



Ground Condition Consultants

PLOT 6, ANGEL HEIGHTS, STORRINGTON, WEST SUSSEX

SLOPE STABILITY ASSESSMENT

APRIL 2026

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VERSION CONTROL

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Slope Stability Assessment	
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Version	Date	Description
1.0	07.04.26	Slope Stability Assessment
2.0	13.04.26	Minor site layout changes (section remains the same)

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1. INTRODUCTION

1.1 REPORT CONTEXT

Ground Condition Consultants Ltd. (GCC) was commissioned by Mibri Limited in July 2023 to undertake a Slope Stability Assessment of a site located at Angels Sandpit, Storrington, West Sussex RH20 4FL. The Report was completed and issued in October 2023 and reviewed by the designated representatives of the Horsham District Council. The response to comments from the reviewer and any correction to the existing Slope Stability Report were completed in October 2024 and the revised Report issued.

Subsequent changes in design levels for the structure designated Plot 6 has meant that a new “Plot Specific” slope stability assessment is now required and this was instructed by ECE Planning on behalf of Nick and Sally Kayworth in March 2026. This slope stability assessment will use the results of the GCC ground investigation (GCC Report No. J20-022/R06 dated September 2023) and the development levels provided by the Client (Drawing No. ARC/008/24/P6/105).

This report is prepared in line with the agreed brief and is subject to the report conditions shown in Appendix 1.

1.2 PROPOSED USE

It is currently understood that Plot 6 is to be redeveloped as low-rise residential housing with gardens and hardstanding. A change in the site use from that currently shown in the layout plan (ARC/008/24/P6/105) may result in the need for reassessment of risk criteria and the conclusions and recommendations resulting from the stability risk assessment could therefore significantly change.

1.3 PREVIOUS REPORTS

The site has been the subject of various investigations and assessments and the following documents have been provided by the Client or produced by GCC:

- Hemsley Consulting (Oct 2008 Draft & Dec 2008 Final), *Angell's Sand Pit, Storrington, West Sussex, Residential Area* (Ref: HC3815)
- WYG Environment (Nov 2009), *Sampling to support Closure of Angells Sandpit* (Ref: A057957/SJS/pg-1)
- WYG Environment (Nov 2010), *Ground Condition Assessment Report* (Ref: A064537 V2)

- WYG Environment (Jun 2011), *Angells Sandpit Closure Report Update* (Ref: A059751)
- Geo-Environmental Services Limited (Dec 2017), *Desk Study Report* (Ref: GE16049-DSR-DEC17)
- Ground Condition Consultants Ltd. (Apr 2020), *Ground Condition Assessment Report* (Ref: J20-002-R02 V3)
- Hemsley Consulting (Nov 2022), *Site Investigation Report* (Ref: HC6085)
- Paul Basham Associates (PBA) Drawing No. 120.05844.0251-P01 Sheets I-3 Cross Sections dated September 2023.
- Ground Condition Consultants Ltd. (Sep 2023), *Geotechnical Design Report* (Ref: J20-002-R06 V2)
- Ground Condition Consultants Ltd. (October 2023), *Angels Sandpit, Storrington Slope Stability Assessment* (Ref. J20-002 R07)

1.4 REPORT SCOPE AND LIMITATIONS

The stability assessment is based on the information collected and assessed during the previous phases of ground investigation.

