

CIVILTEST ALBURY WODONGA

Soils Engineering Laboratory

16 Kane Road, Wodonga - Postal Address P.O Box 876, Wodonga 3689
Telephone 0260 243960 Mobile 0407 572489

17.6.2014

Report No. : 14CT686/262

JMP Developments Pty Ltd
C/- RHPM
P O Box 1210
Wodonga, Vic, 3689

**Re: Site Classification for proposed residence
Lot 262 Riverside Estate
Killara, Vic, 3691**

1. INTRODUCTION/DESCRIPTION

In accordance with your request on the 1st of May 2014, an investigation was conducted by Civiltest Albury/Wodonga to provide a site classification for the above site. The site is essentially flat with good surface drainage.

2. FIELD PROCEDURE

On the 16th of June a Civiltest Albury/Wodonga representative completed one borehole to assess the subsurface conditions.

Materials encountered during the field investigation are presented in the attached borehole log and in general consist of silty and sandy clays of low to high plasticity (CL-CH). A classification explanation sheet is attached outlining the terms and symbols used in the preparation of this report.

3. SITE CLASSIFICATION

Based on the results of the investigation the site has been classified as **Class "M" – Moderately Reactive**. The site classification has been undertaken in accordance with **AS 2870-2011** 'Site Classification - Residential Slabs and Footings' – Site Classification by surface movement calculation.

4. RECOMMENDATIONS

The footings system for a conventional slab may be designed as a **Class "M"** site classification with any external beams founded a minimum of **300mm** below existing surface level.

If piers, stumps or strip footings are used on this site they should be founded a minimum of **600mm** below existing surface level.

The footings for a waffle pod slab may be designed for a **Class "M"** site classification with the external beams founded a minimum of **150mm** below existing surface level.

It is suggested the site be stripped of all vegetation and topsoil, with any areas of soft, loose or wet material selectively excavated to provide a consistent and stable working platform.

The allowable bearing pressure for this site is 125kPa from **150mm** in depth.

5. FILL MATERIAL

Some building sites may contain areas of fill, which cannot be visually identified at the time of investigation. It is also often difficult to determine fill from natural insitu materials during a site investigation borehole. If fill is encountered during excavation of footings, and it is not described in the field investigation log, further advice must be obtained.

Where controlled (compacted) fill is encountered, the amount of compacted fill allowable is up to 800mm of "sand" fill or 400mm of "other" fill. AS 2870 - 2011 provides details of additional construction requirements for controlled fill sites.

6. GENERAL NOTE

The following general measures are recommended in reducing the potential of future building damage:

- Maintain a reasonable distance from building when planting trees or damaging vegetation.
- Monitor watering systems and avoid excessive garden watering
- Monitor underground services and attend any damage as soon as required.

7. APPLICATION

This site classification has been prepared specifically for the above mentioned project and any data or opinions that are given should not be used out of context or pertaining to any other job or purpose without analysis and overview from the undersigned. No other investigation work was provided that is not previously described.

This site classification has been based upon field and sample analysis from the locations mentioned, the nature and continuity below borehole depth is inferred and it must be considered that further investigation may be required to assess actual conditions of subsurface undisturbed soils.

During excavation it is suggested that footings are to be inspected carefully and if any irregularities occur further advice shall be sought.



Peter Vella (Manager)

**APPENDIX A
SITE CLASSIFICATION EXPLANATIONS:**

Class	Expected Surface Movement (Ys)	Explanation
A	0mm	Includes many sand, gravel and rock sites with little/no clays. These sites have little/no expected movement and as a result zero moisture variation.
S	0 - 20mm	Slightly reactive sites which exhibit only small movements with moisture variation.
M	20 - 40mm	Moderately reactive sites exhibit moderate amounts of movement with moisture variation. These sites commonly include red/brown silty soils, some sandy clays and loamy soils.
H1	40 - 60mm	Highly reactive sites exhibit high amounts of movement with moisture variation.
H2	60 - 75mm	Highly reactive sites exhibit high amounts of movement with moisture variation.
E	>75mm	Extremely reactive sites which exhibit greater than 75mm of surface movement. Typically, these sites include deep reactive clays, such as black and dark brown soils. These sites typically demand quite expensive footing systems.

As indicated previously, the Site Classification must consider many aspects of the site, not just the reactivity of the soil. P sites are those that include other factors that need to be brought to the attention of the owner, builder and footing designer. A "P" classification does not indicate a specific Ys value and is described as a "Problem" site.

The reasons for a P classification include:

- P**
- Growth &/or Removal of Trees will cause Abnormal moisture conditions in the subsurface soils;
 - Unusually high moisture conditions caused by water flow, ponds, dams etc;
 - Sites with Loose fill which can be either "controlled" or "uncontrolled". The P Classification depends upon the depth and type of fill;
 - Sites with poor bearing capacity, soft soils, or soils which are prone to collapse;
 - Sites prone to mine subsidence, land slip, piping or coastal erosion;
 - Sites which for one reason or another cannot be classified as normal sites

CIVIL TEST ALBURY WODONGA

Form CT132/3

SOILS ENGINEERING LABORATORY

Borehole/Trench No: 1

Page : 1 of 1

INVESTIGATION LOG REPORT NO: 14CT686

Client: JMP Developments Pty Ltd	Date Logged: 10.6.2014
Investigation For: Site Classification	Logged By: PJ
Location: Lot 262 Riverside Estate, Killara	Checked By: PCV
Borehole/Trench Location: Centre of Lot	Date: 16.6.2014
Method: <input type="checkbox"/> Hand Auger <input type="checkbox"/> Backhoe <input checked="" type="checkbox"/> Drill Rig <input type="checkbox"/> Other	
Alignment: 90°	

DEPTH mm	MATERIAL DESCRIPTION & CLASSIFICATION	MOISTURE CONDITION	CONSIST. DENSITY INDEX	CBR *	SAMPLE TAKEN	REMARKS
150	Sandy CLAY, dark brown	Moist	Firm			
	Fine to medium grained, low plasticity					
300	Sandy CLAY, dark brown					
	Fine to medium grained, low plasticity					
550	Gravelly Clayey SAND, brown		Medium Dense			
	Fine to coarse grained, low plasticity					
800	Clayey SAND, brown		Stiff			
	Fine to medium grained, low plasticity					
1100	Sandy CLAY, brown					
	Fine to medium grained Medium-high plasticity					
	Sandy CLAY, brown					
1500	Fine to medium grained High plasticity	Very Stiff				
	Sandy CLAY, brown					
	Fine to medium grained					
	High plasticity					
2100	Silty SAND, brown	Medium Dense				
	Fine to coarse grained					
	Low plasticity					
2100	Bore Terminated at 2.1m					

ISS - Shrink Swell Index LL - Liquid Limit LS - Linear Shrinkage

DRAINAGE: -General Good Fair Poor Free Water Swampy Subject to Flooding

TOPOGRAPHY:

-General Flat Undulating Hilly

-Local Flat Moderate Slope Dip Valley High Flat Low Flat Crest Steep Slope

----W---- - Water Level
 <----- - Water Inflow
MD - Medium Dense
Vst - Very Stiff

D -Disturbed Sample
U50 -Undisturbed Sample 50mm dia
CBR* -9kg Scala Dynamic Cone
MC -Moisture Content Taken

CIVILTEST ALBURY WODONGA

Soils Engineering Laboratory

16 Kane Road, Wodonga - Postal Address P.O Box 876, Wodonga 3689
Telephone 0260 243960 Mobile 0407 572489

17.6.2014

Report No. : 14CT686/263

JMP Developments Pty Ltd
C/- RHPM
P O Box 1210
Wodonga, Vic, 3689

**Re: Site Classification for proposed residence
Lot 263 Riverside Estate
Killara, Vic, 3691**

1. INTRODUCTION/DESCRIPTION

In accordance with your request on the 1st of May 2014, an investigation was conducted by Civiltest Albury/Wodonga to provide a site classification for the above site. The site is essentially flat with good surface drainage.

