

A Brief Guide to Space, Design and Other Technical Issues in Providing for the Bedford Milton Keynes Waterway



Introduction

This guide has been produced to provide guidance on appropriate space, on design and on other technical issues in relation to provision for the Bedford Milton Keynes Waterway as required by the three planning authorities covering the route of the waterway.

A companion guide, 'A Brief Guide to the Value of Providing for the Bedford Milton Keynes Waterway in Development', introduces the Waterway and provides information on its value to developments along the route.

General Design Matters



The majority of the route will be an open aspect Waterway with a 15m minimum navigable channel and 1 in 3 sloping sides that are planted margins.

In cases where space is limited, visibility good and no obstructions, the width can be reduced (eg to 9m) for short distances in consultation with the Canal & River Trust.

These dimensions along with a 2m channel depth (1.5m water depth) and verge and multi-user, Equality Act compliant, towpath requirements suggest a minimum 35m overall corridor. See over for more details/illustrations.

However, in some sections and approaching bridges, locks and other structures, the traditional vertical hard sided canal construction may be required.

The minimum water width requirement is still as set out above for open aspect channel, reducing to 4.5m for locks and 6m for underpasses. See over for more details/illustrations.

There are a number of relevant standards and legal documents, including in particular:

- Code of Practice for works affecting British Waterways 2010 - engineering, design and construction manual. Contact Canal & River Trust at www.canalrivertrust.org.uk
- Flood & Water Management Act and Land Drainage Act. Contact Internal Drainage Board at www.idbs.org.uk
- Equality Act compliant multi-user foot-and-cycleway ie towpath (see the Environment Agency's Access for all design guide at www.environment-agency.gov.uk/research/library/publications/141756.aspx)
- Town and Country Planning Association Policy Advice Note 'Inland Waterways'. See www.tcpa.org.uk/data/files/InlandWaterways.pdf



Access for Maintenance



Access for maintenance of the navigation is a particular requirement.

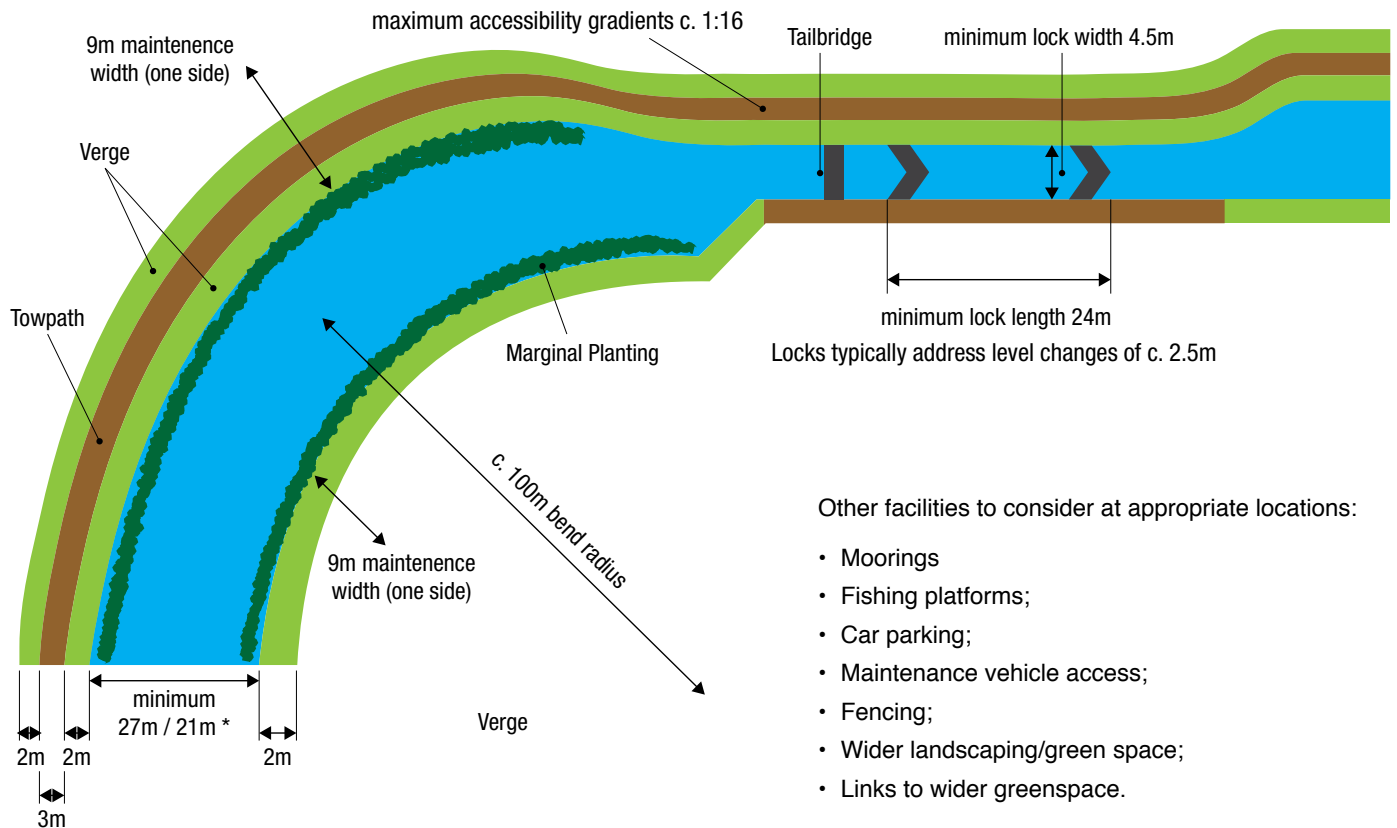
Machines capable of dredging a channel up to 15m wide are of necessity large – usually a 360 excavator.