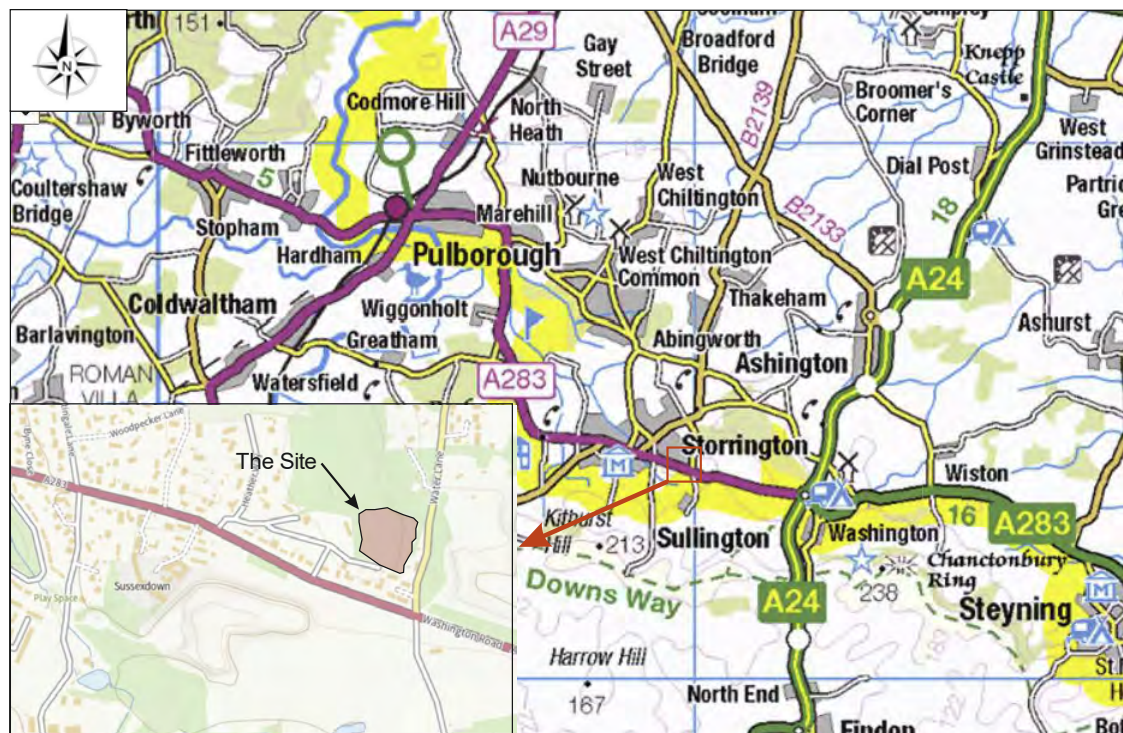
The information contained in this report is intended for the use of Nick and Sally Kayworth and GCC can take no responsibility for the use of this information by any other party or for uses other than that described in this report.

2. CONCEPTUAL STABILITY SITE MODEL

2.1 LOCATION

The wider site is an irregularly shaped parcel of land of approximately 1.27Ha located to the north of Washington Road and the west of Water Lane in Storrington, West Sussex at NGR 509850, 114050 (Figure 2.1).

Figure 2.1. Site Location Plan



The area surrounding the site comprises :

- deciduous woodland to the north;
- to the east, existing residential properties situated to the west of Water Lane with Sandgate Quarry beyond;
- to the south existing residential properties situated to the north of the A238 Washington Road;
- to the west a large detached property and associated gardens.

Access to the site is via a private residential access way from Water Lane.

Plot 6 is situated towards the east of the site

Figure 2.2. Site Layout Plan



Regional Geology

Solid Geology

With reference to British Geological Survey Sheet 317/332 Chichester and Bognor 1:50000 Solid and Drift (1996) the site is underlain by the Folkestone Formation of the Lower Greensand Group (Figure 2.3).

Figure 2.3. Regional geology of the area around Angels Sandpit



The BGS Lexicon of Named Rock Units describes the Folkestone Formation as medium- and coarse-grained, well-sorted cross-bedded sands and weakly cemented sandstones. Whilst the Gault Formation is a pale to dark grey or blue-grey clay or mudstone, glauconitic in part, with a sandy base.

Superficial Deposits

Superficial strata are largely absent across much of the surrounding area. Polymictic head deposits of variable composition, comprising clays, silts, sands, and gravel, overly the bedrock irregularly in the area around the site. Alluvial deposits are present in watercourse valleys, with the closest being the River Stour, located 1.4 km north-west of the site. Clay with Flints Formation crops out on higher ground 1.7 km south of the site.

Local Geology

It is understood that the sand pit was infilled as an inert waste facility in between 2000 and 2006 with restoration works continuing into 2008.

Multiple phases of ground investigation have been carried out since the completion of restoration. The local stratigraphy identified during these intrusive investigations have been reported in the GCC Geotechnical Design Report, dated September 2023, and indicate the site to be underlain by up to 40m of inert waste Material over Folkestone Formation.

The Inert Waste Material (IWM) was described as comprising a discontinuous layer of silty fine to coarse Sand up to 2.10m thick but more usually between 0.25 to 0.50m thick. Beneath the sand, the fine-grained IWM comprises a variety of silty sandy Clays and silty gravelly Clays, much of which is still identifiable as being of London Clay Formation or Reading Formation in origin. The Folkestone Formation is described in the two locations where encountered as dense yellowish brown and pinkish brown medium Sand.