2. FIELD PROCEDURE

On the 16th of June a Civiltest Albury/Wodonga representative completed one borehole to assess the subsurface conditions.

Materials encountered during the field investigation are presented in the attached borehole log and in general consist of silty and sandy clays of low to high plasticity (CL-CH). A classification explanation sheet is attached outlining the terms and symbols used in the preparation of this report.

3. SITE CLASSIFICATION

Based on the results of the investigation the site has been classified as **Class "M" – Moderately Reactive**. The site classification has been undertaken in accordance with **AS 2870-2011** 'Site Classification - Residential Slabs and Footings' – Site Classification by surface movement calculation.

4. RECOMMENDATIONS

The footings system for a conventional slab may be designed as a **Class "M"** site classification with any external beams founded a minimum of **300mm** below existing surface level.

If piers, stumps or strip footings are used on this site they should be founded a minimum of **600mm** below existing surface level.

The footings for a waffle pod slab may be designed for a **Class "M"** site classification with the external beams founded a minimum of **100mm** below existing surface level.

It is suggested the site be stripped of all vegetation and topsoil, with any areas of soft, loose or wet material selectively excavated to provide a consistent and stable working platform.

The allowable bearing pressure for this site is 125kPa from **100mm** in depth.

5. FILL MATERIAL

Some building sites may contain areas of fill, which cannot be visually identified at the time of investigation. It is also often difficult to determine fill from natural insitu materials during a site investigation borehole. If fill is encountered during excavation of footings, and it is not described in the field investigation log, further advice must be obtained.

Where controlled (compacted) fill is encountered, the amount of compacted fill allowable is up to 800mm of "sand" fill or 400mm of "other" fill. AS 2870 - 2011 provides details of additional construction requirements for controlled fill sites.

6. GENERAL NOTE

The following general measures are recommended in reducing the potential of future building damage:

- Maintain a reasonable distance from building when planting trees or damaging vegetation.
- Monitor watering systems and avoid excessive garden watering
- Monitor underground services and attend any damage as soon as required.

7. APPLICATION

This site classification has been prepared specifically for the above mentioned project and any data or opinions that are given should not be used out of context or pertaining to any other job or purpose without analysis and overview from the undersigned. No other investigation work was provided that is not previously described.

This site classification has been based upon field and sample analysis from the locations mentioned, the nature and continuity below borehole depth is inferred and it must be considered that further investigation may be required to assess actual conditions of subsurface undisturbed soils.

During excavation it is suggested that footings are to be inspected carefully and if any irregularities occur further advice shall be sought.



Peter Vella (Manager)

**APPENDIX A
SITE CLASSIFICATION EXPLANATIONS:**

Class	Expected Surface Movement (Ys)	Explanation
A	0mm	Includes many sand, gravel and rock sites with little/no clays. These sites have little/no expected movement and as a result zero moisture variation.
S	0 - 20mm	Slightly reactive sites which exhibit only small movements with moisture variation.
M	20 - 40mm	Moderately reactive sites exhibit moderate amounts of movement with moisture variation. These sites commonly include red/brown silty soils, some sandy clays and loamy soils.
H1	40 - 60mm	Highly reactive sites exhibit high amounts of movement with moisture variation.
H2	60 - 75mm	Highly reactive sites exhibit high amounts of movement with moisture variation.
E	>75mm	Extremely reactive sites which exhibit greater than 75mm of surface movement. Typically, these sites include deep reactive clays, such as black and dark brown soils. These sites typically demand quite expensive footing systems.

As indicated previously, the Site Classification must consider many aspects of the site, not just the reactivity of the soil. P sites are those that include other factors that need to be brought to the attention of the owner, builder and footing designer. A "P" classification does not indicate a specific Ys value and is described as a "Problem" site.

The reasons for a P classification include:

- P**
- Growth &/or Removal of Trees will cause Abnormal moisture conditions in the subsurface soils;
 - Unusually high moisture conditions caused by water flow, ponds, dams etc;
 - Sites with Loose fill which can be either "controlled" or "uncontrolled". The P Classification depends upon the depth and type of fill;
 - Sites with poor bearing capacity, soft soils, or soils which are prone to collapse;
 - Sites prone to mine subsidence, land slip, piping or coastal erosion;
 - Sites which for one reason or another cannot be classified as normal sites

CIVIL TEST ALBURY WODONGA

Form CT132/3

SOILS ENGINEERING LABORATORY

Borehole/Trench No: 1

Page : 1 of 1

INVESTIGATION LOG REPORT NO: 14CT686

Client: JMP Developments Pty Ltd	Date Logged: 10.6.2014
Investigation For: Site Classification	Logged By: PJ
Location: Lot 263 Riverside Estate, Killara	Checked By: PCV
Borehole/Trench Location: Centre of Lot	Date: 16.6.2014
Method: <input type="checkbox"/> Hand Auger <input type="checkbox"/> Backhoe <input checked="" type="checkbox"/> Drill Rig <input type="checkbox"/> Other	
Alignment: 90°	

DEPTH mm	MATERIAL DESCRIPTION & CLASSIFICATION	MOISTURE CONDITION	CONSIST. DENSITY INDEX	CBR *	SAMPLE TAKEN	REMARKS			
300	Sandy CLAY, dark brown Fine to medium grained Low plasticity	Moist	Firm						
	Gravelly Sandy CLAY, brown Fine to coarse grained, low plasticity								
500	Sandy CLAY, brown Fine to medium grained Low plasticity								
	Clayey SAND, brown Fine to coarse grained, low plasticity								
900	Sandy CLAY, brown Fine to medium grained High plasticity		Medium Dense						
	Sandy CLAY, brown Fine to medium grained Low plasticity		Stiff						
1600	Sandy CLAY, brown Fine to medium grained Low plasticity		Firm						
2100	Bore Terminated at 2.1m								

ISS - Shrink Swell Index

LL - Liquid Limit

LS - Linear Shrinkage

DRAINAGE: -General Good Fair Poor Free Water Swampy Subject to Flooding

TOPOGRAPHY:

-General Flat Undulating Hilly

-Local Flat Moderate Slope Dip Valley High Flat Low Flat Crest Steep Slope

----W---- - Water Level
 <----- - Water Inflow
MD - Medium Dense
Vst - Very Stiff

D -Disturbed Sample
U50 -Undisturbed Sample 50mm dia
CBR* -9kg Scala Dynamic Cone
MC -Moisture Content Taken

CIVILTEST ALBURY WODONGA

Soils Engineering Laboratory

16 Kane Road, Wodonga - Postal Address P.O Box 876, Wodonga 3689
Telephone 0260 243960 Mobile 0407 572489

17.6.2014

Report No. : 14CT686/264

JMP Developments Pty Ltd
C/- RHPM
P O Box 1210
Wodonga, Vic, 3689

**Re: Site Classification for proposed residence
Lot 264 Riverside Estate
Killara, Vic, 3691**

1. INTRODUCTION/DESCRIPTION

In accordance with your request on the 1st of May 2014, an investigation was conducted by Civiltest Albury/Wodonga to provide a site classification for the above site. The site is essentially flat with good surface drainage.

2. FIELD PROCEDURE

On the 16th of June a Civiltest Albury/Wodonga representative completed one borehole to assess the subsurface conditions.

Materials encountered during the field investigation are presented in the attached borehole log and in general consist of clayey sands and sandy clays of low to high plasticity (SC-CH). A classification explanation sheet is attached outlining the terms and symbols used in the preparation of this report.

