



Milton Keynes Nature Green and Blue Infrastructure Strategy

Final main report

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Contents

1	Introduction	2
1.1	Introduction Purpose of this report	2
1.2	Milton Keynes	2
1.3	Milton Keynes City Council	2
1.4	Milton Keynes Infrastructure Study	3
1.5	Stakeholder group	
2	What is Green Infrastructure?	7
2.1	What is green infrastructure?	7
2.2	Legislation and planning policy	
3	Natural England's Green Infrastructure Framework	10
3.1	Introduction	10
3.2	Process journey for local planning authorities	10
3.3	NE Green Infrastructure Framework Principles	12
3.4	NE Green Infrastructure Framework Standards	
3.5	Mapping Tool	15
3.6	Green Infrastructure Design Guide	15
3.7	Implications for the NGBI Strategy	15
4	Nature, Green and Blue Infrastructure in Milton Keynes	17
4.1	Baseline NGBI	
4.2	The five benefit principles	
4.3	Principle 'why' 1: Nature rich beautiful places	
4.4	Nature rich beautiful places in Milton Keynes	29

4.5	Principle 'why' 2: Active and healthy places	35
4.6	Active and healthy places in Milton Keynes	37
4.7	Principle 'why' 3: Thriving and prosperous places	44
4.8	Thriving and prosperous places in Milton Keynes	46
4.9	Principle 'why' 4: Improved water management	49
4.10	Improved water management in Milton Keynes	51
4.11	Principle 'why' 5: Resilient and climate positive places	56
4.12	Resilient and climate positive places in Milton Keynes	58
5	Ecosystem Services	61
5.1	Ecosystem services and NGBI	61
5.2	Ecosystem services and benefits provided	63
5.3	Ecosystem disservices	69
5.4	NGBI assets	70
6	Demand for Nature, Green and Blue Infrastructure	78
6.2	Air quality	78
6.3	Population	79
6.4	Age profile	79
6.5	Index of Multiple Deprivation	79
6.6	Health, deprivation and disability domain	85
6.7	Population density	85
6.8	Health (ONS Census 2021)	87
6.9	Risk of flooding from surface water	87
6.10	Spatial prioritisation of catchments suitable for using natural flood management	90
6.11	Water quality	92
6.12	Water resource availability and abstraction reliability	95
6.13	NE Green Infrastructure Framework accessible natural greenspace inequalities layers	95

6.14	NE Green Infrastructure Framework standards	97
6.15	S1: Green Infrastructure Strategy standard	97
6.16	S2: Accessible Greenspace standards	98
6.17	Allot ments standards	105
6.18	Woodland access standard	105
6.19	S3: Urban Nature Recovery standard	107
6.20	S4: Urban Greening Factor standard	108
6.21	S5 Urban Tree Canopy Cover standard	109
7	Vision for the Strategy	113
7.1	Introduction	113
7.2	Stakeholder Vision Workshop	113
7.3	Milton Keynes NGBI Strategy: Vision	113
7.4	Milton Keynes NGBI Strategy: The five Natural England principles	113
7.5	Milton Keynes NGBI Strategy: Objectives	114
8	Nature, Green and Blue Infrastructure Framework and Action Plan	119
8.1	Introduction	119
8.2	Green Infrastructure Principles	119
8.3	Milton Keynes NGBI framework	119
8.4	Actions	120
8.5	Principle 'why' 1: Nature rich beautiful places	121
8.6	Principle 'why' 2: Active and healthy places	130
8.7	Principle 'why' 3: Thriving and prosperous places	139
8.8	Principle 'why' 4: Improved water management	147
8.9	Principle 'why' 5: Resilient and climate positive places	
8.10	Spatial expression of the NGBI Framework	157
9	Assessment of Recommended Growth Options and Potential Intensification Areas	162

9.1	Introduction	162
9.2	Ecosystem services and green infrastructure	162
9.3	Natural Capital Atlases	163
9.4	Environmental Benefits from Nature tool (EBN)	164
9.5	Natural England's Green Infrastructure Standards	165
9.6	Other standards likely to be required in major residential development based on the MK OSA	166
9.7	Use of Natural England Green Infrastructure Framework Standards and Ecosystem Services	167
9.8	Assessment locations	167
10	Recommended Growth Option 1: North of Olney	170
10.1	Location	170
10.2	Existing NGBI assets including agricultural land	170
10.3	Prescriptions and justifications	170
10.4	The Environmental Benefits from Nature Tool	173
11	Recommended Growth Option 2: West of Olney	176
11.1	Location	176
11.2	Existing NGBI assets including agricultural land	176
11.3	Prescriptions and justifications	176
12	Recommended Growth Option 3: North east of Newport Pagnell	179
12.1	Location	179
12.2	Existing NGBI assets including agricultural land	179
12.3	Prescriptions and justifications	179
13	Recommended Growth Option 4: North of Moulsoe	182
13.1	Location	182
13.2	Existing NGBI assets including agricultural land	
13.3	Prescriptions and justifications	182
14	Recommended Growth Option 5: North of M1 Motorway	185

14.1	Location	185
14.2	Existing NGBI assets including agricultural land	185
14.3	Prescriptions and justifications	186
15	Recommended Growth Option 6: West of Cranfield University	188
15.1	Location	188
15.2	Existing NGBI assets including agricultural land	188
15.3	Prescriptions and justifications	188
16	Recommended Growth Option 7: North of Woburn Sands	191
16.1	Location	191
16.2	Existing NGBI assets including agricultural land	191
16.3	Prescriptions and justifications	191
17	Recommended Growth Option 8: East of Fenny Stratford	194
17.1	Location	194
17.2	Existing NGBI assets including agricultural land	194
17.3	Prescriptions and justifications	194
18	Potential Intensification Area: Central Milton Keynes	197
18.1	Location	197
18.2	Existing NGBI assets	197
18.3	Prescriptions and justifications	197
19	Potential Intensification Area: Central Bletchley	200
19.1	Location	200
19.2	Existing NGBI assets	200
19.3	Prescriptions and justifications	200
20	Location of Future Country Parks	204
20.2	Country park accreditation	204
20.3	Milton Keynes City Council Open Space Assessment	205

20.4	Emberton Country Park	208
20.5	Area of search	209
20.6	Potential locations for future Country Parks	209
21	Delivering the Strategy	213
21.1	Delivering the NGBI strategy	213
21.2	Integrating the NGBI strategy	213
21.3	Managed, valued, monitored and evaluated	213
21.4	Management	213
21.5	Funding	216
21.6	Monitoring and evaluation	219
22	Policy Recommendations	231
22.1	Preparing a robust NGBI Policy	231
22.2	Existing Milton Keynes Green Infrastructure Policy NE4 (2015)	231
22.3	Best practice	232
22.4	Standards and targets	236
22.5	Draft NGBI policy recommendations for Milton Keynes	237
22.6	Nature rich beautiful places	237
22.7	Active and healthy places	239
22.8	Thriving and prospering places	241
22.9	Improved water management	242
22.10	Resilient and climate positive places	243
23	Appendix A: National Legislation and Planning Policy	245
23.1	The 25 Year Environment Plan	245
23.2	The Environment Act	245
23.3	Environmental Improvement Plan	246
23.4	Climate Change Act	248

23.5	National Planning Policy Framework	249
23.6	National Planning Practice Guidance	250
23.7	Implications for the NGBI Strategy	252
24	Appendix B: Summary of Existing Plan:MK Policies Relating to Green Infrastructure	253
24.1	Plan MK: Local Plan Policy	253
25	Appendix C: Regional Green Infrastructure Context	261
25.1	The Oxford-Cambridge Pan-Regional Partnership: Environmental principles	261
25.2	Integrated Water Management Framework	265
25.3	Buckinghamshire and Milton Keynes Natural Environment Partnership	266
25.4	Implications for the NGBI Strategy	270
26	Appendix D: The context for Green Infrastructure in Milton Keynes	271
26.1	Milton Keynes New Town	271
26.2	2018 Milton Keynes Green Infrastructure Strategy	274
26.3	The Parks Trust	274
26.4	Health and wellbeing	275
26.5	Implications for the NGBI Strategy	276
27	Appendix E: Milton Keynes to 2050	278
27.1	Milton Keynes Sustainability Strategy	278
27.2	The Greenest City: Physical and Natural Environment Vision	279
27.3	Milton Keynes Strategy for 2050	280
27.4	Seven big ambitions	280
27.5	A sustainable city	283
27.6	Green and blue city	283
27.7	Addressing climate change	287
27.8	Healthy and creative places	288
27.9	Transport and mobility	289

27.10	The New City Plan – Ambitions and Objectives Consultation 2023	289
27.11	New City Plan Themes	291
27.12	Implications for the NGBI Strategy	291
28	Appendix F: Assessment of Recommended Growth Options and Potential Intensification Areas: Ecosystem Services Assessmen	t
	Context	293
28.1	Recommended Growth Option 1: North of Olney: Ecosystem services assessment	293
28.2	Recommended Growth Option 2: West of Olney: Ecosystem services assessment	297
28.3	Recommended Growth Option 3: North east of Newport Pagnell: Ecosystem services assessment	301
28.4	Recommended Growth Option 4: North of Moulsoe: Ecosystem services assessment	305
28.5	Recommended Growth Option 5: North of M1 Motorway: Ecosystem services assessment	309
28.6	Recommended Growth Option 6: West of Cranfield University: Ecosystem services assessment	
28.7	Recommended Growth Option 7: North of Woburn Sands: Ecosystem services assessment	316
28.8	Recommended Growth Option 8: East of Fenny Stratford: Ecosystem services assessment	320
28.9	Potential Intensification Area: Central Milton Keynes: Ecosystem services assessment	
28.10	Potential Intensification Area: Central Bletchley: Ecosystem services assessment	328

Tables

Table 4.1: NGBI assets in Milton Keynes	18
Table 4.2: NGBI assets grouped into five Natural England Green Infrastructure Framework benefit principles	24
Table 5.1: Ecosystem services and benefits provided	64
Table 5.2: NGBI assets and ecosystem services	71
Table 6.1: Age group of usual residents in Milton Keynes, South East England and England (ONS Census 2021)	81
Table 6.2: Domains of deprivation	81
Table 6.3: Age-standardised proportion of usual residents by self-reported health (ONS Census 2021)	87
Table 6.4: Classifications of water bodies in Milton Keynes	92
Table 6.5: Area of open spaces in Milton Keynes	101
Table 8.1: NGBI framework: Nature rich beautiful places	122
Table 8.2: NGBI framework: Active and healthy places	131
Table 8.3: NGBI framework: Thriving and prosperous places	140
Table 8.4: NGBI framework: Improved water management	148
Table 8.5: NGBI framework: Resilient and climate positive places	153
Table 8.6: NGBI framework actions (location-specific)	158
Table 10.1: Potential impact of habitat change at three time points	174
Table 20.1: Country Parks proposed standards for Milton Keynes (MKCC OSA)	207
Table 21.1: Monitoring and evaluation framework: Nature rich beautiful places	220
Table 21.2: Monitoring and evaluation framework: Active and healthy places	222
Table 21.3: Monitoring and evaluation framework: Thriving and prosperous places	224
Table 21.4: Monitoring and evaluation framework: Improved water management	226
Table 21.5: Monitoring and evaluation framework: Resilient and climate positive places	228

Table 22.1: A suite of 'exemplar' green infrastructure policies derived from the highest-scoring policies identified in the Central So	otland local
authority green infrastructure policy review	234
Table 23.1: Overview of the benefits of green infrastructure set out in PPG for the Natural Environment	252
Table 24.1: Existing Policy NE4: Green infrastructure	254
Table 24.2: Plan:MK policy relating to green infrastructure	255
Table 27.1: Milton Keynes Strategy 2050 Success, challenges and opportunities	282

Figures

Figure 1.1: Milton Keynes City Council and surrounding local authority boundaries	5
Figure 3.1: Overview of the process of using the Natural England Green Infrastructure Framework to develop green infrastructure strate and local policy	
Figure 3.2: Natural England's 15 green infrastructure principles	
Figure 3.3: The three-tier structure of the green infrastructure standards, taken from the Natural England Green Infrastructure Framewo	ork 14
Figure 4.1: Nature rich beautiful places in Milton Keynes	33
Figure 4.2: Designated Biodiversity Sites and Biodiversity Opportunity Areas	34
Figure 4.3: Active and healthy places in Milton Keynes	43
Figure 4.4: Thriving and prosperous places in Milton Keynes	48
Figure 4.5: Improved water management in Milton Keynes	55
Figure 5.1: Number of ecosystem services provided by the NGBI assets in Milton Keynes	76
Figure 6.1: Index of Deprivation in Milton Keynes	83
Figure 6.2: IMD Health, Deprivation and Disability Decile in Milton Keynes	84
Figure 6.3: Population density per sq km in LSOAs in Milton Keynes (mid-2020)	86
Figure 6.4: Risk of flooding from surface water (1 in 100 year) in LSOAs in Milton Keynes weighted by population data (mid-2020)	89
Figure 6.5: Spatial prioritisation of catchments suitable for using natural flood management in Milton Keynes	91
Figure 6.6: Water Framework Directive river water body catchments in Milton Keynes	94
Figure 6.7: Water resource availability and abstraction reliability in Milton Keynes	96
Figure 6.8: Doorstep greenspace in Milton Keynes	102
Figure 6.9: Local, neighbourhood, wider neighbourhood and district greenspace in Milton Keynes	103
Figure 6.10: Accessibility of forests and woodlands in Milton Keynes	106
Figure 6.11: Natural England greenness grid in Milton Keynes	111

Figure 8.1: NGBI framework actions (location-specific)	160
Figure 9.1: RGOs and PIAs in Milton Keynes	169
Figure 10.1: Changes in natural capital assets before and after development	175
Figure 25.1: Location of Milton Keynes within the Oxford to Cambridge Region	261
Figure 25.2: Water challenges in OxCam. Taken from the Oxford to Cambridge Programme Update February 2023	266
Figure 25.3: Buckinghamshire and Milton Keynes NEP green infrastructure opportunities map (May 2018)	269
Figure 26.1: Extract from 'Milton Keynes Infrastructure' Milton Keynes development Corporation (1972)	272
Figure 27.1: The seven big ambitions for Milton Keynes, set out in the MK Strategy for 2050	281
Figure 27.2: Milton Keynes Strategy to 2050 Spatial Strategy	285
Figure 27.3: Potential future green infrastructure illustrated in MK Strategy	286

Acronyms & Abbreviations

AGS Accessible Greenspace Standards

ANGSt Accessible Natural Greenspace Standards

AQMA Air Quality Management Area

BBOWT Berkshire, Buckinghamshire and Oxfordshire Wildlife Trust

BMERC Buckinghamshire and Milton Keynes Environmental Records Centre

BMKWT Bedford and Milton Keynes Waterway Trust

BNG Biodiversity Net Gain

BNS Biological Notification Site

BOA Biodiversity Opportunity Area

CCC Climate Change Committee

CICES Common International Classification of Ecosystem Services

CIL Community Infrastructure Levy

CMK Central Milton Keynes

CRoW Countryside and Rights of Way

DEFRA Department for Environment Food and Rural Affairs

EBN Environmental Benefits from Nature

EIP Environmental Improvement Plan

FRM Flood Risk Management

GFA Green Flag Award

GHG Greenhouse Gas

GI Green Infrastructure

ha Hectares

IMD Index of Multiple Deprivation

IWMF Integrated Water Management Framework

LA Local Authority

LNR Local Nature Reserve

LNRS Local Nature Recovery Strategy
LSOA Lower Layer Super Output Area

LWS Local Wildlife Site

MK Milton Keynes

MKCC Milton Keynes City Council

MKISS Milton Keynes Infrastructure Study and Investment Strategy

NEP Natural Environment Partnership

NFM Natural Flood Management

NGBI Nature, Green and Blue Infrastructure

NNS Non-native Species

NPPF National Planning Policy Framework

NSALG National Society of Allotments and Leisure Gardeners

OSA Open Space Assessment

PIA Potential Intensification Area

PPG Planning Policy Guidance

PROW Public Rights of Way

PRP Oxford to Cambridge Pan-Regional Partnership

RGO Recommended Growth Option

RoFSW Risk of Flooding from Surface Water

SFRA	Strategic Flood Risk Assessment
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SPD Supplementary Planning Document

SSSI Site of Special Scientific Interest

SuDS Sustainable Drainage System

WFD Water Framework Directive

1 Introduction

1.1 Purpose of this report

- 1.1.1 Lepus Consulting has been commissioned to prepare a Nature, Green and Blue Infrastructure (NGBI) Strategy on behalf of Milton Keynes City Council (MKCC). The NGBI Strategy has two main purposes:
 - To contribute to the evidence base for the preparation of the new local plan (the New City Plan) which will shape the development of the city to 2050, and
 - Support and promote the wider understanding of NGBI in the authority area.

1.2 Milton Keynes

1.2.1 In this report 'Milton Keynes' refers to the local authority (LA) area of MKCC and the 'city' refers to the city of Milton Keynes. Milton Keynes was awarded city status in 2022, prior to this, the local authority was called Milton Keynes Council.

1.2.3 Milton Keynes was formally designated as a new town in 1967 with an initial projected population of 250,000, however it is anticipated that this will grow to 500,000 by 2050. According to the 2021 census, the population of Milton Keynes was 287,100 1. A map illustrating the location of Milton Keynes is provided in **Figure 1.1.**

1.3 Milton Keynes City Council

1.3.1 MKCC seeks to be innovative and ambitious in relation to taking environmental action. Planned as New Town, the strategic greenspace network was established from the outset as an integral element of the design of the city. The network of natural and semi-natural green spaces is core to the heritage and identity of the city.

^{1.2.2} Milton Keynes is located within the county of Buckinghamshire and covers an area of 309 km². The city of Milton Keynes incorporates the towns of Bletchley, Wolverton and Stony Stratford. The northern regions of the LA area are rural in character and are interspersed with small villages and the town of Olney.

