The conditions that attach to this preliminary approval are as follows:

APPROVED PLANS/DRAWINGS/documents

1 Amended plans/drawings/documents to be submitted

Amended plans/drawings must be submitted generally in accordance with:

Plan No.	Title	Date	Prepared by
5093 P 00 12A	Landuse Classification and Staging Plan	06/11/2012	Gassman Development Perspectives
N/A	Generations Industrial Park Place Code	November 2012	Gassman Development Perspectives

Showing the following amendments to the Landuse Classification and Staging Plan;

- i Demonstrate the provision of a reserve area 20metres wide for the length of the eastern property boundary. This area is to be labelled as 'Covenant Area' on the Landuse Classification and Staging Plan;
- ii Demonstrate the provision of a minimum ten (10) metre wide buffer for the length of the western property boundary of Precinct A and six (6) metres wide for the entire length of the subject site adjoining the Stapylton Jacobs Well Road frontage;
- iii Include a notation on the Landuse Classification and Staging Plan that states 'the landscaped buffer areas shall be established and maintained for the life of the development. No building works are to occur within the landscape buffer areas unless otherwise approved by the Chief Executive Officer;'
- iv Include a notation on the Landuse Classification and Staging Plan that states 'roadworks and land dedication associated with Road 1, Christensen Road, Eastern Service Road and Christensen Road South will be subject to the detailed design for Stage 4 of the development;'
- v Include a notation on the Landuse Classification and Staging Plan that states 'lot access on the southern side of Christensen Road South is subject to further evaluation and approval following the detailed design of roadworks in Stage 4 of the development;'
- vi Delete the reference to 'completion year;' and
- vii Include a notation on the plan that states 'development within Precinct C shall not occur until all other development within the remaining area of the Generations Industrial Park is exhausted.'

Showing the following amendments to the Generations Industrial Park Place Code:

- viii The inclusion of the words 'Any use, not listed in Table A Material Change of Use Table of Development, should be considered undesirable or inappropriate in the Precinct to which the Table of Development applies. Any Material Change of Use not individually listed in the relevant Table of Development will be treated as an Impact Assessable development';

- ix The inclusion of the words 'Development within Precinct C shall not occur until all other development within the remaining area of the Generations Industrial Park is exhausted';
- x The inclusion of the following within the Precinct A Place Code Intent statement of the Generations Industrial Park Place Code:
 - A 'Strict building and operational restrictions, including building design, building construction and hours of operation and delivery and collection activities, apply to development within Precinct A. The 10metre wide landscaped buffer to be established along the western property boundary of Precinct A shall be established to minimise the potential detrimental impacts of development within Precinct A on the adjoining residential development;'
- xi Deletion of the reference to Service Station from the Low Impact Industry definitions within the section 3.3 of the Generations Industrial Park Place Code;
- xii Deletion of the reference to 'Dangerous Goods' from the Low Impact Industry definitions within section 3.3 of the Generations Industrial Park Place Code;
- xiii The deletion of 'Family Accommodation' from the Table of Development as such a use is not considered appropriate;
- xiv The deletion of Detached Dwelling, Working from Home, Low Rise Commercial tourist Accommodation, Child Care Centres and Ecotourism Facility Specific Development Codes from the 'Relevant Code' tables listed in the Generations Industrial Park Place Code;
- xv Amend within section 6.3 Development Requirements, to include a new Acceptable Solution in association with PC4 that states that 'buildings shall be setback 50 metres from the adjoining property boundary of the Stapylton Landfill.' The 50 metres shall be inclusive of the vegetated buffer area adjoining the eastern property boundary;
- xvi Amend within section 6.3 Development Requirements, Acceptable Solution AS4.3 to replace the reference to dot-points with lettering;
- xvii Amend within section 6.3 Development Requirements, to include a new Acceptable Solution and associated Performance Criteria for Development that is self assessable, code assessable or impact assessable. The AS is to state 'For development located within Precinct C an Environmental Management Plan (EMP) has been prepared and approved by Council and the development complies with the requirements of the EMP. The EMP is to be prepared in accordance with the Planning Scheme Policy 10 – Guidelines for Preparing Management Plans and Plans of Development.' The associated PC is to state 'The environmental mitigation methods for the development as detailed within an Environmental Management Plan must take into account and seek to ameliorate any negative aspects of the existing amenity of the local area having regard, but not limited, to the impact of noise, hours of operation, visual amenity, odour, emissions and dust';
- xviii Amend within section 6.3 Development Requirements, Acceptable Solution AS21.6 of the Generations Code to reference a twenty (20) metre wide north-south buffer;
- xix Amend within section 6.3 Development Requirements, Acceptable Solution AS28 to state that the minimum area for subdivision within Precinct C is one (1) hectare;
- xx Amend within section 6.3 Development Requirements, to include an additional Acceptable Solution in relation to Performance Criteria PC28 to state 'The number of allotments and tenancies located within Precinct C is minimised';
- xxi Amend within section 6.3 Development Requirements, Performance Criteria PC28 to include the statement 'The number of allotments within Precinct C is controlled to minimise the number of premises exposed to any environmental nuisance from the nearby landfill and associated heavy industrial uses';
- xxii Amend within section 6.3 Development Requirements, Performance Criteria PC43 to include reference to dust and vibration;
- xxiii Include within section 6.3 Development Requirements, for development that is self assessable, code assessable or impact assessable, under the heading of 'Refuse Facilities' a Performance Criteria that states 'Refuse facilities must be provided on site

to service the needs of the development' and corresponding Acceptable Solutions that state as follows:

- A 'Provision is made for the storage of refuse on site and access for the removal of refuse in accordance with 'Solid Waste Management Policy for New Developments;'
 - B 'The refuse storage area is not less than three metres to the frontage of the site and not less than 1.5 metres from any other site boundary;'
 - C 'The refuse storage area is enclosed on three sides, with a screen wall extending 0.2 metres above the height of the refuse receptacles;' and
 - D 'The refuse storage area is effectively screened from view with landscaping.'
- xxiv Include within section 6.3 Development Requirements, for development that is self assessable, code assessable or impact assessable, an Acceptable Solution that states that 'the building design and construction of development within Precinct A shall be in accordance with the approved Acoustic Report prepared by TTM Group dated 20 April 2011 (reference: 34418 R03)' and a corresponding Performance Criteria that states that 'All buildings within Precinct A must be acoustically treated, to minimise nuisance to the adjoining and surrounding residential development;' and
- xxv Include within section 6.3 Development Requirements, for development that is self assessable, code assessable or impact assessable, an Acceptable Solution that states that 'the hours of operation and the delivery and collection activities for development within Precinct A are restricted to between 7:00am and 8:00pm Monday to Friday' or to the satisfaction of the Chief Executive Officer and a corresponding Performance Criteria that states that 'All activities within Precinct A must be undertaken within appropriate hours, to minimise nuisance to the adjoining and surrounding residential development'.
- xxvi. Amend within section 6.3 Development Requirements, Acceptable Solution AS28 to state that the minimum area for subdivision within Precinct A and B is 2,000m² in the Code Assessable and Impact Assessable column for Precinct A and B, and delete reference to 4,000m².

Condition 69 currently reads:

69 Concurrence agency conditions

The applicant must comply with the conditions set out in the attached correspondence from the following concurrence agencies:

- a. Concurrence Agency – Department of Natural Resources and Mines – Referral Agency Reference 5093-10-BG/BJW, dated 14 August 2012; and
- b. Concurrence Agency – Department of Transport and Main Roads – Referral Agency Reference TMR11-000540, dated 22 November 2012.

Is deleted.

Amended suite of development conditions for development MCU201701550

For ease of reference only, a consolidated set of the conditions, incorporating the above changes, of the preliminary approval dated 04 March 2013 for making a Material Change of Use to override the planning scheme for industry uses is set out below:

NATURE OF DECISION

A Under Delegated Authority the Manager of the City Development Branch decides as follows in respect of the applicant's representations:

B Under Delegated Authority the Manager of the City Development Branch gives a new decision notice approving the issue of preliminary approval for material change of use to override the Planning Scheme for Industry Uses, subject to the following conditions:

1 The issue of a preliminary approval for a material change of use for Industry land uses;

2 The following variations to the effect of the planning scheme:

a Type of assessment

The following tables of development vary the effect of Section A/B/C/D/E/F/G of the Yatala Enterprise Area Local Area Plan Table of Development for determining the type of assessment for the approved material change of use and operational work relating to the approved material change of use:

A: Material Change of Use

Exempt	Self Assessable	Code Assessable	Impact Assessable
Precinct A (Low Impact and Service Industry)			
Agriculture	Café	Bulk Garden Supplies	Motor Vehicle Repairs n.e.i
Animal Husbandry	Car Park	Caretakers Residence	Salvage Yard
Conservation (natural area management)	Convenience Shop	Estate Sales Office	Service Station
Low-Impact Telecommunications Facility	Low Impact Industry	Family Accommodation	Transport Terminal
	Milk Depot	Food Industry	
	Service Industry	Industry	
Minor Change in the scale or intensity of an existing lawful use	Take-Away Food Premises	Manufacturer's Shop	
	Temporary Use	Outdoor Storage Area	
Park	Warehouse	Rural Industry	
Public Utility		Telecommunications Facilities n.e.i.	