3. SITE CLASSIFICATION

Based on the results of the investigation the site has been classified as **Class "M" – Moderately Reactive**. The site classification has been undertaken in accordance with **AS 2870-2011** 'Site Classification - Residential Slabs and Footings' – Site Classification by surface movement calculation.

4. RECOMMENDATIONS

The footings system for a conventional slab may be designed as a **Class "M"** site classification with any external beams founded a minimum of **300mm** below existing surface level.

If piers, stumps or strip footings are used on this site they should be founded a minimum of **600mm** below existing surface level.

The footings for a waffle pod slab may be designed for a **Class "M"** site classification with the external beams founded a minimum of **200mm** below existing surface level.

It is suggested the site be stripped of all vegetation and topsoil, with any areas of soft, loose or wet material selectively excavated to provide a consistent and stable working platform.

The allowable bearing pressure for this site is 125kPa from **200mm** in depth.

5. FILL MATERIAL

Some building sites may contain areas of fill, which cannot be visually identified at the time of investigation. It is also often difficult to determine fill from natural insitu materials during a site investigation borehole. If fill is encountered during excavation of footings, and it is not described in the field investigation log, further advice must be obtained.

Where controlled (compacted) fill is encountered, the amount of compacted fill allowable is up to 800mm of "sand" fill or 400mm of "other" fill. AS 2870 - 2011 provides details of additional construction requirements for controlled fill sites.

6. GENERAL NOTE

The following general measures are recommended in reducing the potential of future building damage:

- Maintain a reasonable distance from building when planting trees or damaging vegetation.
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7. APPLICATION

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During excavation it is suggested that footings are to be inspected carefully and if any irregularities occur further advice shall be sought.



Peter Vella (Manager)

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M	20 - 40mm	Moderately reactive sites exhibit moderate amounts of movement with moisture variation. These sites commonly include red/brown silty soils, some sandy clays and loamy soils.
H1	40 - 60mm	Highly reactive sites exhibit high amounts of movement with moisture variation.
H2	60 - 75mm	Highly reactive sites exhibit high amounts of movement with moisture variation.
E	>75mm	Extremely reactive sites which exhibit greater than 75mm of surface movement. Typically, these sites include deep reactive clays, such as black and dark brown soils. These sites typically demand quite expensive footing systems.

As indicated previously, the Site Classification must consider many aspects of the site, not just the reactivity of the soil. P sites are those that include other factors that need to be brought to the attention of the owner, builder and footing designer. A "P" classification does not indicate a specific Ys value and is described as a "Problem" site.

The reasons for a P classification include:

- P**
- Growth &/or Removal of Trees will cause Abnormal moisture conditions in the subsurface soils;
 - Unusually high moisture conditions caused by water flow, ponds, dams etc;
 - Sites with Loose fill which can be either "controlled" or "uncontrolled". The P Classification depends upon the depth and type of fill;
 - Sites with poor bearing capacity, soft soils, or soils which are prone to collapse;
 - Sites prone to mine subsidence, land slip, piping or coastal erosion;
 - Sites which for one reason or another cannot be classified as normal sites

CIVIL TEST ALBURY WODONGA

Form CT132/3

SOILS ENGINEERING LABORATORY

Borehole/Trench No: 1

Page : 1 of 1

INVESTIGATION LOG REPORT NO: 14CT686

Client: JMP Developments Pty Ltd	Date Logged: 10.6.2014
Investigation For: Site Classification	Logged By: PJ
Location: Lot 264 Riverside Estate, Killara	Checked By: PCV
Borehole/Trench Location: Centre of Lot	Date: 16.6.2014
Method: <input type="checkbox"/> Hand Auger <input type="checkbox"/> Backhoe <input checked="" type="checkbox"/> Drill Rig <input type="checkbox"/> Other	
Alignment: 90°	

DEPTH mm	MATERIAL DESCRIPTION & CLASSIFICATION	MOISTURE CONDITION	CONSIST. DENSITY INDEX	CBR *	SAMPLE TAKEN	REMARKS
200	Sandy CLAY, dark brown	Moist	Firm			
	Fine to medium grained, low plasticity					
450	Gravelly Sandy CLAY, dark brown					
	Fine to coarse grained, low plasticity					
	Clayey SAND, dark brown					
800	Fine to medium grained		Medium Dense			
	Low plasticity					
	Clayey SAND, brown					
1300	Fine to medium grained					
	Low plasticity					
	Sandy CLAY, brown					
1600	Fine to medium grained		Stiff			
	High plasticity					
	Silty SAND, brown					
2100	Fine to coarse grained		Medium Dense			
	Low plasticity					
	Bore Terminated at 2.1m					

ISS - Shrink Swell Index LL - Liquid Limit LS - Linear Shrinkage

DRAINAGE: -General Good Fair Poor Free Water Swampy Subject to Flooding

TOPOGRAPHY:

-General Flat Undulating Hilly

-Local Flat Moderate Slope Dip Valley High Flat Low Flat Crest Steep Slope

----W---- - Water Level
 <----- - Water Inflow
MD - Medium Dense
Vst - Very Stiff

D -Disturbed Sample
U50 -Undisturbed Sample 50mm dia
CBR* -9kg Scala Dynamic Cone
MC -Moisture Content Taken

CIVILTEST ALBURY WODONGA

Soils Engineering Laboratory

16 Kane Road, Wodonga - Postal Address P.O Box 876, Wodonga 3689
Telephone 0260 243960 Mobile 0407 572489

17.6.2014

Report No. : 14CT686/265

JMP Developments Pty Ltd
C/- RHPM
P O Box 1210
Wodonga, Vic, 3689

**Re: Site Classification for proposed residence
Lot 265 Riverside Estate
Killara, Vic, 3691**

1. INTRODUCTION/DESCRIPTION

In accordance with your request on the 1st of May 2014, an investigation was conducted by Civiltest Albury/Wodonga to provide a site classification for the above site. The site is essentially flat with good surface drainage.

2. FIELD PROCEDURE

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The allowable bearing pressure for this site is 125kPa from **200mm** in depth.

5. FILL MATERIAL

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SOILS ENGINEERING LABORATORY

Borehole/Trench No: 1

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INVESTIGATION LOG REPORT NO: 14CT686

Client: JMP Developments Pty Ltd	Date Logged: 10.6.2014
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Borehole/Trench Location: Centre of Lot	Date: 16.6.2014
Method: <input type="checkbox"/> Hand Auger <input type="checkbox"/> Backhoe <input checked="" type="checkbox"/> Drill Rig <input type="checkbox"/> Other	
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	Clayey SAND, dark brown		Medium Dense			
Fine to medium grained						
800	Low plasticity					
	Sandy CLAY, brown		Stiff			
	Fine to medium grained					
1200	High plasticity					
	Sandy CLAY, brown	Firm/Stiff				
	Fine to medium grained					
1700	Medium plasticity					
	Silty SAND, brown	Medium Dense				
	Fine to coarse grained					
2100	Low plasticity					
	Bore Terminated at 2.1m					

ISS - Shrink Swell Index LL - Liquid Limit LS - Linear Shrinkage

DRAINAGE: -General Good Fair Poor Free Water Swampy Subject to Flooding

TOPOGRAPHY:
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Report No. : 14CT686/266

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Killara, Vic, 3691**

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The footings system for a conventional slab may be designed as a **Class "M"** site classification with any external beams founded a minimum of **350mm** below existing surface level.

If piers, stumps or strip footings are used on this site they should be founded a minimum of **600mm** below existing surface level.

The footings for a waffle pod slab may be designed for a **Class "M"** site classification with the external beams founded a minimum of **200mm** below existing surface level.

