



**C.G. FRY & SON**

B U I L D E R S

*in harmony with our heritage*

C. G. Fry & Son Ltd, Litton Cheney Dorchester Dorset DT2 9AW

Telephone: 01308 482000

Fax: 01308 482249 e-mail: info@cgfry.co.uk website: www.cgfry.co.uk

**PROPOSED RESIDENTIAL DEVELOPMENT  
LAND AT BANK AND RIDGE FARM  
CHICKERELL**

**SITE DRAINAGE STRATEGY**

## **CONTENTS**

1.0	INTRODUCTION	1
2.0	EXISTING CONDITIONS	1
3.0	INDICATIVE DRAINAGE STRATEGY	3
4.0	SUMMARY AND CONCLUSION	4

FIGURE 1	Location Plan
FIGURE 2	Existing Adopted Foul Drainage System
FIGURE 3	Surface Water Sewer Network
FIGURE 4	Indicative Surface Water Management Strategy

## 1.0 INTRODUCTION

- 1.1 The subject of this report is a parcel of land known as Bank and Ridge Farm located to the north of the existing residential boundary in Chickerell, near Weymouth. C G Fry & Son, seek to promote this land through the Core Strategy and Local Development Framework planning process as a site suitable for a development of between 350 and 400 new dwellings.
- 1.2 This report identifies a drainage strategy for the development of the land principally for residential use although this could be mixed with small scale employment uses. The purpose of the study is solely to identify whether there is a viable mechanism to provide a means of draining foul and surface water from the site and to determine whether there is any drainage related reason why the land should not be promoted for new residential development. At future stages of the planning process it will be necessary to provide appropriate Flood Risk Assessments in accordance with PPS 25 and these would relate to the actual form and phasing of development.

## 2.0 EXISTING CONDITIONS

### The Site

- 2.1 The site is located to the north eastern edge of Chickerell and is approximately 600m from the centre of the community (as the crow flies). Its western boundary is with a parcel of land known as Flood's Yard. This land is currently identified for a development of 60 residential dwellings. School Hill marks the eastern boundary. This road links Chickerell to Nottingham and the A354 to the east. The location of the site relative to the local community is shown of Figure 1. The overall area of the site is 11.3 Ha and encompasses Bank Farm and Ridge Farm.
- 2.2 The site generally rises from its southern boundary where the lowest point at a level of 34m is adjacent to Barr Lane up towards the northern boundary, where the highest level of 50m is located in the northeast corner. The northern boundary of the land is close to the ridge and therefore the local topographic watershed.
- 2.3 A preliminary site investigation was undertaken by Terra Firma and this indicated that within the site the soils comprise broadly of a sandy gravelly clay topsoil overlaying a firm silty sandy clay. Within the centre of the southern boundary of the site the trial pits located limestone at depth of in the order of 2m. Infiltration tests were undertaken on 12 trial holes located over the site and these indicated that the soils

were broadly impermeable and draining to soakaways would not form a viable option for managing surface water. However, typically limestone does permit some percolation of surface water and thus further site investigation may establish that some soakaway management may be possible.

#### **Existing Foul Sewerage**

- 2.4 Figure 2 shows the location of the existing foul sewer network in the vicinity of the site. Whilst in the northern part of Chickerell, there is a dedicated gravity foul drainage system, as it falls towards the south this system connects with a combined sewer system. Combined sewers carry both foul and surface water and thus during periods of heavy rainfall, the capacity is significantly constrained. Wessex Water, the drainage statutory undertaker, has advised that the existing system is unlikely to have capacity for additional large increases in foul flows and that hydraulic modelling would be necessary. The treatment works has available capacity as does the terminal pumping station.