Precinct B (General Impact Business and Industry)			
Agriculture Animal Husbandry Conservation (natural area management) Low-Impact Telecommunications Facility Minor Change in the scale or intensity of an existing lawful use Park Public Utility	Café Car Park Convenience Shop Industry Low Impact Industry Manufacturer's Shop Milk Depot Outdoor Storage Area Service Industry Take-Away Food Premises Temporary Use Warehouse	Bulk Garden Supplies Caretakers Residence Food Industry Rural Industry Telecommunications Facilities n.e.i. Transport Terminal	Motor Vehicle Repairs n.e.i Salvage Yard Service Station

Precinct C (Limited General Impact Business and Industry)			
Agriculture Animal Husbandry Conservation (natural area management) Low-Impact Telecommunications Facility Minor Change in the scale or intensity of an existing lawful use Park Public Utility	Car Park Industry Low Impact Industry Manufacturer's Shop Outdoor Storage Area Service Industry Temporary Use Warehouse	Bulk Garden Supplies Caretakers Residence Rural Industry Telecommunications Facilities n.e.i Transport Terminal	Café Convenience Shop Food Industry Milk Depot Motor Vehicle Repairs n.e.i Salvage Yard Service Station Take-Away Food Premises

Precinct D (Open Space/Reserve)			
Conservation (natural area management) Low-Impact Telecommunications Facility Minor Change in the scale or intensity of an existing lawful use Park Public Utility	Temporary Use	Telecommunications Facility n.e.i	Agriculture

B: OPERATIONAL WORKS - CHANGE TO GROUND LEVEL

Exempt	Self Assessable	Code Assessable	Impact Assessable
Operational Work that involves extraction, excavation or fill that:			
		Exceeds a volume of 100 cubic metres of fill or excavation, or is closer than 20 metres from the allotment boundary and is within or adjoins an allotment containing places, sites, or landscapes of indigenous cultural heritage significance listed on the Queensland Heritage Register – Cultural Records (Landscapes Queensland and Queensland Estate) Act 1987; OR is located on land which is the subject of a native title claim; OR Is located on land that is known to the owner and/or the developer to be of indigenous cultural heritage value	

C: OPERATIONAL WORKS - ADVERTISING DEVICE

Exempt	Self Assessable	Code Assessable	Impact Assessable
	Advertising Device that is: a) not illuminated, nor animated, and where the total area of signage per street frontage does not exceed the following for each precinct: Precinct A:20 m² b) not on land with frontage to an arterial road or any State controlled road	Advertising Devices n.e.i.	

D: OPERATIONAL WORKS - INFRASTRUCTURE AND LANDSCAPE WORK

Exempt	Self Assessable	Code Assessable	Impact Assessable
Minor Landscape Work		Landscape Work n.e.i. Works for Infrastructure	

E: OPERATIONAL WORKS - VEGETATION CLEARING

Exempt	Self Assessable	Code Assessable	Impact Assessable
Precinct A and B and C (Low Impact and Service Industry, General Impact Business and Industry and Limited General Impact Business and Industry)			
	Results in the removal of, or damage to, vegetation that is equal to, or in excess of, 40 centimetres in girth (circumference) measured at 1.3 metres above average ground level, and complies with the Acceptable Solutions of Specific Development Code 36 – Vegetation Management; OR Results in the removal of, or damage to, vegetation that is equal to, or in excess of, four metres in height, and complies with the Acceptable Solutions of Specific Development Code 36 – Vegetation Management.	Results in the removal of, or damage to, vegetation that is equal to, or in excess of, 40 centimetres in girth (circumference) measured at 1.3 metres above average ground level, and provides an alternative solution to the Acceptable Solutions of Specific Development Code 36 – Vegetation Management; OR Results in the removal of, or damage to, vegetation that is equal to, or in excess of, four metres in height, and provides an alternative solution to the Acceptable Solutions of Specific Development Code 36 – Vegetation Management; or Results in the removal of, or damage to the existing wedge-tailed eagles nest (<i>Aquila audax</i>) in the north eastern corner of Precinct C, which is not in accordance with the vegetation removal requirements detailed in the approved relocation plan required by the conditions of this Development Permit.	

F: RECONFIGURATION OF A LOT

Exempt	Self Assessable	Code Assessable	Impact Assessable
Precinct A and B (Low Impact and Service Industry and General Impact Business and Industry)			
		Results in no lots with an area less than 2,000m ² ; OR Entails only a Community Title Subdivision (including Standard Format Plan and/or Volumetric Lots), or a Volumetric Lot within a building, or a leasehold subdivision of an existing approved development	
Precinct C (Limited General Impact business and Industry)			
		Results in no lots with an area less than 10,000m ² .	
Precinct D (Open Space/Reserve)			
		Results in no lots with an area less than 20 hectares; OR Entails only a Community Title Subdivision (including Standard Format Plans and/or Volumetric Lots), or a Volumetric Lot within a building, or a leasehold subdivision of an existing or approved development.	

b Codes varying the effect of the planning scheme

Subject to the amendments listed in this Decision Notice, the following code varies the effect of the planning scheme code/s listed for the approved material change of use:

New Code	Existing code varied by new code
Generations Industrial Park Place Code	Yatala Enterprise Area Local Area Plan

c The Preliminary Approval pursuant to section 242 of SPA 2009 does not seek to override any further Specific Development Codes or Constraint Codes of the Gold Coast Planning Scheme 2003, version 1.2.

C The conditions that attach to this preliminary approval are as follows:

APPROVED PLANS/DRAWINGS/DOCUMENTS

1 Amended plans/drawings/documents to be submitted

a Amended plans/drawings must be submitted generally in accordance with:

Plan No.	Title	Date	Prepared by
5093 P 00 12A	Landuse Classification and Staging Plan	06/11/2012	Gassman Development Perspectives
N/A	Generations Industrial Park Place Code	November 2012	Gassman Development Perspectives

Showing the following amendments to the Landuse Classification and Staging Plan;

- i Demonstrate the provision of a reserve area 20metres wide for the length of the eastern property boundary. This area is to be labelled as 'Covenant Area' on the Landuse Classification and Staging Plan;
- ii Demonstrate the provision of a minimum ten (10) metre wide buffer for the length of the western property boundary of Precinct A and six (6) metres wide for the entire length of the subject site adjoining the Stapylton Jacobs Well Road frontage;
- iii Include a notation on the Landuse Classification and Staging Plan that states 'the landscaped buffer areas shall be established and maintained for the life of the development. No building works are to occur within the landscape buffer areas unless otherwise approved by the Chief Executive Officer;'
- iv Include a notation on the Landuse Classification and Staging Plan that states 'roadworks and land dedication associated with Road 1, Christensen Road, Eastern Service Road and Christensen Road South will be subject to the detailed design for Stage 4 of the development;'
- v Include a notation on the Landuse Classification and Staging Plan that states 'lot access on the southern side of Christensen Road South is subject to further evaluation and approval following the detailed design of roadworks in Stage 4 of the development;'
- vi Delete the reference to 'completion year;' and
- vii Deleted.

Showing the following amendments to the Generations Industrial Park Place Code:

- viii The inclusion of the words 'Any use, not listed in Table A Material Change of Use Table of Development, should be considered undesirable or inappropriate in the Precinct to which the Table of Development applies. Any Material Change of Use not individually listed in the relevant Table of Development will be treated as an Impact Assessable development';
- ix Deleted.
- x The inclusion of the following within the Precinct A Place Code Intent statement of the Generations Industrial Park Place Code:
 - A 'Strict building and operational restrictions, including building design, building construction and hours of operation and delivery and collection activities, apply to development within Precinct A. The 10metre wide landscaped buffer to be established along the western property boundary of Precinct A shall be established to minimise the potential detrimental impacts of development within Precinct A on the adjoining residential development;'
- xi Deletion of the reference to Service Station from the Low Impact Industry definitions within the section 3.3 of the Generations Industrial Park Place Code;
- xii Deletion of the reference to 'Dangerous Goods' from the Low Impact Industry definitions within section 3.3 of the Generations Industrial Park Place Code;
- xiii The deletion of 'Family Accommodation' from the Table of Development as such a use is not considered appropriate;