It is suggested the site be stripped of all vegetation and topsoil, with any areas of soft, loose or wet material selectively excavated to provide a consistent and stable working platform.

The allowable bearing pressure for this site is 125kPa from **200mm** in depth.

5. FILL MATERIAL

Some building sites may contain areas of fill, which cannot be visually identified at the time of investigation. It is also often difficult to determine fill from natural insitu materials during a site investigation borehole. If fill is encountered during excavation of footings, and it is not described in the field investigation log, further advice must be obtained.

Where controlled (compacted) fill is encountered, the amount of compacted fill allowable is up to 800mm of "sand" fill or 400mm of "other" fill. AS 2870 - 2011 provides details of additional construction requirements for controlled fill sites.

6. GENERAL NOTE

The following general measures are recommended in reducing the potential of future building damage:

- Maintain a reasonable distance from building when planting trees or damaging vegetation.
- Monitor watering systems and avoid excessive garden watering
- Monitor underground services and attend any damage as soon as required.

7. APPLICATION

This site classification has been prepared specifically for the above mentioned project and any data or opinions that are given should not be used out of context or pertaining to any other job or purpose without analysis and overview from the undersigned. No other investigation work was provided that is not previously described.

This site classification has been based upon field and sample analysis from the locations mentioned, the nature and continuity below borehole depth is inferred and it must be considered that further investigation may be required to assess actual conditions of subsurface undisturbed soils.

During excavation it is suggested that footings are to be inspected carefully and if any irregularities occur further advice shall be sought.



Peter Vella (Manager)

**APPENDIX A
SITE CLASSIFICATION EXPLANATIONS:**

Class	Expected Surface Movement (Ys)	Explanation
A	0mm	Includes many sand, gravel and rock sites with little/no clays. These sites have little/no expected movement and as a result zero moisture variation.
S	0 - 20mm	Slightly reactive sites which exhibit only small movements with moisture variation.
M	20 - 40mm	Moderately reactive sites exhibit moderate amounts of movement with moisture variation. These sites commonly include red/brown silty soils, some sandy clays and loamy soils.
H1	40 - 60mm	Highly reactive sites exhibit high amounts of movement with moisture variation.
H2	60 - 75mm	Highly reactive sites exhibit high amounts of movement with moisture variation.
E	>75mm	Extremely reactive sites which exhibit greater than 75mm of surface movement. Typically, these sites include deep reactive clays, such as black and dark brown soils. These sites typically demand quite expensive footing systems.

As indicated previously, the Site Classification must consider many aspects of the site, not just the reactivity of the soil. P sites are those that include other factors that need to be brought to the attention of the owner, builder and footing designer. A "P" classification does not indicate a specific Ys value and is described as a "Problem" site.

The reasons for a P classification include:

- P**
- Growth &/or Removal of Trees will cause Abnormal moisture conditions in the subsurface soils;
 - Unusually high moisture conditions caused by water flow, ponds, dams etc;
 - Sites with Loose fill which can be either "controlled" or "uncontrolled". The P Classification depends upon the depth and type of fill;
 - Sites with poor bearing capacity, soft soils, or soils which are prone to collapse;
 - Sites prone to mine subsidence, land slip, piping or coastal erosion;
 - Sites which for one reason or another cannot be classified as normal sites

CIVIL TEST ALBURY WODONGA

Form CT132/3

SOILS ENGINEERING LABORATORY

Borehole/Trench No: 1

Page : 1 of 1

INVESTIGATION LOG REPORT NO: 14CT686

Client: JMP Developments Pty Ltd	Date Logged: 10.6.2014
Investigation For: Site Classification	Logged By: PJ
Location: Lot 266 Riverside Estate, Killara	Checked By: PCV
Borehole/Trench Location: Centre of Lot	Date: 16.6.2014
Method: <input type="checkbox"/> Hand Auger <input type="checkbox"/> Backhoe <input checked="" type="checkbox"/> Drill Rig <input type="checkbox"/> Other	Alignment: 90°

DEPTH mm	MATERIAL DESCRIPTION & CLASSIFICATION	MOISTURE CONDITION	CONSIST. DENSITY INDEX	CBR *	SAMPLE TAKEN	REMARKS
200	Sandy CLAY, dark brown	Moist	Firm			
	Fine to medium grained, low plasticity					
350	Gravelly Clayey SAND, dark brown		Medium			
	Fine to coarse grained, low plasticity		Dense			
750	Sandy CLAY, brown		Firm			
	Fine to medium grained					
	Low plasticity					
	Sandy CLAY, brown		Very			
1400	Fine to medium grained		Stiff			
	High plasticity					
1700	Sandy CLAY, brown	Firm				
	Fine to medium grained					
	Low plasticity					
2100	Silty SAND, brown	Medium				
	Fine to coarse grained	Dense				
	Low plasticity					
2100	Bore Terminated at 2.1m					

ISS - Shrink Swell Index LL - Liquid Limit LS - Linear Shrinkage

DRAINAGE: -General Good Fair Poor Free Water Swampy Subject to Flooding

TOPOGRAPHY:
 -General Flat Undulating Hilly
 -Local Flat Moderate Slope Dip Valley High Flat Low Flat Crest Steep Slope

----W----	- Water Level	D	-Disturbed Sample
<-----	- Water Inflow	U50	-Undisturbed Sample 50mm dia
MD	- Medium Dense	CBR*	-9kg Scala Dynamic Cone
Vst	- Very Stiff	MC	-Moisture Content Taken

CIVILTEST ALBURY WODONGA

Soils Engineering Laboratory

16 Kane Road, Wodonga - Postal Address P.O Box 876, Wodonga 3689
Telephone 0260 243960 Mobile 0407 572489

17.6.2014

Report No. : 14CT686/267

JMP Developments Pty Ltd
C/- RHPM
P O Box 1210
Wodonga, Vic, 3689

**Re: Site Classification for proposed residence
Lot 267 Riverside Estate
Killara, Vic, 3691**

1. INTRODUCTION/DESCRIPTION

In accordance with your request on the 1st of May 2014, an investigation was conducted by Civiltest Albury/Wodonga to provide a site classification for the above site. The site is essentially flat with good surface drainage.

2. FIELD PROCEDURE

On the 16th of June a Civiltest Albury/Wodonga representative completed one borehole to assess the subsurface conditions.

Materials encountered during the field investigation are presented in the attached borehole log and in general consist of clayey sands and sandy clays of low to high plasticity (SC-CH). A classification explanation sheet is attached outlining the terms and symbols used in the preparation of this report.

3. SITE CLASSIFICATION

Based on the results of the investigation the site has been classified as **Class "M" – Moderately Reactive**. The site classification has been undertaken in accordance with **AS 2870-2011** 'Site Classification - Residential Slabs and Footings' – Site Classification by surface movement calculation.

4. RECOMMENDATIONS

The footings system for a conventional slab may be designed as a **Class "M"** site classification with any external beams founded a minimum of **350mm** below existing surface level.

If piers, stumps or strip footings are used on this site they should be founded a minimum of **600mm** below existing surface level.

The footings for a waffle pod slab may be designed for a **Class "M"** site classification with the external beams founded a minimum of **100mm** below existing surface level.

It is suggested the site be stripped of all vegetation and topsoil, with any areas of soft, loose or wet material selectively excavated to provide a consistent and stable working platform.

The allowable bearing pressure for this site is 125kPa from **100mm** in depth.

5. FILL MATERIAL

Some building sites may contain areas of fill, which cannot be visually identified at the time of investigation. It is also often difficult to determine fill from natural insitu materials during a site investigation borehole. If fill is encountered during excavation of footings, and it is not described in the field investigation log, further advice must be obtained.

