Proposed Residual Land Site

Residual Land fencing to be erected in advance of proposed works by third party contractor. Fencing to remain in-situ for the duration of the works.

Fencing setback for bellmouth and services construction

Proposed Primary School Site

Existing 11KV Overhead Lines See Long section drwg. 8686-130 for cable heights v existing ground levels. Consult WPD safety guidance.

Access to Farm to be retained pending completion of alternative access via Estate Road 01.

The Contractor is to liaise with the owner of Wykham Park Farm so not to conflict with their construction traffic & prevent conflict with the construction works.

Oxfordshire County Council Primary School fencing to be erected in advance of proposed works by third party contractor. Fencing to remain in-situ for the duration of the works.

2m fencing setback from extent of earthworks for highway construction

Fencing setbacks for bellmouth and services construction

Proposed Secondary School playing field site

Oxfordshire County Council Secondary School fencing to be erected in advance of works by third party contractor. Fencing to remain in-situ for the duration of the works.

2m fencing setback from extent of earthworks for highway construction

Overhead cables spans between point C1 & C3 to be undergound & diverted prior to commencement of infrastructure works in this area.

Proposed 11KV underground cable route.

Approx location of existing water service, est 50mm dia.

Approx location of existing water service, est 50mm dia.

Existing 11KV Overhead Lines See Long section drwg 8686-130 for cable heights v existing ground levels. Consult WPD safety guidance.

Existing 11KV Overhead Lines See Long section drwg 8686-130 for cable heights v existing ground levels. Consult WPD safety guidance.

Bridleway 137-11

PROW 137-16

30m Badger Zone.
Works within these areas can only take place between the 1st July & 30th November. The Contractor must apply for a license to work within this area.

See Inset 1. for lower part of site.

Inset 1.

Note:-
- For full details of Tree Protection Measures see report edp6378_r011b Arboricultural Impact Assessment.
- For further details on Archaeology constraints refer to report edp6378_r001d Written Scheme of investigation & method Statement for Archaeological Preservation.
- For further details of constraint related to the badger setts refer to report edp6378_r002a Badger Mitigation Strategy.
- For details of PRoW temporary diversions refer to the CMP.
- For Utilities that have been installed as part of the S278 works please refer to S278 drawings.

Key:-
- Site Boundary
- Proposed Highway Works
- B14 Badger Sett
- BS Badger sub sett
- BS Badger sub sett
- 30m Badger Zone
- Existing MP Gas Main.
- Existing BT
- Existing Water Service
- Thames Water Main with 10m Easement
- Thames Water Surface Water Sewer with 10m Easement.
- Culverted Watercourse
- 11KV HV Overhead Cable with span reference.
- Proposed 11KV HV easement route.
- Proposed 11KV HV underground diversion route to be complete in advance of works starting on site.
- Bridleway 137-11 — Existing Bridleway
- PROW 137-16 — Existing Public Right of Way
- Archaeology Strip Area — Areas of Potential archaeological sensitivity which have previously been excavated & backfilled.
- Archaeology Preservation In-situ Area — No Excavation permitted within this area.
- T47 Tree/Group number
- Tree/Group Canopy
- Tree Steam
- Root Protection Area
- Category A: Trees of high quality & value.
- Category B: Trees of Moderate quality & value
- Category C: Trees of Low quality & value.
- Category U: Trees of Poor quality & value.
- Veteran Tree
- Veteran Tree Buffer

REV	REV-DATE	REV-DESC
REV1	DATE	Client Info

PROJECT:-
Wykham Park Farm, Banbury

TITLE:-
Constraints Plan

SCALE:- 1 to 1250@A0	DATE:- 29/07/2021	DRAWN:- PJT
STATUS:-	DRAWING No:- 8686-113	REVISION:- -

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APPENDIX D

Earthworks Technical Note

TECHNICAL DESIGN NOTE

Project name	Wykham Park Farm, Banbury		
Design note title	Preliminary Earthworks Strategy		
Document reference	WPF_HYD_XX_XX_RP_C_0002		
Author	Sean Mitchinson		
Revision	005		
Date	20 October 2020	Approved	✓

1.1 Introduction

The purpose of this document is to address the requirements of Planning Condition 50 (Reference 14/01932/OUT) which calls for information pertaining to the implementation of the strategy for preliminary earthworks.

