



REPORT TO
HOME CONSORTIUM

ON
GEOTECHNICAL ASSESSMENT

FOR
**PROPOSED ADDITIONS TO GLENMORE PARK
TOWN CENTRE**

AT
TOWN TERRACE, GLENMORE PARK, NSW

Date: 30 September 2021

Ref: 34445Brpt

JK Geotechnics
www.jkgeotechnics.com.au

T: +61 2 9888 5000

JK Geotechnics Pty Ltd

ABN 17 003 550 801





Report prepared by:

Daniel Bliss
Principal | Geotechnical Engineer

For and on behalf of
JK GEOTECHNICS
PO BOX 976
NORTH RYDE BC NSW 1670

DOCUMENT REVISION RECORD

Report Reference	Report Status	Report Date
34445Brpt	Final Report	30 September 2021

© Document copyright of JK Geotechnics

This report (which includes all attachments and annexures) has been prepared by JK Geotechnics (JKG) for its Client, and is intended for the use only by that Client.

This Report has been prepared pursuant to a contract between JKG and its Client and is therefore subject to:

- a) JKG's proposal in respect of the work covered by the Report;
- b) The limitations defined in the Client's brief to JKG;
- c) The terms of contract between JKG and the Client, including terms limiting the liability of JKG.

If the Client, or any person, provides a copy of this Report to any third party, such third party must not rely on this Report, except with the express written consent of JKG which, if given, will be deemed to be upon the same terms, conditions, restrictions and limitations as apply by virtue of (a), (b), and (c) above.

Any third party who seeks to rely on this Report without the express written consent of JKG does so entirely at their own risk and to the fullest extent permitted by law, JKG accepts no liability whatsoever, in respect of any loss or damage suffered by any such third party.

At the Company's discretion, JKG may send a paper copy of this report for confirmation. In the event of any discrepancy between paper and electronic versions, the paper version is to take precedence. The USER shall ascertain the accuracy and the suitability of this information for the purpose intended; reasonable effort is made at the time of assembling this information to ensure its integrity. The recipient is not authorised to modify the content of the information supplied without the prior written consent of JKG.



Table of Contents

1	INTRODUCTION	1
2	ASSESSMENT PROCEDURE	1
3	RESULTS OF INVESTIGATION	2
3.1	Site Description	2
3.2	Subsurface Conditions	2
4	COMMENTS AND RECOMMENDATIONS	3
4.1	Inferred Subsurface Conditions	3
4.2	Geotechnical Issues	3
5	GENERAL COMMENTS	5

ATTACHMENTS

Figure 1: Site Location Plan

1 INTRODUCTION

This report presents the results of a geotechnical assessment for the proposed additions on the eastern side of Glenmore Park Town Centre located on Town Terrace, Glenmore Park, NSW. The location of the site is shown in Figure 1. The assessment was commissioned by John Stewart of Home Consortium and was carried out in accordance with our proposal dated 13 September 2021, Ref: P55012B.

As shown on the pre-DA architectural drawings by Buchan (Project No. 721024, dated August 2021) alterations and additions are proposed on the eastern side of the existing Glenmore Park Town Centre located on Town Terrace. The additions will comprise the following:

- Demolition of the existing single storey building at the southern end and construction of a four storey building. The lowest level of the building will be at about the existing ground surface level, but the existing retaining wall on the western side will be demolished to extend the building into the existing loading dock driveway.
- Construction of a single storey pavilion building at the northern end within the existing shopping centre forecourt.
- Construction of terraced outdoor dining between the two buildings. This will require reconfiguration of the traced gardens within this area to form steps from the existing shopping centre down to the existing car park.
- Reconfiguration of ramps and paths to connect the development with the park in the north-eastern corner.
- Reconfiguration of the car park along Town Terrace on the eastern side of the site.

The purpose of the assessment was to assess the likely geotechnical conditions based on previous investigations carried out in the vicinity of the site, and to use this as a basis for providing preliminary comments and recommendations on geotechnical issues for the proposed development. The comments and recommendations will be confirmed as part of a geotechnical investigation of the site which will be carried out shortly.

2 ASSESSMENT PROCEDURE

This geotechnical assessment was limited to a desktop assessment and a walkover site inspection. The site walkover was completed by our Principal Geotechnical Engineer, Mr Daniel Bliss, on 21 September 2021. Observations made during the site inspection are summarised in Section 3.1.

A search of our project database was made to review the results of previous geotechnical investigations carried out in the vicinity of the site. The results of this search are provided in Section 3.2.

3 RESULTS OF INVESTIGATION

3.1 Site Description

The site is located on the eastern side of Glenmore Park Town Centre, along the Town Terrace frontage. The site is located within gently undulating topography and on the side of a hill that slopes down to the east at about 2° to 4°. The existing town centre comprises a single storey concrete panel building, which appears to be in good external condition.