- xiv The deletion of Detached Dwelling, Working from Home, Low Rise Commercial tourist Accommodation, Child Care Centres and Ecotourism Facility Specific Development Codes from the 'Relevant Code' tables listed in the Generations Industrial Park Place Code;
- xv Amend within section 6.3 Development Requirements, to include a new Acceptable Solution in association with PC4 that states that 'buildings shall be setback 50 metres from the adjoining property boundary of the Stapylton Landfill.' The 50 metres shall be inclusive of the vegetated buffer area adjoining the eastern property boundary;
- xvi Amend within section 6.3 Development Requirements, Acceptable Solution AS4.3 to replace the reference to dot-points with lettering;
- xvii Amend within section 6.3 Development Requirements, to include a new Acceptable Solution and associated Performance Criteria for Development that is self assessable, code assessable or impact assessable. The AS is to state 'For development located within Precinct C an Environmental Management Plan (EMP) has been prepared and approved by Council and the development complies with the requirements of the EMP. The EMP is to be prepared in accordance with the Planning Scheme Policy 10 – Guidelines for Preparing Management Plans and Plans of Development.' The associated PC is to state 'The environmental mitigation methods for the development as detailed within an Environmental Management Plan must take into account and seek to ameliorate any negative aspects of the existing amenity of the local area having regard, but not limited, to the impact of noise, hours of operation, visual amenity, odour, emissions and dust';
- xviii Amend within section 6.3 Development Requirements, Acceptable Solution AS21.6 of the Generations Code to reference a twenty (20) metre wide north-south buffer;
- xix Amend within section 6.3 Development Requirements, Acceptable Solution AS28 to state that the minimum area for subdivision within Precinct C is one (1) hectare;
- xx Amend within section 6.3 Development Requirements, to include an additional Acceptable Solution in relation to Performance Criteria PC28 to state 'The number of allotments and tenancies located within Precinct C is minimised';
- xxi Amend within section 6.3 Development Requirements, Performance Criteria PC28 to include the statement 'The number of allotments within Precinct C is controlled to minimise the number of premises exposed to any environmental nuisance from the nearby landfill and associated heavy industrial uses';
- xxii Amend within section 6.3 Development Requirements, Performance Criteria PC43 to include reference to dust and vibration;
- xxiii Include within section 6.3 Development Requirements, for development that is self assessable, code assessable or impact assessable, under the heading of 'Refuse Facilities' a Performance Criteria that states 'Refuse facilities must be provided on site to service the needs of the development' and corresponding Acceptable Solutions that state as follows:
 - A 'Provision is made for the storage of refuse on site and access for the removal of refuse in accordance with 'Solid Waste Management Policy for New Developments;'
 - B 'The refuse storage area is not less than three metres to the frontage of the site and not less than 1.5 metres from any other site boundary;'
 - C 'The refuse storage area is enclosed on three sides, with a screen wall extending 0.2 metres above the height of the refuse receptacles;' and
 - D 'The refuse storage area is effectively screened from view with landscaping.'
- xxiv Include within section 6.3 Development Requirements, for development that is self assessable, code assessable or impact assessable, an Acceptable Solution that states that 'the building design and construction of development within Precinct A shall be in accordance with the approved Acoustic Report prepared by TTM Group dated 20 April 2011 (reference: 34418 R03)' and a corresponding Performance Criteria that states that 'All buildings within Precinct A must be acoustically treated, to minimise nuisance to the adjoining and surrounding residential development;' and

- xxv Include within section 6.3 Development Requirements, for development that is self assessable, code assessable or impact assessable, an Acceptable Solution that states that 'the hours of operation and the delivery and collection activities for development within Precinct A are restricted to between 7:00am and 8:00pm Monday to Friday' or to the satisfaction of the Chief Executive Officer and a corresponding Performance Criteria that states that 'All activities within Precinct A must be undertaken within appropriate hours, to minimise nuisance to the adjoining and surrounding residential development'.
- xxvi Amend within section 6.3 Development Requirements, Acceptable Solution AS28 to state that the minimum area for subdivision within Precinct A and B is 2,000m² in the Code Assessable and Impact Assessable column for Precinct A and B, and delete reference to 4,000m².
- b The amended plans/drawings are to be submitted to Council for approval by the Chief Executive Officer prior to the earlier of:
 - xxvii Issue of a development approval for reconfiguring a lot.
 - xxviii Issue of a development approval for operational work.
 - xxix Compliance assessment of the subdivision plan.
- c The amended plans/drawings, when approved by the Chief Executive Officer, will be the approved plans/drawings forming part of this approval and a stamped copy will be returned to the applicant. The development must be carried out in general accordance with the approved plans/drawings.

2 Staged construction of development

- a Subject to the changes required by Condition 1 within section B of this Decision Notice, the stages as shown on the following plan are approved (subject to the relevant Operational Works approvals):
 - xxx Landuse Classification and Staging Plan, drawing 5093 P 00 12A, dated 06/11/2012 and prepared by Gassman Development Perspectives.
- b The construction of the development must be in sequence of the stages shown on the approved staging plan.
- c Deleted.
- d Any subsequent proposed amendments to the approved staging plan (including sequence of development must be approved by the Chief Executive Officer.)

3 Decision notice and approved plans/drawings to be submitted with subsequent application

A copy of this decision notice and accompanying stamped approved plans/drawings must be submitted with any building development application or operational works application relating to or arising from this development approval.

4 Any deviations require further approval

Any proposed deviation from the approved plans/drawings as a result of on-site or in-situ conditions must not be made unless amended plans/drawings are submitted and approved by Council. The development must be carried out in accordance with the approved amended plans/drawings.

ADVERTISING

5 Advertising device

No advertising device is to be placed on the premises without the necessary development permit for operational work (advertising device) and/or approval under Council's Local Law No.16 (Licensing) 2008 and Subordinate Local Law No. 16.8 (Advertisement) 2008. The Applicant should contact Council's Health, Regulatory and Lifeguard Services Branch on (07) 5581 6668 to discuss approval requirements.

AMENITY

6 No nuisance from lighting

All lighting devices must be positioned on the premises and shielded to the satisfaction of the Chief Executive Officer so as not to cause glare or other nuisance to surrounding development and motorists

7 Restricted paint colours

Buildings and structures must not be painted in highly reflective, bright or obtrusive colours.

8 Location of equipment and ventilation/air-condition units

All service equipment, mechanical ventilation and air-condition units associated with the use of the premises must be installed and located to the satisfaction of the Chief Executive Officer so as not to cause nuisance or disturbance to persons outside the curtilage of the premises.

CITY TRANSPORT

9 Staged development

Subject to the changes required by Condition 1 within section B of this Decision Notice the stages as shown on Proposal Plan / Staging Plan: 5093 P00 12A, Land Use Classification and Staging Plan, dated 06/11/12 and prepared by Gassman Development Perspectives are approved for the purposes of construction (subject to the relevant Operational Work approvals) and compliance assessment of subdivision plans, subject to the following requirements:

- a The future Operational Works application can cover more than one stage. However, the engineering plans must be split into the individual stages shown on the approved staging plan.
- b The construction of any approved operational works (including provision of "as constructed" information) and compliance assessment of subdivision plans must be in the sequence (i.e. order) of the stages shown on the approved staging plan. To be clear, the subdivision plan for stage 1 must be approved by Council before (or at the same time as) the stage 2 subdivision plan, and so on.
- c Subdivision plans must correspond to the stages as shown on the approved staging plan.
- d Any subsequent proposed amendments to the stage boundaries or the sequence of development must be first approved by Council as a change to the reconfiguration of a lot development approval and any operational work development approval.

10 Roadworks Design (Stage 4)

Prior to the issue of any development approval for Stage 4, detailed design for roadworks must be submitted for the following:

- a the upgrade of Christensen Road and Christensen Road South;
- b the intersection of Christensen Road and proposed Road 1;
- c the intersection of Christensen Road and the Eastern Service Road;
- d the re-prioritisation of the intersection of Christensen Road and Christensen Road South.

The designed works must be supported by a Traffic Impact Assessment Report, and must be completed at no cost to Council and to the satisfaction of the Chief Executive Officer.

Advice Note: Any identified roadworks supported by Council will be conditioned for construction as part of future development applications associated with Stage 4.

11 Land dedication for road widening

Land must be dedicated to Council for road widening purposes. All land to be dedicated to Council must be completed at no cost to Council and to the satisfaction of the Chief Executive Officer, the timing of which will be determined as part of each subsequent application.

ACID SULFATE SOILS AND GROUNDWATER

12 Approved acid sulfate soil management plan must be complied with

- a All works must be undertaken with due regard to the possibility of encountering acid sulfate soils.

- b The applicant must comply with the approved acid sulfate soil management plan, being Acid Sulfate Soil investigation, Lot 1 on RP 6882 and Lot 240 on W31320 Stapylton Jacobs Well Road and Christensen Road, Stapylton, prepared by ADG consulting and dated August 2011, in the carrying out of works and in the testing, treatment and management of acid sulfate soils.

VEGETATION MANAGEMENT

13 Staged tree clearing

Tree clearing onsite must be staged in accordance with the approved staging development plan as required by Condition no.1 of this Decision Notice.

14 Vegetation works OPW application required

This approval does not approve vegetation clearing or damage. Prior to commencement of such works, a development application for operational work (vegetation works) must be made to and approved by Council for any works proposing clearing or damage to any Protected Vegetation. The application must be accompanied by a copy of each of the following plans (and, where a plan has already been approved, that plan must be accompanied by the corresponding approval documentation (i.e. decision notice or letter of approval)):

- a The approved MCU layout plan.
- b The approved bushfire management plan/site specific Bushfire Hazard letter.
- c Plans clearly identifying which vegetation is proposed to be removed and which vegetation is proposed to be retained.
- d A letter from an EPA-approved spotter-catcher together with any necessary fauna management plan or a QPWS-endorsed fauna translocation management plan.
- e A sediment and erosion control and construction management plan.