2.2 GROUNDWATER

Groundwater was not recorded during the drilling of any of the windowless sample boreholes. However, groundwater was monitored during the initial monitoring rounds in the GCC wells and BH1 at between 0.6mbgl and 6.73mbgl with some wells dry to up to 4.87mbgl and considerable fluctuation in the recorded groundwater levels.

As the majority of the fill material encountered was of a clay matrix with pockets of sand, groundwater is considered likely to be present in discrete pockets of granular fill at various depths throughout the former landfill material and a consistent groundwater body within the fill material that correlates with groundwater levels in the surrounding natural soils is considered unlikely.

2.3 SITE TOPOGRAPHY

Cross sections across Plot 6 have been drawn and are presented with the sections designated Section B-B and E-E from the earlier PBA Drawing 120.05844.0251-P01 in Appendix 2 of this Report.

3. SLOPE STABILITY ASSESSMENT

3.1 JUSTIFICATION OF MODELLING APPROACH AND SOFTWARE

Two-dimensional limiting equilibrium stability analyses will be used in the assessment of the stability of Plot 6, Angels Height, Storrington. The method of analysis was determined from an examination of the form of failure being considered. The stability analyses were carried out using the Slope/W computer programme, using the Morgenstern and Price method of slices to determine the Degree of Utilisation against instability for both total stress and effective stress conditions.

3.2 JUSTIFICATION OF GEOTECHNICAL PARAMETERS SELECTED FOR ANALYSES

The characteristic geotechnical parameters used in the stability analyses are based on those Presented in Table 5.8 of the GCC Geotechnical Design Report (Report No. J20-002-R06 - Angels - GDR AUG23 V2). The relevant parts of Table 5.8 are reproduced below and presented as Table 3.1.

Table 3.1. Characteristic geotechnical parameters

Stratum	Geotechnical Parameter			Notes	Characteristic Value
Inert Waste Material	Unit Weight γ			Lab UUT	19kN/m ³
	Shear Strength	Undrained	C_{uk}	Lab UUT and SPT Correlation	35kN/m ² in the upper 5.00m - increasing thereafter
			ϕ_{uk}		0°
		Drained	C'_k	BS8004	0kN/m ²
			ϕ'_k		26°
Folkestone Formation	Unit Weight γ			BS8004	18MN/m ²
	Shear Strength		C_k	BS8004	0kN/m ²
			f_k	Relationship with SPTN	35°

3.3 SELECTION OF APPROPRIATE FACTORS OF SAFETY

The stability analyses have been carried out in accordance with EC7. The United Kingdom has adopted Design Approach 1 (DA1) Combination 1 & 2 (C 1 & 2) whereby partial factors are applied to either the actions or the material properties and a resultant factor of safety of 1.00 is required.

Table 3.2. Partial Factors used in Design in Accordance with the UK National Annex to EC7

Design Approach	Combination	Partial Factor Sets	Partial Factor Value			
1	1	A1 + M1 + R1	Actions A1			
			Permanent (G)	Unfavourable	$\gamma_{G;dst}$	1.35
				Favourable	$\gamma_{G;stb}$	1.00
			Variable (Q)	Unfavourable	$\gamma_{Q;dst}$	1.50
				Favourable	$\gamma_{Q;stb}$	0
			Materials M1			
			Coefficient of shearing resistance ($\tan \phi$)		$\gamma_{\phi'}$	1.00
			Effective cohesion (c')		$\gamma_{c'}$	1.00
			Undrained shear strength (c_u)		γ_{cu}	1.00
			Resistance R1			
			Resistance		$\gamma_{R;e}$	1.00
	2	A2 + M2 + R1	Actions A2			
			Permanent (G)	Unfavourable	$\gamma_{G;dst}$	1.00
				Favourable	$\gamma_{G;stb}$	1.00
			Variable (Q)	Unfavourable	$\gamma_{Q;dst}$	1.30
				Favourable	$\gamma_{Q;stb}$	0
			Materials M2			
			Coefficient of shearing resistance ($\tan \phi$)		$\gamma_{\phi'}$	1.25
			Effective cohesion (c')		$\gamma_{c'}$	1.25
			Undrained shear strength (c_u)		γ_{cu}	1.40
			Resistance R1			
			Resistance		$\gamma_{R;e}$	1.00

The values of the partial factors used are termed “nationally determined parameters” and EC7 (as published by CEN) allows these to be specified in National Annexes, which recognise regional variations in design philosophy.