As well as needing access routes to the waterside, the practicable space is a 9m wide access area either side of the water also ensuring that trees, structures and furniture do not obstruct operations.

Key Dimensional Data

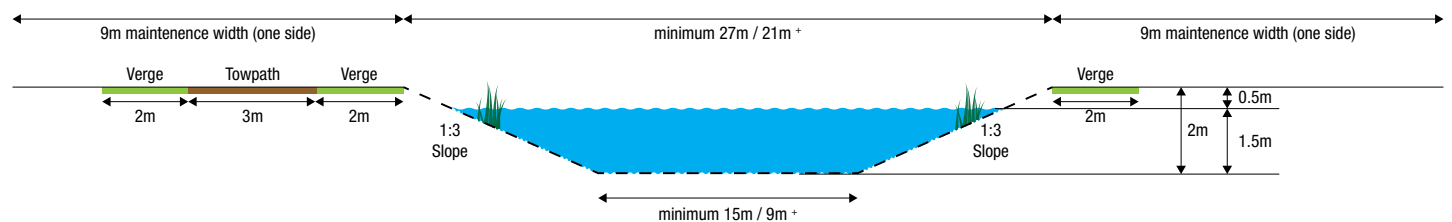
The following diagrams (not to scale) provide key indicative dimension data for the waterway itself and related facilities (including of channels, bends, towpaths, verges, locks, underpasses etc.)

1. Vertical Perspectives (widths, lengths, bends and facilities)



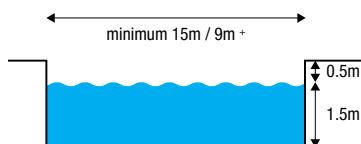
2. Elevations and Cross-Sections (widths, heights, depths)