For this condition 'Protected Vegetation' is defined as vegetation that is:

- i equal to, or in excess of, 40 centimetres in girth (circumference) measured at 1.3 metres above average ground level irrespective of the domain or LAP; or
- ii equal to, or in excess of, four metres in height in the Rural, Park Living or Emerging Communities Domains, Burleigh Ridge LAP, Coomera LAP (Precincts 7, 9 and 10), Coomera Town Centre (Precincts 8, 10 and 11), Currumbin Hill LAP, Eagleby LAP (Precinct 6), East Coomera/Yawalpah Conservation LAP, Guragunbah LAP, Hope Island LAP (Precinct 3), Mudgeeraba Village LAP, Nerang LAP (Precincts 9 and 10), South Stradbroke LAP, Uplands Dr and Woodlands Way LAP, West Burleigh Township LAP or Yatala Enterprise Area LAP.

LANDSCAPING

15 Detailed landscape plan to be submitted for approval relating to landscape buffers within Stage 2

- a In relation to the landscape buffer ten (10) metres wide for the length of the western property boundary of Precinct A and six (6) metres wide for the entire length of the subject site adjoining the Stapylton Jacobs Well Road frontage, the applicant must submit to Council for approval a detailed landscape plan, by making a development application for operational work (landscape work).
- b Approval of proposed landscape work (adjoining Precinct A) must be obtained prior to the commencement of works relating to Stage 2 of this development. These approved landscape work must be constructed prior to the commencement of use of any part of Stage 2 of this development.
- c Without limiting the requirements of the planning scheme's Landscape Work Specific Development Code, the detailed landscape plan must:
 - i Be prepared by a qualified landscape architect or similar landscape design professional;

- ii Be in general accordance with the Statement of Landscape Intent, being drawing 5093 L LI 03 pages 1-3, Landscape Intent, dated 01/11/12 and prepared by Gassman Development Perspectives;
 - iii Reflect the approved layout (including any amendments to that layout required by these conditions) and the conditions of this approval; and
 - iv Comply with Planning Scheme Policy 13 – Landscape Strategy Part 2 – Landscape Works Documentation Manual.
- d The required landscaping plan must demonstrate
 - i A landscape buffer ten (10) metres wide for the length of the western property boundary of Precinct A and six (6) metres wide for the entire length of the subject site adjoining the Stapylton Jacobs Well Road frontage; and
 - ii That the buffers contain dense tree planting to soften and screen the development.

COVENANT AREA – PROHIBITED ACTIVITIES, MANAGEMENT AND COVENANT

16 Covenant Area – prohibited activities

The area described as 'Covenant Area' on amended plan required by Condition 1 of this Decision Notice, is for the purpose of preserving native plants and animals. Within the Covenant Area, the following activities must not be undertaken:

- a Clearing, lopping or removal of any native plants, whether existing at the date of this approval or planted pursuant to conditions of this approval;
- b Erection of any fixtures or improvements, including buildings or structures;
- c Construction of any trails or paths;
- d Depositing of any fill, soil, rock, rubbish, ashes, garbage, waste or other material foreign to the protected area;
- e Keeping or permitting the entry of domestic animals or any other animals that are not indigenous to the Covenant Area; and
- f Performance of any other acts which may have detrimental impact on the values of the Covenant Area.

17 Preparation of Covenant Area management plan

A covenant management plan must be prepared, detailing all management measures and monitoring to be undertaken in the Covenant Area for the life of the development and the use of the premises so as to ensure the preservation of the environmental integrity of the Covenant Area. The covenant management plan must include the following information:

- a Description of the approved development including a plan showing the location of the covenant areas.
- b Purpose of the document relating to relevant conditions of approval.
- c A description of how the document is to be read, including the purpose of the covenant area and general requirements at each phase of the development (i.e. developer's and landowners' responsibilities as covenantor).
- d Detailed descriptions for the covenant areas including:
 - i Topography;
 - ii Waterways, flow paths, gullies;
 - iii Vegetation communities and significant species;
 - iv Fauna habitat and significant species; and
 - v Other significant features.
- e Requirements to be fulfilled by the developer (as covenantor) as to the following:
 - i Prohibited and permitted actions during construction;
 - ii Infrastructure requirements (including essential, unavoidable services, stormwater etc);

- iii Rehabilitation, including summaries of rehabilitation activities (based on the approved Rehabilitation Plan and/or Landscaping Plans) in accordance with Appendix 1 (Guideline for the preparation of a Rehabilitation Plan) of Council's Open Space Management Guidelines: Guideline for the preparation of Reports and Plans associated with the dedication of Public Open Space (November 2007: Version 1);
 - iv Maintenance requirements including activities, timeframes and standards to be achieved prior to off-maintenance in accordance with relevant sections of Appendix 1 (Guideline for the preparation of a Rehabilitation Plan) of Council's Open Space Management Guidelines: Guideline for the preparation of Reports and Plans associated with the dedication of Public Open Space (November 2007: Version 1);
 - v Monitoring details including baseline data/photographs; and
 - vi Compliance/certification.
- f Requirements to be fulfilled by landowners (as covenantors) as to the following:
 - i Purpose of the covenant;
 - ii Prohibited and permitted actions/activities;
 - iii Detailed landowner requirements and responsibilities; and
 - iv Detailed methods relating to maintenance and enhancement of the covenant area, including weed removal methods, revegetation methods and species lists, monitoring requirements and useful resources and contacts.
- g General information, including:
 - i Duration of requirements / responsibilities;
 - ii Information on who to contact for approvals for any activities required that are not permitted within the covenant area;
 - iii Baseline data; and
 - iv Checklists for Council (as the covenantee) to assess compliance with the covenant (including remedial actions for non-compliance).
- h The covenant management plan must include and be consistent with:
 - i The approved management and rehabilitation plans for the site and the Covenant Area, including any amendments to those plans required by the conditions of this approval;
 - ii Any stormwater quality management components within the Covenant Area; and
 - iii Full details of any approved landscape plans for the Covenant Area.

18 Compliance assessment of covenant area management plan

The covenant management plan is a document requiring compliance assessment under the *Sustainable Planning Act 2009*. A request for compliance assessment must be made in accordance with the *Sustainable Planning Act 2009* for a compliance certificate approving the document, in accordance with the following:

Matters or things against which the document must be assessed	The planning scheme's: • Conservation Domain Place Code; • Natural Wetland Areas and Natural Waterways Constraint Code; and • Nature Conservation Constraint Code.
Compliance assessor	Gold Coast City Council
When the request for compliance assessment must be made	Before the earlier of: • A development application for operational work (inclusive of change to ground level, works for infrastructure, vegetation clearing/tree works or landscape work) within Precinct C; or • Any works commencing within Precinct C.

The covenant management plan is not an approved plan until a compliance certificate has been issued in respect of it.

19 Compliance certificate with future operational work development applications

A copy of the compliance certificate for the covenant management plan must be provided with any future operational work development applications within Precinct C.

20 Ongoing compliance with the approved covenant management plan

The management measures and monitoring required by the approved covenant management plan and any conditions imposed on the compliance certificate must be complied with for the life of the development and the use of the premises.

21 Amendment of the covenant management plan

The covenant management plan may be amended with the written agreement of Council but only if the amendment:

- a Is consistent with the purpose of the covenant (being the statutory covenant required to be registered pursuant to the conditions of this approval);
- b Does not alter the covenant area; and
- c Does not add or remove a party to the covenant.

22 Covenant Area – statutory covenant to be registered

At the same time as the lodgement of the subdivision plans for Precinct C, or if no subdivision plans are required, prior to the commencement of the use within Precinct C, an instrument of covenant must be registered on the title/s of the lot/s which contain/s the Covenant Area. The following requirements must be complied with in the preparation and lodgement of the instrument of covenant:

- a The applicant is responsible for the preparation of the instrument of covenant and any necessary subdivision plan to enable registration of the covenant and for lodgement of the covenant for registration.
- b The instrument must be in a form capable of registration pursuant to section 97A(3)(b) of the Land Title Act 1994.
- c The Covenant Area must be shown and identified as a 'Covenant Area' on the face of the subdivision plan in addition to any covenant descriptor (e.g. Covenant 'A').
- d Council's standard covenant (Dealing number 711772071) must be used and the applicant must provide a draft of the covenant to Council for written approval.
- e The parties to the covenant are to be the registered owner of the lot (as covenantor) and the Council (as covenantee).
- f The instrument must include a purpose statement that articulates:
 - i That the covenantor acknowledges that the Covenant Area contains native plants and habitat for native animals that should be preserved;
 - ii That the covenant is aimed at directly preserving those features; and
 - iii That to ensure the Covenant Area and its values are preserved, it is critical that activities within the Covenant Area are limited and managed to ensure native plants, native animals, their habitat, & associated values are preserved.
- g The instrument must expressly set out, in full, as obligations of the covenantor each of the individual requirements set out in Condition 2
- h If the instrument is requisitioned or refused registration by the Registrar of Titles, the applicant shall amend the document to include a covenant/s which, as nearly as practicable, addresses the objective sought to be achieved by this condition. A draft of the amended document is to be provided to Council for written approval.
- i The applicant must provide Council with evidence of the registration of the covenant within 30 days of the registration of the subdivision plan that shows the Covenant Area.