4. STABILITY ANALYSIS

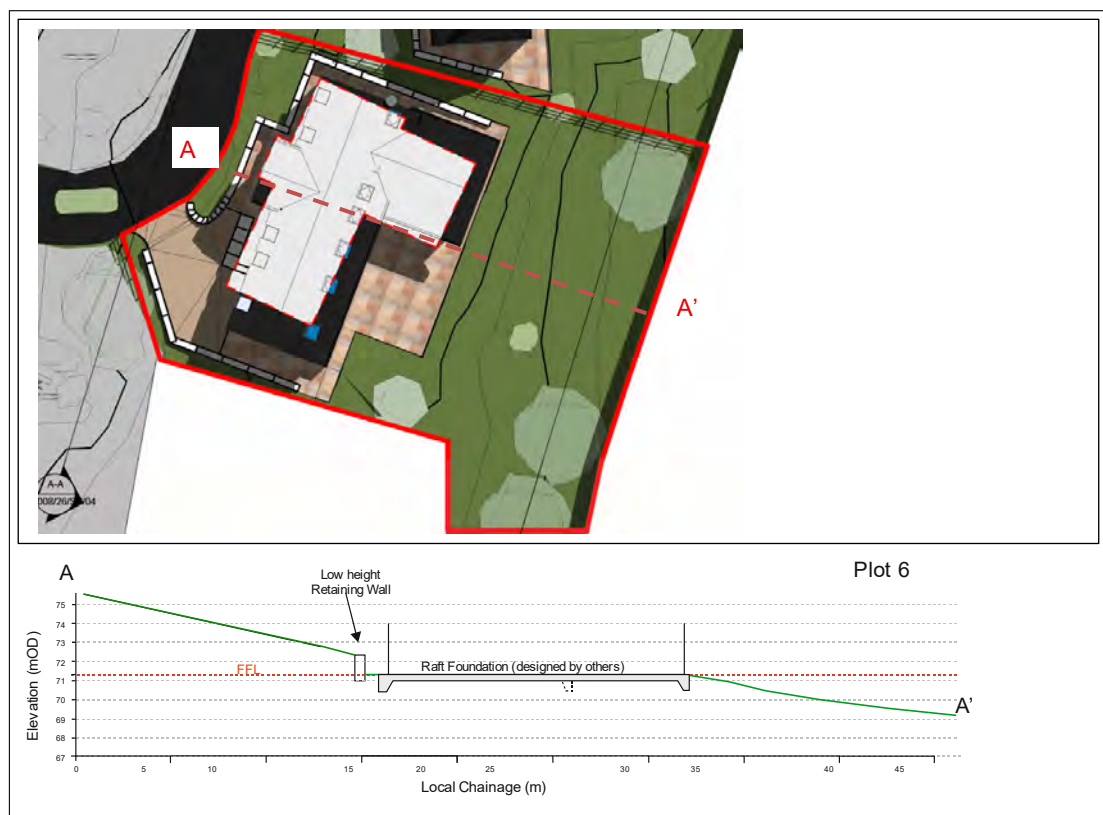
4.1 INTRODUCTION

The global stability of the wider Angel Sandpit (now Angel Heights) was reported in GCC Report J20-002-R06 dated October 2023. The earlier stability assessment returned a maximum degree of utilisation of 0.333 under all foreseeable ground conditions and concluded that the site remains stable even under worst case condition when a porewater pressure coefficient of 0.50 (saturated) is applied to the Inert Waste Material.

4.2 PLOT 6 STABILITY

The stability of the revised Plot 6 has been undertaken in accordance with EC7, as detailed earlier in this Report. It should be noted that the Plot numbering has changed from the earlier Report in which the current Plot 6 was identified as Plot 1. Where any of the individual construction platforms require a retaining structure, it is assumed that the internal stability (sliding and overturning) of any such structure will be considered during the retaining wall design.

Figure 4.1. Section through Plot 6



Results of the Stability Analyses

The results of the individual construction plot stability analysis are presented in Table 4.2., whilst the SlopeW worksheets are located in Appendix 3.

