Milton Keynes East
Illustrative Masterplan
for St James

Drawing No. 01312_SK_102
Scale @ A1 1:10000 Rev -

0 100 200 300 400 500m

jtp

Appendix C4
Preliminary Earthworks Strategy

TECHNICAL NOTE

DATE:	26 February 2021	**CONFIDENTIALITY:**	Confidential
SUBJECT:	Preliminary Earthworks Strategy		
PROJECT:	Milton Keynes East	**AUTHOR:**	D. Edwards
CHECKED:	B. Uyduran	**APPROVED:**	S. Purcell

INTRODUCTION

This technical note sets out the preliminary earthworks strategy for the residential and commercial development zones at Milton Keynes East (MKE).

This Note should to be read in conjunction with drawing reference numbers MKE-WSP-ZZ-ZZ-C-SK-0601, MKE-WSP-ZZ-ZZ-C-SK-0602, MKE-WSP-ZZ-ZZ-C-SK-0603, MKE-WSP-ZZ-ZZ-C-SK-0604, MKE-WSP-ZZ-ZZ-C-SK-0605, MKE-WSP-ZZ-ZZ-C-SK-0605 contained in Appendix A.

The site boundaries and land use budget which form the basis of this strategy are based on masterplan issued by JTP on 06 October 2020 and phasing drawing reference 01312 SK-041 rev D1 (see Appendix B).

Earthworks volumetric analysis associated with each development zone is contained within the schedules in Appendix C.

ASSESSMENT PARAMETERS AND METHODOLOGY

The following assumptions have been made and agreed with the Client (see email exchange between Simon Purcell and Nick Trollope dated 29 September 2020 in Appendix D) in the production of the preliminary earthwork's strategy for the proposed development site.

General

- Overall objective of the assessment is to minimise any material being taken off site, i.e. to achieve a cut and fill balance.
- To be cognisant of onsite constraints such as floodplain, utilities, archaeology.
- No allowance will be made for contaminated ground.
- The earthworks quantities are based on the SenSat survey data provided by the Client which could have inaccuracies of up to ±500mm. The strategy will need to be revised following receival of detailed topographical information.

Topsoil

- All earthworks cut/fill volumes have been calculated after the removal of topsoil.
- All development platform levels will commence at the underside of topsoil.
- An average topsoil depth of 300mm is assumed.
- Topsoil is stockpiled in a dry state to a height of 3m with 1 in 3 batters.

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Development Zones

- Residential Areas to have:
  - A maximum parcel grade of 1 in 20.
  - Earthworks batters of 1in 3. Gradients may vary following full geotechnical investigation.
  - On-plot arisings assumed to be 40CuM/dwelling (from foundations and drainage).
- Commercial Areas to have:
  - A flat platform level.
  - No allowance for dock levellers.