• Open Aspect Waterway

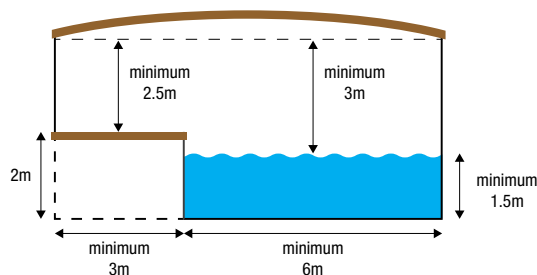


• Vertical Hard Sided Waterway

• Two boat Width Waterway



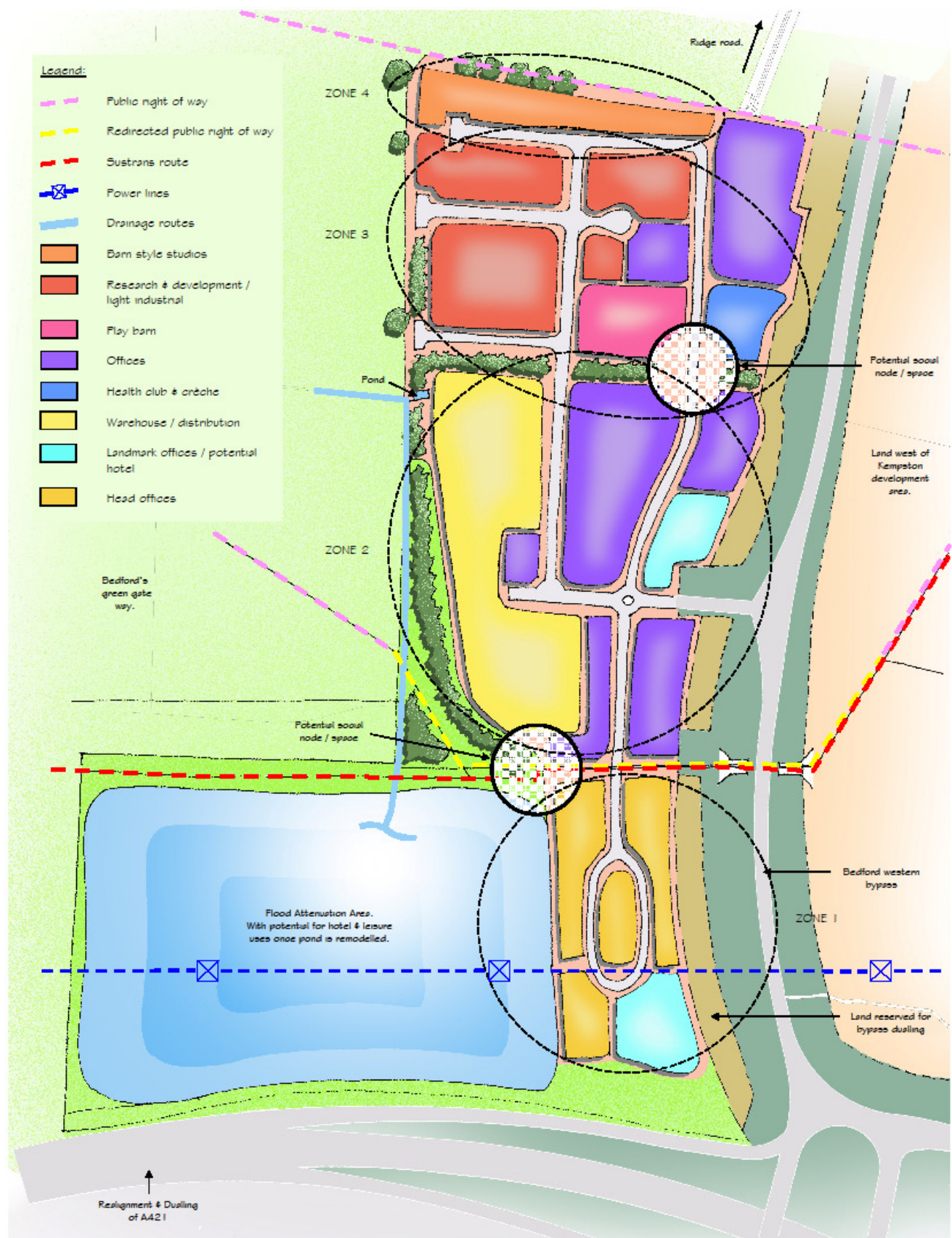
• One Boat Width Underpass

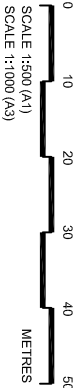


* Towpaths should be multi-user (footpaths and cycleways) and Equality Act compliant with surfacing appropriate to their location – see Equality Act reference above and Sustrans Technical Note 8 re surfacing:

[www.sustrans.org.uk/assets/files/design_and_construction/Technical_Note_8_-_Path_surfaces\(1\).pdf](http://www.sustrans.org.uk/assets/files/design_and_construction/Technical_Note_8_-_Path_surfaces(1).pdf)