Table 4.1. Results of the construction Plot 6 stability analyses

Plot No	SlopeW Run	Stress Conditions	Degree of Utilisation (%)		Notes
			Combination 1	Combination 2	
Plot 6	Slope1	Total	0.63		Section as Figure 4.1
	Slope 2			0.49	
	Slope 3	Effective	0.31		
	Slope 4			0.31	
	Slope 5	Effective		0.64	Fully Saturated

The stability analyses of construction plot 6 returned degrees of utilisation of less than 1.00 under both total and long term effective stress conditions. The degree of utilisation decreases from short term total to long term effective stress conditions. This is most likely due to the effect of the surcharge loading increasing the shear strength of the Inert Waste Material under effective stress conditions ($\sigma_n \tan \phi$).

Therefore, it is concluded that the construction plot 6 is stable in the form set out in cross-sections supplied by the Client (Appendix 2).

5. CONCLUSIONS

5.1 INTRODUCTION

This stability assessment has been carried out in accordance Eurocode 7 (EC7) using the results of the previous ground investigations and associated laboratory geotechnical testing.

The slope stability analysis has been carried out on a cross-section through the Construction Plot 6 supplied by the Client. The software programme used was Geostudio SLOPEW, which is EC7 compliant and allows for the application of Design Approach 1 Combination 1 and 2 partial factors to the stability model.

5.2 GLOBAL STABILITY

The global stability of the wider Angel Heights site (formerly Angels Sandpit) has been carried out and the results presented in the earlier slope stability assessment (GCC Report J20-002-R06 dated October 2023. Three (3no.) cross-sections across the site were analysed under short and long term conditions including fully saturated ground. The results show that the site is stable in its current configuration with the highest degree of utilisation of 0.537.

5.3 CONSTRUCTION PLOT 6 STABILITY

The stability of Construction Plot 6 has been determined using the SLOPEW stability programme with an additional surcharge load of 60kNm² to represent a uniformly loaded raft foundation.

It should be noted that where a vertical face is shown on the cross-section and stability ground models, it is assumed that these will be formed by the placement of an appropriate gravity retaining structure that will be designed by a qualified geotechnical engineer.

The results of the stability analyses (Table 4.1) show that Plot 6 will remain stable, in the form set out in the supplied cross-section, under both short and long term ground conditions.

APPENDIX 1: REPORT CONDITIONS

This report is produced solely for the benefit of **Nick and Sally Kayworth** and no liability is accepted for any reliance placed on it by any other party unless specifically agreed in writing otherwise.

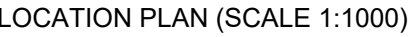
This report refers, within the limitations stated, to the condition of the Site at the time of the inspections. No warranty is given as to the possibility of future changes in the condition of the Site.

This report is based on a visual Site inspection, study of readily accessible referenced historical records, information supplied by those parties noted in the text and preliminary discussions with local and Statutory Authorities. Some of the opinions are based on unconfirmed data and information and are presented in good faith without exhaustive clarification. Where ground contamination is suspected but no physical Site test results are available to confirm this, the report must be regarded as initial advice only, and further assessment should be undertaken prior to detailed activities related to the Site. Where test results undertaken by others have been made available these can only be regarded as a limited sample. The possibility of the presence of contaminants, not revealed by this research cannot be discounted.

Whilst confident in the findings detailed within this report because there are no exact UK definitions of these matters, being subject to risk analysis, we are unable to give categorical assurances that they will be accepted by Authorities or Funds etc. without question, as such bodies may have unpublished, often more stringent objectives. This report is prepared for the proposed uses stated in the report and should not be used in a different context without reference to Ground Condition Consultants Ltd. In time improved practices or amended legislation may necessitate a re-assessment.

The report is necessarily limited to those aspects of land contamination specifically reported on and no liability is accepted for any other aspect especially concerning gradual or sudden pollution incidents that may occur. The opinions expressed cannot be absolute due to the limitations of time and resources within the context of the agreed brief and the possibility of unrecorded previous use and abuse of the Site and adjacent Sites. The report concentrates on the Site as defined in the report and provides an opinion on surrounding Sites. If migrating pollution or contamination (past or present) exists this can only practically be better assessed following extensive on and off Site intrusive investigations and monitoring.