 $^{^{\}rm 1}$ ONS (2023) How life has changed in Milton Keynes: Census 2021. Accessed on 13/03/2023. Available at:

https://www.ons.gov.uk/visualisations/censusareachanges/E06000042/

MK NGBI Strategy August 2023

- 1.3.2 MKCC believes that addressing climate change and biodiversity loss are critical to creating a liveable, sustainable city. This ambition is captured in the adopted local plan, Plan:MK², which sets out a vision for Milton Keynes as a green and spacious city, and the Sustainability Strategy (2019-2050) ³ which confirms the aspiration to become a world-leading, low carbon, sustainable city.
- 1.3.3 MKCC is committed to protecting and enhancing biodiversity and leaving the natural environment in a better state than we find it in today. MKCC has prepared a document supporting the vision to become the 'Greenest City in the World' 4, which sets out the three pillars to achieve this: 'nature', 'water' and 'trees'. This document is considered in more detail in **Appendix E**.

1.4 Milton Keynes Infrastructure Study

1.4.1 The Milton Keynes Infrastructure Study and Investment Strategy (MKISS) will utilise outputs from the NGBI study. The MKISS amongst other outputs will develop an approach to infrastructure prioritisation and evidence the cost of the infrastructure required, and likely funding sources (including developer funding), and funding gaps. The viability study will address overall deliverability of the plan to determine whether the policy requirements can be viably delivered.

07/03/23]

² Milton Keynes Council (2019) 'Plan:MK 2016 – 2031' Available at https://www.milton-keynes.gov.uk/sites/default/files/2022-05/PlanMK%20Adoption%20Version%20%28March%202019%29.pdf [Accessed on

³ Milton Keynes Council (2019) 'MK Sustainability Strategy 2019-2050' Available at https://www.milton-keynes.gov.uk/sites/default/files/2022-07/2019%2001%2015%20sustainability%20strategy%20v4.pdf [Accessed on 07/03/23]

⁴ Milton Keynes Council (2019) 'The Greenest City in the World - Physical and Natural Environment: Position Statement'

1.5 Stakeholder group

- 1.5.1 This report has been shaped through a stakeholder-led approach. The stakeholder group comprises representatives from the following organisations and departments in MKCC:
 - Berkshire, Buckinghamshire and Oxfordshire Wildlife Trust (BBOWT)
 - Environment Agency
 - MKCC Development Management and Policy Planner
 - MKCC Flood and Water Management Officer
 - MKCC Head of Environment and Waste
 - MKCC Public Health Officer
 - MKCC Strategic Landscape & Countryside Manager
 - The Parks Trust.

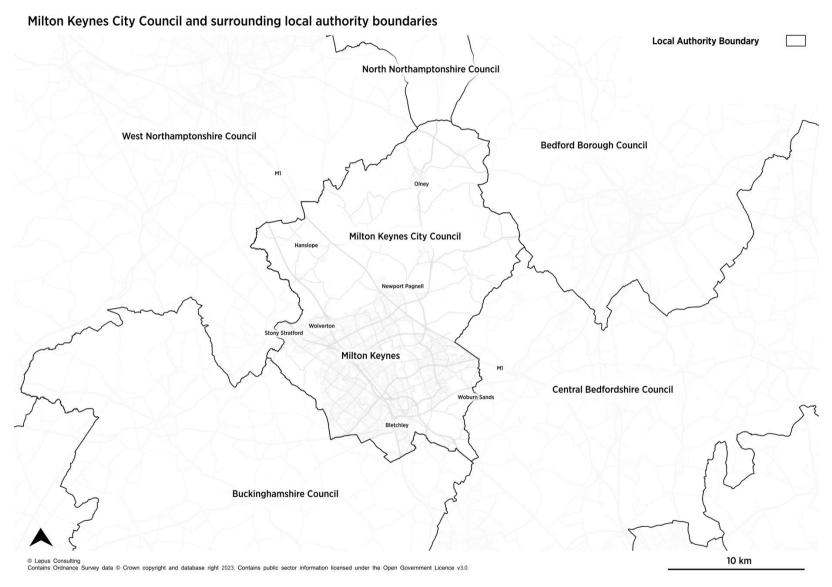


Figure 1.1: Milton Keynes City Council and surrounding local authority boundaries

2 What is Green Infrastructure?

2.1 What is green infrastructure?

- 2.1.1 Green infrastructure is a network of multi-functional green space and other features, urban and rural, which can deliver quality of life and environmental benefits for communities⁵.
- 2.1.2 In this NGBI Strategy, green infrastructure will be considered as follows:
 - A strategically planned network of natural and seminatural areas with other environmental features, that compliments and, in some cases, replaces the need for 'grey' infrastructure, using nature-based solutions.
 - Green infrastructure comprises multi-functional green space and other green features. It includes parks, open spaces, playing fields, woodlands and other seminatural features such as street trees, allotments and private gardens.

2.1.3 GI can deliver a range of ecosystem services. Ecosystem services is an umbrella term for the range of services and benefits people derive from nature (our natural capital), such as clean air and water, regulation of risks (floods, droughts, overheating), health and well-being benefits, food and energy.

2.2 Legislation and planning policy

- 2.2.1 Natural England's Green Infrastructure Framework recommends the preparation of a green infrastructure strategy which should review the Natural England Green Infrastructure Principles, current local, regional and national planning policy and planning practice guidance, as well as how green infrastructure will fit into the local planning framework.
- 2.2.2 A review of key documents and sources of guidance relating to green infrastructure are provided in Appendix A to E, and includes the following.

Blue infrastructure includes rivers, streams, canals and water bodies, as well green roofs and walls and sustainable drainage systems (SuDS).

⁵ Town and Country Planning Association. What is Green Infrastructure? Available at: https://tcpa.org.uk/what-is-green-infrastructure/ [Accessed on 08/03/23]

Appendix A: National legislation and planning policy

- The 25 Year Environment Plan
- The Environment Act
- Environmental Improvement Plan
- Climate Change Act
- National Planning Policy Framework
- National Planning Practice Guidance

Appendix B: Summary of Existing Plan:MK Policies Relating to Green Infrastructure

• Plan MK: Local Plan Policy

Appendix C: Regional green infrastructure context

- The Oxford-Cambridge Pan-Regional Partnership: Environmental principles
- Integrated Water Management Framework
- The environment and the economy
- Buckinghamshire and Milton Keynes Natural Environment Partnership

Appendix D: The context for green infrastructure in Milton Keynes

- Milton Keynes New Town
- 2018 Milton Keynes Green Infrastructure Strategy

- The Parks Trust
- Health and wellbeing

Appendix E: Milton Keynes to 2050

- Milton Keynes Infrastructure Study
- Milton Keynes Sustainability Strategy
- The Greenest City: Physical and Natural Environment Vision
- Milton Keynes Strategy for 2050
- Seven big ambitions
- A sustainable city
- Green and blue city
- · Addressing climate change
- Healthy and creative places
- Transport and mobility
- The New City Plan Ambitions and Objectives Consultation 2023
- New City Plan Themes

3 Natural England's Green Infrastructure Framework

3.1 Introduction

3.1.1 Launched in January 2023, Natural England's Green Infrastructure Framework provides a structure to analyse where greenspace in urban environments is needed most. The Natural England Green Infrastructure Framework has been prepared to help achieve the Government's 25 Year Environment Plan, the United Nation's Sustainable Development Goals and the Convention on Biological Diversity Targets.

3.1.2 Natural England state that the Green Infrastructure Framework is vital for improving the quality of life for urban communities and creating climate resilient towns and cities across England. Along with Biodiversity Net Gain (BNG), the Green Infrastructure Framework is a powerful tool to help deliver the Nature Recovery Network by planning for and investing in space for nature in our urban areas. The Green Infrastructure Framework provides clear guidance about the quantity and quality of greenspace required to unlock multiple benefits for climate, health and prosperity, with headline targets to increase 'green cover' to 40% in urban residential areas and that residents should be able to access a greenspace (or blue space) within 15 minutes' walk of their home.

3.2 Process journey for local planning authorities

3.2.1 The Green Infrastructure Framework sets out the 'Process Journey' for Local Planning Authorities in relation to the preparation of green infrastructure policies and strategies. The recommended process for using the Natural England Green Infrastructure Framework to develop green infrastructure strategies and local policy is presented in Figure 3.1.



Figure 3.1: Overview of the process of using the Natural England Green Infrastructure Framework to develop green infrastructure strategies and local policy

3.3 NE Green Infrastructure Framework Principles

- 3.3.1 Natural England has developed a set of green infrastructure principles that underpin the Natural England Green Infrastructure Framework. The principles are intended to provide a baseline to develop stronger green infrastructure policy and delivery. The principles cover the Why, What and How of good green infrastructure, as summarised in **Figure 3.2.**
- 3.3.2 The Natural England Green Infrastructure Framework mapping and principles will be considered further in the next stage of the Milton Keynes NGBI Strategy.

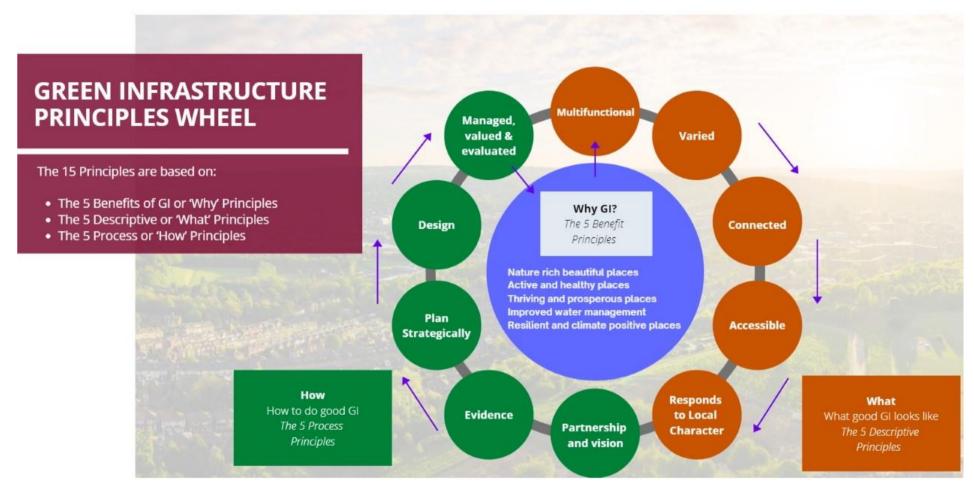


Figure 3.2: Natural England's 15 green infrastructure principles

3.4 NE Green Infrastructure Framework Standards

3.4.1 The Green Infrastructure Standards will comprise three levels, summarised below. At the time of preparing this NGBI Strategy only the five headline standards are available. The 'Menu of Standards' and the 'Signposting Table' are to be published later in 2023.

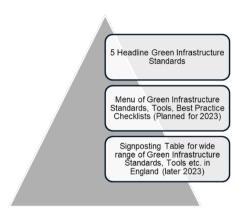


Figure 3.3: The three-tier structure of the green infrastructure standards, taken from the Natural England Green Infrastructure Framework

3.4.2 The Natural England Green Infrastructure Framework Standards are voluntary, however, they have been designed to help meet and support national and local planning policy. The Natural England Green Infrastructure Framework is structured around five key standards. For each standard there are measures to be considered at the 'Area Wide' level as well as measures to be considered in 'Major Development' proposals. The standards are detailed in Chapter 6.

3.5 Mapping Tool

3.5.1 The Natural England Green Infrastructure Framework is supported by numerous data sets which are valuable for identifying green infrastructure assets and communities where there are deficits in accessible green space. The Green Infrastructure Mapping⁶ tool helps to identify areas of multiple deprivation and limited access to greenspace, allowing more targeted distribution of funds and resources, helping to address inequalities around health, biodiversity, climate change and sustainable growth.

3.6 Green Infrastructure Design Guide

3.6.1 The Green Infrastructure Design Guide ⁷ supports the National Model Design Code and provides comprehensive advice on the planning, design, delivery and management of good quality green infrastructure. The Design Guide sets out how to apply the Natural England Green Infrastructure Framework including how to design green infrastructure as the 'buildings blocks' of a larger, multifunctional interconnected network.

3.7 Implications for the NGBI Strategy

3.7.1 Natural England has published the Green Infrastructure Framework and the associated Principles and Standards to help guide the preparation of green infrastructure strategies. These guidance documents help to clarify the processes involved in the preparation of green infrastructure strategies and introduce new tools to assess need, as well as guidance in the design and implementation of green infrastructure.

⁶ Natural England (2023) Green Infrastructure Mapping Tool. Available at https://designatedsites.naturalengland.org.uk/GreenInfrastructure/Map.aspx [Accessed 28/06/23]

⁷ Natural England (2023) Green Infrastructure Planning and Design Guide. Available at https://designatedsites.naturalengland.org.uk/GreenInfrastructure/DesignGuide.aspx [Accessed 28/06/23]

4 Nature, Green and Blue Infrastructure in Milton Keynes

4.1 Baseline NGBI

- 4.1.1 Milton Keynes is characterised by different types of NGBI. **Table 4.1** provides a listing of the various NGBI assets that are found in Milton Keynes.
- 4.1.2 The NGBI assets have been grouped into NGBI typologies based on the guidance presented in the Natural England Green Infrastructure Framework and adapted to reflect the assets present in Milton Keynes. This process has been informed by MKCC Open Space Assessment (unpublished draft, 2023) which provides crucial evidence regarding the current level of provision of the different types of open space within Milton Keynes.

Table 4.1: NGBI assets in Milton Keynes

NGBI Typology	Functionality	NGBI Assets
Parks and gardens	Parks and Gardens provide a significant green infrastructure asset in Milton Keynes. They encompass large scale composite green infrastructure features such as Linear Parks and smaller parcels of land such as Pocket Parks. Parks and Gardens feature high levels of multifunctionality that deliver a wide range of ecosystem services. Large parks form the cornerstone of many subregional green infrastructure networks. Optimum location is near and throughout urban areas. Examples of Parks and Gardens in Milton Keynes include Ouzel Valley Park (Linear Park) and Campbell Park (District Park).	 Country parks District parks Linear parks Local parks Pocket parks Private domestic gardens Civic spaces and formal gardens
Amenity Greenspace	Amenity Greenspaces often provide a supplement to larger spaces such as Local Parks. Their main purpose is to provide enhancement of the appearance and visual amenity of the area. They may provide opportunities for informal play close to home or work and support wildlife conservation. Examples include Bury Field in Newport Pagnell and Horsefair Green in Stony Stratford.	 Common land⁸ Village greens Paddocks

⁸ Registered common land

Natural and semi- natural greenspaces	Natural greenspaces are defined by Natural England as "places where human control and activities are not intensive so that a feeling of naturalness is allowed to predominate."9 These areas provide strong multifunctional ecosystem services that contribute to the diversity of the NGBI network in Milton Keynes. They can help protect, enhance, restore and create habitats which in turn provide benefits for people, business and nature. It is important that habitats are inter-connected and maintained at a high and stable quality. Milton Keynes includes a number of sites that are protected for their nature conservation value. Milton Keynes has two whole Sites of Special Scientific Interest (SSSI) and part of Yardley Chase SSSI, one Local Nature Reserve (LNR) and 33 Local Wildlife Sites (LWS). A National Nature Reserve (NNR) named 'King's Wood and Rushmere' is located outside but in close proximity to the south east corner of the MKCC LA boundary (see Figure 4.2).	 Broadleaved woodlands Coniferous woodlands Mixed woodlands Ancient woodland Grasslands Hedgerows
Traffic-free access network	Milton Keynes is served by a strong network of multifunctional traffic-free access routes that often follow historical linear landscape features. They are principally used for commuting (walking and cycling) and for outdoor recreation. These routes are multifunctional and provide opportunities for biodiversity enhancement. Vegetation throughout the routes is managed and the provision of bins, dog bins and sitting area is common.	Leisure routesRedwaysPRoW (footpaths and bridleways)
Transport network	Green spaces such as roadside grass verges are integrated into the transport network throughout Milton Keynes. These spaces provide an important buffer between road and rail traffic and areas nearby. These spaces provide multifunctional ecosystem services including biodiversity and visual amenity enhancements.	Road islandRoadside grass vergesRailway corridor

⁹ Natural England (2023) Glossary of Terms. Accessed 10/03/2023. Available at: https://designatedsites.naturalengland.org.uk/GreenInfrastructure/Glossary.aspx

Outdoor sports facilities	Formal and informal outdoor sports facilities support engagement in recreation, sport, play and exercise. They often also provide facilities of supporting use such as changing rooms and toilets. Playing surfaces can be natural or manmade. Natural surfaces offer greater multifunctionality of green infrastructure. Not all outdoor sports facilities are publicly available. For example, school playing fields are usually only used by school children. The same is true of certain sports venues such as tennis clubs and golf courses. Smaller parcels of green infrastructure in this category include children's natural play spaces, skateparks, ball courts and other open space provision for teenagers. Access is an important consideration when reviewing this resource; formal and informal outdoor recreation opportunities should be balanced. Indirect benefits include flood risk management and natural drainage, landscape enhancements and opportunities for communities to socialise.	 Recreation ground Golf courses Equestrian centres Bowling green Natural sports pitches Artificial sports pitches Natural ball court Artificial ball court Multi use games areas (MUGAs) Skateparks Children's natural play space
Religious spaces	Cemeteries, burial grounds and churchyards provide areas for quiet contemplation. They can be linked with the promotion of wildlife conservation and biodiversity enhancement or preservation of the local archaeology.	Private cemeteryLocal authority cemeteryChurchyard
Food growing areas	Food growing areas have the potential to supplement the production of fruit and vegetables in Milton Keynes. They also provide cultural services including health and wellbeing benefits.	 Allotments Orchards Community growing areas

Blue infrastructure	Blue infrastructure refers to urban water infrastructure including rivers, lakes and ponds. Blue infrastructure provides a multitude of ecosystem services including the provision of water, flood risk reduction and habitats for wildlife. Milton Keynes benefits from a strong network of blue infrastructure assets. The River Ouzel and the Grand Union Canal cross through the city and the River Great Ouse is located in close proximity to the northern extent of the city. Numerous lakes and ponds are also located within Milton Keynes including Furzton Lake and Willen Lake (see Figure 4.5).	 Wetlands Watercourses Canals Sustainable urban drainage systems (SuDS) Reedbeds Lakes and standing waters Ponds Modified waters (reservoirs)
Architectural features	New or existing development can include a range of 'building blocks' that draw on natural processes and aim to complement or mimic natural processes that would take place in semi-natural habitats. Benefits of these types of green infrastructure include sustainable drainage, mitigating the urban heat island effect by providing evaporative cooling, enhanced energy efficiency and the enhancement of habitat connectivity across areas that are lacking in habitat diversity.	 Intensive green roofs Extensive green roofs Biodiverse extensive green roofs Brown roofs Biosolar roofs Blue roofs Green facades Living walls Balcony gardens
Civic spaces	Civic spaces are often incorporated into new developments to provide settings for civic buildings, public demonstrations, and community events. Civic spaces provide cultural services including health and wellbeing benefits and support social inclusion. Civic spaces can also include planting to enhance habitat connectivity across areas that are lacking in habitat diversity.	 Market squares Trees in hard landscapes Building fabric, furniture and utility structures Features for species Flower beds Ground level planters

Heritage features	Heritage features provide cultural services by contributing to the character and	Scheduled Monuments
and the historic	sense of identity in Milton Keynes. These features often overlap with green	Conservation Areas
environment	infrastructure assets including parks and woodlands.	Listed Buildings

4.2 The five benefit principles

- 4.2.1 The Natural England Green Infrastructure Framework sets out five benefits of green infrastructure or 'why' principles:
 - Nature rich beautiful places
 - Active and healthy places
 - Thriving and prosperous places
 - Improved water management
 - Resilient and climate positive places
- 4.2.2 NGBI assets in Milton Keynes have been grouped into these five principles, as set out in **Table 4.2.** However, many NGBI assets are multifunctional and will contribute to more than one of the 'benefits'.
- 4.2.3 A detailed description of each of the five principles and the local context in Milton Keynes is presented from **Section 4.3** to **4.11**.