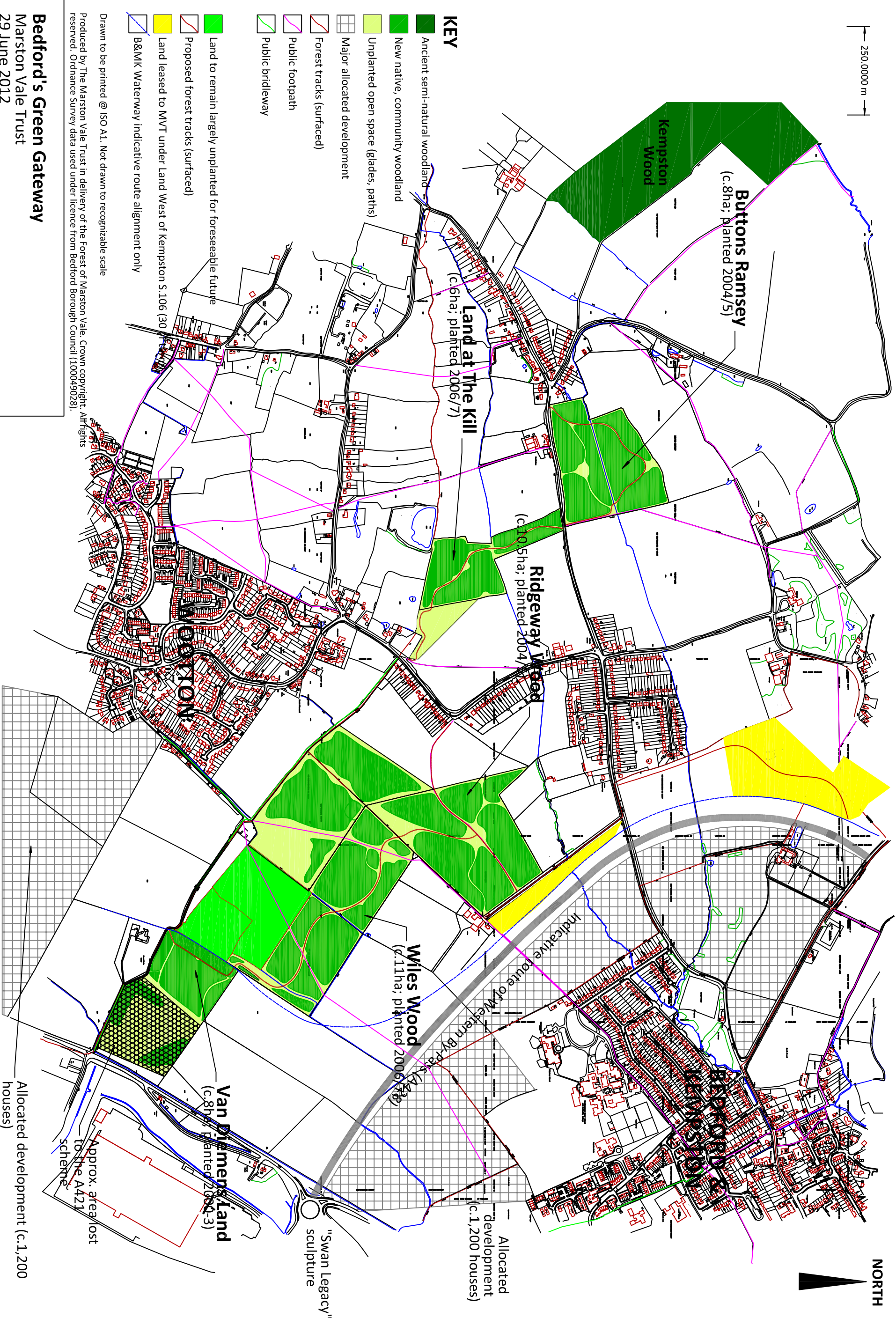
+ The larger 'minimums' (27m and 15m at full depth) apply to unconstrained open aspect waterway sections. The lower 'minimums' (21m and 9m at full depth) can be applied to shorter (eg less than 500m) constrained sections with good visibility and no moorings.





250.0000 m

NORTH



KEY

- Ancient semi-natural woodland
- New native, community woodland
- Unplanted open space (glades, paths)
- Major allocated development
- Forest tracks (surfaced)
- Public footpath
- Public bridleway
- Land to remain largely unplanted for foreseeable future
- Proposed forest tracks (surfaced)
- Land leased to MVT under Land West of Kempston S.106 (30)
- B&MK Waterway indicative route alignment only

Drawn to be printed @ ISO A1. Not drawn to recognizable scale

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Bedford's Green Gateway

Marston Vale Trust

29 June 2012

NOTES

1. DO NOT SCALE - USE FIGURED DIMENSIONS ONLY
2. ALL PROPOSALS SUBJECT TO DETAILED DESIGN, LOCATION OF EXISTING SERVICES, APPROVAL OF LANDHOLDERS, & FURTHER HYDRODYNAMIC MODELLING OF WATERCOURSES AND CATCHMENT.
3. THE STANDARDS OF SERVICE OF THE STRATEGY DESIGN ARE BASED UPON THE FLOOD ESTIMATION PARADIGM (1999) RAINFALL RUN-OFF METHOD (1% ANNUAL PROBABILITY (1 IN 100 YEARS) FLOOD PLANNING) BUT 20% ALLOWANCE FOR CLIMATE CHANGE ON FLOW, BASED ON 41%a GREENFIELD RUN-OFF.
- B** MANOR ROAD DIVERSION CHANNEL