Where controlled (compacted) fill is encountered, the amount of compacted fill allowable is up to 800mm of "sand" fill or 400mm of "other" fill. AS 2870 - 2011 provides details of additional construction requirements for controlled fill sites.

6. GENERAL NOTE

The following general measures are recommended in reducing the potential of future building damage:

- Maintain a reasonable distance from building when planting trees or damaging vegetation.
- Monitor watering systems and avoid excessive garden watering
- Monitor underground services and attend any damage as soon as required.

7. APPLICATION

This site classification has been prepared specifically for the above mentioned project and any data or opinions that are given should not be used out of context or pertaining to any other job or purpose without analysis and overview from the undersigned. No other investigation work was provided that is not previously described.

This site classification has been based upon field and sample analysis from the locations mentioned, the nature and continuity below borehole depth is inferred and it must be considered that further investigation may be required to assess actual conditions of subsurface undisturbed soils.

During excavation it is suggested that footings are to be inspected carefully and if any irregularities occur further advice shall be sought.



Peter Vella (Manager)

**APPENDIX A
SITE CLASSIFICATION EXPLANATIONS:**

Class	Expected Surface Movement (Ys)	Explanation
A	0mm	Includes many sand, gravel and rock sites with little/no clays. These sites have little/no expected movement and as a result zero moisture variation.
S	0 - 20mm	Slightly reactive sites which exhibit only small movements with moisture variation.
M	20 - 40mm	Moderately reactive sites exhibit moderate amounts of movement with moisture variation. These sites commonly include red/brown silty soils, some sandy clays and loamy soils.
H1	40 - 60mm	Highly reactive sites exhibit high amounts of movement with moisture variation.
H2	60 - 75mm	Highly reactive sites exhibit high amounts of movement with moisture variation.
E	>75mm	Extremely reactive sites which exhibit greater than 75mm of surface movement. Typically, these sites include deep reactive clays, such as black and dark brown soils. These sites typically demand quite expensive footing systems.

As indicated previously, the Site Classification must consider many aspects of the site, not just the reactivity of the soil. P sites are those that include other factors that need to be brought to the attention of the owner, builder and footing designer. A "P" classification does not indicate a specific Ys value and is described as a "Problem" site.

The reasons for a P classification include:

- P**
- Growth &/or Removal of Trees will cause Abnormal moisture conditions in the subsurface soils;
 - Unusually high moisture conditions caused by water flow, ponds, dams etc;
 - Sites with Loose fill which can be either "controlled" or "uncontrolled". The P Classification depends upon the depth and type of fill;
 - Sites with poor bearing capacity, soft soils, or soils which are prone to collapse;
 - Sites prone to mine subsidence, land slip, piping or coastal erosion;
 - Sites which for one reason or another cannot be classified as normal sites

CIVIL TEST ALBURY WODONGA

Form CT132/3

SOILS ENGINEERING LABORATORY

Borehole/Trench No: 1

Page : 1 of 1

INVESTIGATION LOG REPORT NO: 14CT686

Client: JMP Developments Pty Ltd	Date Logged: 10.6.2014
Investigation For: Site Classification	Logged By: PJ
Location: Lot 267 Riverside Estate, Killara	Checked By: PCV
Borehole/Trench Location: Centre of Lot	Date: 16.6.2014
Method: <input type="checkbox"/> Hand Auger <input type="checkbox"/> Backhoe <input checked="" type="checkbox"/> Drill Rig <input type="checkbox"/> Other	
Alignment: 90°	

DEPTH mm	MATERIAL DESCRIPTION & CLASSIFICATION	MOISTURE CONDITION	CONSIST. DENSITY INDEX	CBR *	SAMPLE TAKEN	REMARKS
350	Sandy CLAY, dark brown Fine to medium grained Low plasticity	Moist	Firm			
	Sandy CLAY, dark brown Fine to medium grained Low-medium plasticity					
600	Silty Sandy CLAY, brown Fine to medium grained High plasticity		Very Stiff			
	Silty Clayey SAND, brown Fine to coarse grained Low plasticity		Medium Dense			
1600						
2100	Bore Terminated at 2.1m					

ISS - Shrink Swell Index

LL - Liquid Limit

LS - Linear Shrinkage

DRAINAGE: -General Good Fair Poor Free Water Swampy Subject to Flooding

TOPOGRAPHY:

-General Flat Undulating Hilly

-Local Flat Moderate Slope Dip Valley High Flat Low Flat Crest Steep Slope

----W---- - Water Level
 <----- - Water Inflow
MD - Medium Dense
Vst - Very Stiff

D -Disturbed Sample
U50 -Undisturbed Sample 50mm dia
CBR* -9kg Scala Dynamic Cone
MC -Moisture Content Taken

CIVILTEST ALBURY WODONGA

Soils Engineering Laboratory

16 Kane Road, Wodonga - Postal Address P.O Box 876, Wodonga 3689
Telephone 0260 243960 Mobile 0407 572489

17.6.2014

Report No. : 14CT686/268

JMP Developments Pty Ltd
C/- RHPM
P O Box 1210
Wodonga, Vic, 3689

**Re: Site Classification for proposed residence
Lot 268 Riverside Estate
Killara, Vic, 3691**

1. INTRODUCTION/DESCRIPTION

In accordance with your request on the 1st of May 2014, an investigation was conducted by Civiltest Albury/Wodonga to provide a site classification for the above site. The site is essentially flat with good surface drainage.

2. FIELD PROCEDURE

On the 16th of June a Civiltest Albury/Wodonga representative completed one borehole to assess the subsurface conditions.

Materials encountered during the field investigation are presented in the attached borehole log and in general consist of clayey sands and sandy clays of low to high plasticity (SC-CH). A classification explanation sheet is attached outlining the terms and symbols used in the preparation of this report.

3. SITE CLASSIFICATION

Based on the results of the investigation the site has been classified as **Class "M" – Moderately Reactive**. The site classification has been undertaken in accordance with **AS 2870-2011** 'Site Classification - Residential Slabs and Footings' – Site Classification by surface movement calculation.

4. RECOMMENDATIONS

The footings system for a conventional slab may be designed as a **Class "M"** site classification with any external beams founded a minimum of **300mm** below existing surface level.

If piers, stumps or strip footings are used on this site they should be founded a minimum of **600mm** below existing surface level.

The footings for a waffle pod slab may be designed for a **Class "M"** site classification with the external beams founded a minimum of **100mm** below existing surface level.

It is suggested the site be stripped of all vegetation and topsoil, with any areas of soft, loose or wet material selectively excavated to provide a consistent and stable working platform.

The allowable bearing pressure for this site is 125kPa from **100mm** in depth.

5. FILL MATERIAL

Some building sites may contain areas of fill, which cannot be visually identified at the time of investigation. It is also often difficult to determine fill from natural insitu materials during a site investigation borehole. If fill is encountered during excavation of footings, and it is not described in the field investigation log, further advice must be obtained.

Where controlled (compacted) fill is encountered, the amount of compacted fill allowable is up to 800mm of "sand" fill or 400mm of "other" fill. AS 2870 - 2011 provides details of additional construction requirements for controlled fill sites.

6. GENERAL NOTE

The following general measures are recommended in reducing the potential of future building damage:

- Maintain a reasonable distance from building when planting trees or damaging vegetation.
- Monitor watering systems and avoid excessive garden watering
- Monitor underground services and attend any damage as soon as required.

7. APPLICATION

This site classification has been prepared specifically for the above mentioned project and any data or opinions that are given should not be used out of context or pertaining to any other job or purpose without analysis and overview from the undersigned. No other investigation work was provided that is not previously described.