#### **Existing Surface Water Drainage**

- 2.5 Figure 3 is an extract from a plan prepared by West Dorset District Council in their capacity as the Land Drainage Authority and it shows the existing surface water drainage system to the south of the site. This system connects to ditches which run along Barr Lane, which traverses the site in a north to south direction. The pipe network carries surface water runoff southwards to the ditch system located on the land east of Putton Lane and south of Lower Putton Lane. Some sections of the existing surface water system is in need of repair. In the vicinity of North Square this system does surcharge and cause localised flooding. It is hypothesised that during intense rainfall events, surface water runoff from Bank and Ridges farms surcharges the existing system and contributes to the flooding.

#### **Flood Risk**

- 2.6 The Environment Agency flood map indicates that the whole of the site is within flood zone 1. Zone 1 is identified in PPS 25 as being land which is subject to a flood risk by tidal or fluvial effects of 0.1% or that a flood could occur once in one thousand years. As such the site would not be subject to a sequential test or an exception test as would otherwise be required to accord with PPS 25.
- 2.7 The land does generally slope towards the existing, mainly residential properties, which are located along the southern boundary of the site. Due to the generally impermeable nature of the soils, during intense rainfall, water would tend to run directly off the land towards those existing properties and would thus create a threat of short term (flash) flooding.

### **Strategic Flood Risk Assessment**

- 2.8 West Dorset District Council published the level 1 Strategic Flood Risk Assessment (SFRA) in August 2008. This identified that in Chickerell 24 properties are at risk of foul sewage flooding. The SFRA also identified that in Chickerell there have been 40 recorded incidents of surface water flooding although some of these may relate to roads and undeveloped land.

## **3.0 INDICATIVE DRAINAGE STRATEGY**

### **Foul Drainage**

- 3.1 It is conceivable that prior to the Bank and Ridge farms site coming to fruition, Wessex water may have upgraded the foul drainage system within Chickerell thus creating additional capacity. This could be accomplished by such measures as removing some of the surface water that currently discharges into the foul system and discharging that into a separate system or by constructing additional capacity. The actual methodology would be evaluated following hydraulic modelling of the system.
- 3.2 Whichever approach is taken to upgrade the foul sewer system in order to create additional capacity, this matter can be resolved and would not prejudice the future 'bringing forward' of the land for development.