APPENDIX 2: CROSS-SECTIONS



GENERAL NOTES

1. THIS DRAWING IS INTENDED TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS, ENGINEERS, SERVICES AND SPECIALIST DRAWINGS, DETAILS AND SPECIFICATIONS.
2. ANY VARIATIONS OR DISCREPANCIES BETWEEN THE DRAWINGS IN TERMS OF DIMENSIONS OR DETAILS SHOULD BE DRAWN TO THE ATTENTION OF THE ARCHITECT AND/OR THE ENGINEER FOR CLARIFICATION.
3. ALL FIGURED DIMENSIONS TO BE TAKEN IN PREFERENCE TO SCALED DIMENSIONS. DO NOT SCALE THIS DRAWING.
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6. IT IS THE MAIN CONTRACTOR'S SOLE RESPONSIBILITY FOR ASCERTAINING SAFE DISPOSAL OF ANY OFF-SITE EVACUATED MATERIALS. CLAIMS ARISING FROM ABOVE TITLED TENDER REQUIREMENTS WILL BE ENTERTAINED.
7. THE MAIN CONTRACTOR TO PROVIDE AND FIX SUITABLE BRACING AND PROPPING FOR ALL ELEMENTS IN THE TEMPORARY CONDITION DURING CONSTRUCTION STAGE, SUCH AS TO ENSURE STRUCTURE STABILITY AT ALL TIMES.
8. THE MAIN CONTRACTOR IS TO ENSURE THE STABILITY AND STRUCTURAL INTEGRITY OF THE EXISTING PROPERTY AT ALL TIMES DURING WORKS AND IS TO BE RESPONSIBLE FOR ALL PROPPING AND SHORING AS REQUIRED.
9. THIS DRAWING SHOULD ONLY BE USED FOR CONSTRUCTION IF THE PROJECT PHASE IN THE TITLE FRAME BELOW IS SHOWN AS 'CONSTRUCTION'. PAUL BASHAM ASSOCIATES TAKE NO RESPONSIBILITY FOR ANY FAILURE OR UNDERSTANDING TO DRAWINGS WHICH ARE NOT MARKED UNDER THIS PHASE.



Datum: 67.000m AOD

[illegible]

Datum: 67.000m AOD

PROPOSED LEVELS (m)	PROPOSED CHAINAGE (m)	design S3D +0.6.dwg (m)	EXISTING LEVELS (m)	EXISTING CHAINAGE (m)
75.213 —	15.000 —	74.034 —	73.434 —	0.000 —
75.179 —	13.677 —			
75.145 —	12.332 —			
74.981 ×	9.345 >			
74.985 ×	9.332 >			
73.973 —	6.438 —			
		74.034 —	73.434 —	0.000 —
73.462 >	2.880 >			
73.312 >	3.613 >			
73.201 >	4.993 >	73.550 —	72.950 —	5.254 —
73.132 >	6.343 >			
73.075 >	7.604 >			
73.072 >	8.876 >	73.201 —	72.601 —	8.751 —
73.068 ×	10.168 ×			
73.068 ×	10.000 ×			
		72.525 —	71.925 —	16.427 —
		72.379 —	71.779 —	18.334 —
72.174 —	20.287 —			
71.745 —	23.493 —	71.840 —	71.240 —	23.486 —
71.561 ×	25.470 >			
71.561 ×	25.509 >			
71.561 ×	26.790 >			
71.400 >				
		71.239 —	70.639 —	30.715 —
70.062 —	41.336 —			
69.373 —	43.446 —			