This site classification has been based upon field and sample analysis from the locations mentioned, the nature and continuity below borehole depth is inferred and it must be considered that further investigation may be required to assess actual conditions of subsurface undisturbed soils.

During excavation it is suggested that footings are to be inspected carefully and if any irregularities occur further advice shall be sought.



Peter Vella (Manager)

**APPENDIX A
SITE CLASSIFICATION EXPLANATIONS:**

Class	Expected Surface Movement (Ys)	Explanation
A	0mm	Includes many sand, gravel and rock sites with little/no clays. These sites have little/no expected movement and as a result zero moisture variation.
S	0 - 20mm	Slightly reactive sites which exhibit only small movements with moisture variation.
M	20 - 40mm	Moderately reactive sites exhibit moderate amounts of movement with moisture variation. These sites commonly include red/brown silty soils, some sandy clays and loamy soils.
H1	40 - 60mm	Highly reactive sites exhibit high amounts of movement with moisture variation.
H2	60 - 75mm	Highly reactive sites exhibit high amounts of movement with moisture variation.
E	>75mm	Extremely reactive sites which exhibit greater than 75mm of surface movement. Typically, these sites include deep reactive clays, such as black and dark brown soils. These sites typically demand quite expensive footing systems.

As indicated previously, the Site Classification must consider many aspects of the site, not just the reactivity of the soil. P sites are those that include other factors that need to be brought to the attention of the owner, builder and footing designer. A "P" classification does not indicate a specific Ys value and is described as a "Problem" site.

The reasons for a P classification include:

- P**
- Growth &/or Removal of Trees will cause Abnormal moisture conditions in the subsurface soils;
 - Unusually high moisture conditions caused by water flow, ponds, dams etc;
 - Sites with Loose fill which can be either "controlled" or "uncontrolled". The P Classification depends upon the depth and type of fill;
 - Sites with poor bearing capacity, soft soils, or soils which are prone to collapse;
 - Sites prone to mine subsidence, land slip, piping or coastal erosion;
 - Sites which for one reason or another cannot be classified as normal sites

CIVIL TEST ALBURY WODONGA

Form CT132/3

SOILS ENGINEERING LABORATORY

Borehole/Trench No: 1

Page : 1 of 1

INVESTIGATION LOG REPORT NO: 14CT686

Client: JMP Developments Pty Ltd	Date Logged: 10.6.2014
Investigation For: Site Classification	Logged By: PJ
Location: Lot 268 Riverside Estate, Killara	Checked By: PCV
Borehole/Trench Location: Centre of Lot	Date: 16.6.2014
Method: <input type="checkbox"/> Hand Auger <input type="checkbox"/> Backhoe <input checked="" type="checkbox"/> Drill Rig <input type="checkbox"/> Other	
Alignment: 90°	

DEPTH mm	MATERIAL DESCRIPTION & CLASSIFICATION	MOISTURE CONDITION	CONSIST. DENSITY INDEX	CBR *	SAMPLE TAKEN	REMARKS			
300	Sandy CLAY, dark brown Fine to medium grained Low-medium plasticity	Moist	Firm						
	Gravelly Sandy CLAY, dark brown Fine to coarse grained, low plasticity								
500	Sandy CLAY, brown Fine to medium grained Medium plasticity		Firm/Stiff						
	800		Silty Sandy CLAY, brown Fine to medium grained High plasticity				Stiff		
1100							Very Stiff		
	1400		Silty Clayey SAND, brown Fine to coarse grained Low plasticity				Medium Dense		
2100			Bore Terminated at 2.1m						

ISS - Shrink Swell Index

LL - Liquid Limit

LS - Linear Shrinkage

DRAINAGE: -General Good Fair Poor Free Water Swampy Subject to Flooding

TOPOGRAPHY:

-General Flat Undulating Hilly

-Local Flat Moderate Slope Dip Valley High Flat Low Flat Crest Steep Slope

----W---- - Water Level
 <----- - Water Inflow
MD - Medium Dense
Vst - Very Stiff

D -Disturbed Sample
U50 -Undisturbed Sample 50mm dia
CBR* -9kg Scala Dynamic Cone
MC -Moisture Content Taken

CIVILTEST ALBURY WODONGA

Soils Engineering Laboratory

16 Kane Road, Wodonga - Postal Address P.O Box 876, Wodonga 3689
Telephone 0260 243960 Mobile 0407 572489

17.6.2014

Report No. : 14CT686/269

JMP Developments Pty Ltd
C/- RHPM
P O Box 1210
Wodonga, Vic, 3689

**Re: Site Classification for proposed residence
Lot 269 Riverside Estate
Killara, Vic, 3691**

1. INTRODUCTION/DESCRIPTION

In accordance with your request on the 1st of May 2014, an investigation was conducted by Civiltest Albury/Wodonga to provide a site classification for the above site. The site is essentially flat with good surface drainage.

2. FIELD PROCEDURE

On the 16th of June a Civiltest Albury/Wodonga representative completed one borehole to assess the subsurface conditions.

Materials encountered during the field investigation are presented in the attached borehole log and in general consist of clayey sands and sandy clays of low to high plasticity (SC-CH). A classification explanation sheet is attached outlining the terms and symbols used in the preparation of this report.

3. SITE CLASSIFICATION

Based on the results of the investigation the site has been classified as **Class "M" – Moderately Reactive**. The site classification has been undertaken in accordance with **AS 2870-2011** 'Site Classification - Residential Slabs and Footings' – Site Classification by surface movement calculation.

4. RECOMMENDATIONS

The footings system for a conventional slab may be designed as a **Class "M"** site classification with any external beams founded a minimum of **300mm** below existing surface level.

If piers, stumps or strip footings are used on this site they should be founded a minimum of **600mm** below existing surface level.

The footings for a waffle pod slab may be designed for a **Class "M"** site classification with the external beams founded a minimum of **200mm** below existing surface level.

It is suggested the site be stripped of all vegetation and topsoil, with any areas of soft, loose or wet material selectively excavated to provide a consistent and stable working platform.

The allowable bearing pressure for this site is 125kPa from **200mm** in depth.

5. FILL MATERIAL

Some building sites may contain areas of fill, which cannot be visually identified at the time of investigation. It is also often difficult to determine fill from natural insitu materials during a site investigation borehole. If fill is encountered during excavation of footings, and it is not described in the field investigation log, further advice must be obtained.

Where controlled (compacted) fill is encountered, the amount of compacted fill allowable is up to 800mm of "sand" fill or 400mm of "other" fill. AS 2870 - 2011 provides details of additional construction requirements for controlled fill sites.

6. GENERAL NOTE

The following general measures are recommended in reducing the potential of future building damage:

- Maintain a reasonable distance from building when planting trees or damaging vegetation.
- Monitor watering systems and avoid excessive garden watering
- Monitor underground services and attend any damage as soon as required.

7. APPLICATION

This site classification has been prepared specifically for the above mentioned project and any data or opinions that are given should not be used out of context or pertaining to any other job or purpose without analysis and overview from the undersigned. No other investigation work was provided that is not previously described.

This site classification has been based upon field and sample analysis from the locations mentioned, the nature and continuity below borehole depth is inferred and it must be considered that further investigation may be required to assess actual conditions of subsurface undisturbed soils.

During excavation it is suggested that footings are to be inspected carefully and if any irregularities occur further advice shall be sought.