Table 4.2: NGBI assets grouped into five Natural England Green Infrastructure Framework benefit principles

Nature rich beautiful places	Active and healthy places	Thriving and prosperous places	Improved water management	Resilient and climate positive places
 Broadleaved woodlands Coniferous woodlands Mixed woodlands Grasslands Hedgerows Reedbeds 	 Country parks District parks Linear parks Local parks Pocket parks Private domestic gardens Civic spaces and formal gardens Common land (RCL) Village greens Children's natural play space Leisure routes Redways PRoW (footpaths and bridleways) Recreation ground Golf courses Equestrian centres Bowling green Natural sports pitches Artificial sports pitches Natural ball court Artificial ball court 	 Scheduled Monuments Conservation Areas Listed Buildings Visitor centres in parks Landscape character 	 Wetlands Watercourses Canals Sustainable urban drainage systems (SuDS) Lakes and standing waters Ponds Modified waters (reservoirs) Flood zones 	 Road islands Roadside grass verges Railway corridor Intensive green roofs Extensive green roofs Biodiverse extensive green roofs Brown roofs Biosolar roofs Blue roofs Green facades Living walls Balcony gardens Market squares Trees in hard landscapes Building fabric, furniture and utility structures Features for species Flower beds Ground level planters

 Multi use games areas (MUGAs) Skate parks Food growing areas (allotments, orchards and community growing areas) Paddocks Private cemetery Local authority cemetery Churchyard 	
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4.3 Principle 'why' 1: Nature rich beautiful places

4.3.1 NGBI supports nature to recover and thrive everywhere, in towns, cities and countryside, conserving and enhancing natural beauty, wildlife and habitats, geology and soils, and our cultural and personal connections with nature.

Description of this principle

- 4.3.2 Natural England's description of this principle provides a useful summary of this issue and how NGBI can help to achieve the associated planning objectives¹⁰, summarised below.
- 4.3.3 Despite some gains, overall biodiversity loss has been accelerating in recent years in England. Habitats are becoming more fragmented, and many individual species are in decline. Soil loss and degradation through agriculture, neglect, and damage to sites with important geological and fossil records and mineral extraction are causing an overall loss to geodiversity.

- 4.3.4 There is a recognition from government and across the environmental sector that action at both broad landscape and local scales is required. Planning NGBI in a strategic way should seek to identify locations where individual gains can be made in areas where provision is poor and there is a need, even if this does not complement existing protected sites.
- 4.3.5 There is also a recognition that biodiverse environments are the foundation for the flow of other NGBI benefits and cannot be planned or managed in isolation from other NGBI benefits. Therefore, the design and implementation of NGBI should achieve a measurable increase in biodiversity through the creation, restoration, enhancement and connectivity of new and existing habitats and sites.

https://designatedsites.naturalengland.org.uk/GreenInfrastructure/downloads/GreenInfrastructurePrinciples.pdf [Accessed 21/04/2023]

¹⁰ Natural England (2023) Natural England Green Infrastructure Principles (Detailed version, date January 2023). Available at:

- 4.3.6 Biodiversity Net Gain (BNG) is an Environment Act requirement for new development to deliver a minimum 10% increase in biodiversity after development, compared to the level before, which can provide an investment mechanism for both on-site and off-site green infrastructure. This can be achieved by either enhancing existing habitats or creating new ones. BNG can therefore be used to both raise the quality of existing green and blue spaces (such as river restoration) and provide new green infrastructure.
- 4.3.7 At a regional level, the Oxford to Cambridge Pan Regional Partnership has set an environmental objective to deliver 20% Biodiversity Net Gain and to double the area of land managed for nature across the region to contribute to the Government's 2030 target.
- 4.3.8 Local Nature Recovery Strategies (LNRSs) will also be used to identify how habitats can deliver wider environmental benefits, which may also improve people's access to green infrastructure.

4.3.9 Urban landscapes can be rich in wildlife and help support nature's recovery. Significant amounts of wildlife-rich habitat exist in Local Nature Reserves (LNRs), that are often within or close to urban settings. These areas provide important NGBI for local communities and can support rare as well as common species. Urban areas are particularly important for pollinators and relatively small areas of habitat such as green roofs can be important especially in combination with public parks and private gardens which are managed for wildlife. Welcoming nature rich spaces can also be crucial in raising awareness and appreciation of what other benefits NGBI can offer.

- 4.3.10 Although native plant species are essential to support wider biodiversity, creating beautiful places in an urban context, where the diversity of trees, shrubs and plants enrich townscapes, non-native species will also be vital. Many gardens mimic a dynamic woodland edge habitat, replicating the succession between meadow through tall herbaceous vegetation to scrub and high canopy. This is a highly energised habitat with a large diversity of non-native plants. Historic public parks and cemeteries were also planted with a rich palette of trees from around the world to create interest. The treescapes of many Conservation Areas are also notable along with allotments, orchards, and fruit trees all of which make a huge contribution but are often non-native species.
- 4.3.11 NGBI can create the opportunity to strengthen a communities' connection with its surroundings regardless of background or experience. There can be strong cultural associations with nature whether they are based on common insects in an area noted by long standing residents, or the comparative reflections of recent arrivals to a location which has plants familiar from another country. These historical and cultural links can be used as an alternative/additional hook for creating connections, including with traditionally hard to reach communities. Nature on the doorstep can also enable children to connect with nature in the everyday journey to school or in their leisure activities.

4.4 Nature rich beautiful places in Milton Keynes

- 4.4.1 The grid road system in Milton Keynes combines habitats such as woodland, hedgerows and ponds into the fabric of the city. Through planning and management these discreet units are connected through a series of linear parks along the water corridors including, the River Great Ouse, the Ouzel, Loughton Brook and Grand Union canal.
- 4.4.2 Milton Keynes has a diverse range of habitats and species of importance, such as lowland mixed deciduous woodland, ancient and veteran trees, orchards and unimproved meadows. Riparian and wetland habitats provide valuable habitat connectivity within the landscape and support populations of breeding and overwintering birds, Otter and Great Crested Newt¹¹.
- 4.4.3 Milton Keynes contains several designated sites and Biodiversity Opportunity Areas (BOAs):
 - Howe Park Wood SSSI
 - Oxley Mead SSSI
 - Yardley Chase SSSI (partially)
 - Blue Lagoon Local Nature Reserve (LNR)

- Greensand Ridge BOA
- Ouse Valley BOA
- Whaddon Chase BOA
- Yardley Chase BOA
- 4.4.4 Blue Lagoon LNR is the only LNR in Milton Keynes. This LNR is located in Bletchley and comprises a former brick works site that opened in 1929 and covers 116 acres. The clay pits on the site flooded in 1947, and later they were filled and landscaped. The site officially opened in 1994 to the public. Wildlife that has been spotted at the Blue Lagoon includes badgers, bats, grass snakes, great crested newts, butterflies, damselflies, dragonflies and over a dozen bird species 12. Blue lagoon is used predominantly by walkers. The site has ponds and lakes within which allow for fishing and scuba diving.

¹¹ The Buckinghamshire & Milton Keynes Natural Environment Partnership (2023) Forward to 2030: Biodiversity Action Plan. Available at: https://bucksmknep.co.uk/forward-to-2030/ [Accessed 24/04/23]

¹² Milton Keynes City Council (2023) Blue Lagoon. Available at: https://www.milton-keynes.gov.uk/environment-parks-and-open-spaces/blue-lagoon [Accessed 02/05/23]

- 4.4.5 The Biodiversity Action Plan for Buckinghamshire and Milton Keynes ¹³ states that Milton Keynes faces high development pressure, with associated land use change and possible habitat fragmentation as a result of the expected growth. The key pressures and threats facing biodiversity in Milton Keynes are considered to be:
 - Climate Change, which can exacerbate many of the other pressures and become a threat to species unable to adapt quickly enough;
 - Development and associated habitat loss, change and/or fragmentation;
 - Flood risk management, land drainage and river/riparian management, including historic river channel engineering, leading to a change of habitat and species composition;
 - Over-abstraction of water;
 - Land management, including land use change, intensification, changes in farming practices;
 - Pollution including, waste, polluted runoff, soil erosion, sound, light, noise, chemicals and particulates;
 - Non-native species, diseases and pests; and

- Policy changes, ability to influence, resourcing.
- 4.4.6 Milton Keynes Strategy for 2050¹⁴ states that the physical and natural environment vision is to:
 - Conserve and protect existing sites of biodiversity, wildlife areas and the principles of multi-functional green spaces, linear parks, wildlife corridors and designated sites;
 - Restore and manage species and habitats appropriate
 to Milton Keynes and its wider regional, physical and
 geographical context in a way that mitigates against and
 adapts to a changing climate;
 - Create new green infrastructure and biodiversity assets that are interconnected and integrate with the way ecosystems work and enhance the capacity of our natural environment to provide ecosystem services; and
 - Engage people with natural environments rich in wildlife, enabling and promoting access to allow them to enjoy and experience the natural environment and the benefits to public health, regardless of age, race, ability or gender.

14 Milton Keynes Council (2021) Milton Keynes Strategy for 2050

¹³ The Buckinghamshire & Milton Keynes Natural Environment Partnership (2023) Forward to 2030: Biodiversity Action Plan. Available at: https://bucksmknep.co.uk/forward-to-2030/ [Accessed 24/04/23]

- 4.4.7 The City of Trees¹⁵ plan recognises that trees play a critical role in the identity, environmental quality, and civic identity of Milton Keynes. Through the City of Trees documentation MKCC sets out a management framework that will ensure long-term conservation, resilience, and expansion of trees across the city.
- 4.4.8 Regarding planning, the City of Trees plan states:

"Developers, planners and communities will work to ensure that the urban forest is a key component of each new development. Trees form significant landscape features in both urban and rural regions; often as visually important elements of the skyline and acting to soften the edges of the built environment.

Tree losses resulting from a development should be avoided, adequately mitigated or, as a last resort, compensated for on site, and off-site as an alternative with appropriate tree pits and relevant infrastructure in place."

4.4.9 The City of Trees plan includes an action plan for inventory, planning and sustainability. For planning, MKCC will do the following:

- Deliver a new Tree Biosecurity Action Plan to undertake actions to protect trees and prevent significant loss to our tree stock;
- Review planning applications for arboriculture planting, review of tree pits ensuring that trees meet 'resilient' and 'adaptive' lists; and
- Deliver dedicated tree pits for urban areas. These will include water retention to provide resilience to drought stress and mitigate impact of root spread into the Highways and other privately owned assets.
- 4.4.10 NGBI assets relating to 'nature rich beautiful places' are presented on the map in **Figure 4.1** including ancient woodland, priority habitats (Plan:MK data), woodlands (National Forest Inventory Woodland 2020) and areas of natural and semi-natural greenspace identified in the MKCC Open Space Assessment (unpublished draft, 2023).

Undertake a phased replanting of trees in urban locations where trees or tree pits have failed or are inappropriate;

¹⁵ MKCC (2023) City of Trees. Urban Tree Planting 2023 to 2030. The vision and delivery for planting trees in our city.

4.4.11 Designated biodiversity sites and biodiversity opportunity areas in Milton Keynes are presented on the map in in **Figure 4.2.**

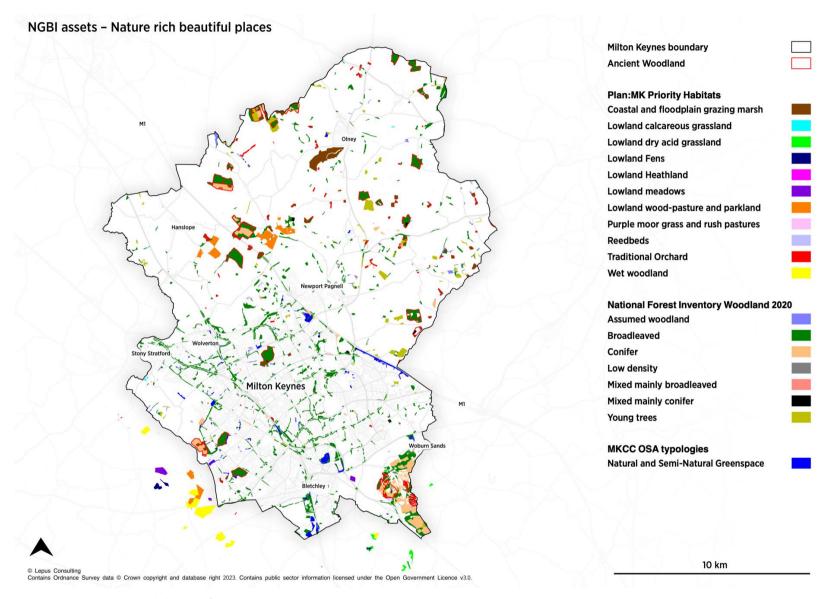


Figure 4.1: Nature rich beautiful places in Milton Keynes

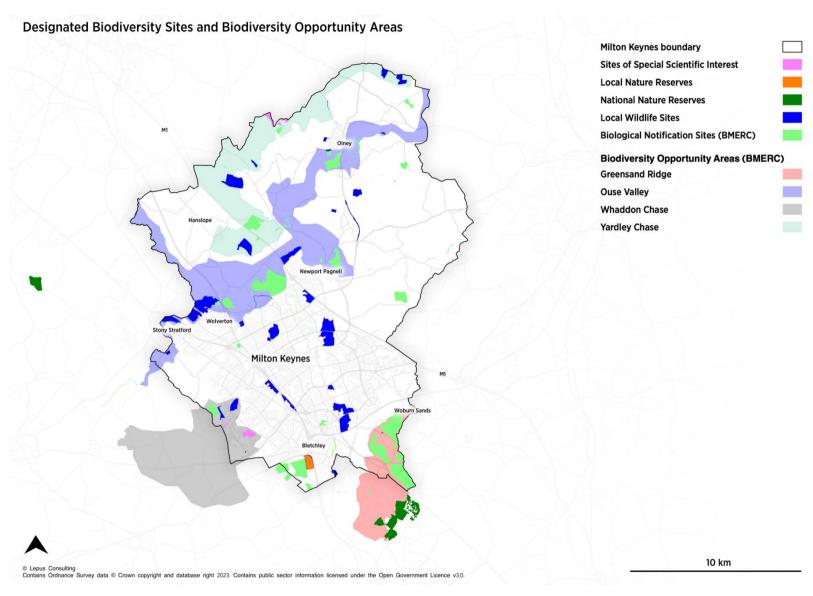


Figure 4.2: Designated Biodiversity Sites and Biodiversity Opportunity Areas

4.5 Principle 'why' 2: Active and healthy places

4.5.1 Green neighbourhoods, green/blue spaces and green routes support active lifestyles, community cohesion and nature connections that benefit physical and mental health, wellbeing, and quality of life. NGBI also helps to mitigate health risks such as urban heat stress, noise pollution, flooding, and poor air quality¹⁶.

Description of this principle

4.5.2 Natural England's description of this principle provides a useful summary of this issue and how NGBI can help to achieve the associated planning objectives¹⁷, summarised below.

England is suffering a health crisis with diabetes, obesity, 4.5.3 dementia and mental health issues rising unevenly across the population. Faced with these challenges, there is an increasing focus not just on treating conditions, but also on prevention. Changing lifestyles and increasing healthy behaviours particularly physical activity, is seen as critical in helping people live more independent lives for longer. There is recognition across the health sector that outdoor activity in nature rich spaces can be an alternative or positive complement to other treatments. This applies to mental as well as physical health conditions and can be supported by green social prescribing, where patients take part in nature-based activities, such as, walking and cycling, community gardening, food-growing projects, and practical conservation tasks such as tree planting. In a number of studies, access to green space has been associated with improved relaxation, increased functioning of the immune system and better sleep patterns.