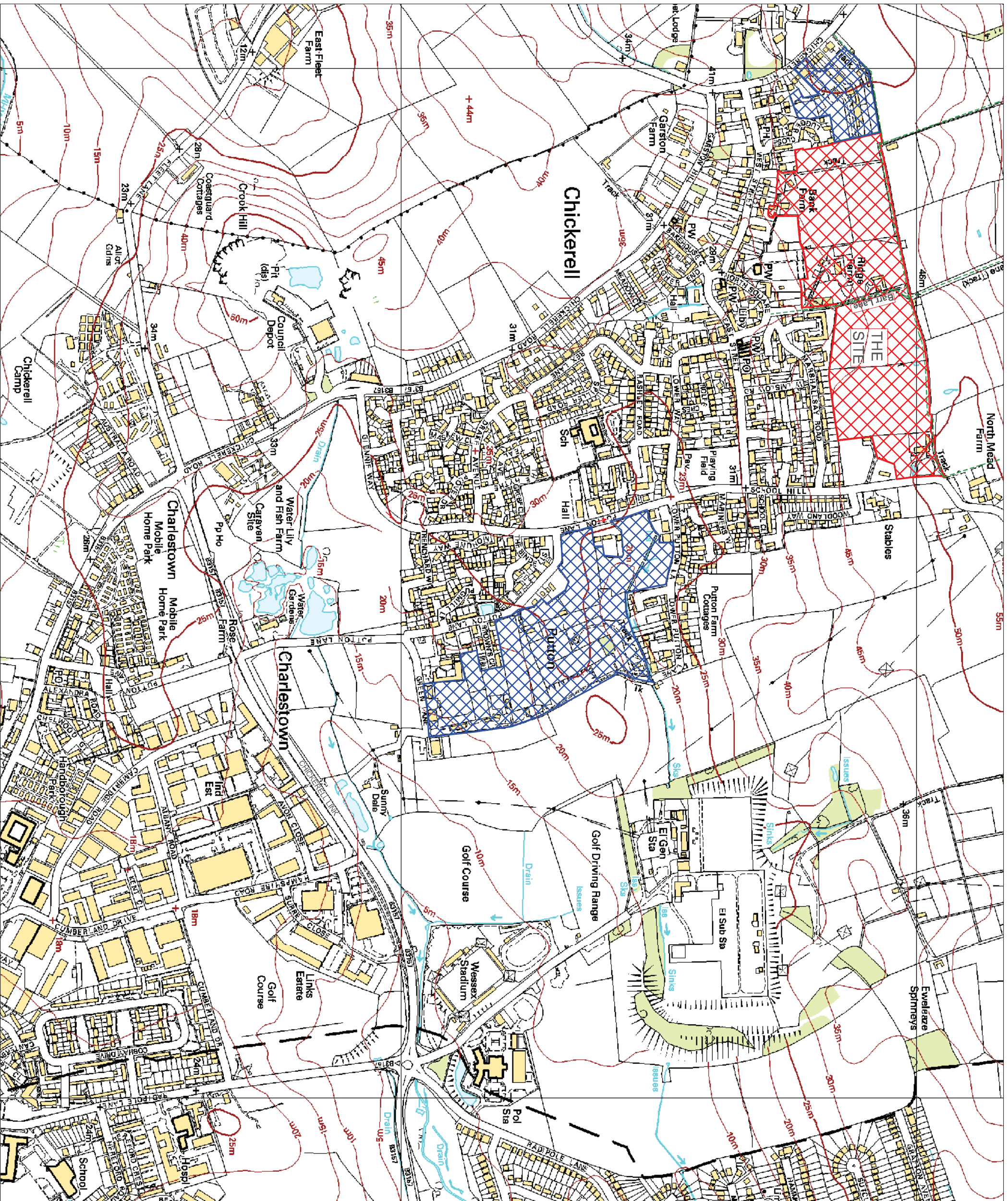
### **Surface Water Management**

- 3.3 The general requirement of PPS 25 and the Environment Agency is that surface water from new development should be managed using sustainable drainage methods. The preliminary strategy for draining the site would be to agree a permitted discharge rate for surface water from the whole site such that the existing pipe system shown in figure 3 could easily accommodate it. It is most likely that this discharge rate would be less than the existing 'greenfield' runoff but in any event would not be greater. The rate of flow would be controlled by a flow control device such as a hydrobrake. During some storm events the rate of flow from the development would exceed the rate of discharge, thus it would be necessary to store surface water. The storage would accommodate the runoff from a 1 in 100 year rainfall event (plus 30% for climate change). Preliminary calculations indicate that this could be in the order of 1500 cum. The preferred method of storage would be in the form of ponds and swales although the topography of the site limits the number of locations where this could be achieved. Storage crates under car parking areas and some underground tank storage may also be necessary. A flood risk assessment would identify the methodology appropriate for the development.

- 3.4 In order to protect properties to the south of the site from the effects of overland flow particularly during intense rainfall events, it is proposed that a system of ditches and bunds would direct excess flow toward the storage facilities. Figure 4 is schematic diagram showing the likely surface water management measures.
- 3.5 By managing surface water runoff flowing from the upper reaches of the catchment in Chickerell, it will be possible to relieve the existing properties in North Square from future flooding thus improving conditions for the existing community.