PRELIMINARY

DRAWING/DESIGN IS STILL 'IN DEVELOPMENT'
YOU ARE ADVISED TO MAKE DUE ALLOWANCE

P01	FIRST ISSUE	12.09.2023	RL	RW
Rev	Description	Date	By	App'd



Client

MIBRI LIMITED

Project Name

ANGEL SANDPIT,
STORRINGTON

Title

PLOT CROSS SECTIONS
SHEET 2 OF 5

Project Phase

PRELIMINARY

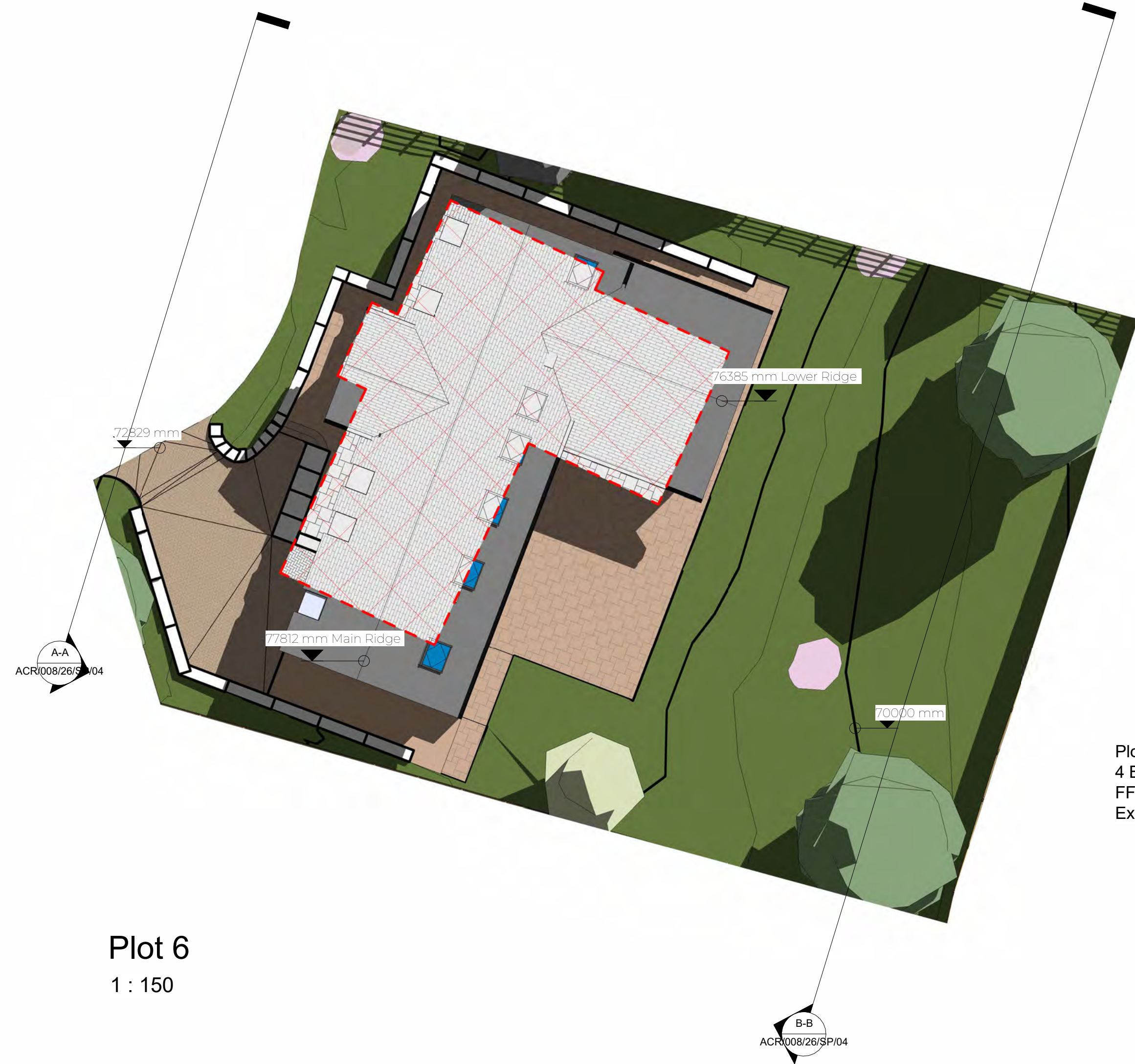
Date Created	Drawn By	Approved By	Suitability Code
06.09.2023	RL	RW	-

PBA Project Number	Scale
020 5844	1:250H 1:250V (AT A1)