¹⁶ Natural England (2023) Natural England Green Infrastructure Principles (Detailed version, date January 2023). Available at:

https://designatedsites.naturalengland.org.uk/GreenInfrastructure/downloads/GreenInfrastructurePrinciples.pdf [Accessed 21/04/2023]

¹⁷ Natural England (2023) Natural England Green Infrastructure Principles (Detailed version, date January 2023). Available at:

https://designatedsites.naturalengland.org.uk/GreenInfrastructure/downloads/GreenInfrastructurePrinciples.pdf [Accessed 21/04/2023]

- Evidence that people in more affluent socio-economic 4.5.4 groups generally visit the natural environment much more often than less affluent groups, including some black and minority ethnic groups and those with a disability or longterm illness is well established. Often economically disadvantaged communities who have poorer health and educational outcomes do not have access to good quality natural green or blue spaces close to where they live or work. Health inequalities are also often compounded by poor housing, higher rates of crime, a lack of places for play and higher risks due to traffic. Due to population density, people on lower incomes can also have to share green spaces with high numbers of people, making restorative or contemplative experiences more difficult. People on lower incomes may also not have the resources to visit green spaces that are not close to home. Therefore, to be effective in addressing health needs, green and blue spaces need to be close to where people live and work, be good quality, safe, welcoming, provide the necessary facilities and be well-maintained.
- 4.5.5 Children are key NGBI users and are a major concern in terms of rising obesity levels. Offering safe routes to school and doorstep play opportunities as part of NGBI planning can help address these issues.

- 4.5.6 Paths alongside rivers, canals and lakes often act as routes for walking and cycling and therefore help to support active lifestyles. Living near or visiting the coast or rivers and lakes increases people's self-reported levels of mental health and wellbeing. Overall green and blue spaces can have a positive impact on preventing health issues through providing opportunities for sport and more active and healthy lives. NGBI can also supply other health benefits by helping to address some of the environmental causes of poor health, such as poor air quality, by filtering particulates, and reducing urban summer temperatures by cooling the air.
- 4.5.7 Parks, open spaces (Local Parks and Pocket Parks form part of open spaces), nature areas, lakes, ponds and rivers are the places where many people seek tranquillity and a chance to escape the pressures of everyday life. Planning NGBI should therefore take account of the need for passive buffering and creating smaller peaceful spaces. Also, the introduction of expansive spaces where it is possible to be removed from everyday noise. Therefore, NGBI implementation should not always be about intensifying use and maximising activity.

4.5.8 Heritage values are often the catalyst for visiting, enjoying green spaces, engaging with others and getting involved. The historic public parks were designed for fresh air, recreation and exercise. Their creation, alongside other spaces, such as cemeteries, were about improving the health of communities and sanitation. Returning to these historic values offers the potential for addressing similar modern day health issues.

4.6 Active and healthy places in Milton Keynes

4.6.1 Milton Keynes Strategy for 2050 ¹⁸ recognises that the network of open spaces, parks, woodlands, lakes, canals and rivers, linked by paths and redways, provide beautiful, accessible places for people to exercise and spend time which provides mental and physical health benefits.

- 4.6.2 In Milton Keynes, opportunities for people to interact with nature are highest in the parks in and around the city, such as Willen Lake, Ouzel Valley Park, Woughton Park, Caldecotte Lake, Bury Field and a number of the other linear parks spread across the urban area. Significant NGBI assets are located in the northern and more rural parts of the Milton Keynes local authority area, away from the city (the primary northern asset being Emberton Country Park)¹⁹.
- 4.6.3 MKCC Open Space Assessment (unpublished draft, 2023) provides a comprehensive assessment of the current level of provision of different types of open space in Milton Keynes. Public open spaces form an important part of the NGBI network. They are recognised as being important to the quality of people's lives and are a significant factor in achieving sustainable communities by providing numerous benefits. Open spaces often encourage enjoyment of the natural and semi-natural environment whilst contributing to biodiversity net gain and conservation of nature and landscape, protection of water resources and air quality.

¹⁸ Milton Keynes Council (2021) Milton Keynes Strategy for 2050

¹⁹ The Buckinghamshire & Milton Keynes Natural Environment Partnership (2023) Forward to 2030: Biodiversity Action Plan. Available at: https://bucksmknep.co.uk/forward-to-2030/ [Accessed 24/04/23]

- 4.6.4 MKCC Open Space Assessment (unpublished draft, 2023) provides detail on the condition, distribution, overall quality and accessibility of the following types of open spaces:
 - Country parks
 - District Parks
 - Linear Parks
 - 'Other' Natural and Semi-natural greenspaces
 - Amenity greenspace
 - Local parks
 - Pocket parks
 - Civic spaces and formal gardens
 - Food growing areas
 - Allotments, orchards, and community growing areas
 - Cemeteries, churchyards, and other burial grounds
 - Formal outdoor playing fields
 - Green access links
 - Common land and village greens
 - Paddocks

- 4.6.5 MKCC Open Space Assessment (unpublished draft, 2023) states that outdoor sports facilities are fully examined through the Playing Pitch Strategy (PPS). The latest PPS was developed in 2019 and published in 2020, and Sport England recommend it lasts the lifespan of local policy. Plan:MK has a lifespan until 2031, therefore the action plan of the PPS will last from 2019 to 2031.
- 4.6.6 The Milton Keynes Parks Trust was set up in 1992 to own and manage the city's strategic open space network and cares for about 25% of the city area²⁰. The Parks Trust manages over 6,000 acres of green space including river valleys, ancient woodlands, lakes, parks and landscaped areas along the city's grid roads²¹.
- 4.6.7 Milton Keynes has one of the highest amounts of green space per resident in the UK. At least 40% of Milton Keynes is green space. Key statistics relating to the provision of NGBI assets that support active and healthy lifestyles include the following:
 - 15m² of green space per citizen;
 - 191 parks and 565 play areas;
 - 22 million trees, plants and bulbs originally planted;

²⁰ Milton Keynes Council (2021) Milton Keynes Strategy for 2050

²¹ Parks Trust Milton Keynes (2023) Our Work. Available at: https://www.theparkstrust.com/our-work/ [Accessed 26/04/23]

- 250 hectares of accessible woodland; and
- 80km of rivers, streams, canal and towpath²².
- 4.6.8 Public rights of way (PRoW) form an important part of the extensive network of green space in Milton Keynes. Milton Keynes has 776 public rights of way covering 550km comprising:
 - Public footpaths: 356km;
 - Public bridleways: 192km; and
 - Byways open to all traffic: 2km.²³
- 4.6.9 These routes form part of the highways network that the MKCC is responsible for maintaining. There are several local and national trails and promoted routes that travel through Milton Keynes including:
 - Midshires Way: 362km of bridleway and quiet lanes, with alternative footpath routes for walkers, travelling from the Ridgeway National Trail through to Stockport.
 - Swan's Way: 106km bridleway from Salcey Forest,
 Northamptonshire to Goring-on-Thames, Oxfordshire.

- North Bucks Way: set up by the Ramblers in 1972, this 55km footpath travels from the Ridgeway, through Aylesbury Vale, to Old Wolverton, Milton Keynes.
- Grafton Way: 21km footpath from Old Wolverton to join the Knightley Way at Greens Norton, Northamptonshire.
- Grand Union Canal Walk: 222km towpath walk from London to Birmingham.
- Milton Keynes Boundary Walk: A 101km circular walk route around the edges of the Milton Keynes borough boundary, travelling through the valleys of the Rivers Tove and Ouse and linking with the Swan's Way at Salcey Forest.²⁴

²² Milton Keynes City Council (2021) Milton Keynes Application for City Status Platinum Jubilee Civic Honours Competition

²³ Milton Keynes City Council (2023) Rights of Way Improvement Plan. Available at: https://www.milton-keynes.gov.uk/environment-parks-and-open-spaces/rights-way/rights-way-improvement-plan [Accessed 31/07/23]

²⁴ Milton Keynes City Council (2023) Rights of Way Improvement Plan. Available at: https://www.milton-keynes.gov.uk/environment-parks-and-open-spaces/rights-way/rights-way-improvement-plan [Accessed 31/07/23]

- 4.6.10 Urban Milton Keynes has a 350km shared use network, known as redways, so called by the use of red tarmac. A redway is a leisure route on public land, separated from motor vehicles making them safer routes for all abilities. They travel through all the parks, and every estate, and into the city centre itself. These pathways are not the same as PRoW and are managed by their own specialist team and have their own strategies and plans. However, they contribute significantly to the walking and cycling provision of Milton Keynes, and are therefore integral to the extent of public access.²⁵
- 4.6.11 Milton Keynes Health Impact Assessment SPD²⁶ states that men in the most affluent areas of Milton Keynes will live, on average, 7.5 years longer than men in the most deprived areas, while for women the difference is 7.4 years. Almost a third of Year 6 pupils in Milton Keynes are overweight or obese and rates of admissions for lower respiratory tract infection among children are higher than the England average. Furthermore, whilst life expectancy has improved over the past decade, it remains half a year below the national average for England for both men and women and many lives continue to be shortened because of smoking, excessive drinking, unhealthy eating and physical inactivity.
- 4.6.12 The health and wellbeing strategy for Milton Keynes, called 'Lifelong Wellbeing' ²⁷ describes being healthy as "much more than the absence of illness or disease. It's about being able to lead fulfilling lives, and to be actively involved in families and communities".
- 4.6.13 Key issues identified in the health and wellbeing strategy include:

²⁵ Milton Keynes City Council (2023) Rights of Way Improvement Plan. Available at: https://www.milton-keynes.gov.uk/environment-parks-and-open-spaces/rights-way/rights-way-improvement-plan [Accessed 31/07/23]

²⁶ Milton Keynes Council (2021) Health Impact Assessment SPD 2021. Available at: https://www.milton-keynes.gov.uk/planning-and-building/planning-policy/health-impact-assessment-spd-2021 [Accessed 25/04/23]

²⁷ Milton Keynes Council (2018) 'Lifelong Wellbeing' Available at https://www.milton-keynes.gov.uk/health-and-wellbeing-strategy-2018-2028 [Accessed on 14/03/23]

- Almost one in ten 5-16 year olds have mental health issues;
- More than one in ten children are obese;
- One in five children are living in poverty;
- One in six adults has a mental health problem such as anxiety or depression;
- Greater obesity in the adult population of Milton Keynes in comparison to UK;
- There is an increasing proportion of elderly people in the population; and
- For older residents, social isolation is a contributing factor to over 60% of preventative illness.
- 4.6.14 The health and wellbeing strategy sets out key priorities to address these issues, which includes:
 - SW6: Promote access to green spaces and public transport for children and young people; and
 - AW1: Older citizens are supported to stay healthy and maintain their independence.

- 4.6.15 The Joint Strategic Needs Assessment for Children and Young People ²⁸ states that's the causes of obesity are complex and multi-faceted, but can include social factors such as the built environment, transport systems and green space. As well as helping children and young people maintain a healthy weight, there is increasing evidence of the mental health benefits of participating in regular physical activity for children and young people. including feeling good about themselves and better concentration in addition to the physical health benefits.
- 4.6.16 The Health Impact Assessment SPD also states that providing secure, convenient and attractive green/open space can lead to more physical activity and reduce levels of heart disease, strokes and other ill-health problems that are associated with both sedentary occupations and stressful lifestyles. The environment of Milton Keynes could contribute more to healthy outcomes and the challenge remains how to encourage people to live more active lifestyles by taking advantage of the extensive network of open space, linear parks and redways and to design new developments to build on these opportunities.

²⁸ Milton Keynes Council (2021) Joint Strategic Needs Assessment' Available at https://www.milton-keynes.gov.uk/joint-health-and-wellbeing-strategy-2018-2028 [Accessed on 14/03/23]

- 4.6.17 The Milton Keynes Strategy for 2050 ²⁹ recognises that walking and cycling help to address congestion, encourage more visible life in our public places and bring more activity into our day-to-day lives.
- 4.6.18 Milton Keynes Local Cycling & Walking Infrastructure Plan (LCWIP) 30 was designed to support Milton Keynes City Council in creating materially better places to live and work, including:
 - Places designed for people: Places that have cycling and walking at their heart where cycling and walking offer a safe and reliable way to travel for short journeys;
 - **Healthy places:** The development of a wider green network of paths, routes and open spaces; and
 - **Better mobility:** Engagement with citizens to encourage uptake of cycling and walking, making it easy, normal and enjoyable.

- 4.6.19 The focus of the LCWIP was to identify missing links within the existing network and produce an ambitious plan for the redway expansion within Central Milton Keynes, extending into Bletchley, Wolverton and Olney. The LCWIP identifies a delivery plan of schemes that will help to deliver a coherent active travel network.
- 4.6.20 NGBI assets relating to 'active and healthy places' are presented on the map in **Figure 4.3** including public rights of way (PRoW), registered parks and gardens, access land (CRoW), play areas and typologies identified in the MKCC Open Space Assessment (unpublished draft, 2023).

²⁹ Milton Keynes Council (2021) Milton Keynes Strategy for 2050

³⁰ Milton Keynes City Council (2023) Local Cycling & Walking Infrastructure Plan. Available at: https://www.milton-keynes.gov.uk/highways/transport-policy/local-cycling-and-walking-infrastructure-plan [Accessed 25/04/23]

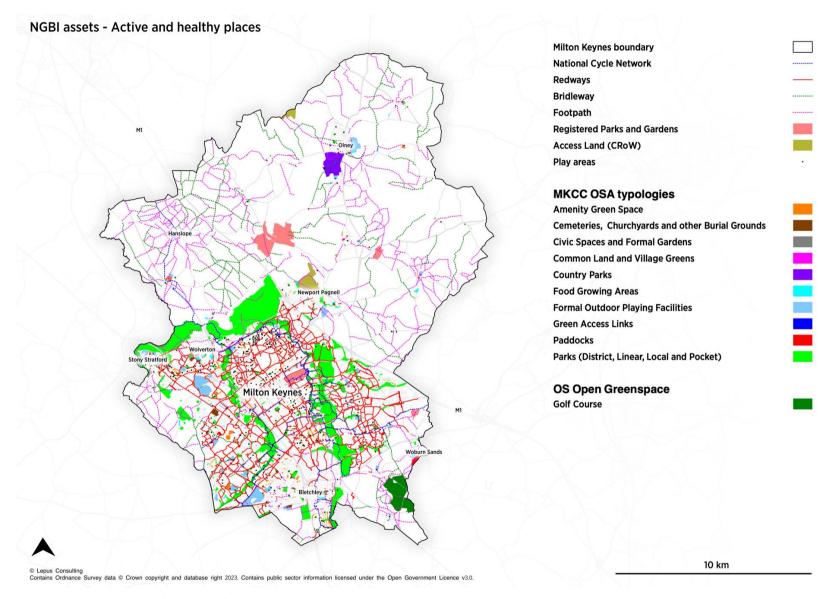


Figure 4.3: Active and healthy places in Milton Keynes

4.7 Principle 'why' 3: Thriving and prosperous places

4.7.1 NGBI helps to create and support prospering communities that benefit everyone and adds value by creating high quality environments which are attractive to businesses and investors, create green jobs, support retail and high streets, and to help support the local economy and regeneration.

Description of this principle

- 4.7.2 Natural England's description of this principle provides a useful summary of this issue and how NGBI can help to achieve the associated planning objectives³¹, summarised below.
- 4.7.3 In the context of growing urbanisation, people have grown distant from nature despite the fact that our economies, livelihoods, and well-being all depend on it. The solutions start with understanding and accepting that our economies are embedded within nature, not external to it and investing in nature will ultimately repay society with dividends.

- 4.7.4 Placing accurate economic values on green infrastructure is therefore vital and will help to support the case for sustained investment. For local authorities and statutory bodies high quality environments with natural green spaces and attractive settings can encourage inward investment. This in turn can support retail and high streets, incorporate green forms of transport, create inviting and distinctive workplaces, reduce flood risk and the impact of climate change, and provide space for renewable energy generation.
- 4.7.5 For residents, workers and businesses high quality environments can be a catalyst for regeneration and community ownership, a focus for education, training and volunteering and stimulate job opportunities by attracting investment and tourism. There is evidence that spending time in green space can also benefit employees and students as it is associated with improved motor skills, better academic performance, and increased concentration.

https://designatedsites.naturalengland.org.uk/GreenInfrastructure/downloads/GreenInfrastructurePrinciples.pdf [Accessed 21/04/2023]

³¹ Natural England (2023) Natural England Green Infrastructure Principles (Detailed version, date January 2023). Available at:

- 4.7.6 NGBI can also provide additional 'green jobs'. There is a clear link between jobs and skills to manage and maintain spaces and places, from local neighbourhood streets to specific spaces such as parks and river corridors. There is huge scope to raise urban street management so that spaces and places are managed well for nature. Although often dispersed compared to manufacturing or retail, jobs from NGBI can amount to a significant pool of skills and income.
- Quality green space can have a positive impact on creating 4.7.7 settings for investment and may act as a catalyst for wider regeneration. Property owners and businesses place a higher value on properties close to green and blue space. Developers have used NGBI to add value to projects and differentiate their brand in the marketplace. Selling points have focused on operational savings associated with lower building heating and cooling costs for businesses, more landscape elements, opportunities for appealing recreation, climate resilience and a strengthened sense of community. Heritage has an important role in supporting regeneration. The histories of most public parks and designed landscapes are intertwined with the past growth and development of our towns and cities. Heritage and NGBI can work together to increase prosperity. Particularly in area-wide regeneration projects and individual development proposals. This means that it can often be useful to gain heritage expertise as part of NGBI planning.
- 4.7.8 Creating connectivity and spreading the benefits through networks rather than high investment in individual sites can be important in ensuring the economic benefits of NGBI are more evenly available, particularly for those in densely populated areas.