#### **4.0 SUMMARY AND CONCLUSION**

- 4.1 The sewage treatment works and pumping stations have adequate capacity to accommodate the additional flow from a mainly residential development on the site. The capacity of the existing foul drainage pipe network is likely to require upgrading to create additional capacity. The scale of the works would be determined following hydraulic modelling. There no evidence to suggest that the necessary works could not be successfully undertaken to accommodate the existing foul flows. Improving the existing foul drainage system would assist in reducing the existing risk of foul water flooding events for a few residents.
- 4.2 The site is located within flood zone 1 and there is a very low risk of tidal or fluvial flooding. Although soakaways are unlikely to provide a viable means of surface water management for a development on this site, water could be discharged via an existing piped surface water drainage system at an agreed rate, the maximum value of which would be equivalent to 'greenfield' runoff. Surface water would need to be stored on site in a sustainable way in ponds, swales and possibly underground piped storage.
- 4.3 Overland flow from the site is currently directed towards the existing residential properties along the southern boundary. The provision of bunds and ditches as part of the development surface water management strategy would protect those properties from surface water flooding particularly during intense rainfall events. This would reduce flood risk for existing residents, particularly those in the vicinity of North Square.
- 4.4 It is concluded that there are no drainage reasons why the site could not be developed.



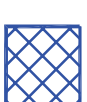
**C.G. FRY & SON**  
BUILDERS

*In harmony with our heritage*  
C G Fry & Son Ltd, Union Close, Dorchester, Dorset, DT12 3AW  
Telephone: 01388 482000  
Fac: 01388 482299  
e-mail: info@cgrf.co.uk website: www.cgrf.co.uk