The main earthworks at Wykham Park Farm involve the creation of the site wide drainage network, including two attenuation basins and a swale system. In addition to this there is the creation of two platforms suitable for use as sports pitches and a landscaping mound in the south west area referred to in the report and drawings as the Southern Gateway Landscaping Mound. Other sources of material generation include the construction of the main spine road, Section 278 works and local centre bus loop. The intention of the earthwork's strategy is for all site won material and topsoil generated from the above works to be moved within the site boundary and for a cut & fill balance to be achieved.

1.2 Cut & Fill Analysis

Full cut & fill analysis details can be seen on drawing WPF_HYD_XX_XX_DR_C_2400. This details sources of all topsoil strip, suitable reusable cut material and where the stripped topsoil and cut material is to be reused.

1.2.1 Topsoil

Table 1 on the drawing above identifies the sources of Topsoil strip shown in figure 1 below. The Hydrock site investigation report WPF_HYD_XX_XX_RP_G_1001 identifies topsoil depths ranging from 0.15m to 0.4m across the site. For the purpose of the cut & fill analysis an average topsoil depth of 0.3m has been assumed. Where topsoil has been reused a thickness of 0.2m is specified. 0.2m of topsoil has been proposed as a typical value and is subject to detailed landscaping design.

For the purposes of this cut & fill analysis it has been assumed that no topsoil strip shall be taken from the proposed development parcels, in addition to this a zero-topsoil strip approach has been applied under Sports Pitch A due to archaeological restrictions.

A total topsoil strip volume of 24343m³ is generated from the various areas as shown in Figure 1.

1. Topsoil

Volumes of 0.3topsoils trip from each parcel, basins and swales, including volumes of topsoil reuse (assuming 0.2m reuse thickness except where indicated)

	Area (m²)	Topsoil Strip Volume (m²)	200mm Topsoil Reuse Volumes
Parcel R1	28500		
Parcel R2	29000		
Parcel R3	34300		
Parcel R4	41600		
Parcel R5	40076		
Parcel R6	46600		
Parcel R7	20000		
Local Centre	8000	2400	
Secondary Sch	18300		
Primary Sch	30300		4545
Sports Pitch A	12386		2477
Sports Pitch B	11237	3371	2247
South Gate Landscape Mound	17053		3410
Storage Area A	4641		781
Basin 1	13556	4067	2711
Basin 2	2850	855	570
Highway	17590	5277	
Swales	27913	8373	5421
Allotment	9014		2181
Total	408707m³	24343m³	24343m³

Figure 1: Table of topsoil strip and re-use volumes (taken from dwg WPF-HYD-XX-XX-DR-C-2400)

A total volume of topsoil re-use at 22162m³ has been identified using the proposed thickness of 0.2m as previously stated. The remaining 2181m³ has been used to improve topsoil thickness at the proposed allotment area to the south east corner to ensure a minimum topsoil thickness of 0.4m. This provides a total topsoil reuse volume of 24343m³ providing a net balance.

1.2.2 Suitable Cut Material

The main sources of cut within the site include the swale infrastructure, attenuation basins and spine road network. The swale infrastructure produces 22819m³ of cut material, the attenuation basins produce 20234m³ and excavation of the spine road to the proposed formation level produces 13888m³ of material. This derives a total volume of site won cut material of 66018m³ (Including an allowance for arisings from drainage trenches). Figure 2 below highlights the separate sources of cut material and volume generated by each.

2. Sources and volumes of fill material

Volumes of suitable fill material after 0.3m topsoil strip

	Area (m²)	Cut Volume (m²)
Swale 1A	1590	2848
Swale 1B	14961	5277
Swale 2A	2890	4240
Swale 2B	2441	2330
Swale 2C	5225	8124
Basin 1	13556	16943
Basin 2	2850	3291
Highway	17590	13888
Drainage Arisings		1083
Total	**67605m²**	**58023m³**
Total including Marlstone		*66018m³*

Figure 2: Table cut material sources

This site won material is to be used to generate the two proposed sports pitches, the Southern Gateway Landscape platform and material storage areas in the north west corner of the site.

The volumes of material required to generate these features is shown in the Figure 3 below.