Design Storage Level: 3.1.5m
Bed/Retained Water Level: 29.0-30.0m
Loss of Existing Flood Plain: Not applicable
Design Storage Capacity: 4,500m³
NETT STORAGE CAPACITY: 4,500m³
- C** HARDWICK BRIDGE FLOOD RESERVOIR

Design Storage Level: 3.1.5m
Bed/Retained Water Level: 29.5m
Loss of Existing Flood Plain: Not applicable
Design Storage Capacity: 16,000m³
NETT STORAGE CAPACITY: 16,000m³
- D** MARSH LEYS FARM FLOOD RESERVOIR (Phase 1 Marsh Leys, Phase 2 BCC land)

Design Storage Level: 30.0m
28.5m (Phase 1), 28.3m (Phase 2)
Loss of Existing Flood Plain: 3,400m³ (Phase 1), 29,600m³ (Phase 2)
Design Storage Capacity: 30,000m³ (Phase 1), 60,000m³ (Phase 2)
NETT STORAGE CAPACITY: 26,600m³ (Phase 1), 30,400m³ (Phase 2)
- E** WOBURN ROAD WETLANDS

Design Storage Level: 3.1.50m
Bed/Retained Water Level: 29.50m
Loss of Existing Flood Plain: 29.100m
Design Storage Capacity: 104,500m³
NETT STORAGE CAPACITY: 61,400m³
- F** VAN DIEMANS WOODLAND

Design Storage Level: 3.1.50m
Bed/Retained Water Level: 30.25m
Loss of Existing Flood Plain: Not Applicable
Design Storage Capacity: 16,500m³
NETT STORAGE CAPACITY: 16,500m³
- G** WOBURN ROAD REED BEDS

Design Storage Level: TBC
Bed/Retained Water Level: TBC
Loss of Existing Flood Plain: Not Applicable
Design Storage Capacity: 10,000m³
NETT STORAGE CAPACITY: 10,000m³
- POTENTIAL STORAGE GENERATED: 1 67,400m³** (See Note 4)
- A** MARSH LEYS FARM DEVELOPMENT

Contributing impermeable area (maximum) 3.4ha
Loss of Existing Flood Plain: 1,400m³
Additional Surface Water Run-off: 34,000m³
NETT STORAGE REQUIREMENT: 55,400m³
- B** A42 I DIVERSION & DUALLING

Contributing impermeable area (maximum) 8.1ha
Loss of Existing Flood Plain: (Included in pond analysis)
Additional Surface Water Run-off: 1,000m³ (Diversion), 7,000m³ (Dualling)
NETT STORAGE REQUIREMENT: 8,000m³
- C** DEVELOPMENT WEST OF KEMPSTON

Contributing impermeable area (maximum) 10.1ha
Loss of Existing Flood Plain: 72,700m³
Additional Surface Water Run-off: 10,000m³
NETT STORAGE REQUIREMENT: 82,700m³
- D** WESTERN BYPASS

Contributing impermeable area (maximum) 2.2ha
Loss of Existing Flood Plain: Included with West of Kempston estimate
Additional Surface Water Run-off: 2200m³
NETT STORAGE REQUIREMENT: 2200m³
- E** WOOTTON EXPANSION

Contributing impermeable area (maximum) 22.1ha
Loss of Existing Flood Plain: 15,000m³
Additional Surface Water Run-off: 22,000m³ (based on 22ha of impermeable area)
NETT STORAGE REQUIREMENT: 37,000m³
- MINIMUM STORAGE REQUIRED: 1 65,300m³** (See Note 3)
- 1** Water Level Sensor/ telemetry Station (refer to IDB's standard detail 01)