Peter Vella (Manager)

**APPENDIX A
SITE CLASSIFICATION EXPLANATIONS:**

Class	Expected Surface Movement (Ys)	Explanation
A	0mm	Includes many sand, gravel and rock sites with little/no clays. These sites have little/no expected movement and as a result zero moisture variation.
S	0 - 20mm	Slightly reactive sites which exhibit only small movements with moisture variation.
M	20 - 40mm	Moderately reactive sites exhibit moderate amounts of movement with moisture variation. These sites commonly include red/brown silty soils, some sandy clays and loamy soils.
H1	40 - 60mm	Highly reactive sites exhibit high amounts of movement with moisture variation.
H2	60 - 75mm	Highly reactive sites exhibit high amounts of movement with moisture variation.
E	>75mm	Extremely reactive sites which exhibit greater than 75mm of surface movement. Typically, these sites include deep reactive clays, such as black and dark brown soils. These sites typically demand quite expensive footing systems.

As indicated previously, the Site Classification must consider many aspects of the site, not just the reactivity of the soil. P sites are those that include other factors that need to be brought to the attention of the owner, builder and footing designer. A "P" classification does not indicate a specific Ys value and is described as a "Problem" site.

The reasons for a P classification include:

- P**
- Growth &/or Removal of Trees will cause Abnormal moisture conditions in the subsurface soils;
 - Unusually high moisture conditions caused by water flow, ponds, dams etc;
 - Sites with Loose fill which can be either "controlled" or "uncontrolled". The P Classification depends upon the depth and type of fill;
 - Sites with poor bearing capacity, soft soils, or soils which are prone to collapse;
 - Sites prone to mine subsidence, land slip, piping or coastal erosion;
 - Sites which for one reason or another cannot be classified as normal sites

CIVIL TEST ALBURY WODONGA

Form CT132/3

SOILS ENGINEERING LABORATORY

Borehole/Trench No: 1

Page : 1 of 1

INVESTIGATION LOG REPORT NO: 14CT686

Client: JMP Developments Pty Ltd	Date Logged: 10.6.2014
Investigation For: Site Classification	Logged By: PJ
Location: Lot 269 Riverside Estate, Killara	Checked By: PCV
Borehole/Trench Location: Centre of Lot	Date: 16.6.2014
Method: <input type="checkbox"/> Hand Auger <input type="checkbox"/> Backhoe <input checked="" type="checkbox"/> Drill Rig <input type="checkbox"/> Other	
Alignment: 90°	

DEPTH mm	MATERIAL DESCRIPTION & CLASSIFICATION	MOISTURE CONDITION	CONSIST. DENSITY INDEX	CBR *	SAMPLE TAKEN	REMARKS
200	Sandy CLAY, dark brown	Moist	Firm			
	Fine to medium grained, low plasticity		Medium Dense			
Clayey SAND, dark brown	Firm/Stiff					
Fine to medium grained			Very Stiff			
Low plasticity	Medium Dense					
700		Silty Sandy CLAY, brown	Firm/Stiff			
950	Fine to medium grained, medium plasticity	Very Stiff				
	Silty Sandy CLAY, brown		Medium Dense			
1300	Fine to medium grained	Medium Dense				
	High plasticity					
2100	Silty Clayey SAND, brown					
	Fine to coarse grained					
	Low plasticity					
	Bore Terminated at 2.1m					

ISS - Shrink Swell Index LL - Liquid Limit LS - Linear Shrinkage

DRAINAGE: -General Good Fair Poor Free Water Swampy Subject to Flooding

TOPOGRAPHY:

-General Flat Undulating Hilly

-Local Flat Moderate Slope Dip Valley High Flat Low Flat Crest Steep Slope

----W---- - Water Level
 <----- - Water Inflow
MD - Medium Dense
Vst - Very Stiff

D -Disturbed Sample
U50 -Undisturbed Sample 50mm dia
CBR* -9kg Scala Dynamic Cone
MC -Moisture Content Taken

CIVILTEST ALBURY WODONGA

Soils Engineering Laboratory

16 Kane Road, Wodonga - Postal Address P.O Box 876, Wodonga 3689
Telephone 0260 243960 Mobile 0407 572489

17.6.2014

Report No. : 14CT686/270

JMP Developments Pty Ltd
C/- RHPM
P O Box 1210
Wodonga, Vic, 3689

**Re: Site Classification for proposed residence
Lot 270 Riverside Estate
Killara, Vic, 3691**

1. INTRODUCTION/DESCRIPTION

In accordance with your request on the 1st of May 2014, an investigation was conducted by Civiltest Albury/Wodonga to provide a site classification for the above site. The site is essentially flat with good surface drainage.

2. FIELD PROCEDURE

On the 16th of June a Civiltest Albury/Wodonga representative completed one borehole to assess the subsurface conditions.

Materials encountered during the field investigation are presented in the attached borehole log and in general consist of clayey sands and sandy clays of low to high plasticity (SC-CH). A classification explanation sheet is attached outlining the terms and symbols used in the preparation of this report.

3. SITE CLASSIFICATION

Based on the results of the investigation the site has been classified as **Class "M" – Moderately Reactive**. The site classification has been undertaken in accordance with **AS 2870-2011** 'Site Classification - Residential Slabs and Footings' – Site Classification by surface movement calculation.

4. RECOMMENDATIONS

The footings system for a conventional slab may be designed as a **Class "M"** site classification with any external beams founded a minimum of **300mm** below existing surface level.

If piers, stumps or strip footings are used on this site they should be founded a minimum of **600mm** below existing surface level.

The footings for a waffle pod slab may be designed for a **Class "M"** site classification with the external beams founded a minimum of **250mm** below existing surface level.

It is suggested the site be stripped of all vegetation and topsoil, with any areas of soft, loose or wet material selectively excavated to provide a consistent and stable working platform.

The allowable bearing pressure for this site is 125kPa from **250mm** in depth.

5. FILL MATERIAL

Some building sites may contain areas of fill, which cannot be visually identified at the time of investigation. It is also often difficult to determine fill from natural insitu materials during a site investigation borehole. If fill is encountered during excavation of footings, and it is not described in the field investigation log, further advice must be obtained.

Where controlled (compacted) fill is encountered, the amount of compacted fill allowable is up to 800mm of "sand" fill or 400mm of "other" fill. AS 2870 - 2011 provides details of additional construction requirements for controlled fill sites.

6. GENERAL NOTE

The following general measures are recommended in reducing the potential of future building damage:

- Maintain a reasonable distance from building when planting trees or damaging vegetation.
- Monitor watering systems and avoid excessive garden watering
- Monitor underground services and attend any damage as soon as required.

7. APPLICATION

This site classification has been prepared specifically for the above mentioned project and any data or opinions that are given should not be used out of context or pertaining to any other job or purpose without analysis and overview from the undersigned. No other investigation work was provided that is not previously described.

This site classification has been based upon field and sample analysis from the locations mentioned, the nature and continuity below borehole depth is inferred and it must be considered that further investigation may be required to assess actual conditions of subsurface undisturbed soils.

During excavation it is suggested that footings are to be inspected carefully and if any irregularities occur further advice shall be sought.



Peter Vella (Manager)

**APPENDIX A
SITE CLASSIFICATION EXPLANATIONS:**

Class	Expected Surface Movement (Ys)	Explanation
A	0mm	Includes many sand, gravel and rock sites with little/no clays. These sites have little/no expected movement and as a result zero moisture variation.
S	0 - 20mm	Slightly reactive sites which exhibit only small movements with moisture variation.
M	20 - 40mm	Moderately reactive sites exhibit moderate amounts of movement with moisture variation. These sites commonly include red/brown silty soils, some sandy clays and loamy soils.
H1	40 - 60mm	Highly reactive sites exhibit high amounts of movement with moisture variation.
H2	60 - 75mm	Highly reactive sites exhibit high amounts of movement with moisture variation.
E	>75mm	Extremely reactive sites which exhibit greater than 75mm of surface movement. Typically, these sites include deep reactive clays, such as black and dark brown soils. These sites typically demand quite expensive footing systems.