At the northern end of the site is a paved forecourt, with a semi-circular park on the eastern side. The park comprises two grassed areas either side of paving and stairs leading up from Town Terrace to a circular garden bed containing a mature tree. Along the eastern side of the Town Centre is a paved ramp leading up from the northern end of the site to the southern end where it joins onto a loading dock driveway for the centre. On the western side of this ramp the Town Centre is supported by a mortared sandstone cobble retaining wall ranging in height from 0m at the southern end to about 2.3m at the northern end. On the eastern side of the ramp are a terraced gardens, ranging from about 2.2m at the southern end to about 0.5m at the northern end. The retaining walls appear to be in good condition.

At the base of the terraced gardens is Town Terrace, which comprised an Asphaltic Concrete paved roadway with parking on each side. The pavement appears to be in good condition.

At the southern end of the site is a concrete paved loading dock driveway, which is supported by a masonry retaining wall of about 3m in height. At the base of this retaining wall is a single storey masonry building that abuts the retaining wall. This building is at about the level of the adjacent Town Terrace. The building appears to be in good external condition. Between the building at Town Terrace is a small grassed area.

To the south of the site is a single storey McDonalds building at the same level as the building at the southern end of the site. The building appears to be in good external condition. To the east of the site is a sports oval, with a grassed batter sloping down the Town Terrace at about 15° for a height of about 3m to 3.5m. Town Terrace circles the park at the northern end of the site and on the northern side of the road is a single storey community centre building, in good external condition.

3.2 Subsurface Conditions

Reference to the Penrith 1:100,000 geological Series Sheet indicates that the site is mapped to be underlain by Ashfield Shale, comprising *“dark grey to black claystone-siltstone and fine sandstone-siltstone laminite”*.

A search of our project database has revealed that we previously carried out a geotechnical investigation prior to construction of the service station on the western side of the Town Centre. The boreholes drilled for that investigation encountered fill comprising silty clay of medium plasticity covering weathered siltstone bedrock at depths of about 0.5m to 0.8m. The siltstone was generally assessed to be initially of very low to low strength. In two boreholes auger drilling was extended and refusal of the auger occurred within rock



assessed to be of medium strength at depths of about 2.5m. No groundwater seepage was encountered within the boreholes during drilling.

We also completed a geotechnical investigation within Glenmore Park High School to the south-east and those boreholes encountered fill and residual silty clay grading into weathered siltstone at a depth of about 1m to 2m. Again, the siltstone was initially of very low to low strength but quickly became medium to high strength at depths of about 3m. No groundwater seepage was encountered within these boreholes during drilling.

4 COMMENTS AND RECOMMENDATIONS

4.1 Inferred Subsurface Conditions

Based on the results of this desktop study, we expect that the subsurface conditions at the site will comprise areas of fill, particular behind retaining walls, covering residual silty clay that grades into weathered siltstone at relatively shallow depths. The siltstone is likely to be initially of very low to low strength, but should increase to medium and possibly high strength shortly into the rock profile. Groundwater is not expected to be encountered within the near surface soils and siltstone.

The comments and recommendations provided herein are based on the above inferred subsurface profile. A geotechnical investigation of the site will be carried out and that will confirm the geotechnical conditions. The comments and recommendations given below may be used for planning and preliminary design, but will be amplified as part of the geotechnical investigation, which should be used for detailed design and construction.

4.2 Geotechnical Issues

Based on the above inferred subsurface profile we consider that the main geotechnical issues for the proposed development are as detailed below. These comments will be amplified as part of the geotechnical investigation.

Overall, we consider that the proposed development is feasible from a geotechnical perspective, provided the issues detailed below are taken into account as part of the design and construction. The proposed development is similar to other developments within the vicinity of the site that have been successfully completed.

- The proposed four storey building at the southern end of the site will extend into the existing loading dock driveway and will require demolition of the existing retaining wall. Insufficient space will be available for a temporary batter to be formed so a full depth retention system will need to be installed prior to the start of excavation, which may comprise a soldier or contiguous pile retaining wall.
- The wall type that would be appropriate will depend on the level of the footings of the existing Town Centre building. If the existing building is supported on piles founded within the siltstone bedrock

founded below the base of the existing wall then a soldier pile wall would be appropriate. However, if the footings are founded at a higher level, then a more rigid contiguous pile wall should be adopted. We recommend that information be sought on the footings of the existing building to determine the most appropriate wall type.