4.8 Thriving and prosperous places in Milton Keynes

- 4.8.1 Milton Keynes generated £15.7 billion GDP in 2018, which makes it one of the UK's most productive and largest economies. A thriving and expansive business community covers digital technology, high performance engineering, financial, legal services, retail, logistics and hospitality, and delivers productivity 27% above national levels.
- 4.8.2 Key statistics highlighting the economic success of Milton Keynes are listed below:
 - 14,000 businesses of which 700 are internationally owned;
 - £15.7 billion GDP (2018);
 - Productivity 27% above the national average;
 - 70% of businesses are local start-ups;
 - 182,000 employees and working age population of 169,000 (2018);
 - Employment rate well above national average at 86% (2019/20);
 - Open University has £2.77bn impact on UK economy with 175,000 students (2018/19);
 - 40 million visitors annually to centre:mk shops; and

- Visitor economy worth over £1bn annually³².
- 4.8.3 The Milton Keynes Strategy for 2050 ³³ states that 'knowledge intensive' businesses such as finance, digital and technology and green jobs in low carbon industries will drive future economic growth. Milton Keynes aims to continue to be attractive for companies investing in the green economy. By 2050, there will be a further 50,000 to 90,000 jobs in Milton Keynes.
- 4.8.4 Milton Keynes is home to a variety of heritage assets. Archaeological sites form a major feature in the city's current GI network and Milton Keynes has 27 conservation areas, including buildings, open spaces, cemeteries, historic street patterns and local centres. There are 1,112 listed buildings in Milton Keynes, this includes 30 Grade I listed buildings and 49 scheduled monuments.
- 4.8.5 There are also 5 Registered Parks and Gardens in Milton Keynes:
 - Campbell Park (Grade II)
 - Chicheley Hall (Grade II*)
 - Gayhurst Court (Grade II)

³² Milton Keynes City Council (2021) Milton Keynes Application for City Status Platinum Jubilee Civic Honours Competition

³³ Milton Keynes Council (2021) Milton Keynes Strategy for 2050

- Tyringham (Grade II*)
- Wavendon House Landscape (Grade II)
- 4.8.6 The Parks Trust is responsible for many pieces of significant local heritage and scheduled ancient monuments in Milton Keynes. Some notable historic sites include the 19th Century Brick Kilns at Great Linford Manor Park, the outlines of Bancroft Roman Villa at North Loughton Valley Park, the ruins of St Peters Church at Stanton Low Park, and the remains of a motte and bailey castle at Shenley Toot³⁴.
- 4.8.7 NGBI assets relating to 'thriving and prosperous places' are presented on the map in **Figure 4.4** including heritage assets, education centres and landscape character types from the Milton Keynes Landscape Character Assessment (2022)³⁵.

landscape-character-assessment-2022#:~:text=The%20Milton%20Keynes%20Landscape%20Character,the%20qualities%20 of%20the%20landscape. [Accessed 31/07/23]

³⁴ The Parks Trust (2023) Heritage in our Parks. Available at: https://www.theparkstrust.com/our-work/heritage-in-our-parks/ [Accessed 29/06/23]

³⁵ LUC (2022) Milton Keynes Landscape Character Assessment. Available at: https://www.milton-keynes.gov.uk/planning-and-building/planning-policy/milton-keynes-

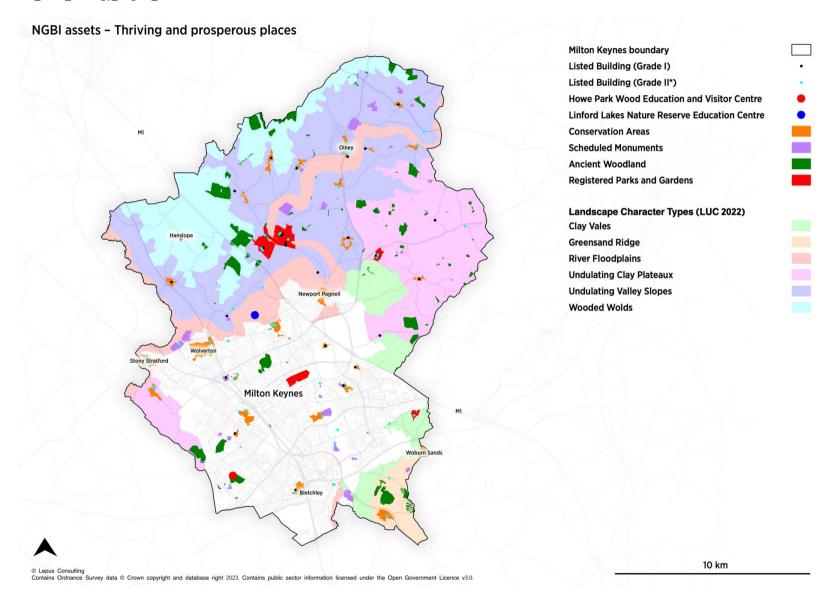


Figure 4.4: Thriving and prosperous places in Milton Keynes

4.9 Principle 'why' 4: Improved water management

4.9.1 NGBI reduces flood risk, improves water quality and natural filtration, helps maintain the natural water cycle and sustainable drainage at local and catchment scales. This in turn reduces pressures on the water environment and infrastructure, bringing amenity, biodiversity, economic and other benefits.

Description of this principle

- 4.9.2 Natural England's description of this principle provides a useful summary of this issue and how NGBI can help to achieve the associated planning objectives³⁶, summarised below.
- 4.9.3 Green infrastructure can have a strategic and local role in sustainable water management. If planned and delivered effectively, NGBI can greatly reduce the speed and volume of water reaching drains, sewers, and watercourses, reducing the risk of flooding and storm overflow spills, putting that water to beneficial use. NGBI can improve natural processes of water filtration, recharging groundwater rather than that water ending up in drains.

- 4.9.4 NGBI can also play a vital role in improving water quality, for example by introducing vegetation which can help trap, filter out or reduce contaminants released to the environment. Supporting this, the Environment Act places duty on water companies to collaborate on joint water management plans and sewerage undertakers will need to prepare drainage and sewerage management plans giving an opportunity to influence water quality and blue-green infrastructure.
- 4.9.5 The recreational benefits of blue infrastructure are also important aspects of green infrastructure. These can range from simple waterside access for walking and angling, to active sports such as swimming, sailing, canoeing and their associated facilities. Likewise, biodiversity, water, and NGBI link together to provide habitat and ecological connectivity for wildlife, including important locations for migratory fish and birds. The variety of uses that water can be put to can lead to potential conflicts and the multi-disciplinary approach to NGBI can be useful in resolving these.

https://designatedsites.naturalengland.org.uk/GreenInfrastructure/downloads/GreenInfrastructurePrinciples.pdf [Accessed 21/04/2023]

³⁶ Natural England (2023) Natural England Green Infrastructure Principles (Detailed version, date January 2023). Available at:

- 4.9.6 Sustainable water management through NGBI can also lead to improved community resilience in the face of climate change supporting adaptation to the availability of too much or too little water. Taking a catchment-based approach can help build NGBI networks, allowing local bluegreen infrastructure assets to link to larger watercourses and rivers. This can generate cumulative benefits connecting these to larger landscape scale features beyond. Therefore, at all scales, sustainable water management can be integrated into multifunctional corridors and networks of green and blue infrastructure.
- 4.9.7 Sustainable drainage systems (SuDS) are a form of natural flood management and can manage water using or mimicking natural processes. This approach can enable developments to include green roofs and walls, rain gardens, swales, ponds, and various other water retention features. These measures are capable of slowing the water flow, bringing rain and greywater into use, creating new habitats, reducing water pollution, and enhancing and creating recreational opportunities. SuDS work best when planned in and integrated as part of a NGBI from the outset within new developments. This approach can help strengthen local and wider NGBI networks by linking multifunctional SuDS to larger landscape scale features beyond

4.9.8 Introducing a SuDS based approach within existing developments is far more challenging and integrated systems can be functionally harder to achieve and need to fit with the existing historic and landscape character. This means a long-term vision with a view to identifying opportunities and achieving benefits over time is needed.

4.10 Improved water management in Milton Keynes

- 4.10.1 The Milton Keynes Strategy for 2050³⁷ recognises that a consequence of climate change is the increased risk of surface water flooding and repeated property flooding. The green infrastructure network in Milton Keynes integrates with the blue infrastructure network of lakes, rivers, canals and other drainage systems and this helps protect the city from all but the worst flood events.
- 4.10.2 The original design of the city included balancing lakes such as those at Willen and Caldecotte which act as flood storage areas to direct flood water away from residential areas. The Strategy for 2050 states that future water management solutions may include new balancing lakes, local wet/dry ponds, and strategic river maintenance and management.

4.10.3 MKCC is considering strategic solutions to the future management of flood risk and drainage in the region. The plans consider flood risk management, alongside wider environmental and water quality enhancements. Strategic solutions may include upstream flood storage, integrated major infrastructure/ Flood Risk Management (FRM) schemes, new defences, and watercourse improvements as part of regeneration and enhancing green infrastructure, with opportunities for natural flood management and retrofitting sustainable drainage systems. The Milton Keynes Local Flood Risk Management Strategy and Anglian River Basin Flood Risk Management Plan set out specific actions for the authority region.

³⁷ Milton Keynes Council (2021) Milton Keynes Strategy for 2050

- 4.10.4 Many of the newer developments in Milton Keynes include sustainable drainage systems (SuDS) which are designed into their plans. These often form the heart of the park and the housing development is built around them, examples are Brooklands Meadows and Oxley Park. For parts of the year these areas may look like dry ditches but when heavy rainfall comes, these ditches store the water that runs off from roads, paths, car parks and roofs creating a series of brooks and ponds. This means that the excess water runs away from the houses and prevents residential flooding.³⁸
- 4.10.5 The Milton Keynes City Council Level 1 Strategic Flood Risk Assessment (SFRA) (unpublished draft, 2023)³⁹ states that parts of the Milton Keynes Borough are at risk of flooding from the following sources: fluvial, surface water, groundwater, sewers, reservoir inundation and canal overtopping/breaches. The draft SFRA states that the most significant sources of flood risk in Milton Keynes Borough are fluvial and surface water, the Milton Keynes Flood Risk Area has been identified because of the risk of surface water flooding.

- 4.10.6 The region faces significant challenges in relation to water resources. Milton Keynes lies in the Anglian Water Region which is the driest in the UK with two thirds of the national average rainfall and is classed as seriously water-stressed by the Environment Agency.
- 4.10.7 The Integrated Water Management Framework (IWMF) will explore how to draw together current and ongoing water, flood, natural capital, and land use planning work, to create a fully interconnected water and flood risk approach to planning and decision making. The goal is to enable a more proactive, holistic approach to decision making and solution planning for water management infrastructure, focusing on addressing the needs of the natural environment and avoiding reactive water management solutions.

³⁸ The Parks Trust (2023) Flood defences. Available at: https://www.theparkstrust.com/our-work/flood-defences/ [Accessed 22/05/23]

³⁹ JBA Consulting (2023) Milton Keynes City Council – Level 1 Strategic Flood Risk Assessment. Draft Report.

- 4.10.8 The MK Strategy for 2050 also emphasises the importance of reducing water consumption due to the growing population and increased risk of prolonged periods of dry weather and drought from climate change. The aim is to reduce use to fewer than 110 litres of water per person per day through the harvesting and storage of rainwater, stormwater and 'grey' water (waste-water, other than from toilets, from people's homes).
- 4.10.9 The Grand Union Canal is a key NGBI asset which enters Milton Keynes at the Ouse Valley Park at Old Wolverton, crosses through the city and leaves Milton Keynes at Water Eaton in Bletchley. The Grand Union Canal was constructed over 200 years ago to provide a transport link between London and Birmingham for cargo. Today, the canal provides a crucial wildlife corridor and is a key feature in the city's linear park network. The route includes a 11-mile, lock-free section between Cosgrove in the north and Fenny Stratford in the south. The towpath has also been designated as a PRoW which provides a traffic-free route through the city.⁴⁰
- 4.10.10 The Bedford and Milton Keynes Waterway Trust (BMKWT) is leading a project to create a new canal. The proposed canal link is 26 km long connecting the Grand Union Canal at Campbell Park in Milton Keynes to the head of navigation of the River Great Ouse at Kempston, west of Bedford. Protected in three local plans and with planning permission achieved on sections of the waterway, as well as creating regeneration opportunities for local communities along its route, it would also provide a strategic connection to the waterways of East Anglia.
- 4.10.11 The Inland Waterways Association and BMKWT studies have shown the canal and water park will:
 - Create 900 permanent jobs;
 - Be a key component in flood & water management across the Great Ouse catchment;
 - Enhance the local environment and increase biodiversity;
 - Provide £26 million extra for the local economy;
 - Act as a catalyst to regeneration and new development;
 and

⁴⁰ Milton Keynes City Council. Existing and potential canal infrastructure in Milton Keynes. Supporting paper for the blue and green infrastructure study.

- Improve opportunities for boating, canoeing, fishing, cycling, walking or just relaxing⁴¹.
- 4.10.12 NGBI assets relating to 'improved water management' are presented on the map in **Figure 4.5** including watercourses, surface water bodies and flood zones.

⁴¹ Milton Keynes City Council. Existing and potential canal infrastructure in Milton Keynes. Supporting paper for the blue and green infrastructure study.

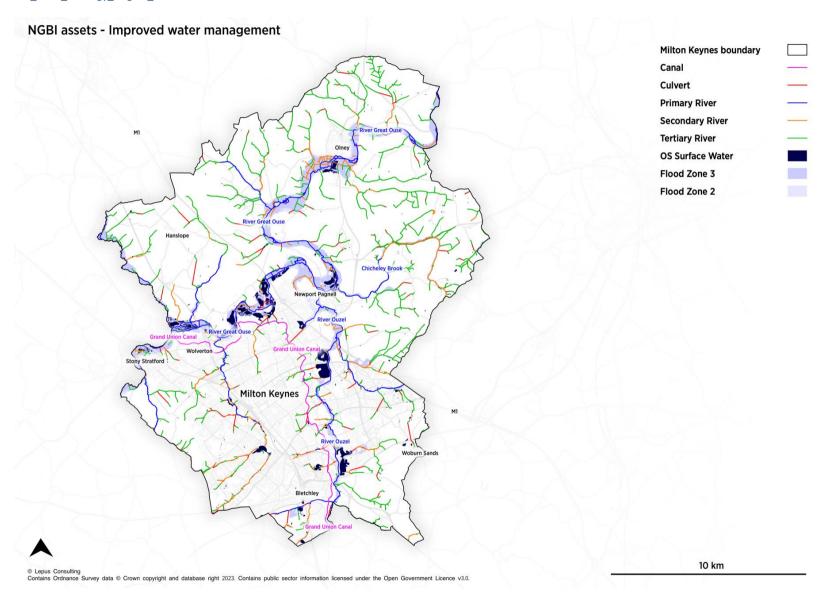


Figure 4.5: Improved water management in Milton Keynes

4.11 Principle 'why' 5: Resilient and climate positive places

4.11.1 NGBI makes places more resilient and adaptive to climate change and helps to meet zero carbon and air quality targets. NGBI itself should be designed to adapt to climate change to ensure long term resilience.

Description of this principle

4.11.2 Natural England's description of this principle provides a useful summary of this issue and how NGBI can help to achieve the associated planning objectives⁴², summarised below.

- 4.11.3 As the climate changes, more extreme weather events are expected. Flash flooding, heat waves, high winds, sea level rise and disruption to transport and communication networks are likely to be more frequent and severe. Places which both contribute to the mitigation of the effects of climate change and are able to adapt to its predicted consequences over time can be described as climate positive. Green and blue infrastructure can be designed, implemented, and managed to help mitigate and adapt to these climate challenges. These interventions can reduce the impact on both wildlife and human populations, fostering resilience and low carbon behaviours.
- 4.11.4 In the built environment NGBI can have a strong role in carbon sequestration and reducing CO2 emissions through low carbon approaches to design, construction, and long-term maintenance. Many NGBI interventions can support more than one climate change objective.

https://designatedsites.naturalengland.org.uk/GreenInfrastructure/downloads/GreenInfrastructurePrinciples.pdf [Accessed 21/04/2023]

⁴² Natural England (2023) Natural England Green Infrastructure Principles (Detailed version, date January 2023). Available at:

- 4.11.5 There is a strong interrelationship between NGBI and managing water. Tree planting, street trees, green roofs, and other permeable vegetated surfaces such as open spaces, all play a role in water management, therefore considering how water interacts with NGBI is crucial and is considered in **Chapter 5** of this report. NGBI also has a strong relationship with travel. Attractive cycling and walking networks as part of NGBI corridors can contribute to CO2 reduction by encouraging use of active travel options. Waterways can also play a role in the provision of thermal energy for heating and cooling systems.
- 4.11.6 Strategic tree planting can provide carbon storage and flood water management. NGBI particularly through trees providing shade and evapotranspiration can help reduce day time temperatures in urban areas and provide health benefits by cooling during heat waves. Trees which give shade to buildings can also reduce the need for air conditioning, saving carbon. Trees can also play a vital role in improving air quality by reducing pollution through absorbing harmful gases and particles in the air. Blue spaces such as ponds, lakes and rivers can also have a cooling impact and reduce urban temperatures in particular.

- 4.11.7 Measures to adapt to climate change can also create significant opportunities to provide biodiversity benefits. For instance, providing refuges and corridors for climate sensitive species within the landscape and individual sites.
- 4.11.8 Local communities can get directly involved in climate related NGBI projects, including tree planting and maintenance, with local engagement a vital element of many successful approaches to NGBI and climate change.

MK NGBI Strategy August 2023

4.12 Resilient and climate positive places in Milton Keynes

- 4.12.1 The Milton Keynes Sustainability Strategy ⁴³ states that Milton Keynes will strive to be carbon neutral by 2030 and carbon negative by 2050 while creating one of the world's most truly sustainable economies and models for growth.
- 4.12.2 The vision from the Sustainability Strategy is as follows:

"Milton Keynes can be the world's greenest and most sustainable city, using the opportunities of growth to tackle the challenges of climate change and resource competition to create a more prosperous city for all our people and future generations which is carbon negative by 2050."

- 4.12.3 The Sustainability Strategy highlights the following three principles:
 - Green energy: Maximising the use of renewable energy, reducing carbon and providing resilience to the grid;
 - Circular economy: Increasing the efficient use of resources to reuse materials, use less water, and ensure the best use of land; and

- Low emissions: Reducing the level of emissions from transport, industry and agriculture and to ensure clear air.
- 4.12.4 Milton Keynes is seeking the following sustainable outcomes as stated in the Sustainability Strategy:
 - Use less carbon than we are able to capture;
 - Contribute positively to action on climate change;
 - A more sustainably designed city;
 - A transition to low-cost renewable energy sources;
 - A sustainable green economy with well-paid jobs;
 - Reduce the consumption of resources without sacrificing economic development;
 - A diverse, green and bio-diverse environment;
 - Less use of water;
 - Clean air; and
 - A healthier and more sustainably conscious population.