As indicated previously, the Site Classification must consider many aspects of the site, not just the reactivity of the soil. P sites are those that include other factors that need to be brought to the attention of the owner, builder and footing designer. A "P" classification does not indicate a specific Ys value and is described as a "Problem" site.

The reasons for a P classification include:

- P**
- Growth &/or Removal of Trees will cause Abnormal moisture conditions in the subsurface soils;
 - Unusually high moisture conditions caused by water flow, ponds, dams etc;
 - Sites with Loose fill which can be either "controlled" or "uncontrolled". The P Classification depends upon the depth and type of fill;
 - Sites with poor bearing capacity, soft soils, or soils which are prone to collapse;
 - Sites prone to mine subsidence, land slip, piping or coastal erosion;
 - Sites which for one reason or another cannot be classified as normal sites

CIVIL TEST ALBURY WODONGA

Form CT132/3

SOILS ENGINEERING LABORATORY

Borehole/Trench No: 1

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INVESTIGATION LOG REPORT NO: 14CT686

Client: JMP Developments Pty Ltd	Date Logged: 10.6.2014
Investigation For: Site Classification	Logged By: PJ
Location: Lot 270 Riverside Estate, Killara	Checked By: PCV
Borehole/Trench Location: Centre of Lot	Date: 16.6.2014
Method: <input type="checkbox"/> Hand Auger <input type="checkbox"/> Backhoe <input checked="" type="checkbox"/> Drill Rig <input type="checkbox"/> Other	
Alignment: 90°	

DEPTH mm	MATERIAL DESCRIPTION & CLASSIFICATION	MOISTURE CONDITION	CONSIST. DENSITY INDEX	CBR *	SAMPLE TAKEN	REMARKS
250	Silty Sandy CLAY, dark brown Fine to medium grained, low plasticity	Moist	Firm			
	Clayey SAND, brown Fine to medium grained Low plasticity		Medium Dense			
600	Sandy CLAY, brown Fine to medium grained Medium-high plasticity		Firm/Stiff			
	Clayey SAND, brown Fine to coarse grained Low plasticity		Medium Dense			
1000	Silty Clayey SAND, grey-brown Fine to coarse grained Low plasticity					
	Bore Terminated at 2.1m					

ISS - Shrink Swell Index LL - Liquid Limit LS - Linear Shrinkage

DRAINAGE: -General Good Fair Poor Free Water Swampy Subject to Flooding

TOPOGRAPHY:

-General Flat Undulating Hilly

-Local Flat Moderate Slope Dip Valley High Flat Low Flat Crest Steep Slope

----W---- - Water Level
 <----- - Water Inflow
MD - Medium Dense
Vst - Very Stiff

D -Disturbed Sample
U50 -Undisturbed Sample 50mm dia
CBR* -9kg Scala Dynamic Cone
MC -Moisture Content Taken

CIVILTEST ALBURY WODONGA

Soils Engineering Laboratory

16 Kane Road, Wodonga - Postal Address P.O Box 876, Wodonga 3689
Telephone 0260 243960 Mobile 0407 572489

17.6.2014

Report No. : 14CT686/271

JMP Developments Pty Ltd
C/- RHPM
P O Box 1210
Wodonga, Vic, 3689

**Re: Site Classification for proposed residence
Lot 271 Riverside Estate
Killara, Vic, 3691**

1. INTRODUCTION/DESCRIPTION

In accordance with your request on the 1st of May 2014, an investigation was conducted by Civiltest Albury/Wodonga to provide a site classification for the above site. The site is essentially flat with good surface drainage.

2. FIELD PROCEDURE

On the 16th of June a Civiltest Albury/Wodonga representative completed one borehole to assess the subsurface conditions.

Materials encountered during the field investigation are presented in the attached borehole log and in general consist of clayey sands and sandy clays of low to high plasticity (SC-CH). A classification explanation sheet is attached outlining the terms and symbols used in the preparation of this report.

3. SITE CLASSIFICATION

Based on the results of the investigation the site has been classified as **Class "M" – Moderately Reactive**. The site classification has been undertaken in accordance with **AS 2870-2011** 'Site Classification - Residential Slabs and Footings' – Site Classification by surface movement calculation.

4. RECOMMENDATIONS

The footings system for a conventional slab may be designed as a **Class "M"** site classification with any external beams founded a minimum of **300mm** below existing surface level.

If piers, stumps or strip footings are used on this site they should be founded a minimum of **600mm** below existing surface level.

The footings for a waffle pod slab may be designed for a **Class "M"** site classification with the external beams founded a minimum of **100mm** below existing surface level.

It is suggested the site be stripped of all vegetation and topsoil, with any areas of soft, loose or wet material selectively excavated to provide a consistent and stable working platform.

The allowable bearing pressure for this site is 125kPa from **100mm** in depth.

5. FILL MATERIAL

Some building sites may contain areas of fill, which cannot be visually identified at the time of investigation. It is also often difficult to determine fill from natural insitu materials during a site investigation borehole. If fill is encountered during excavation of footings, and it is not described in the field investigation log, further advice must be obtained.

Where controlled (compacted) fill is encountered, the amount of compacted fill allowable is up to 800mm of "sand" fill or 400mm of "other" fill. AS 2870 - 2011 provides details of additional construction requirements for controlled fill sites.

6. GENERAL NOTE

The following general measures are recommended in reducing the potential of future building damage:

- Maintain a reasonable distance from building when planting trees or damaging vegetation.
- Monitor watering systems and avoid excessive garden watering
- Monitor underground services and attend any damage as soon as required.

7. APPLICATION

This site classification has been prepared specifically for the above mentioned project and any data or opinions that are given should not be used out of context or pertaining to any other job or purpose without analysis and overview from the undersigned. No other investigation work was provided that is not previously described.

This site classification has been based upon field and sample analysis from the locations mentioned, the nature and continuity below borehole depth is inferred and it must be considered that further investigation may be required to assess actual conditions of subsurface undisturbed soils.

During excavation it is suggested that footings are to be inspected carefully and if any irregularities occur further advice shall be sought.



Peter Vella (Manager)

**APPENDIX A
SITE CLASSIFICATION EXPLANATIONS:**

Class	Expected Surface Movement (Ys)	Explanation
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CIVIL TEST ALBURY WODONGA

Form CT132/3

SOILS ENGINEERING LABORATORY

Borehole/Trench No: 1

Page : 1 of 1

INVESTIGATION LOG REPORT NO: 14CT686

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Investigation For: Site Classification	Logged By: PJ
Location: Lot 271 Riverside Estate, Killara	Checked By: PCV
Borehole/Trench Location: Centre of Lot	Date: 16.6.2014
Method: <input type="checkbox"/> Hand Auger <input type="checkbox"/> Backhoe <input checked="" type="checkbox"/> Drill Rig <input type="checkbox"/> Other	
Alignment: 90°	

DEPTH mm	MATERIAL DESCRIPTION & CLASSIFICATION	MOISTURE CONDITION	CONSIST. DENSITY INDEX	CBR *	SAMPLE TAKEN	REMARKS
400	Sandy CLAY, dark brown Fine to medium grained Low plasticity	Moist	Firm			
600	Gravelly Clayey SAND, dark brown Fine to coarse grained, low plasticity		Medium Dense			
1100	Clayey SAND, brown Fine to coarse grained Low plasticity		Firm/Stiff			
1450	Gravelly Sandy CLAY, brown Fine to coarse grained Medium plasticity		Very Stiff			
2100	Silty Sandy CLAY, grey-brown Fine to medium grained High plasticity					
	Bore Terminated at 2.1m					

ISS - Shrink Swell Index LL - Liquid Limit LS - Linear Shrinkage

DRAINAGE: -General Good Fair Poor Free Water Swampy Subject to Flooding

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