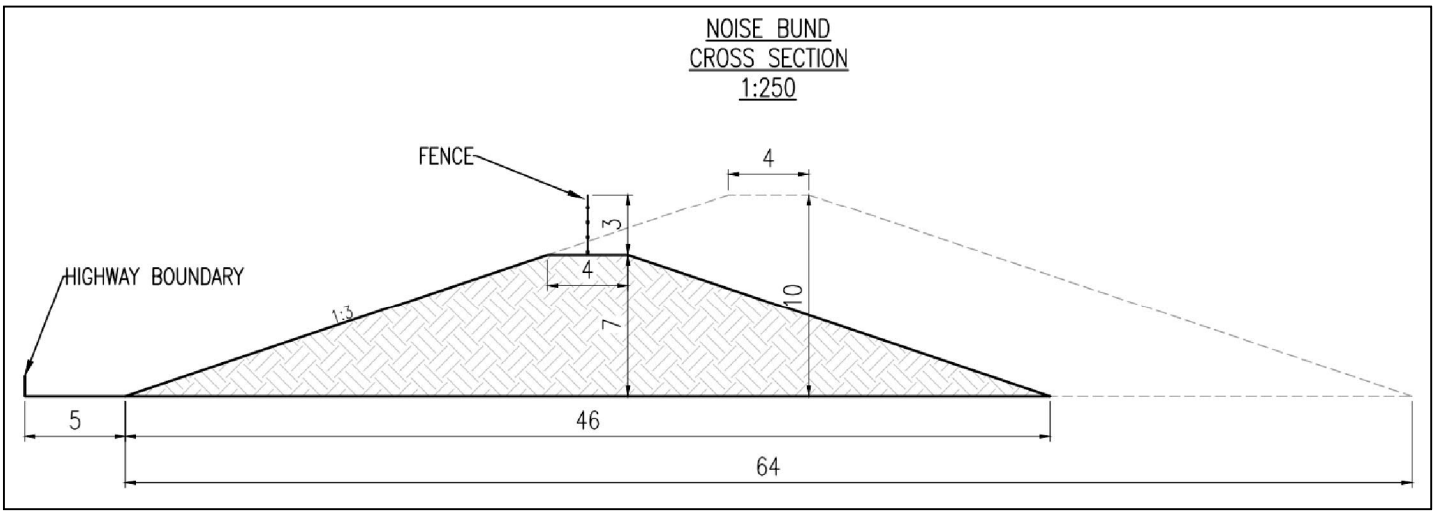
Utilities

- All existing utilities will be diverted into existing land boundaries.

Noise Bunds

Although the proposed noise bunds are not shown on the earthworks strategy drawings, we have estimated, based on a bund bottom width of 64m, 1 in 3 slopes, top width of 4m and a height of 7m over 626m for the right bund and 688m for the left bund, that there will be a fill requirement of 441,800CuM.

Figure 1 – Typical noise bund cross section



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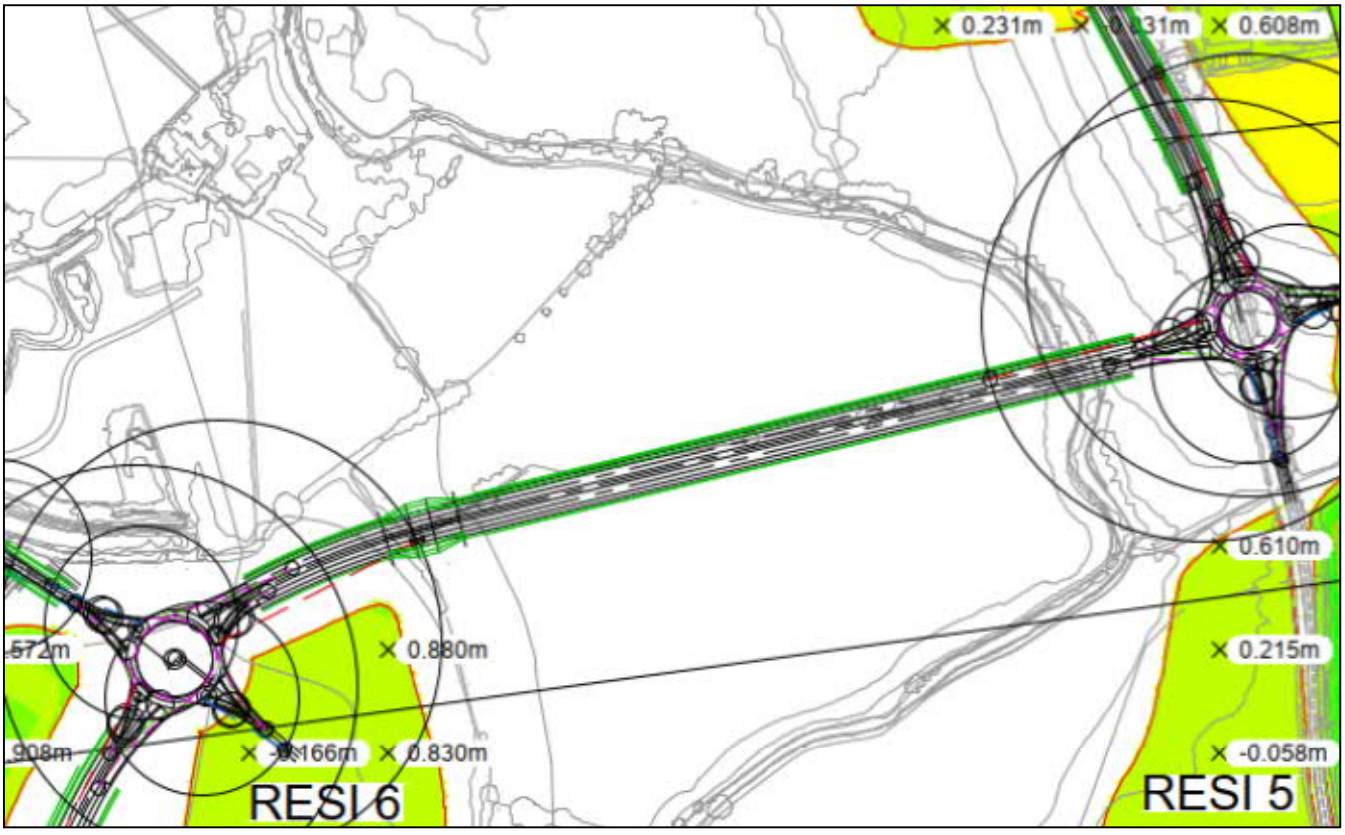
Highway Embankments