⁴³ Milton Keynes Council (2019) MK Sustainability Strategy 2019-2050. Available at: https://www.milton-keynes.gov.uk/environmental-health/mk-low-carbon-living/2019-2050-sustainability-strategy [Accessed 25/04/23]

- 4.12.5 The Milton Keynes Strategy for 2050 ⁴⁴ emphasises the importance of sustainability and acting to address climate change. The Strategy highlights that as transport is now the largest source of carbon emissions in Milton Keynes, the need to travel by car must be minimised. Milton Keynes will be promoting walkable, compact mixed use developments, making walking and cycling the first choice for shorter journeys, and developing a Mass Rapid Transit system for longer journeys.
- 4.12.6 The Strategy also states that Milton Keynes will encourage investment in waste recovery and recycling, energy generation from renewable sources, reducing emissions and energy conservation and expanding NGBI.

⁴⁴ Milton Keynes Council (2021) Milton Keynes Strategy for 2050

5 Ecosystem Services

5.1 Ecosystem services and NGBI

- 5.1.1 Ecosystem services are the benefits provided to humans by natural systems, from the provision of food and water to recreation and climate regulation. The elements of the natural environment that provide benefits to humans are referred to as 'natural capital'. The UK Natural Capital Committee have defined natural capital as 'elements of nature that directly or indirectly produce value to people'. In urban areas, the elements of the natural environment providing ecosystem services are referred to as 'green infrastructure'.⁴⁵
- 5.1.2 Whilst it is widely recognised that an approach that includes a natural capital approach and consideration of ecosystem services is desirable, there is currently no agreed methodology for assessment.

5.1.3 There are a range of available approaches to identifying and grouping ecosystem services. The Millennium Ecosystem Assessment split ecosystem services into four main categories: supporting services, regulating services, provisioning services and cultural services. The Common International Classification of Ecosystem Services (CICES) developed for natural capital accounting splits ecosystem services into regulating, provisioning and cultural services, with supporting services forming an integral part of functioning ecosystems.

⁴⁵ Houses of Parliament (2017) 'POSTbrief26: Urban Green Infrastructure and Ecosystem Services' Available at https://post.parliament.uk/research-briefings/post-pb-0026/ [Date accessed: 23/03/23]

MK NGBI Strategy August 2023

- 5.1.4 The CICES was used to inform the Natural Capital Atlases⁴⁶ prepared by Natural England. The Buckinghamshire Natural Capital Atlas: Mapping Indicators ⁴⁷ report uses sixteen ecosystem services and has adopted a plain English approach to the description of these services. The study maps the provision of ecosystem services across Buckinghamshire within hexagonal units measuring five square kilometres. While this scale of assessment does not helpfully inform the assessment of ecosystem services in Milton Keynes, the study has been used to inform the categorisation of ecosystem services and how these relate to each typology of green infrastructure in this NGBI Strategy.
- 5.1.5 The Environmental Benefits from Nature Tool⁴⁸ (EBN) was formerly called the Ecometric and is designed to be used alongside the Biodiversity Net Gain metric. The tool uses a habitat-based approach to consider the effects of land use change across 18 ecosystem service services. The results are likely to illustrate the gains and losses in the different ecosystem services as a result of land use change.

5.1.6 The tool has been designed to be used at the project or site level. However, it could be trialled in considering the relative changes to ecosystem services at the proposed growth locations. In order to create the data for the habitats available before and after the development, the approach would need to be based on assumptions about the nature of the development proposed.

⁴⁶ Natural England (2020) 'Natural Capital Atlases: Mapping Indicators for County and City Regions' Available at

http://publications.naturalengland.org.uk/publication/6672365834731520 [Date accessed 23/03/23]

⁴⁷ Natural England (2021) 'Buckinghamshire Natural Capital Atlas: Mapping Indictors'

⁴⁸ Natural England (2021) 'The Environmental Benefits from Nature Tool - Beta Test Version' Available at

http://publications.naturalengland.org.uk/publication/6414097026646016 [Accessed on 23/03/23]

5.2 Ecosystem services and benefits provided

Capital Atlas: Mapping Indicators and additional 'Notes' are taken from the 'Urban Green Infrastructure and Ecosystem Services' report⁴⁹. Urban green infrastructure is less likely to contribute to some ecosystem services such as 'Timber, hay and other materials', 'Fish', 'Plant based energy' and 'Livestock'. These ecosystem services may be provided by more rural areas and would potentially be of consideration in the assessment of areas of land which are considered to accommodate future growth.

⁴⁹ Houses of Parliament (2015) POSTnote. Novel Food Production. Available at: https://post.parliament.uk/research-briefings/post-pn-0499/ [Accessed 28/06/23]

Table 5.1: Ecosystem services and benefits provided

Ecosystem Service	Benefits provided
Timber, hay and other materials	Materials e.g. hay, grass for fodder, timber, paper and other products from wood.
Fish and other marine products from wild sources	Products from the sea e.g. fish, shellfish & seaweed for food, fertiliser, angling bait, medicines.
Plant-based energy	Energy from wood.
Cultivated crops and provision of community food	Food from crops e.g. cereals, vegetables, fruit. Notes: The amount of food UK urban areas can produce is limited. However, community food production, such as allotments, can be multifunctional, providing well-established social and health-related benefits. Those involved in gardening have increased levels of exercise and tend to eat more vegetables (POSTnote 499). ⁵⁰
Water supply	Plentiful water e.g. water for drinking, domestic use, irrigation, livestock, industrial use including cooling, wildlife.
Livestock	Products from animals e.g. meat, dairy products, honey.
Water quality	Clean water, also underpinning e.g. water supply, sustainable ecosystems, cultural services, health benefits. Notes: Diffuse pollution of urban waterways arise from numerous small pollution sources that are conveyed into watercourses via surface water run-off from paved surfaces. Water contaminated with urban pollutants requires additional treatment before it is fit for human consumption, as well as reducing the recreational and cultural amenity of watercourses (POSTnote 529). One of the additional benefits of SuDS are the removal of urban pollutants before it enters watercourses. They can also reduce the amount of surface water entering combined sewage systems and likelihood of subsequent discharges of untreated sewage into watercourses during heavy rainfall events.
Air quality	Clean air, also underpinning health benefits and sustainable ecosystems.

⁵⁰ Houses of Parliament (2017) Urban Green Infrastructure and Ecosystem Services' Available at https://post.parliament.uk/research-briefings/post-pb-0026/

	Notes: Vegetation can reduce air pollution directly by trapping and removing fine particulate matter and indirectly by reducing air temperatures. However, the effects of the various vegetation types deployed in different built environments has yet to be fully evaluated and quantified. For example, green roofs and walls may improve air quality, but only a small number of studies have been undertaken. Vegetation and trees in open areas can reduce exposure to pollution, but beneficial effects depend on multiple factors, such as the weather, wind flow conditions, the pollution concentration, and the type, location and quality of vegetation. For example, if the configuration of street trees along busy roads is not adequately planned, they may trap and contain air pollution leading to a deterioration in air quality compared to roads without trees, as highlighted in recent guidance from National Institute for Health and Care Excellence (Nice). By contrast, 1.5 to 2.5 m hedges planted along such roads can improve air quality.
Noise regulation	Health benefits e.g. reduced stress, hypertension, hearing impairment; benefits to sustainable ecosystems through reduction in disturbance; reduced impacts on educational & work performance. Notes: Transport, construction and other activities make noise a major problem in towns and cities, affecting health through physiological and psychological effects. WHO have estimated the range of disease burden in Europe from noise at $1.0-1.6$ million Disability Adjusted Life Years (a measure of overall disease burden, expressed as the number of years lost due to ill-health, disability or early death). Studies have suggested that vegetation can attenuate noise by absorption, dispersal and destructive interference of sound waves, and soils can indirectly reduce noise through their absorptive capacity. The effectiveness of vegetation in reducing noise depends on: how close it is to a noise source (the closer it is, the more noise it mutes), the noise frequency and the type of vegetation. Other factors that can mediate its effectiveness are sound duration, climate (temperature, humidity, wind direction, wind speed) and soil type. However, some studies suggest people overrate the ability of vegetation to attenuate noise, suggesting there is also a psychological effect.
Erosion control	Erosion control e.g. soil/land retention, lack of transport disruption, protection of housing, businesses & infrastructure, reduced health & safety risk, reduced flood risk.
Flood protection	Reduced flood risk e.g. reduced health and safety risk, reduced impact on mental health and well-being, protection of housing, businesses & infrastructure, lack of transport disruption. Notes:

	Reduced infiltration in areas with high levels of impermeable surfaces leads to rapid surface flows into pipes, culverts and channelised urban waterways, increasing peak flood flows. The increasing volume of surface water flows expected with climate change in piped drainage systems could be prohibitively expensive. Green infrastructure reduces urban runoff by enabling rainfall to soak into the underlying soil. SuDS provide natural drainage processes through a network of predominantly above-ground surface water management features. They channel, slow and store surface water and control the rate it enters sewers and watercourses. SuDS have similar costs to conventional drainage systems and can provide a range of additional benefits, such as improving biodiversity, amenity, and air quality, as well as reducing the warming effect of densely packed buildings in urban areas ⁵¹ . In addition to SuDS, restoration of urban watercourses, their associated riparian vegetation and connections to floodplains, can be used to convey or store urban run-off while encouraging water infiltration and improving water quality.
Pollination	Pollination underpinning cultivated crops dependent on insect pollination e.g. field beans, apples, plums, pears, cucumbers, strawberries, oil seed rape. Notes: Domestic and community gardens, and other types of urban green infrastructure, benefit from pollinators. Urban ecosystems can also support high levels of diversity for some groups of pollinators, such as bumblebees, but this requires a network of good quality habitats for pollinators (such as flowering meadows) in close proximity to areas benefitting from pollination. For example, bee abundance on green roofs and in managed green spaces in Switzerland was positively correlated with connectivity to surrounding habitat. Increasing floral resources in urban green spaces, such as gardens, can increase pollinator abundance and diversity. However, systematic studies that compare the value of different urban habitats for pollinators in multiple cities are lacking. Studies have shown that urban areas are able to successfully support pollinator conservation measures, such as reseeding road verges and altering mowing regimes to provide resources for pollinators. However, commentators suggest more studies are needed to understand which measures would most effectively support pollinators in urban areas; for instance, the benefits of managing road verges for pollinators could be offset by mortalities from vehicle strike.

⁵¹ CIRIA (2007) 'The SuDS Manual' Available at https://www.ciria.org/ItemDetail?iProductCode=C753F&Category=FREEPUBS {Date accessed 20/03/23]

Biodiversity – thriving plants and wildlife	Biodiversity, in and of itself, and underpinning all other services such as recreation (including wildlife watching), tourism, research and education, food from wild populations & aquaculture, flood protection (salt marsh, dunes), climate regulation.
Climate regulation	Equitable climate e.g. reduced risk of drought, flood & extreme weather events, lower summer temperatures, reduced health and safety risks, protection of infrastructure/lack of transport disruption. Notes: Urban areas often experience elevated ambient temperatures compared with the surrounding countryside. This is because cities and towns have extensive heat absorbing surfaces, such as concrete and tarmac, concentrated heat production and impeded air flow. Green infrastructure can lower air temperatures through the evaporation of water from vegetation, shading and modifying wind flow. Carbon Storage: Although the contribution to overall carbon storage will be limited compared to more extensive habitat types, urban ecosystems are potential carbon reservoirs. Almost all above-ground carbon storage is in tree biomass, with only a small amount stored in shrubs and herbaceous borders. For example, a study has estimated that trees account for 97% of total carbon stored in biomass in Leicester. The management of trees, mown lawns and flower beds found in many urban ecosystems may also result in more GHGs being emitted than carbon stored. Soil carbon content is usually defined by the amount of organic matter contained within it. Soil microbes can make carbon and nitrogen available to plants, immobilise carbon and nitrogen in soil, and also decompose organic material to CO2. The amount of carbon stored in urban green space top soils can be significant, particularly in domestic gardens. However, the ability of urban soil to store carbon is reduced when it is degraded or disturbed, as will be the other beneficial processes it provides, such as water filtration. The mosaic of land uses in urban areas leads to a diverse patchwork of soil types, a substantial part of which are sealed under impervious surfaces. A study in Leicester, looking at soils across the city, including under sealed surfaces, found that the amount of organic carbon stored was substantially higher than in rural arable soils. Based on the estimates of
Cultural services	Health and wellbeing benefits, including sense of place, spirituality, inspiration, physical and mental wellbeing. Notes: The UK NEA highlighted the conceptual difficulties in defining cultural ecosystem services (non-material benefits). It suggests 'environmental settings' as the relevant ecosystem service; places where humans interact with each other

and with nature to give rise to cultural goods and benefits, such as recreation. Individuals will experience multiple cultural goods and benefits from environmental settings, but as these settings range from land and seascapes to urban parks and gardens, they will support different aggregations of goods and benefits. The different characteristics of environmental settings that constitute cultural services may also be affected by the absence or presence of species. Human interactions with animals and plants could generate cultural goods if people value environmental settings where certain types of wild animals or plants are present, but the majority of the limited available evidence is largely from observational studies. For example, a perennial meadow experiment at ten urban green-spaces in southern England assessed green-space visitor responses to the creation of biodiverse urban meadows. While responses varied between visitor types, on average people preferred naturalistic vegetation and all of the meadow treatments were preferred to the standard amenity mown grass. Meadows that contained more plant species had the highest preference scores. They were seen as less pleasing in winter, but visitors were willing to tolerate this when provided with information on their additional benefits, such as increased levels of plant and insect biodiversity. However, other studies that have used objective metrics of biodiversity, such species richness, are inconclusive and suggest a complex relationship between biodiversity and self-reported wellbeing (the 'people-biodiversity paradox'). Some studies suggest that abilities to perceive levels of diversity is often poor and that interactions are influenced by people's perceptions of biodiversity rather than actual levels present. Given the complex social and ecological factors that may influence the outcome of interactions, carefully designed interdisciplinary studies would be needed to understand the relationships between urban biodiversity and cultural ecosystem services.

Geodiversity services

Geodiversity, in and of itself and products, such as minerals, materials, fossil fuels and renewable energy, fossils, and underpinning other services. Examples of other services underpinned include providing landscape features and habitats such as sea cliffs.

5.3 Ecosystem disservices

5.3.1 The concept of disservices is intended to establish a comprehensive overview of the net effects for environmental planning rather than solely concentrating on benefits.

Urban ecosystems can also give rise to ecosystem 5.3.2 disservices. These are interactions with biodiversity and ecosystems that give rise to actual or perceived negative effects on human health, such as pests and diseases, or reduced levels of an ecosystem service benefit. They can arise both from relatively undisturbed ecosystems or human activities that alter ecosystems. For example, the natural diversity of organisms in soil may include diseasecausing organisms that directly affect human health, such as parasitic worms. However, the loss of soil diversity may also affect human health, as interactions between soil bacteria and the bacteria found on skin and in the gut may have a beneficial influence on the human immune system. The gut microbiota of inhabitants of urban areas in developed countries is greatly reduced in comparison to hunter gathers and rural farmers in developing countries. Gut microbiota of limited diversity is characteristic of human inflammation-associated conditions. Reduced skin microbiota diversity is also characteristic of some skin disorders, such as eczema and psoriasis.

MK NGBI Strategy August 2023

5.3.3 Some disservices can be prevented or controlled, such as stopping an invasive non-native plant species from becoming established in an urban area that will have adverse effects on human wellbeing. Other negative effects on human wellbeing may arise from cultural perceptions, such as the fear of overgrown green spaces. Such perceptions may vary between individuals depending on factors such as age, gender and socioeconomic status. Discussions between urban residents that enjoy benefits from green infrastructure and those that incur disservices may be necessary to inform polices and ensure levels of any disservices are tolerable. Studies on ecosystem disservices remain limited compared to ecosystem services.

5.4 NGBI assets

5.4.1 NGBI can supply multifunctional ecosystem services which provide a range of environmental, social and economic benefits. It is crucial that the diversity of these services is considered in policy and decision making.

- 5.4.2 Using the approach set out in the Essex Green Infrastructure Strategy⁵² **Table 5.2** has been prepared which shows the number of ecosystem services that are associated with the NGBI assets in Milton Keynes, grouped into their typologies.
- 5.4.3 The map presented in **Figure 5.1** shows the number of ecosystem services provided by the NGBI assets in Milton Keynes. This map helps to improve understanding of the distribution and multifunctionality of the services and benefits provided by the NGBI network in Milton Keynes.