23 Covenant Area - rehabilitation

The applicant must undertake and complete all rehabilitation works within the Covenant Area in accordance with these conditions of approval.

OPEN SPACE

24 Transfer of open space

- a The applicant must transfer to Council the areas of public open space listed below, as identified on the plans indicated (subject to any amendments required by these conditions):

Purpose	Description on Plan	Plan Reference
Conservation Area	Area D – Open Space/Reserve	Land Use Classification and Staging Plan, Drawing 5093 P 0012A, prepared by Gassman Development Perspectives and dated 06/11/2012.

- b The land identified in paragraph (a) must be transferred in fee simple as 'Public Open Space' to Council of the City of Gold Coast as Trustee.
- c Council will hold the land in trust for community infrastructure and may use the land, or permit the land to be used, for purposes that do not compromise the purpose for which the land is dedicated.
- d The applicant must lodge the transfer documents with Council at the same time as lodgement of the subdivision plans or, if no subdivision plans are required, prior to the commencement of any use within Stage 4 of this development.
- e Where subdivision plans are required, the applicant must provide Council with evidence of the transfer of the land identified in paragraph (a) within 30 days of the registration of the subdivision plan that shows the entirety of the land identified in paragraph (a).
- f The transfer of the land to Council must be at no cost to Council.

OPEN SPACE MANAGEMENT PLAN

25 Preparation of open space management plan (OSMP) to be submitted for approval addressing all areas of land to be transferred to Council as public open space

- a An Open Space Management Plan ('OSMP') must be prepared, addressing all areas of land to be transferred to Council, specifically the area of land south of Christensen Road to be dedicated to Council as public open space.
- b The OSMP must be submitted and approved by the Chief Executive Officer prior to the approval of any development permit for operational works (change to ground level, bulk earthworks, tree works, landscaping, whichever comes first) within Stage 4 of this development. The OSMP is not an approved report until a Council approved letter has been issued in respect of it.
- c The OSMP must be prepared by a suitably qualified professional and must be:
- i In accordance with Council's Open Space Management Guideline: Guideline for the preparation of Reports and Plans associated with the dedication of Public Open Space (November 2007, Version 1); and
 - ii Generally in accordance with:
 - A The approved reconfiguration layout (including any amendments required by these conditions).
 - B Relevant conditions of approval.
- d The submitted OSMP must demonstrate compliance with the Open Space requirements in Section 6 of the Planning Scheme Policy 11 – Land Development Guidelines, Standard Specifications and Drawings and must address the following site-specific issue:
- i Detail a rehabilitated sixty (60) metre buffer from the high bank of Sandy Creek.

26 Compliance assessment of OSMP

The OSMP is a document requiring compliance assessment under the Sustainable Planning Act 2009. A request for compliance assessment must be made in accordance with the Sustainable Planning Act 2009 for a compliance certificate approving the document, in accordance with the following:

Matters or things against which the document must be assessed	• The planning scheme's Landscape Works Specific Development Code; • The planning scheme's Vegetation Management Specific Development Code; • The planning scheme's Bushfire Management Areas Constraint Code; • The planning scheme's Canals and Waterways Constraint Code; • The planning scheme's Cultural Heritage (Indigenous) Constraint Code; • The planning scheme's Natural Wetland Areas and Natural Waterways Constraint Code; • The planning scheme's Nature Conservation Constraint Code; • Policy 10 – Guidelines for Preparing Management Plans and Plans of Development; • Planning Scheme Policy 11 – Land Development Guidelines; • Planning Scheme Policy 17 – Site Analysis; and • Council's Open Space Management Guideline: Guideline for the preparation of Reports and Plans associated with the dedication of Public Open Space (November 2007, Version 1).
Compliance assessor	Gold Coast City Council
When the request for compliance assessment must be made	Prior to the approval of any development applications for operational work (inclusive of change to ground level, works for infrastructure, vegetation clearing or landscape work) for Stage 4.

The OSMP is not an approved report until a compliance certificate has been issued in respect of it.

27 Compliance certificate with future operational work development applications

A copy of compliance certificate for the OSMP must be provided with any future operational work development applications for Stage 4.

28 Compliance with OSMP prior to acceptance of open space 'On Maintenance'

- a All works specified in the OSMP and any conditions imposed on the compliance certificate must be carried out in accordance with the approved plan at no cost to Council and to the satisfaction of the Chief Executive Officer, prior to Council accepting the open space 'On Maintenance' in accordance with Planning Scheme Policy 11 – Land Development Guidelines, Standard Specifications and Drawings.
- b The applicant must provide certification from a qualified professional that all works in the approved OSMP and associated design drawings have been implemented on-site in accordance with the OSMP and the conditions of approval as stated on the compliance certificate approving the OSMP. This certification must be provided to the Council prior to accepting the works 'On Maintenance'.

29 Revegetation to use Local Provenance Stock

- a All revegetation for the purposes of ecological rehabilitation and restoration must be undertaken using only local provenance plant stock in accordance with Appendix 1A of Open Space Management Guideline: Guideline for the preparation of Reports and Plans associated with the dedication of Public Open Space (November 2007, Version 1).
- b Unless otherwise approved to the satisfaction of the Chief Executive Officer, local provenance plant stock is to be sourced from seed or vegetative material located no further than 10 kilometres from the subject site.

ACOUSTICS

30 Acoustic report

- a The development must be designed and constructed in accordance with the recommendations outlined in 7.1 of the approved acoustic report prepared by 'TTM Group', dated 20 April 2011 (Ref: 34418 R03 Hester Land Stapylton Acoustic Report.doc).
- b Any alteration to the design or construction of the development that prevents the recommendations of the approved acoustic report being implemented will require an amended acoustic report to be submitted and approved by Council prior to Building Approval.

31 Acoustic barrier

A continuous line of buildings adjacent to the full extent of the western property boundary adjoining the residential development as per Figure 4 of the approved acoustic report prepared by 'TTM Group', dated 20 April 2011 (Ref: 34418 R03 Hester Land Stapylton Acoustic Report.doc) is to be provided ensuring the following treatment is incorporated:

- a Buildings to be a minimum 5m high;
- b No gaps to be present between buildings;
- c Buildings to be constructed of solid concrete or masonry with a minimum thickness of 100mm;
- d No openings (other than emergency doors) are to be located on the western façade facing the residential properties. Any doors are to be a minimum 45mm thick solid core door with a minimum density of 25kg/m² with acoustic gasket seals around the top and sides and a seal the base;
- e Insulation blanket is to be installed in the roof of the buildings with a minimum thickness of 75mm;
- f Any penetrations through the western building façade should be acoustically treated to ensure the acoustic rating is maintained; and
- g Any alteration to the design or construction of the development that prevents the above recommendations being implemented will require an amended acoustic report to be submitted and approved by Council prior to Building Approval.

32 Landscape buffer

A minimum ten (10) metre wide buffer is to be provided along the length of the western property boundary of Precinct A in accordance with the submitted Statement of Landscape Intent, being drawing 5093 L LI 03 pages 1-3, Landscape Intent, dated 01/11/12 and prepared by Gassman Development Perspectives.

33 Certificate of Compliance

Prior to occupation of any premise within Precinct A of the development, a Certificate of Compliance from a suitably qualified acoustic professional is to be provided so as to confirm that buildings have been constructed in accordance Section 7.1 and Figure 4 of the approved acoustic report, prepared by 'TTM Group' and dated 20 April 2011 (Ref: 34418 R03 Hester Land Stapylton Acoustic Report.doc).

34 An acoustic report required for future MCU (Code and Impact Assessable) development applications within Precinct A

An acoustic report must be submitted and approved by Council for all future Material Change of Use (Code and Impact Assessable) development applications within Precinct A.

- a The report must detail:
 - i The expected impact of noise from mechanical plant and equipment from buildings within Precinct A on nearby noise sensitive dwellings;
 - ii An assessment conducted in accordance with AS1055.1-3: 1997 Acoustics – Description and Measurement of Environmental Noise and the Environmental Protection Act 1994 and Subordinate Regulations and Policies; and
 - iii The required control measures to ensure compliance with the relevant noise level criteria.
- b The development must be designed and constructed in accordance with any recommendations of the approved acoustic report and any other conditions imposed in the approval of the report.

35 Hours of operation within Precinct A

Hours of operation within Precinct A are restricted to between 7:00am and 8:00pm Monday to Friday or to the satisfaction of the Chief Executive Officer.

36 Delivery and Collection Activities within Precinct A

Delivery and collection activities within Precinct A are restricted to between 7:00am and 8:00pm Monday to Friday or to the satisfaction of the Chief Executive Officer.

HYDRAULICS AND STORMWATER MANAGEMENT

37 No worsening of hydraulic conditions

The development must be designed and constructed so as to result in:

- a No increase in peak flow rates downstream from the site;
- b No increase in flood levels external to the site; and
- c No increase in duration of inundation external to the site that could cause loss or damage.