- For other areas of the site where site works will comprise reconfiguration of the terraced gardens to form outdoor dining, and reconfiguration of access ramps and stairs, excavations are expected to be minor and temporary batters should be possible. Depending on the results of the geotechnical investigation we expect temporary batters of the order of 1 Vertical in 1 Horizontal (1V:1H) should be appropriate.
- Where retaining walls are required they should support heights of no more than about 3m and may be designed as cantilevered walls. Such walls may be provisionally designed based on a triangular earth pressure distribution using active earth pressure coefficient, K_a , of 0.3 and a bulk unit weight of 20kN/m^3 . This assumes that some resulting ground movements are acceptable. If movements are to be kept low or walls are restrained by other structural elements in front of the wall, design should be based on an 'at rest' earth pressure coefficient, K_0 , of 0.6. These coefficients assume horizontal backfill surfaces. All surcharge loads and full hydrostatic loads should be allowed for in the design.
- Where floor slabs and pavements are proposed proper subgrade preparation should be completed. Within building areas, this will require any existing uncontrolled fill that may be present to be fully excavated and replaced by engineered fill. Within pavement areas, existing fill may remain provided it performs satisfactorily during proof rolling. All subgrade areas should be proof rolled to improve the near surface compaction and detect any weak subgrade areas. Preferably, proof rolling should be carried out with say a 10 tonne dead weight, smooth drum, vibratory roller, but access for such a roller may not be possible for the entire site. Care will be required when using the roller that unacceptable vibrations are not transferred to the existing building.
- For the proposed four storey building footings will need to be founded within the weathered siltstone and the use of piles will likely to be required to reach the siltstone. Bored piers are likely to be appropriate for this site. Allowable bearing pressures within the siltstone would start at 700kPa for extremely weathered siltstone, increasing to 1000kPa for siltstone of low strength. Where the rock is cored (which is proposed) allowable bearing pressures of the order of 2000kPa to 3500kPa may be possible within siltstone of medium to high strength.
- For the other minor structures, footings founded within the residual silty clay may be possible, provided the structures are separate to any other structures supported on footings founded within the siltstone. Such footings would need to be designed to accommodate shrink/swell movements of the clays, which may be of the order of movements for a Class H1 or H2 site in accordance with AS2870-2011. Allowable bearing pressures within the clays are likely to be of the order of 200kPa for clays of at least very stiff strength.
- The design CBR value for any new pavements will depend on the subgrade conditions. Where the subgrade comprises residual silty clay we would expect CBR values of the order of 2% to 4%, but this will need to be confirmed as part of the geotechnical investigation. Subsoil drainage will need to be provided on the high side of the pavement to prevent moisture ingress into the pavement and subgrade.



The above preliminary comments will be amplified as part of the geotechnical investigation.

5 GENERAL COMMENTS

The recommendations presented in this report include specific issues to be addressed during the detailed design and construction phases of the project. In the event that any of the detailed design or construction phase recommendations presented in this report are not implemented, the general recommendations may become inapplicable and JK Geotechnics accept no responsibility whatsoever for the performance of the structure where recommendations are not implemented in full and properly tested, inspected and documented.

The long term successful performance of floor slabs and pavements is dependent on the satisfactory completion of the earthworks. In order to achieve this, the quality assurance program should not be limited to routine compaction density testing only. Other critical factors associated with the earthworks may include subgrade preparation, selection of fill materials, control of moisture content and drainage, etc. The satisfactory control and assessment of these items may require judgment from an experienced engineer. Such judgment often cannot be made by a technician who may not have formal engineering qualifications and experience. In order to identify potential problems, we recommend that a pre-construction meeting be held so that all parties involved understand the earthworks requirements and potential difficulties. This meeting should clearly define the lines of communication and responsibility.

This report provides advice on geotechnical aspects for the proposed civil and structural design. As part of the documentation stage of this project, Contract Documents and Specifications may be prepared based on our report. However, there may be design features we are not aware of or have not commented on for a variety of reasons. The designers should satisfy themselves that all the necessary advice has been obtained. If required, we could be commissioned to review the geotechnical aspects of contract documents to confirm the intent of our recommendations has been correctly implemented.

A waste classification is required for any soil and/or bedrock excavated from the site prior to offsite disposal. Subject to the appropriate testing, material can be classified as Virgin Excavated Natural Material (VENM), Excavated Natural Material (ENM), General Solid, Restricted Solid or Hazardous Waste. Analysis can take up to seven to ten working days to complete, therefore, an adequate allowance should be included in the construction program unless testing is completed prior to construction. If contamination is encountered, then substantial further testing (and associated delays) could be expected. We strongly recommend that this requirement is addressed prior to the commencement of excavation on site.

This report has been prepared for the particular project described and no responsibility is accepted for the use of any part of this report in any other context or for any other purpose. If there is any change in the proposed development described in this report then all recommendations should be reviewed. Copyright in this report is the property of JK Geotechnics. We have used a degree of care, skill and diligence normally exercised by consulting engineers in similar circumstances and locality. No other warranty expressed or



implied is made or intended. Subject to payment of all fees due for the investigation, the client alone shall have a licence to use this report. The report shall not be reproduced except in full.

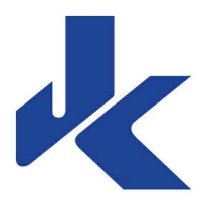


SOURCE: <http://www.whereis.com/>

PLOT DATE: 28/09/2021 4:18:21 PM DWG FILE: Y:\3400\34445B GLENMORE PARK\CAD\34445B.DWG

AERIAL IMAGE SOURCE: MAPS.AU.NEARMAP.COM

Title:	SITE LOCATION PLAN	
Location:	GLENMORE PARK TOWN CENTRE, TOWN TERRACE, GLENMORE PARK, NSW	
Report No:	34445B	Figure No: 1
JKGeotechnics		



This plan should be read in conjunction with the JK Geotechnics report.