⁵² Essex County Council (2020) Essex Green Infrastructure Strategy. Available at: https://www.essex.gov.uk/plans-and-strategies/essex-green-infrastructure-strategy [Accessed 24/03/23]

Table 5.2: NGBI assets and ecosystem services

NGBI Typology	NGBI Asset	Timber, hay and other materials	Fish and other marine products from wild	Plant-based energy	Cultivated crops	Water supply	Livestock	Water quality	Air quality	Noise regulation	Erosion control	Flood protection	Pollination	Biodiversity – thriving plants and wildlife	Climate regulation	Cultural services	Geodiversity services	Total
	Country parks							1	1	1		1	1	1	1	1		8
	District parks									1		1		1	1	1		8
	Linear parks									1		1		1	1	1		8
Parks and gardens	Local parks									1		1		1	1	1		8
	Pocket parks									1		1		1	1	1		5
	Private domestic gardens									1		1		1	1	1		5
	Formal gardens									1				1	1	1		4
	Common land (RCL)									1				1	1	1		4
Amenity greenspace	Village greens									1				1	1	1		4
	Children's natural play space									1				1	1	1		4

	Paddocks				1								1	2
	Broadleaved woodlands	1	1	1		1	1		1		1	1	1	9
Natural and semi-natural greenspaces	Coniferous woodlands	1	1	1		1	1		1			1	1	8
	Mixed woodlands	1	1	1		1	1		1		1	1	1	9
	Grasslands	1		1	1	1			1	1	1	1	1	9
	Hedgerows						1	1			1	1	1	5
	Leisure routes												1	1
Linear traffic- free access network	Redways												1	1
	PRoW: Bridleway												1	1
	PRoW: Footpath												1	1
	Road island							1			1	1	1	4
Transport network	Roadside grass verges							1			1	1	1	4
	Railway corridor							1			1	1	1	4
	Recreation ground							1	1		1	1	1	5
	Golf courses							1	1		1	1	1	5

	Equestrian centres									1	1
	Bowling green									1	1
Sports facilities	Natural sports pitches					1		1	1	1	4
	Artificial sports pitches									1	1
	Natural ball court									1	1
	Artificial ball court									1	1
	Multi use games areas (MUGAs)									1	1
	Skate parks									1	1
	Private cemetery					1		1	1	1	4
Religious spaces	Local authority cemetery					1		1	1	1	4
	Churchyard					1		1	1	1	4
	Allotments		1		1					1	3
Food growing areas	Orchards		1		1					1	3
	Community growing areas		1		1					1	3

	Wetlands							1		1		1	3
								1		1			
	Watercourses		1							1		1	3
	Canals		1							1		1	2
Blue infrastructure	Sustainable urban drainage systems (SuDS)		1	1	1		1	1	1	1		1	8
	Reedbeds									1	1	1	3
	Lakes and standing waters		1					1		1		1	4
	Ponds							1		1		1	3
	Modified waters (reservoirs)		1					1				1	3
Architectural features	Intensive green roofs				1	1				1	1	1	5
	Extensive green roofs				1	1				1	1	1	5
	Biodiverse extensive green roofs				1	1				1	1	1	5
	Brown roofs				1	1				1	1	1	5
	Biosolar roofs				1	1				1	1	1	5
	Blue roofs				1	1				1	1	1	5

	Green facades				1	1		1	1	1	5
	Living walls				1	1		1	1	1	5
	Balcony gardens				1	1		1	1	1	5
Civic spaces	Market squares									1	1
	Trees in hard landscapes				1	1		1	1	1	5
	Building fabric, furniture and utility structures							1		1	2
	Features for species							1		1	2
·	Flower beds									1	1
	Ground level planters									1	1
Heritage features and the historic environment	Scheduled Monuments									1	1
	Conservation Areas									1	1
	Listed Buildings									1	1

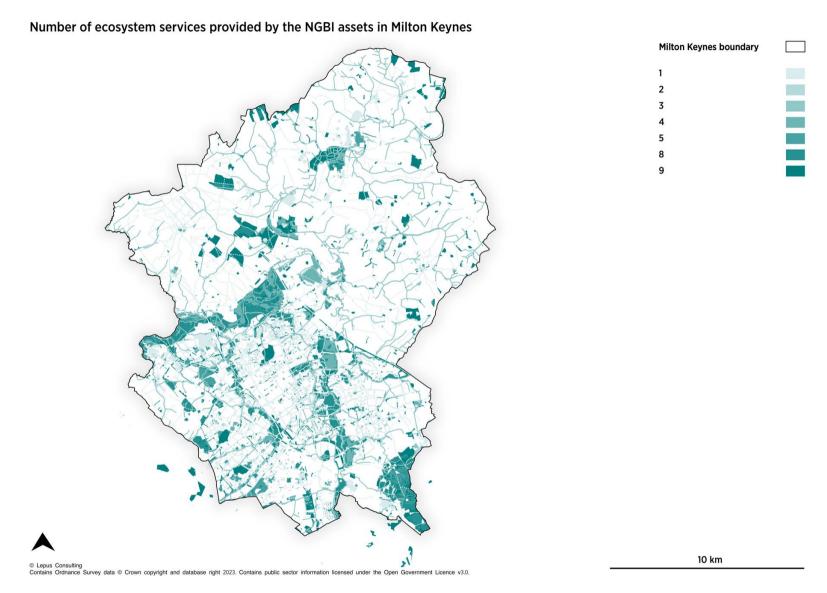


Figure 5.1: Number of ecosystem services provided by the NGBI assets in Milton Keynes

6 Demand for Nature, Green and Blue Infrastructure

- 6.1.1 This strategy expresses demand for NGBI through qualitative and quantitative means. Demand is influenced by a number of factors both at a NGBI strategy level and at a site level.
- 6.1.2 The quantitative analysis of demand has used the following methods:
 - Air quality
 - Population
 - Age profile
 - Index of Multiple Deprivation
 - Population density
 - Health
 - Risk of flooding from surface water
 - Natural Flood Management
 - Water quality and supply
 - NE's five headline standards including AGS
 - Woodland Trust standards

53 DEFRA (2023) Air Quality Management Areas (AQMAs). Available at: https://uk-air.defra.gov.uk/aqma/ [Accessed 20/03/23]

Allotment standard

6.2 Air quality

6.2.1 There is only one Air Quality Management Area (AQMA) located within the MKCC LA area in Olney⁵³.

MK NGBI Strategy August 2023

6.2.2 It is widely accepted that the effects of air pollution from road transport decreases with distance from the source of pollution i.e. the road carriageway. The Department for Transport (DfT) in their Transport Analysis Guidance (TAG) consider that, "beyond 200m, the contribution of vehicle emissions from the roadside to local pollution levels is not significant" ⁵⁴. This statement is supported by Highways England and Natural England based on evidence presented in a number of research papers ⁵⁵⁵⁶. A buffer distance of 200m has therefore been applied in this assessment. A proposed site which lies wholly or partially within an AQMA or a 200m buffer, as described above, is assessed as having potential negative effects on new residents.

6.3 Population

6.3.1 In Milton Keynes, the population size has increased by around 38,200 (15.3% increase), from around 248,800 in 2011 to 287,000 in 2021. This is higher than the overall increase for South East England (7.5%) and England (6.6%)⁵⁷.

6.4.1 Between the last two censuses (2011 to 2021), the average (median) age of Milton Keynes increased by two years, from 35 to 37 years of age. This is lower than the South East as a whole (41 years) and a lower than England (40 years) in 2021. **Table 6.1** shows the percentage of each age group of usual residents in Milton Keynes, South East England and England in 2021.

6.5 Index of Multiple Deprivation

6.5.1 It is widely accepted that communities living in areas of higher IMD and greater population density are likely to have greater health and wellbeing needs.

^{6.4} Age profile

⁵⁴ Department for Transport (2017) TAG unit A3 Environmental Impact Appraisal. Available at: https://www.gov.uk/government/publications/webtag-tag-unit-a3-environmental-impact-appraisal-december-2015 [Date accessed: 16/08/22]

⁵⁵ Bignal, K., Ashmore, M & Power, S. 2004. The ecological effects of diffuse air pollution from road transport. English Nature Research Report No. 580, Peterborough.

⁵⁶ Ricardo-AEA, 2016. The ecological effects of air pollution from road transport: an updated review. Natural England Commissioned Report No. 199.

⁵⁷ ONS (2023) How life has changed in Milton Keynes: Census 2021. Available at: https://www.ons.gov.uk/visualisations/censusareachanges/E06000042/ [Accessed 22/03/23]

- MK_NGBI_Strategy_August_2023
- 6.5.2 The English Indices of Deprivation (IoD)⁵⁸ measure relative levels of deprivation in 32,844 small areas or neighbourhoods, called Lower-layer Super Output Area (LSOAs), in England. The LSOAs are ranked and divided into 10 equal groups (or deciles) according to their deprivation rank. The Index of Multiple Deprivation (IMD) is the official measure of relative deprivation in England. The latest iteration of the IMD was published in 2019.
- 6.5.3 A map showing the IMD decile for the LSOAs in Milton Keynes is presented in **Figure 6.1**.

https://www.gov.uk/government/statistics/english-indices-of-deprivation-2019 [Accessed 20/03/23]

⁵⁸ Ministry of Housing, Communities & Local Government. The English Indices of Deprivation 2019 (IoD2019). Available at:

Table 6.1: Age group of usual residents in Milton Keynes, South East England and England (ONS Census 2021)

Classification	Milton Keynes (%)	South East (%)	England (%)
85 years and over	1.5	2.7	2.4
75 to 84 years	4.1	6.5	6.1
65 to 74 years	8.2	10.2	9.8
50 to 64 years	17.7	19.8	19.4
35 to 49 years	22.9	19.7	19.4
25 to 34 years	14.3	12.4	13.6
20 to 24 years	5.2	5.6	6
16 to 19 years	4.4	4.5	4.6
10 to 15 years	8.4	7.3	7.2
5 to 9 years	7.1	6	5.9
4 years and under	6.2	5.3	5.4

6.5.4 The IoD is comprised of seven distinct domains of deprivation which, when combined and appropriately weighted, form the IMD (2019). The seven domains (and their weightings) are presented in **Table 6.2**.

Table 6.2: Domains of deprivation

Domains of deprivation	Weighti ng	Description
Income	(22.5%)	Measures the proportion of the population experiencing deprivation relating to low incomes
Employment	(22.5%)	Measures the proportion of the working age population in an area involuntarily excluded from the labour market
Health, Deprivation and Disability	(13.5%)	Measures the risk of premature death and the impairment of quality of life through poor physical or mental health
Education, Skills Training	(13.5%)	Measures the lack of attainment and skills in the local population
Crime	(9.3%)	Measures the risk of personal and material victimisation at local level

Barriers to Housing and Services	(9.3%)	Measures the physical and financial accessibility of housing and local services
Living Environment	(9.3%)	Measures the quality of both the 'indoor' and 'outdoor' local environment

6.5.5 There are 152 LSOAs in Milton Keynes. Of these, 8 are within the most deprived decile (1) and 10 are within the least deprived decile (10). The most deprived LSOA in Milton Keynes is ranked 628 and the least deprived LSOA is ranked 32,338 out of 32,844 LSOAs in England. A map showing the decile for each LSOA in Milton Keynes is presented in **Figure 6.1**. The most deprived LSOAs are located within the city.

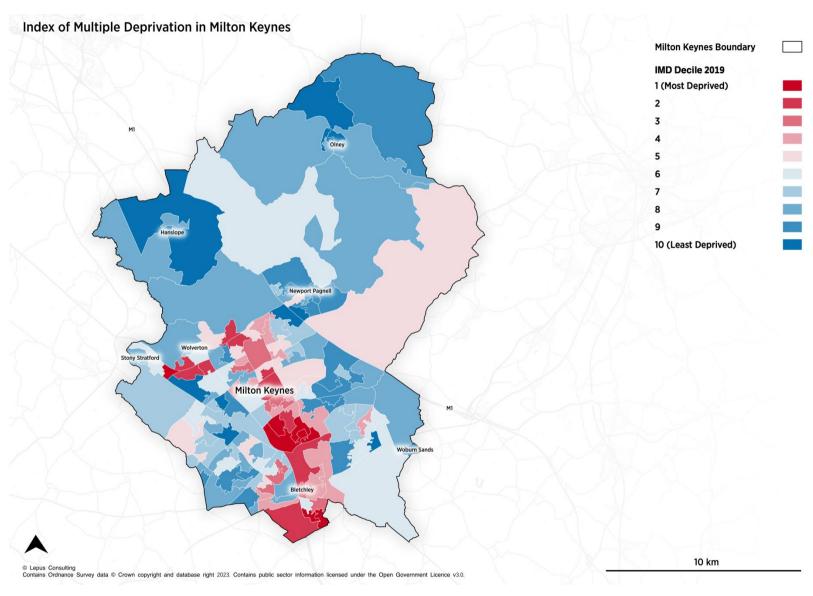


Figure 6.1: Index of Deprivation in Milton Keynes

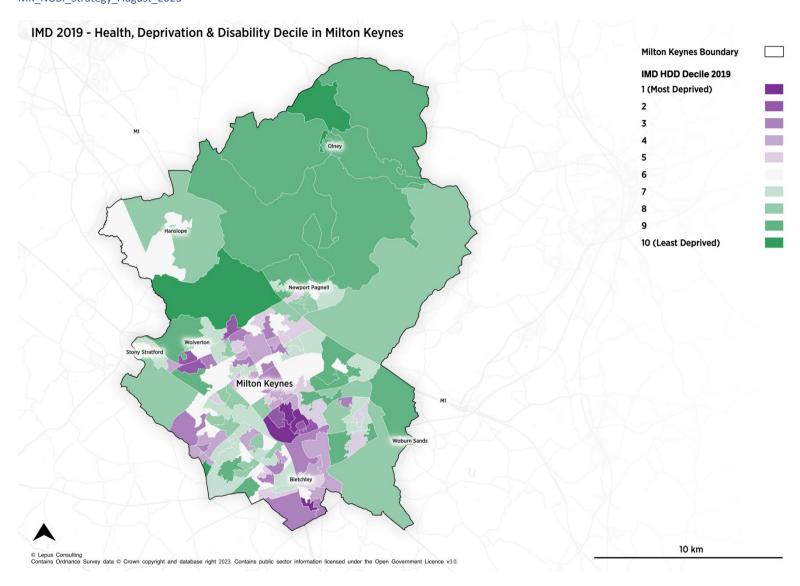


Figure 6.2: IMD Health, Deprivation and Disability Decile in Milton Keynes

6.6 Health, deprivation and disability domain

- 6.6.1 The Health Deprivation and Disability Domain (HDDD) is one of seven domains of deprivation within the IoD (see **Table 6.2**). The HDDD measures the risk of premature death and the impairment of quality of life through poor physical or mental health. The domain measures morbidity, disability and premature mortality but not aspects of behaviour or environment that may be predictive of future health deprivation. The indicators within the HDDD are as follows:
 - Years of potential life lost: An age and sex standardised measure of premature death;
 - Comparative illness and disability ratio: An age and sex standardised morbidity/disability ratio;
 - Acute morbidity: An age and sex standardised rate of emergency admission to hospital; and
 - Mood and anxiety disorders: A composite based on the rate of adults suffering from mood and anxiety disorders, derived from hospital episodes data, prescribing data and suicide mortality data.⁵⁹

6.6.2 The map presented in **Figure 6.2** shows the HDDD decile for each LSOA within Milton Keynes.

6.7 Population density

- 6.7.1 Population density can be a big driver of demand as accessible NGBI may not be close to these populations or it may be so intensively used that the quality of experience reduces. Areas of high population density in particular are therefore likely to benefit greatly from NGBI interventions.
- 6.7.2 The population density per sq km in LSOAs in Milton Keynes is presented in **Figure 6.3**. The population data is from mid-2020 as this was the most recent data for LSOA level at the time of writing. The LSOA with the highest population density was 'Milton Keynes 008B' (8854.45 per sq km) located in Wolverton.

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/833951/IoD2019 Technical Report.pdf [Accessed 22/03/23]

⁵⁹ Ministry of Housing, Communities & Local Government (2019) The English Indices of Deprivation 2019. Technical report. Available at:

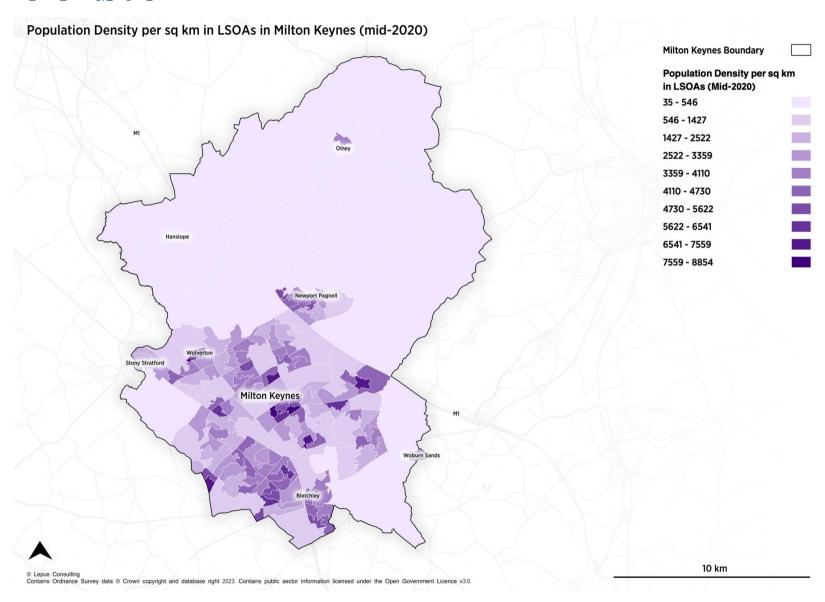


Figure 6.3: Population density per sq km in LSOAs in Milton Keynes (mid-2020)

6.8 Health (ONS Census 2021)

According to ONS 2021 census data, in 2021, 47.4% of Milton Keynes residents described their health as "very good", increasing from 44.9% in 2011. The proportion of Milton Keynes residents describing their health as "very bad" was 1.1% (similar to 2011), while those describing their health as "bad" fell from 4.2% to 3.8% Table 6.3 shows the age-standardised proportion of usual residents by self-reported health in Milton Keynes, South East England and England in 2021.

Table 6.3: Age-standardised proportion of usual residents by self-reported health (ONS Census 2021)

Classification	Milton Keynes (%)	South East (%)	England (%)
Very good health	47.4	49.6	47.5
Good health	34.8	34.4	34.2
Fair health	12.8	11.8	13

Bad health	3.8	3.3	4.1
Very bad health	1.1	0.9	1.2

6.9 Risk of flooding from surface water

- 6.9.1 A map showing the Risk of Flooding from Surface Water (RoFSW) in Milton Keynes is presented in **Figure 6.4**.
- 6.9.2 The data to inform this map has been calculated using the RoFSW: one percent annual chance (1 in 100 chance) data from the Environment Agency⁶¹.
- 6.9.3 Surface water flooding happens when rainwater does not drain away through the normal drainage systems or soak into the ground, but lies on or flows over the ground instead.