**MIXED USE DEVELOPMENT  
BANK AND RIDGE FARMS  
CHICKERELL**

**DRAINAGE STRATEGY  
SITE LOCATION PLAN**

Not to Scale A3 Size

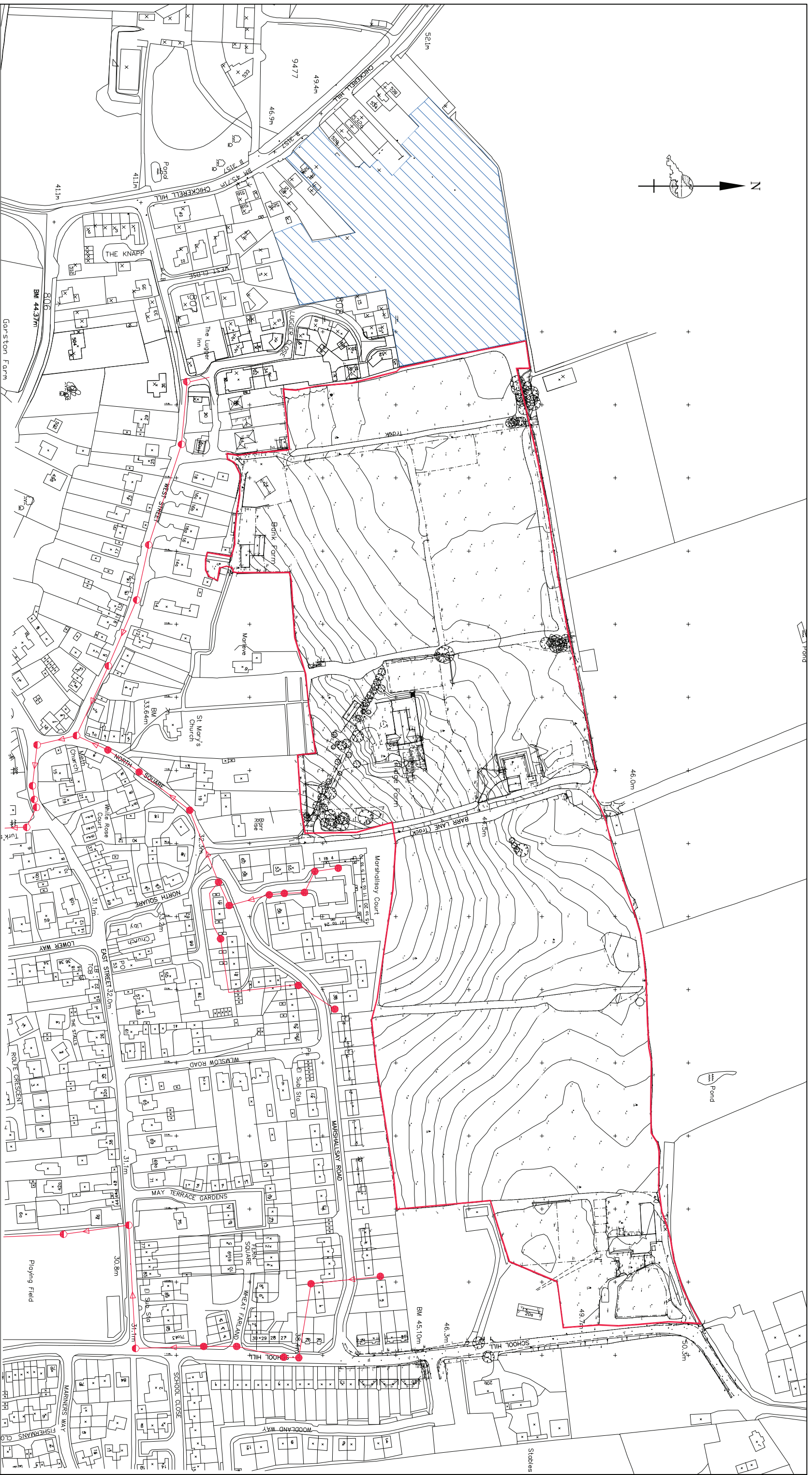


Sites already subject to a residential planning application

**FIGURE 1**

**LAURENCE RAE ASSOCIATES LTD**  
Consulting Engineers

52 Ridgeway Road, Long Ashton  
Bristol BS41 9ES  
Tel: 01275 539 2626  
Fax: 01275 539 4978



- KEY**
- Site Boundary
  - Floods Yard Development
  - Existing adopted foul drain
  - Existing adopted combined sewer

Information derived from a plan provided by Wessex Water

© Crown copyright. All rights reserved.  
Licence number 100041065

**C.G. FRY & SON**  
BUILDERS

*In harmony with our heritage*

C. G. Fry & Son Ltd, Limes Quay, Durdent, Dorset DT2 9JW  
Telephone: 01388 482000  
Fax: 01388 482249 e-mail: info@cgfry.co.uk website: www.cgfry.co.uk