3. Cut & Fill Volumes

Where reusable fill is generated the following areas have been adjusted to reduce the volume of site won material

Total reusable fill material available taken from table 2 = 66018m³

	Area (m²)	FIll Volume required (m³)
Sports Pitch A	12368	9108 (4125 Marlstone Rock)
Sports Pitch B	13595	2936
South Gate Landscape Mound	11941	51286 (3870 Marlstone Rock)
Storage Area 1a	2262	2688
Total	**109216m²**	**66018m³**

An allowance for a 0.2m topsoil layer has been allowed for in the above volumes
Total volume of fill material taken from Table 2 = 66018m³

66018 - 66018 = 0m³

Figure 3: Site won material re-use table

The volume of material required to generate the features shown in Figure 3 is 66018m³ as shown in Figure 2 the total volume of cut generated is 66018m³ allowing a balance of the site won material to be achieved. Refer to drawing WPF_HYD_XX_XX_DR_C_2400 for locations of the features listed above. Cross sections of each of the features can also be found on the following drawings.

Southern Gateway Landscaping: Refer to drawing WPF-HYD-XX-XX-DR-C-0212

Sports Pitch A: Refer to drawing WPF-HYD-XX-XX-DR-C-0210

Sports Pitch B: Refer to drawing WPF-HYD-XX-XX-DR-C-0211

1.2.3 Contaminated Material

The Ground Investigation report (Ref WPF_HYD_XX_XX_RP_G_1001) identifies the presence of elevated levels of arsenic within the Marlstone Rock formation found within the site boundary. Drawing WPF-HYD-XX-GI-DR-G-1002 shows the geological zonation plan, which displays the areas where the Marlstone Rock formations are outcropping (green hatch to the very eastern edge of the site.) The Ground investigation report concludes that any excavated Marlstone Rock material should be capped with a 600mm layer of clean cover where Marlstone Rock formations are deposited.

The proposed swale network cuts through these areas of Marlstone Rock formation. Swale 1B, Swale 2B and the proposed foul drainage along the southern boundary generated the volumes of Marlstone Rock as shown in Figure 4

4. Marlstone Rock Volumes

Volumes of contaminated material removed through swale excavation and topsoil strip

	Volume (m³)
Swale 1B	5619
Swale 2B	1542
Southern Foul Drainage Network	834
Total Volume	**7995m³**
Volume stored in Sports Pitch A	4125
Volume Stored in Leap	3870
Total	**7995m³**

This contaminated fill has been placed within the Leap and Sports Pitch A with a minimum of 600mm cover.

Figure 4: Sources of Marlstone Rock Excavation

The total excavated volume of Marlstone Rock is 7995m³. It is proposed that this contaminated material be placed in the build up of the Southern Gateway Landscaping area and Sports Pitch A. Figure 3 shows the volumes of Marlstone Rock material to be lost in each of these areas 4125m³ in Sports Pitch A and 3870m³ in the Southern Gateway Landscaping area. A minimum of 600mm of cover is provided in these two areas over the Marlstone Rock deposits. The cross-sectional drawings HYD WPF-HYD-XX-XX-DR-C-0212 and WPF-HYD-XX-XX-DR-C-0210 shows the locations where the Marlstone Rock material is to be deposited.

An additional plan and note by EDP which also supports this discharge of conditions submission, has been produced to demonstrate the impact of the proposed earthworks on the existing tree root protection areas. This can be seen on drawing WPF-HYD-XX-XX-DR-C-2510. This plan highlights the areas of tree planting that will be removed as part of the earthworks/infrastructure as well as those areas avoided along swale routes.

1.3 Conclusions

- The cut & fill analysis shows that a balance of materials can be achieved without the need for materials to be taken off-site. However, the cut and fill analysis has made some assumptions on topsoil thicknesses and bulking factors. The southern gateway mound could be used as a balancing area for additional fill material with a tolerance of approximately +/- 200mm. These details are to be approved as a subsequent landscape reserved matters submission.
- A 0.3m topsoil strip generates a calculated volume of 24343m³ with all the stripped material being used within the site boundary
- Cut material generated from the creation of the green infrastructure (basins & swales) and grey infrastructure (Spine Road) can be fully utilised to generate the sports pitches and Southern Gateway Landscape area, resulting in a net balance and zero cart-away materials.
- Where contaminated material is to be excavated from the marlstone rock outcrops it will be covered with a 600mm capping layer of clean material in line with recommendations from the Ground Investigation.
- Contaminated Marlstone Rock material is to be deposited in the Southern Gateway Landscape area and Sports Pitch A platform providing a minimum 600mm of clean cover.