38 Alteration of overland flow paths

Overland flow paths on the site must not be altered in a way that inhibits or alters the characteristics of existing overland flows on other properties or that creates an increase in flood damage on other properties.

39 Certification of earthworks compliance with hydraulic report

Immediately after completion of the bulk earthworks, the applicant must submit to Council a certification from a Registered Professional Engineer Queensland (RPEQ) specialising in hydraulics stating that the bulk earthworks comply with Section 4 of the approved report, being 'Generations Industrial Park – Stormwater Management Plan', dated 20 June 2012 and prepared by Hyder Consulting Pty Ltd and no loss of flood plain storage has occurred as a result of the earthworks. The certification must be accompanied by calculations and as constructed data that:

- a Includes existing and proposed triangulated surface meshes which can be produced by computer terrain modelling software packages such as Civil-Cad, 12D or KEAYS; and
- b Has been compared with the pre-development surface levels to ensure that no loss of floodplain storage has occurred.

40 Use of land for flood storage purposes only

The part of Lot 4 on RP6843 that is identified as Excavation below RL8.6m AHD in Figure 4.6 (Compensatory Excavation for Flood Storage Volume Balance) of the stormwater management report, being 'Generations Industrial Park – Stormwater Management Plan', dated 20 June 2012 and prepared by Hyder Consulting Pty Ltd must be used solely for the purposes of flood storage/conveyance and not be used for any purposes that involve the construction of any building, structures or earthworks. This obligation applies independently of any registered covenant.

41 Flood storage covenant

Prior to the earlier of compliance assessment of the subdivision plan or the commencement of the use of the premises, an instrument of covenant must be registered on the title/s of the lot/s. The following requirements must be complied with in the preparation and lodgement of the instrument of covenant:

- a The applicant is responsible for the preparation of the instrument of covenant and any necessary subdivision plan to enable registration of the covenant and for lodgement of the covenant for registration.
- b The instrument must be in a form capable of registration pursuant to section 97A(3)(a) of the Land Title Act 1994.
- c The part of Lot 4 on RP6843 that is identified as Excavation below RL8.6m AHD in Figure 4.6 (Compensatory Excavation for Flood Storage Volume Balance) of the stormwater management report, being 'Generations Industrial Park – Stormwater Management Plan', dated 20 June 2012 and prepared by Hyder Consulting Pty Ltd must be shown and identified as a 'Flood Covenant Area' on the face of the subdivision plan in addition to any covenant descriptor (e.g. Covenant 'A').
- d The applicant must provide a draft of the covenant to Council for written approval.
- e The parties to the covenant are to be the registered owner of the lot (as covenantor) and the Council (as covenantee).
- f The instrument must include a purpose statement that articulates:
 - i That the covenantor acknowledges that the Flood Covenant Area contributes to the existing flood storage capacity of the floodplain and watercourse system, as well as maintaining existing flood conveyance capacity of the watercourse system; and
 - ii That to ensure the flood storage/flood conveyance function of the Flood Covenant Area is not adversely affected, it is critical the Flood Covenant Area be used solely for the purposes of flood storage/conveyance and not be used for any purposes that involve the construction of any building, structures or earthworks.
- g The instrument must expressly set out in full as obligations of the covenantor that:
 - i The Flood Covenant Area must be used for the purpose of flood storage/conveyance; and
 - ii The Flood Covenant Area must not be used for any purposes involving buildings, structures or earthworks that result in a loss of flood plain storage or conveyance capacity (cross sectional area) of the watercourse.
- h If the instrument is requisitioned or refused registration by the Registrar of Titles, the applicant shall amend the document to include a covenant/s which, as nearly as practicable, addresses the objective sought to be achieved by this condition. A draft of the amended document is to be provided to Council for written approval.

42 Amendment of and compliance with stormwater management plan

- a The submitted stormwater management plan, being 'Generations Industrial Park – Stormwater Management Plan', dated 20 June 2012 and prepared by Hyder Consulting Pty Ltd, is approved, subject to the following amendments:
 - i GPTs must be selected in accordance with Section 13.12.2.2 of the Council's Land Development Guidelines (GCCC, 2007).
 - ii Pollutant removal efficiency of GPTs must not be higher than the Council's acceptable value 50% TSS, 20% TP and no removal of TN. The applicant must provide additional bioretention basin/swale if requires to achieve the Council's pollutant load reduction target (80% TSS, 60% TP, 45% TN and 90% GP).
- b All works must be carried out and completed and all maintenance and monitoring implemented by the applicant in accordance with the amended stormwater management plan, prior to a request for compliance assessment of the subdivision plan or, if no subdivision plan is required, prior to the commencement of the use of the premises.

43 Certification that stormwater management treatment train implemented

- a The applicant must provide to Council certification from a Registered Professional Engineer Queensland (RPEQ) specialising in stormwater that the stormwater management treatment train in the approved (as amended) stormwater management plan and associated design drawings has been installed on-site and is functioning as designed.
- b Certification must be provided prior to the earlier of compliance assessment of the subdivision plan or the commencement of the use of the premises.

44 SQIDs maintenance management plan

In accordance with Vol 3 (Section 13) of the Land Development Guidelines, the applicant must submit to Council for approval, before Council will accept the works 'On Maintenance', a SQID Maintenance Management Plan (MMP) that is:

- a prepared by a Registered Professional Engineer Queensland (RPEQ) specialising in stormwater; and
- b developed in accordance with Council's Water Sensitive Urban Design Guidelines (2007), and with reference to the Water by Design document "Maintaining Vegetated Stormwater Assets" Version 1 February 2012.

The MMP should be a concise document suitable for use by field staff in carrying out day-to-day maintenance activities. The MMP must include, but not necessarily be limited to, the following key information:

- i Design intent and description of the device(s)
- ii The location and specific dimensions of the device(s)
- iii Approved / designed water quality objectives
- iv Water quality monitoring procedures
- v Monitoring frequency
- vi Specifications and procedures for device(s) maintenance
- vii Plant and equipment access details for maintenance activities
- viii Maintenance activity schedule defining frequency, area (m²) per maintenance zone, hours, staff, plant and equipment, approximate costs per rotation, and per annum
- ix Performance indicators / intervention levels / triggers for reactive maintenance
- x Any necessary preventative maintenance measures
- xi Acceptable solutions for specific items, i.e. acceptable plant species substitutions based on availability, hydraulic conductivity, water quality objectives, etc
- xii Defined maintenance zones, i.e. shallow water zone – 350m², ephemeral planting zone – 600m², etc (for wetlands in particular)
- xiii Approximate lifecycle maintenance costs

Prior to acceptance for 'Off Maintenance' the applicant must submit a report to Council providing details of water quality performance monitoring including any recommendations or corrective action taken throughout the maintenance / defects liability period ('On Maintenance').

Information note:

The term Stormwater Quality Improvement Devices (SQID) is used to describe all built WSUD features, e.g. grassed swales, gross pollutant traps and various basins (detention, retention and sedimentation, etc).

EROSION AND SEDIMENT CONTROL

45 Erosion and sediment control

- a Sediment, erosion and dust control measures must be implemented generally in accordance with the approved report, being "Generations Industrial Park – Stormwater Management Plan" dated 20 June 2012 prepared by Hyder Consulting Pty Ltd and the Best Practice Erosion & Sediment Control (IECA Australasia, November 2008). Additional sediment, erosion and dust control measures must be implemented as directed by Council officers upon site inspection.

- b Immediately after backfilling behind all kerbing:
 - i A turf strip 1 metre wide must be placed behind all kerbing; and
 - ii A turf strip must be placed at 90 degrees to the kerb every 10 metres to prevent scouring along the turf edge,
 in accordance with Figure 2.5 (Application of Grassed Filter Strips down a slope) of the Best Practice Erosion & Sediment Control (IECA Australasia, November 2008).
- c Immediately after completion of the construction of an open drain:
 - i The open drain must be turfed, unless approved otherwise in a Council approved stormwater management plan; and
 - ii A turf strip must be placed at 90 degrees to the invert every 10 metres to prevent scouring along the turf edge. Reinforced turf must be used where invert grades exceed 5%.
- d Sediment control structures (e.g. sediment fence) must be placed at the base of all materials imported on-site to trap any sediment runoff.
- e The following inspection program must be carried out until the site is fully rehabilitated:
 - i Regular inspections to ensure that adequate erosion control measures are in place and in good condition both during and after construction; and
 - ii Inspections after each storm event to assess the adequacy of the erosion control measures. The applicant must make good any damage or non-performing erosion control devices and clean up any sediment that has left the site or is on the roads within and external to the site.
- f To minimise unvegetated areas:
 - i Construction activities must be staged;
 - ii Filled areas must be seeded immediately on completion; and
 - iii No area should remain exposed (unvegetated) for more than 2 weeks unless construction work is being undertaken on that area.
- g All water from the site, including dewatering discharge, must be directed through a sediment pond prior to leaving the site. The sediment ponds or other approved devices are to be maintained in good condition until the site is fully rehabilitated.
- h Prior to discharging of any water from the site during construction, including dewatering discharge, the applicant must achieve the water quality objectives in Table 8.2.1 of the Queensland Water Quality Guidelines (DERM, September 2009).
- i Water quality must be monitored in accordance with Section 7.5 of the Best Practice Erosion & Sediment Control (IECA Australasia, November 2008) and compared with water quality objectives. A monitoring report must be prepared and retained at the site office and made available to Council's inspectors upon request. The applicant must notify Council's Contributed Asset Section and Department of Environmental and Resource Management of any non-compliance to water quality objectives and the corrective actions taken by the applicant within 48 hours of the non-compliance.
- j Water quality samples must be collected monthly during the first rainfall event of greater than 25mm in 24 hours. The sampling frequency shall be increased to fortnightly in case of any non-compliance to the construction phase water quality objectives until the above water quality objectives are achieved through additional corrective measures.