**LAURENCE RAE ASSOCIATES LTD**  
Consulting Engineers

52 Ridgeway Road, Long Ashton  
Bristol BS41 9ES

Tel. 01275 339 2626  
Fax 01275 339 4978

**RESIDENTIAL DEVELOPMENT  
LAND AT BANK FARM AND  
RIDGE FARM CHICKERELL**

**EXISTING ADOPTED FOUL  
DRAINAGE SYSTEM**

**FIGURE 2**




Scale 1:2500 at A3 size





To the Site

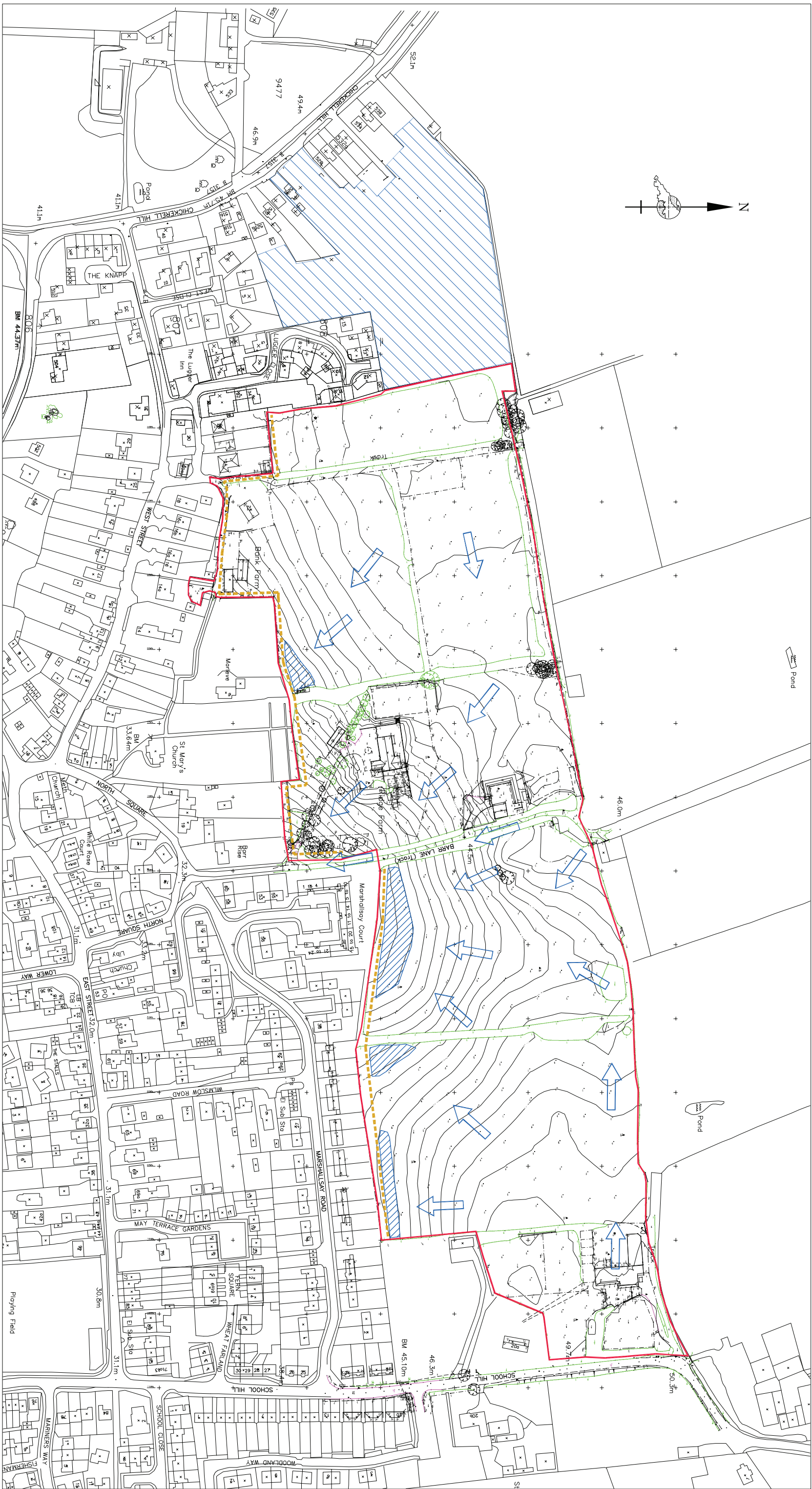
LEGEND

-  Manhole positions and numbers
-  600 Pipe diameter in mm
-  Existing ditch

**FIGURE 3**


Extract from a Drawing Prepared by West Dorset District Council

Scale 1:2000 at A3 size



- KEY**
- Site Boundary
  - Floods Yard
  - Development
  - Ditch or bund
  - Possible pond location
  - Direction of overland flow

© Crown copyright. All rights reserved.  
 Licence number 100041065



**C.G. FRY & SON**  
 BUILDERS

*In harmony with our heritage*

C. G. Fry & Son Ltd, Llaner Chae, Porthkerry Drive, DT12 9AW  
 Telephone: 01238 42300  
 Fax: 01238 42329 e-mail: info@cgfry.co.uk website: www.cgfry.co.uk

**LAURENCE RAE ASSOCIATES LTD**

52 Ridgeway Road, Long Ashton  
 Bristol BS41 9ES

Tel: 0127 539 2626  
 Fax 0127 539 4978

**RESIDENTIAL DEVELOPMENT  
 LAND AT BANK FARM AND  
 RIDGE FARM CHICKERELL**

**INDICATIVE SURFACE  
 WATER MANAGEMENT  
 STRATEGY**

Scale 1:2500 at A3 size

**FIGURE 4**