Although the highway design is still ongoing, based on the preliminary highway horizontal and vertical alignment design, see highway link (750m long, 35m top width, average 5m high with 1 in 3 slopes) between the two roundabouts on Figure 2 below, it is estimated that the fill requirement for this feature is circa 137,250CuM.

Figure 2 – Location of highway embankments



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EARTHWORKS AND LEVELS ANALYSIS

Table 1 below summarises the earthworks cut and fill volumes for the site.

Table 1 – Earthworks Volumes

									On-Plot Arisings, assume 40CuM/dwelling	
Development Phasing	**Earthworks Phasing**	**Development Zone**	**Plot Level, mAOD**	**Topsoil Strip, CuM**	**Cut, CuM**	**Fill, CuM**	**Balance per Parcel, CuM**	**Balance per Phase, CuM**	**Number of Dwellings**	**Total, CuM**
Phase 1	Phase A	Commercial 1A	63.500	83,487	1,564,932	-	1,564,932			
	Phase A	Commercial 1B	68.500	108,163	232,306	556,585	-324,279			
	Phase A	Commercial 2	61.500	49,575	74,949	180,096	-105,146		600	24,000
	Phase B	Resi 9	n/a	10,302	22,381	21,645	736			
	Phase B	Resi 10	n/a	39,895	97,520	84,521	12,998	1,149,241		
Phase 2	Phase B	Resi 8	n/a	82,349	447,409	367,891	79,518		1,100	44,000
	Phase B	Resi 12	n/a	52,581	26,011	371,840	-345,829			
	Phase B	Resi 13	n/a	11,257	7,775	7,746	29	-266,282		
Phase 3	Phase B	Resi 1	n/a	83,506	49,770	397,091	-347,321		2,300	92,000
	Phase B	Resi 2	n/a	76,167	278,367	294,977	-16,610			
	Phase A	Resi 3	n/a	12,849	91	18,905	-18,814			
	Phase B	Resi 4	n/a	82,309	363,788	299,223	64,564			
	Phase A	Resi 5	n/a	9,234	-	14,184	-14,184			
	Phase A	Resi 6	n/a	10,187	3,288	2,443	846			
	Phase B	Resi 7	n/a	4,563	4,037	1,443	2,594			
	Phase B	Resi 11	n/a	14,304	18,958	10,145	8,813	-320,111		
	Phase A	Noise Bund								
	Phase A	Floodplain Crossing				137,250				
	Phase A	Embankment				441,800				
		Total for All Development		730,730	3,191,582	3,207,784	-16,202			160,000
		Total for Earthworks Phase A		273,496	1,875,566	1,351,262	524,305			
		Total for Earthworks Phase B		457,234	1,316,015	1,856,523	-540,507			

Negative numbers signify "defecit"; positive numbers represent "surplus"

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DISCUSSIONS AND NEXT STEPS

It is intended that this preliminary earthworks assessment will be updated to address the developing phasing strategy, highway alignment design, highway embankments design and the floodplain bridge embankment design.

At the time of issue of this Technical Note, the cut and fill volumes across the development site (without counting for on-plot arisings) are virtually at balance with a cut volume of 3,191,582CuM and a fill volume of 3,207,784CuM.

It is envisaged that the surplus material generated in Phase A earthworks operations will be partially used to form the noise bunds, the embankments for floodplain crossing and the residential plots which require raising due to flood levels (plots Resi 3, 5, 6, 7). Approximately 524,000CuM of material will be available from earthworks Phase A to be used in Phase B.

Arisings generated on-plot by excavation to foundations, drainage, road boxes etc. have been estimated and presented in this Technical Note. It is envisaged that during the next iteration of this earthworks exercise, phasing and highway alignments will have been further detailed hence the on-plot generated arisings can be better integrated into the design.

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APPENDIX A

Preliminary Earthworks Strategy Drawings

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APPENDIX B

Masterplan and Phasing Diagram

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APPENDIX C

Earthworks volumetric analysis schedule

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APPENDIX D

Stakeholder liaison