46 Construction of sediment basin

- a The sediment basin(s) proposed for construction phase must be designed in accordance with Appendix B of the Best Practice Erosion and Sediment Control (IECA Australasia, November 2008).
- b Each sediment basin must have the capacity to treat flows to current best practice standards and as a minimum must be designed to contain all the stormwater runoff from the 85th percentile 5 day rainfall depth and in addition be designed to store 2 months sediment from the receiving catchment, as determined using the Revised Universal Soil Loss Equation.

- c Sediment basins must be dewatered as soon as practicable after each rainfall event.
- d Sediment basins and associated structures such as inlets, outlets and spillways are designed and constructed to be structurally sound for 10 year ARI rainfall event under normal circumstances.
- e A high-flow bypass system must be included (if necessary) to prevent any potential re-suspension of accumulated sediment from the basin during major storm events.
- f Accumulated sediment from basins and other controls must be removed and disposed of appropriately without causing water contamination.

47 Inspections and reporting

- a All erosion and sediment control measures must be inspected on a weekly basis and following runoff events until the site is fully rehabilitated.
- b All drainage control structures such as Diversion Banks, Diversion Channels and Temporary Culvert Protections must be inspected daily to ensure they have not been damaged by machinery and are serviceable in readiness for the next rainfall event.
- c Where inspection indicates a non-conformance, a Non-Conformance Report must be generated. This report must include but not limited to the following:
 - i Details of the nature and cause of non-conformance; and
 - ii Details of the required corrective actions.

Corrective actions must be carried out within 24 hours where practicable or as agreed with the Construction Superintendent.

- d A monthly summary of Erosion and Sediment Control (ESC) performances must be compiled and retained at the site office and made available to Council's inspectors upon request. This report must include but not limited to the following:
 - i ESC Inspection Checklists;
 - ii Description of any incidents of non-conformance;
 - iii Results of corrective action; and
 - iv Revisions to the ESCP.

48 Detailed design and certification of erosion and sediment control measures

- a The development application for operational work (change to ground level and/or works for infrastructure) must be accompanied by site specific detailed design of erosion & sediment control measures, including (but not limited to) details of:
 - i Catchment boundary and overland flow path;
 - ii Estimated soil loss from each catchment;
 - iii Length, width and depth of each sediment basin;
 - iv Spillway details and levels;
 - v Energy dissipation/scour protection;
 - vi High flow bypass (if requires);
 - vii Value of each parameter used in the calculation of soil loss and volume of sediment basins;
 - viii Cross section, capacity and spacing of each catch/diversion drain;
 - ix Spacing of silt fences;
 - x Frequency and location of water quality monitoring;
 - xi Maintenance requirements and frequencies;
 - xii Maintenance access; and
 - xiii Contingency measures in case of failure to achieve the water quality objectives.
- b The applicant must also submit a certification from a qualified professional confirming that the above detailed drawings are prepared in accordance with the Best Practice Erosion & Sediment Control (IECA Australasia, November 2008) and best industry practices.

GEOTECHNICAL

49 Geotechnical report to be complied with

All future earthworks over the subject site must be designed following the advice and recommendations of the geotechnical report, being 'Broad Geotechnical Assessment, Proposed Industrial Development, Lot 1 on RP6882 and Lot 240 on W31320, Stapylton Jacobs Well Road and Christensen Road, Stapylton', prepared by Morrison Geotechnic Pty Ltd, Job No. GE11/002 and dated February 2011.

50 Retaining structures design

- a Retaining structures and associated footings must be designed in accordance with AS 4678 – 2002 Earth-retaining structures.
- b Retaining structures and associated footings must comply with the Planning Scheme Policy 11 - Land Development Guidelines, Standard Specifications and Drawings including in particular, but not limited to:
 - i Section 3.2.7 (Cut/fill batters and earth retaining structures); and
 - ii Section 7.7 (Building near or over Council water, sewer and/or stormwater services).
- c Retaining structures over the subject site must not exceed 5.0 metres in height.
- d Retaining structures must be made of durable materials not subject to rot and insect attack and have a minimum design life of 60 years.

51 Cut and fill batters design

- a Cut/fill batters must be constructed in accordance with section 3.2.7 of Planning Scheme Policy 11 - Land Development Guidelines, Standard Specifications and Drawings.
- b All platforms resulting from cutting/filling must have a minimum slope of 1 in 150 and comply with Planning Scheme Policy 11 – Land Development Guidelines, Standard Specifications and Drawings for drainage of allotments to the street.
- c Benching is required where any proposed freestanding batter height exceeds 2.5 metres. The minimum width of benching must be 1 metre with a minimum slope of 1 in 100 towards the lower face. The absolute maximum height of any freestanding cut/fill batter with benching is 5 metres.

WASTEWATER

52 Reduced infiltration gravity wastewater reticulation

The development must be connected to reduced infiltration gravity wastewater reticulation by gravity solution, at the applicant's cost.

53 General wastewater servicing arrangement

Unless otherwise determined by Gold Cast Water, the wastewater servicing arrangements shall be generally in accordance with the following:

- a Connect part of Stage 1 that naturally drains to Pump Station BE45, to BE45, via De Bortoli Street;
- b Connect the remaining part of Stage 1 and part of Stage 2 that naturally drains to the proposed new pump station (refer to drawing no.C028-AA003837-04 dated 15/6/2012 prepared by Hyder Consulting) located near Stapylton-Jacobs Well Road;
- c The balance of Stage 2, Stage 3 and Stage 4 shall gravitate into Council's future wastewater network;
- d The balance of Stage 2 and Stage 3 shall gravitate into Stage 4 (no pump station is permitted); and
- e A temporary pump station sited in Stage 4 may be permitted where the wastewater network in Christensen Road remains unavailable (the wastewater network in Christensen Road serving lot 334 on SP193431 is serviced by a private pump station and therefore not currently available).

54 Connection point

The applicant must submit to Gold Coast Water and obtain approval prior to making any development application for a Development Permit or Building Work:

- a Pump Station BE45 catchment (part of Stage 1):
 - i Demonstrate development can be connected by gravity to BE45,
- b Proposed new pump station near Stapylton-Jacobs Well Road (balance of Stage 1 and part of Stage 2 that's drains to this new pump station):
 - i Demonstrate that downstream wastewater infrastructure has sufficient capacity to accommodate the new wastewater pump station;
 - ii Demonstrate an ability to deliver the new wastewater pump station in time to service the proposed development.
- c Long Term Strategy (balance of Stage 2, Stage 3 and Stage 4):
 - i Demonstrate that balance of Stage 2 and Stage 3 gravitate to Stage 4; and
 - ii Demonstrate that downstream wastewater infrastructure has sufficient capacity to accommodate the development.

Note: The development is out of sequence in respect of wastewater services. The wastewater network scenario may change as a result of the future planning of the Beenleigh, Stapylton and Pimpama Wastewater Treatment plants. The applicant is advised to liaise with Gold Coast Water.

55 Wastewater reticulation schematic plan

- a The applicant must submit to Gold Coast Water a wastewater reticulation schematic plan for the proposed development that:
 - i Demonstrates how the development is to be connected to Council's wastewater network,
 - ii Provides the following details:
 - A Average and peak weather flows;
 - B Emergency storage;
 - C Septicity and odour; and
 - D Pump duty points.
 - iii Makes allowance for any external catchments that may drain through the subject site; and
 - iv Accommodates the extension of the wastewater main to the upstream property boundary to provide for future wastewater connectivity of the upstream external catchment.
- b The applicant must obtain Gold Coast Water approval of the wastewater reticulation schematic plan prior to making any development application for a Development Permit or Building Work.

56 Wastewater pump stations

Wastewater pump stations, rising main and emergency storage must be designed and constructed in accordance with Council's Policy 11 – Land Development Guidelines standards, at no cost to Council and are to:

- a Provide legal access to the pump station,
- b Provide a separate electrical power,
- c Provide a separate water service and meter.

57 Location and transfer of wastewater pump station land

The site of any wastewater pump station and associated access driveways, that will be owned and maintained by Council, must be transferred, in freehold and at the applicant's cost, at the earlier of making an application for Building Work, request for a compliance assessment for a Development Permit or prior to the commencement of the use.