2 IDB Access Route (7m width)

3 Flow Control Structure / existing throttle

4 Inflow Spillway / Outlet Pipe (screened)

5 Permanent Wet Pond

6 Predominantly Dry Pond or Fringe

7 Shallow Reedbed Fringe

8 Dense Tree Planting

9 Controlled Planting, min. 6m separation, flood tolerant slow propagating species.

10 Embankment impounding Flood Flows

11 Settlement Pond & Local Silt Disposal Area

12 Realignment of Bank / End Extension

13 Side Drainage Channel

14 Ground raising (to provide FFL freeboard)

15 Cycle bridge to be clear span above flood level.

16 Temporary route prior to A421 projects

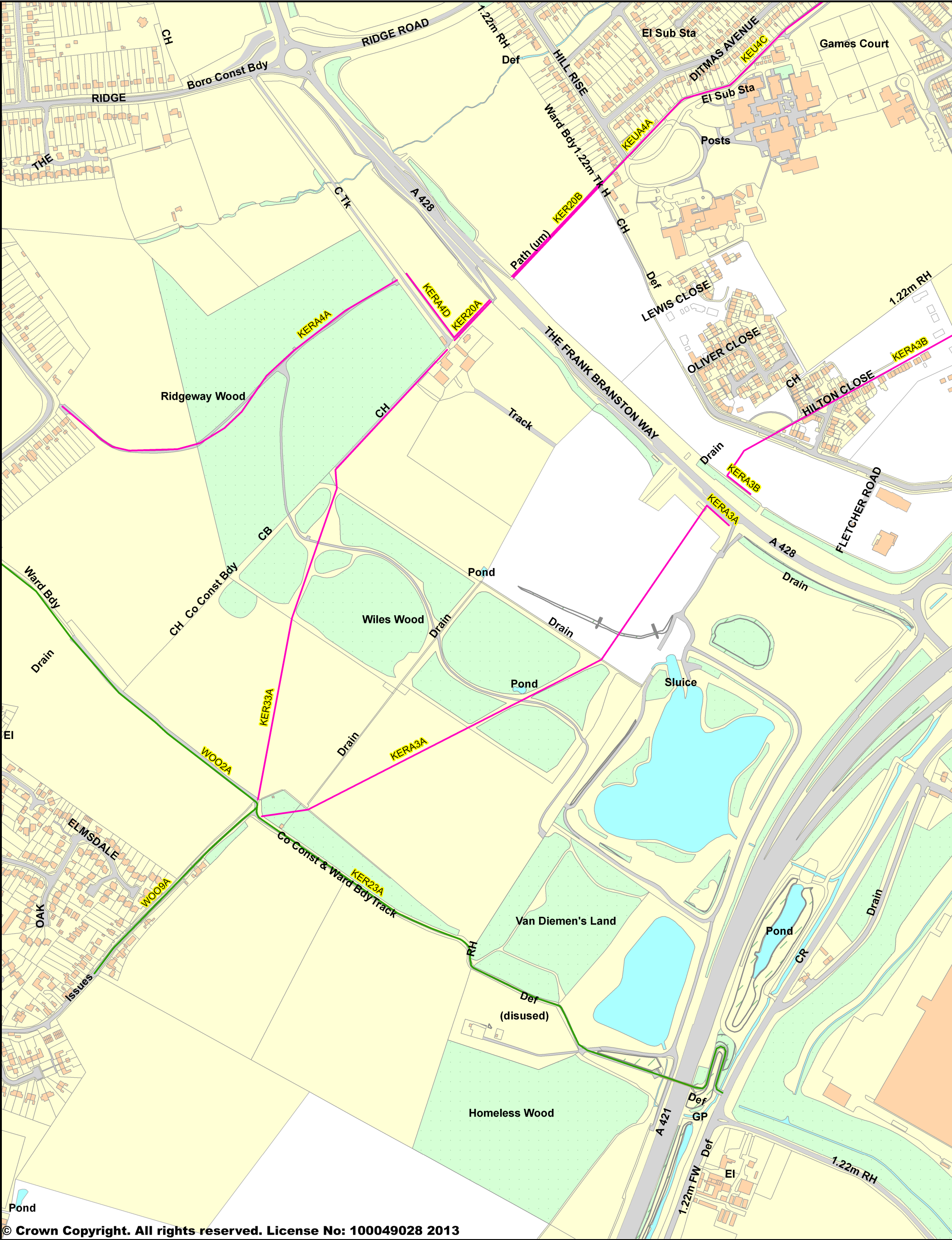
FOR INFORMATION ONLY



Client	Bedfordshire & River Ivel IDB		
Project	Developments West of Bedford Strategic Flood Facility		
Title	Master Plan		

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