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# Land South and East of Aadastral Park, Ipswich

## Technical Note No 20 : Hydrology cross-referencing guide

15<sup>th</sup> June 2017

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### 1 Introduction

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Brookbanks Consulting Limited (BCL) is commissioned by Carlyle Land Ltd and Commercial Estates Group to provide technical advice on viability and delivery on a proposed mixed-use development at Aadastral Park, Martlesham Heath, Suffolk.

An outline planning application has been submitted which, amongst other things, contains the following documents:

- Flood Risk Assessment
- Phase I Geo-Environmental Desk Study
- Phase II Site Investigation & Infiltration Investigation Report
- Land Stability Report
- Ground Conditions ES Chapter
- Flood Risk and Drainage ES Chapter

The purpose of this note is to discuss the hydrology elements contained within each of the listed documents and guide the consultees review to what should be cross-referenced or read independently.

### 2 Guide to hydrology within various documents

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In terms of the Site's hydrology the following respective documents each appraise the existing baseline conditions and where necessary offer appropriate mitigation measures.

#### FLOOD RISK ASSESSMENT (FRA)

The Flood Risk Assessment forms a detailed assessment of the potential sources of flooding on and within proximity of the site, which includes rivers, the coast, overland flow, groundwater and artificial sources such as reservoirs and canals. The assessment utilises data sourced from a wide range of authorities such as the Environment Agency, British Geological Survey (BGS), Centre for Ecology and Hydrology, Suffolk County Council and Suffolk Coastal District Council as the local drainage authority (Anglian Water). Primary Drainage Systems (such as swales and permeable paving) and SuDS design on site within the FRA are based on information acquired from the initial Phase 1 Desk Study review, the Phase 2 intrusive works and the results of the Infiltration Testing.

**Review status:** The FRA can be reviewed in conjunction with both the Phase 1 Desk Study and the Infiltration Testing Report.

#### PHASE 1 GEO-ENVIRONMENTAL DESK STUDY

The Phase 1 Desk Study forms an initial desk based assessment of the site, utilising data sourced from a wide range of authorities such as the Environment Agency, British Geological Survey (BGS), DEFRA, Centre for Ecology and Hydrology, Suffolk County Council and Suffolk Coastal District Council.

In addition to assessing the potential sources of land contamination on and around the site, the Desk Study further reviews the underlying geology, hydrogeology and hydrology of the site. This review includes published geology records, underlying aquifer designations, groundwater vulnerability assessments and BGS groundwater flooding susceptibility records.

**Review status:** The Phase 1 Desk Study can be reviewed in conjunction with the Flood Risk Assessment which provides further information and detail relating to the site-specific flood risks and the proposed drainage strategy and design.

## PHASE 2 SITE INVESTIGATION REPORT & INFILTRATION INVESTIGATION REPORT

Following on from the conclusions and findings of the Phase 1 Desk Study a more detailed site investigation is carried out, whereby intrusive ground works are able to establish the existing baseline ground conditions of the site.

The Phase 2 report reviews data sourced from published BGS borehole records, historic ground works data provided by WSP, in addition to the results of the intrusive works. The works comprise cable percussive boreholes and window sample boreholes which offer confirmation of the groundwater levels, groundwater monitoring and underlying geology, as initially reported within the Phase 1 Desk Study.

Confirmation of permeability and site infiltration is achieved via Infiltration Testing in Trial Pits (set to BRE365 standards). The results of the infiltration testing are further utilised within the drainage strategy for the site, outlined in the Flood Risk Assessment.

The Phase 2 report also offers geotechnical information from the soil samples obtained and testing carried out on site. Remediation and mitigation measures are also provided, where necessary.

**Review status:** The Phase 2 report can be reviewed in conjunction with both the Phase 1 Desk Study or as an independent report providing further information on foundation and road pavement design.

The Infiltration report can be reviewed in conjunction with the Flood Risk Assessment.

## LAND STABILITY REPORT (LSR)

The LSR has been prepared to comment upon the required earthworks necessary in order to generate development platforms prior to completion of the Brett Aggregate site operations.

The LSR speaks in general terms on the movement and placement of ground with associated tests for ground strength and moisture content.

**Review status:** The LSR should be reviewed independently of other documents. Detailed design and phasing strategies through Reserved Matters applications will coordinate the specific earthworks requirements into the wider hydraulic conditions of the site.

## GROUND CONDITIONS ES CHAPTER

This chapter assesses the environmental impact of ground conditions, using the data obtained within the Phase I and Phase II ground reports as its baseline. The construction, operation, residual and cumulative impacts generated by the development are assessed and quantified with mitigation measures proposed to suit.

**Review status:** This ES Chapter should be read in accordance with the Phase I and Phase II Ground Investigation Reports.

## FLOOD RISK AND DRAINAGE ES CHAPTER

This chapter assesses the environmental impact of flood risk and drainage, using the data obtained within the Flood Risk Assessment as its baseline. The construction, operation, residual and cumulative impacts generated by the development are assessed and quantified with mitigation measures proposed to suit.

**Review status:** This ES Chapter should be read in accordance with the Flood Risk Assessment.

### 3 Limitations

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The benefits of this report are provided to Carlyle Land Ltd and Commercial Estates Group and the statutory consultees for the proposed development on Land South and East of Adastral Park.

Brookbanks Consulting Ltd excludes third party rights for the information contained in the report.