58 Completion of external wastewater connections

All external wastewater connections (including the completion of all infrastructure downstream of the development site to the point of connection and approved augmentation works) must be completed in accordance with engineering plans approved by Council prior to the earlier of making an application for Building Work, request for a compliance assessment for a Development Permit or commencement of the use of the premises.

59 Connections – arrangements with Gold Coast Water

All live connections are to be performed by Gold Coast Water at the applicant's cost. The applicant must liaise with Gold Coast Water's Field Services and Construction Branch (phone 5581 7564) to make arrangements for the connection and to obtain a quotation for the work.

60 No building work over/within Council's wastewater infrastructure easements and minimum distance from Gold Coast Water infrastructure

- a No structure or building work is permitted over/within any public utility easements (Gold Coast Water/Council).
- b All proposed buildings and structures must be located a minimum distance of 2 metres from Gold Coast Water infrastructure (i.e. Water or wastewater infrastructure that become contributed assets) and comply with Gold Coast City Council Planning Scheme Policy 11 – Land Development Guidelines, Standard Specifications and Drawings.

WATER SUPPLY RETICULATION

61 Dual water supply reticulation (potable and recycled)

The development must be connected to Council's dual water reticulation system (potable and recycled supply) at the applicant's cost.

62 Design, construction and standard of water supply reticulation

The design, construction and standard of the required water supply reticulation infrastructure to be carried out by the applicant (including all water supply reticulation infrastructure to be dedicated to Council) must be in accordance with Gold Coast City Council Planning Scheme Policy 11 – Land Development Guidelines, Standard Specifications and Drawings.

63 Connection point

- a The existing 225mm main in Stapylton Jacobs Wall Road must be used as the potable water supply connection point, unless otherwise approved by Gold Coast Water.
- b The development site must be connected to Council's recycled water reticulation system when it becomes available for connections at no cost to Council.
- c The development site must provide a cross-connection between the potable and recycled water systems at the applicant's cost.
- d The applicant must submit to Gold Coast Water and obtain approval for a cross-connection.

64 Water reticulation schematic plan and network analysis

- a The applicant must submit to Gold Coast Water and obtain approval of a potable and recycled water reticulation schematic plan and network analysis of the overall development prior to the earlier of the making of any development applications for Operational Work (works for infrastructure) or for Plumbing and Drainage Work.
- b In preparing the plan/analysis, the applicant must liaise with Gold Coast Water to ensure appropriate allowance is made for connectivity with external mains and external demands.

65 Installation of property service, dual water meter box and meters

The applicant must, prior to a request for compliance assessment of the overall development:

- a Provide property service and dual water meter box at the boundary of the development site in accordance with Gold Coast City Council Planning Scheme Policy 11 – Land Development Guidelines, Standard Specifications and Drawings; and
- b A complete property service connection that includes the meter installation and tapping of the main shall be installed by the Council the time of the building application and at the cost of the applicant.

- c All development shall comply with Clause 4.2.7 of Gold Coast City Council Planning Scheme Policy 11 – Land Development Guidelines.

66 Supply standard

The applicant must provide water supply to the standard specified in Section 4 and 7 of Gold Coast City Council's Land Development Guidelines.

67 Fire loading

Fire loading must not exceed 30L/s for commercial and industrial uses, unless otherwise approved by Gold Coast Water.

68 Rainwater tanks – dual reticulated water supply regions

To achieve water savings targets in dual reticulated water supply regions all:

- a "Commercial Building" or "Non-residential Building"

must meet the requirements of Clause 7.3.2.4 (Rainwater Tanks) of Planning Scheme Policy 11- Land Development Guidelines 2005 as amended from time to time.

Advice Note: The terms 'Commercial Building' and 'Non-residential Building' are defined in the code.

REFERRAL AGENCY CONDITIONS

69 Cancelled

FAUNA MANAGEMENT

70 Relocation of active Wedge-tailed eagles nest within Precinct C

Prior to any clearing within Precinct C, a relocation program shall be developed by the applicant, lodged with Council and approved by Council for the relocation of the active wedge-tailed eagles nest (*Aquila audax*) located within the north eastern corner of Precinct C. The program shall detail the specific requirements for the relocation of the nest into the adjoining eastern boundary environmental covenant area. All works shall occur in accordance with the requirements of the relocation program and in liaison with Councils Environmental Planning section.

Please note, a relocation pole of similar height and dimension to the existing nesting tree will be required.

ADVISORY NOTES TO APPLICANT

D Referral agencies

The referral agencies (and their addresses) for the application are listed below.

Any referral agency conditions are identified in the conditions of approval.

Referral agency	Address	Jurisdiction
Department of Natural Resources and Mines (Previously Department of Environment and Resource Management)	Permit and Licence Management GPO BOX 2454 BRISBANE QLD 4001	Concurrence and Advice Agency – For the purposes of the Vegetation Management Act and for the purposes of the Environmental Protection Act
Department of Transport and Main Roads	South Coast Region Land Management PO BOX 442 NERANG QLD 4211	Concurrence Agency – for the purposes of the Transport Infrastructure Act
Department of State Development Infrastructure and Planning	PO BOX 15009 CITY EAST QLD 4002	Concurrence Agency – for the purposes of the Act

E Properly made submissions

There were properly made submissions about the application. The name and address of the principal submitter for each properly made submission is attached to the decision notice.

F Rights of appeal

The applicant has a right of appeal to the Planning and Environment Court regarding this decision, pursuant to section 461 of the Sustainable Planning Act 2009. A copy of that section is attached to the decision notice.

For particular material changes of use, an appeal can also be made to a Building and Development Committee. Please refer to the prerequisites in sections 519 and 522 of the Sustainable Planning Act 2009, attached to this decision notice, to determine whether you have appeal rights to a Building and Development Committee.

Submitters who made properly made submissions have a right of appeal to the Planning and Environment Court regarding this decision, pursuant to section 462 of the Sustainable Planning Act 2009. A copy of that section is attached to the decision notice.

G Applicant responsibilities

The applicant is responsible for securing all necessary approvals and tenure, providing statutory notifications and complying with all relevant laws.

Nothing in this decision notice alleviates the need for the applicant to comply with all relevant local, State and Commonwealth laws and to ensure appropriate tenure arrangements have been made where the use of/reliance upon land other than that owned by the applicant is involved. Without limiting this obligation, the applicant is responsible for:

- a Obtaining all other/further necessary approvals, licences, permits, resource entitlements etc by whatever name called required by law before the development the subject of this approval can be lawfully commenced and to carry out the activity for its duration;
- b Providing any notifications required by law (by way of example only, to notify the administering authority pursuant to the Environmental Protection Act 1994 of environmental harm being caused/threatened by the activity, and upon becoming aware the premises is being used for a 'notifiable activity');
- c Securing tenure/permission from the relevant owner to use private or public land not owned by the applicant (including for access required by conditions of approval);
- d Ensuring the correct siting of structures on the land. An identification survey demonstrating correct siting and setbacks of structures may be requested of the applicant to ensure compliance with this decision notice and applicable codes;
- e Providing Council with proof of payment of the Portable Long Service Leave building construction levy (or proof of appropriate exemption) where the value of the Operational Works exceeds \$80,000. Acceptable proof of payment is a Q.Leave – Notification and Payment Form approved by the Authority. Proof of payment must be provided before Council can issue a development permit for the Operational Works. This is a requirement of section 77(1) of the Building and Construction Industry (Portable Long Service Leave) Act 1991; and
- f Making payment of any outstanding Council rates and charges applicable to the development site prior to the lodgement of subdivision plans.

H Indigenous cultural heritage legislation and duty of care requirement

The Aboriginal Cultural Heritage Act 2003 ('AHCA') is administered by the Department of Environment and Resource Management (DERM). The AHCA establishes a duty of care to take all reasonable and practicable measures to ensure any activity does not harm Aboriginal cultural heritage. This duty of care:

- a Is not negated by the issuing of this development approval;

- b Applies on all land and water, including freehold land;
- c Lies with the person or entity conducting an activity; and
- d If breached, is subject to criminal offence penalties.

Those proposing an activity involving surface disturbance beyond that which has already occurred at the proposed site must observe this duty of care.

Details of how to fulfil this duty of care are outlined in the duty of care guidelines gazetted with the AHCA.

The applicant should contact DERM's Cultural Heritage Coordination Unit on (07) 3238 3838 for further information on the responsibilities of developers under the AHCA.

I Greenhouse gas emissions

As part of Council's commitment to reducing greenhouse gas emissions Council is encouraging the expansion of the natural gas reticulation network. In particular, the use of natural gas hot water systems will result in significantly less greenhouse gas emissions than equivalent electric storage hot water systems.

The applicant should contact the local natural gas reticulator (APA Group) to arrange an assessment of the suitability of the proposed development for connection to the existing gas reticulation network. Please contact Ramon O'Keefe on 0438708798 or email: ramon.o'keefe@apa.com.au.

J Infrastructure charges

Infrastructure charges have not been calculated or imposed for this Material Change of Use, as it is a Preliminary Approval under Section 242 of the Sustainable Planning Act 2009. Infrastructure charges will be assessed and charged at the time of subsequent development permit/s for Material Change of Use or Building Work.