PBA Drawing No:	Revision
020.5844.0262	P01

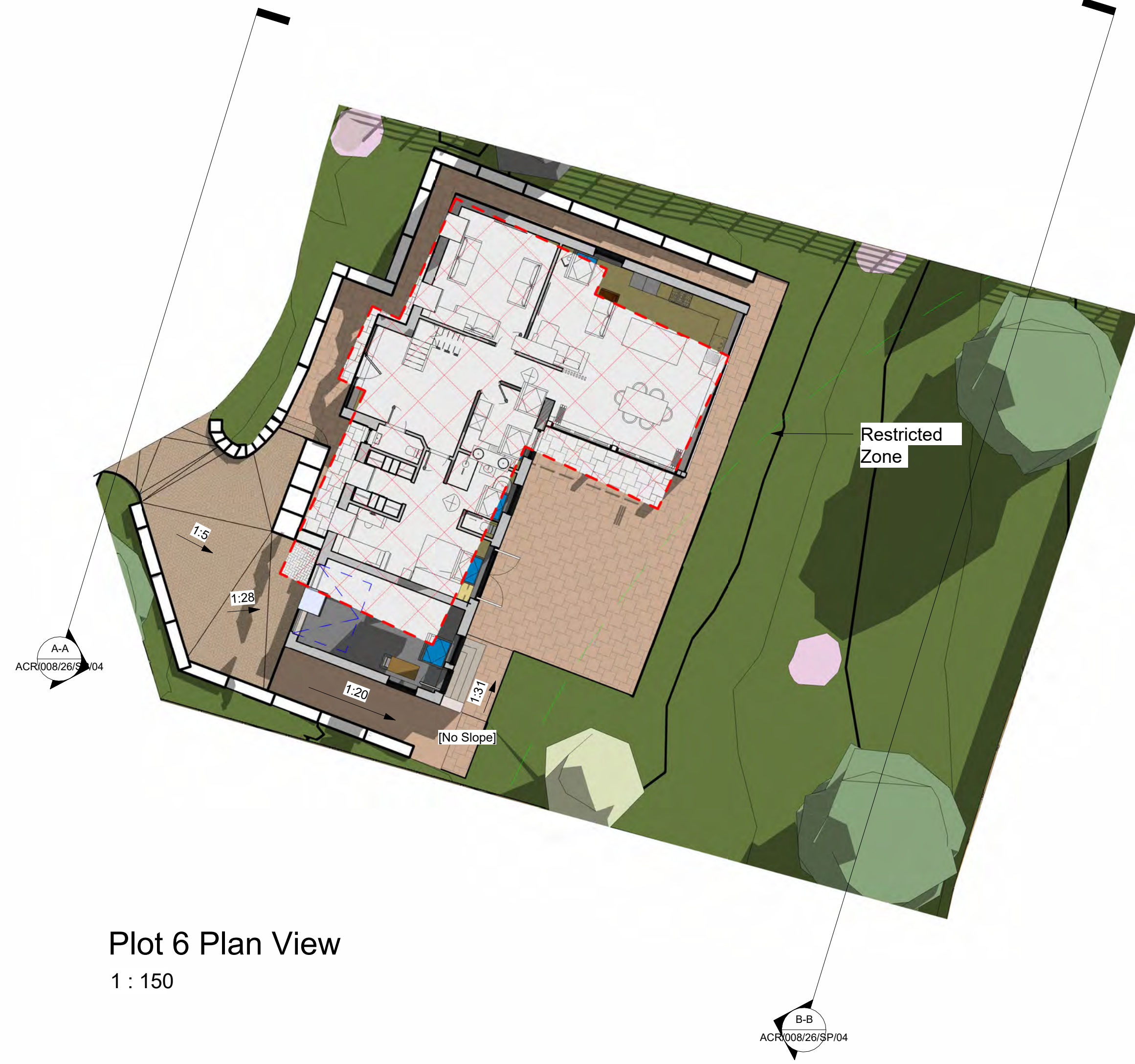


Proposed Site Plan
1 : 250



Plot 6
1 : 150

Plot 6
4 Bed
FFL - 71.29
External FFL - 71.29



Plot 6 Plan View
1 : 150

Revision Number	Revision Description	Issued by	Revision Date
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DATE:	STATUS:	SHEET SIZE:
22/01/25	PLANNING ISSUE	A0

SCALE:	DRAWN:	CHECKED:
As Indicated	AP	

CLIENT:	SITE ADDRESS:
Mr & Mrs N Keyworth	Plot 6 Angel Heights

REVISION:
DRAWING NO: ARC/008/24/P6/105

PROJECT NO: Angel Heights

DRAWING: Site Plans

TITLE: Plot 6



ARCHEVOLVE

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0m 5m 10m 15m 20m 25m

VISUAL SCALE 1:250 @ A1

0m 3m 6m 9m 12m 15m

VISUAL SCALE 1:150 @ A1

APPENDIX 3: SLOPEW WORKSHEETS - PLOT 6