⁶⁰ ONS (2023) How life has changed in Milton Keynes: Census 2021. Available at: https://www.ons.gov.uk/visualisations/censusareachanges/E06000042/ [Accessed 22/03/23]

⁶¹ Environment Agency (2023) Risk of Flooding from Surface Water Hazard: 1 percent annual chance. Available at: https://www.data.gov.uk/dataset/d204b56d-bb78-4cde-83ed-411593b190f5/risk-of-flooding-from-surface-water-hazard-1-percent-annual-chance [Accessed 21/03/23]

- 6.9.4 The nationally produced surface water flood mapping presents the surface water flood risk for a 'current day' scenario. The mapping does not take into account possible 'future' scenarios such as climate change, urban creep, or various post-scheme implementation scenarios.
- 6.9.5 The RoFSW extent data was then split into the 152 LSOAs in Milton Keynes and the area of flood extent within each LSOA was calculated to determine the percent that each LSOA will flood with a one percent annual chance.
- 6.9.6 This data was then weighted by population using a correction factor using mid-2020 population estimates as this was the most recent data for LSOA level at the time of writing.
- 6.9.7 The LSOA with the highest population was given a score of 1 and every other LSOA was given a score as a percentage of the highest population and converted to a decimal. For example, the LSOA with the highest population was 6,393 (score of 1) and the LSOA with a population of 3,224 was given a score of 0.5. The correction factors for population were then multiplied by the percentage that each LSOA will experience surface water flooding with a one percent annual chance.

6.9.8 The LSOA with the highest RoFSW was 'Milton Keynes 010B' located in Stony Stratford. This LSOA includes the Stony Stratford Nature Reserve and the River Great Ouse runs along the boundary of this LSOA.

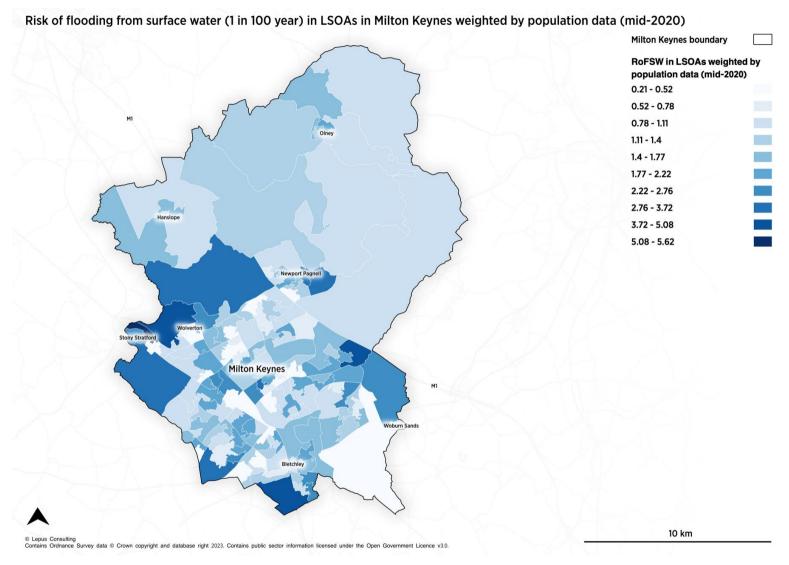


Figure 6.4: Risk of flooding from surface water (1 in 100 year) in LSOAs in Milton Keynes weighted by population data (mid-2020)

6.10 Spatial prioritisation of catchments suitable for using natural flood management

- 6.10.1 The map shown in **Figure 6.5** presents the spatial prioritisation of catchments suitable for reducing flood risk using natural flood management (NFM) or land use management and land use change within the Environmental Land Management pilot schemes.
- 6.10.2 The types of interventions relevant to this spatial prioritisation include changes to vegetation cover, farming practices, small scale structures to store water or small scale re-naturalisation of streams and ditches, or other interventions that work with natural processes to slow flows of water within watercourses or overland flow. The prioritisation map aims to identify catchments where these "slow the flow" type NFM measures, or other associated land use or land management changes, will be most effective in reducing flood risk and will maximise the number of properties protected⁶².

⁶² DEFRA (2023) Spatial prioritisation of catchments suitable for using Natural Flood Management. Available at: https://environment.data.gov.uk/dataset/793f7e63-0c3e-49cd-808f-9f77e55382d2 [Accessed 22/03/23]

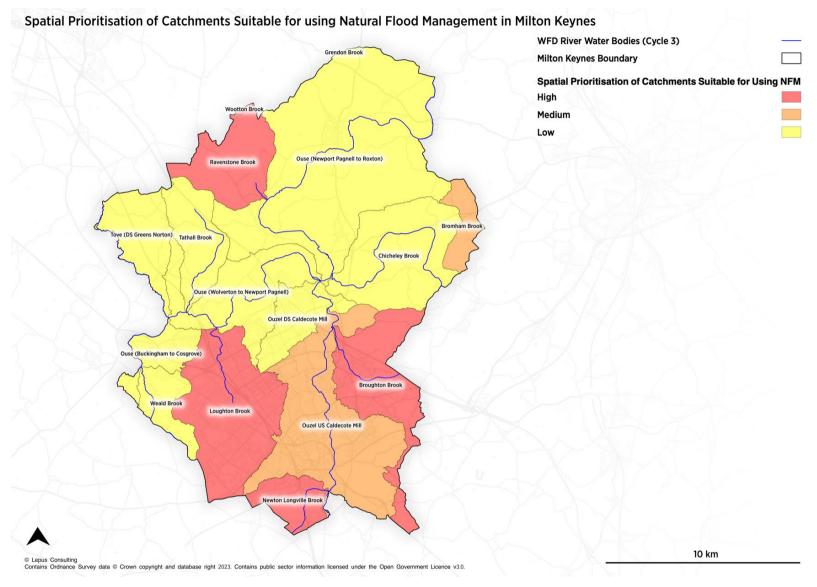


Figure 6.5: Spatial prioritisation of catchments suitable for using natural flood management in Milton Keynes

6.11 Water quality

- 6.11.1 Milton Keynes is located within the Anglican River basin district and the Ouse Upper and Bedford management catchment. Milton Keynes is located within three operational catchments: Great Ouse Bedford, Ouzel and Milton Keynes and Great Ouse Upper. Within these three operational catchments, there are 13 water bodies (all rivers) within Milton Keynes. The hydromorphological designation of all rivers in Milton Keynes are either 'heavily modified' or 'not designated artificial or heavily modified'.
- 6.11.2 A map of the Water Framework Directive (WFD) river water body catchments is shown in **Figure 6.6**. The ecological and chemical classifications of these water bodies (time period: cycle 3) are presented in **Table 6.4** alongside the hydrological regime classification which describes the naturalness of river flows.

Table 6.4: Classifications of water bodies in Milton Keynes

Water body	Classificati on: Ecological	Classificati on: Chemical	Hydrological regime	
Broughton Brook	Poor	Fail	Does not support good	
Chicheley Brook	Poor	Fail	Supports good	
Loughton Brook	Moderate	Fail	Supports good	
Newton Longville Brook	Poor	Fail	Supports good	
Ouse (Buckingham to Cosgrove)	Moderate	Fail	Supports good	
Ouse (Newport Pagnell to Roxton)	Moderate	Fail	Supports good	
Ouse (Wolverton to Newport Pagnell)	Moderate	Fail	Supports good	
Ouzel DS Caldecote Mill	Moderate	Fail	Supports good	

Ouzel US Caldecote Mill	Moderate	Fail	Supports good
Ravenstone Brook	Moderate	Fail	Supports good
Tathall Brook	Moderate	Fail	Supports good
Tove (DS Greens Norton)	Moderate	Fail	Supports good
Weald Brook	Moderate	Fail	Supports good

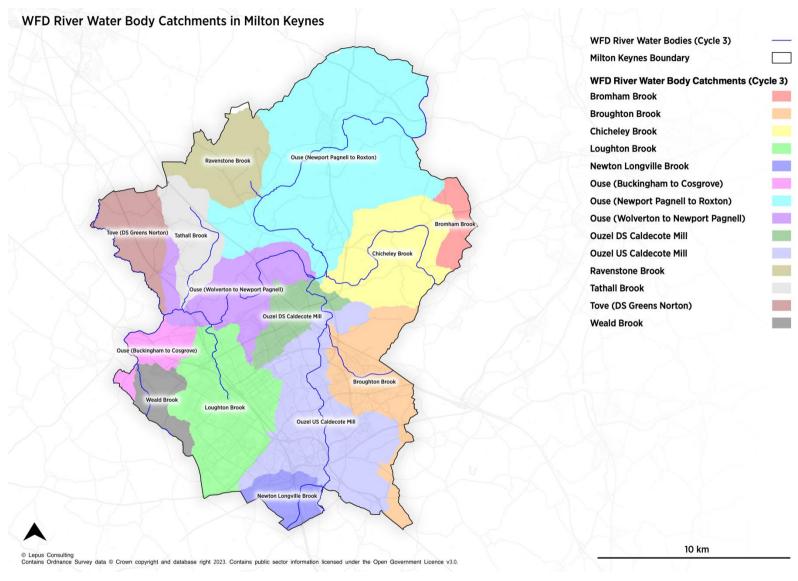


Figure 6.6: Water Framework Directive river water body catchments in Milton Keynes

6.12 Water resource availability and abstraction reliability

- 6.12.1 The Water Resource Availability and Abstraction Reliability (Cycle 2) dataset ⁶³ indicates whether, and for what percentage of time, additional water may be available for consumptive abstraction (subject to assessment of local risks) for each Water Framework Directive Cycle 2 water body. Each water body is colour coded as follows:
 - Green Water available for licensing;
 - Yellow Restricted water available for licensing; and
 - Red Water not available for licensing.
- 6.12.2 The map shown in **Figure 6.7** shows the availability of water extraction 95% of the time. This map shows that water from the Broughton Brook Water Body Catchment is not available for licensing.

- 6.13.1 The Natural England Green Infrastructure Framework Mapping Tool ⁶⁴ includes layers exploring the spatial relationship between accessibility of green spaces (measured as % LSOA covered by the respective green spaces and their ANGSt buffer) across the range of ANGSt Benchmarks and compares with:
 - Deprivation as measured by the IMD (2019); and
 - Population density derived from ONS Census 2011.
- 6.13.2 The resultant maps provide a relative measure of places with respect to potential issues concerning supply and demand for accessible natural green space. More information about these layers can be found at the mapping module descriptions⁶⁵.

^{6.13} NE Green Infrastructure Framework accessible natural greenspace inequalities layers

⁶³ Environment Agency (2023) Water Resource Availability and Abstraction Reliability Cycle 2. Available at: https://www.data.gov.uk/dataset/b1f5c467-ed41-4e8f-89d7-f79a76645fd6/water-resource-availability-and-abstraction-reliability-cycle-2 [Accessed 21/03/23]

⁶⁴ Natural England (2023) The England Green Infrastructure Mapping Database. Available at: https://designatedsites.naturalengland.org.uk/GreenInfrastructure/Map.aspx [Accessed 21/03/23]

⁶⁵ Natural England (2023) Mapping module descriptions. Available at: https://designatedsites.naturalengland.org.uk/GreenInfrastructure/UserGuide/Section03.aspx#inequalities-population [Accessed 21/03/23]

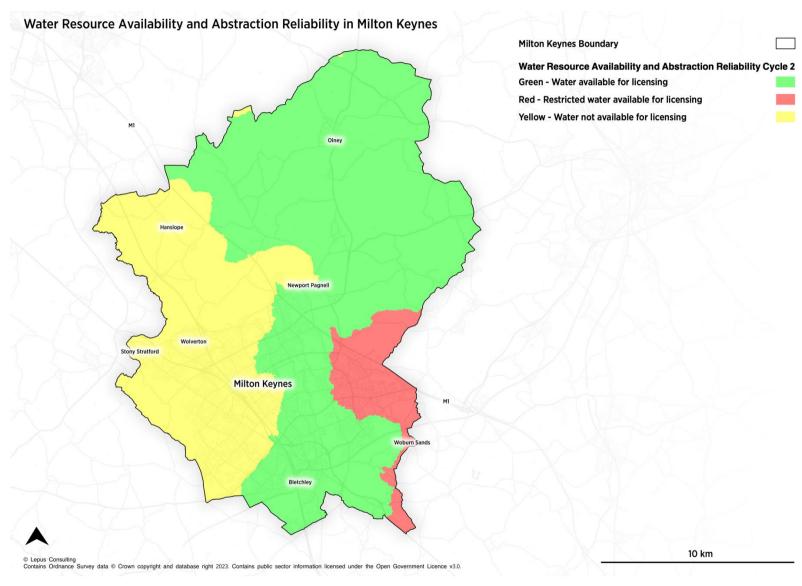


Figure 6.7: Water resource availability and abstraction reliability in Milton Keynes

6.14 NE Green Infrastructure Framework standards

- 6.14.1 MKCC is aspirational in seeking to deliver low carbon communities, halting biodiversity loss, delivering biodiversity net gain and increasing tree planting, seeking to become the Greenest City in the World.
- 6.14.2 Delivering the quality and quantity of NGBI required to meet these aspirations can be achieved by setting standards which provide benchmarks to enable local authorities to compare different areas, highlight good NGBI and help to identify and address inequalities in provision.
- 6.14.3 The Natural England Green Infrastructure Framework⁶⁶ sets out 5 headline standards that define criteria and attributes for good green infrastructure and how to plan, deliver and maintain it. The 5 headline standards are listed below:
 - S1: Green Infrastructure Strategy Standard
 - S2: Accessible Greenspace Standards
 - S3: Urban Nature Recovery Standard
 - S4: Urban Greening Factor Standard
 - S5 Urban Tree Canopy Cover Standard

6.14.4 For each standard there are measures to be considered at the 'Area Wide' level as well as measures to be considered in 'Major Development' proposals. The following section of this report details the extent to which Milton Keynes currently meets these standards.

6.15 S1: Green Infrastructure Strategy standard

S1: Area wide:

6.15.1 This standard supports the National Planning Policy Framework's policy that local authorities should develop strategic policies for green infrastructure. The Green Infrastructure Standard will support Local Authorities to develop Delivery Plans to support the creation and enhancement of new and existing greenspaces.

"Working in partnership with stakeholders, including local communities, assess and strategically plan their green infrastructure provision, for example, as part of a green infrastructure strategy. Plans set out how green infrastructure will help to create greener, beautiful, healthier and more prosperous neighbourhoods, with a thriving nature network that can reduce air and water

https://designatedsites.naturalengland.org.uk/GreenInfrastructure/downloads/Green%20

<u>Infrastructure%20Standards%20for%20England%20Summary%20v1.1.pdf</u> [Accessed 28/06/23]

 $^{^{66}}$ Natural England (2023) Green Infrastructure Standards for England – Summary. Accessed on 20/03/2023. Available at:

pollution, support sustainable drainage and help places adapt to climate change".

6.15.2 In doing this they apply the 15 Green Infrastructure Principles and the Green Infrastructure Standards locally (adapting them to local context where appropriate) and set green infrastructure policies, proposals and development requirements in development plans and local design codes. Local Planning Authorities can set SMART targets in a Delivery Plan for achieving Green Infrastructure Standards and local policies over time. Local Planning Authorities can then monitor and evaluate green infrastructure policies and delivery of the targets every five years.

S1: Major development

6.15.3 Each major new development has a Green Infrastructure Plan (which may be part of a Design and Access Statement) setting out how the development will deliver the Green Infrastructure Framework's 15 Green Infrastructure Principles and the Green Infrastructure Standards as set out in local green infrastructure policies, proposals and development requirements in development plans and local design codes. The green infrastructure delivered within (or associated with) major new developments should be managed, maintained and monitored for a minimum of 30 years⁶⁷.

6.16 S2: Accessible Greenspace standards

S2: Area wide

6.16.1 Accessible Greenspace Standards (AGS) – Size and Proximity Criteria.

https://designatedsites.naturalengland.org.uk/GreenInfrastructure/downloads/Green%20

Infrastructure%20Standards%20for%20England%20Summary%20v1.1.pdf [Accessed 15/03/23]

 $^{^{67}}$ Natural England (2023) Green Infrastructure Standards for England – Summary. Available at:

6.16.2 Natural England's Green Infrastructure Framework has updated the Accessible Natural Greenspace Standards (ANGSt) and they have been renamed 'Accessible Greenspace Standards'. The Green Infrastructure Framework puts an initial focus on access to green and blue spaces within 15 minutes' walk from home. The size proximity criteria is as follows:

"Within 15 minutes' walk:

EITHER a Doorstep or Local Accessible Greenspace:

- A doorstep greenspace of at least 0.5ha within 200 metres or
- A local natural greenspace of at least 2ha within 300 metres walk from home

AND

 A medium sized neighbourhood natural greenspace (10ha) within 1km

AND, beyond 15 minutes' walk:

- A medium/large wider neighbourhood natural greenspace (20ha) within 2km
- A large district natural greenspace (100ha) within 5km, and

- A very large subregional greenspace (500ha) within 10km"
- 6.16.3 Accessible greenspaces in Milton Keynes are derived from MKCC Open Space Assessment (unpublished draft, 2023).
- 6.16.4 A map showing the location of doorstep greenspaces in Milton Keynes above 0.5ha is presented in **Figure 6.8**. Doorstep greenspaces includes the following open space types derived from MKCC Open Space Assessment (unpublished draft, 2023):
 - Amenity greenspace
 - Cemeteries, churchyards and other burial grounds
 - Civic spaces and formal gardens
 - Common land and village greens
 - Country parks
 - District parks
 - Food growing areas
 - Formal outdoor playing facilities
 - Linear parks
 - Local parks
 - Other natural & semi natural greenspace
 - Pocket parks

- 6.16.5 **Figure 6.8** also shows isochrones which have been calculated by MKCC and show the area served by doorstep greenspace within 200m. The data used to prepare this map was created to inform MKCC's Open Space Assessment (unpublished draft, 2023).
- 6.16.6 A map showing the location of accessible greenspace in Milton Keynes above 2ha is presented in **Figure 6.9**. This includes the following open space types derived from MKCC Open Space Assessment (unpublished draft, 2023):
 - District parks
 - Linear parks
 - Country parks
 - Other natural & semi natural greenspace

- 6.16.7 **Figure 6.9** also shows isochrones which have been calculated by MKCC and show the area served by local greenspace within 300m, the area served by neighbourhood greenspace within 1km, the area served by wider neighbourhood greenspace within 2km and the area served by district greenspace within 5km. The data used to prepare this map was created to inform MKCC's Open Space Assessment (unpublished draft, 2023).
- 6.16.8 There are no sub-regional greenspaces within Milton Keynes that are above 500ha and within 1km.

S2: Accessible greenspace standards

6.16.9 The Natural England Green Infrastructure Framework also sets a target for local authorities to provide 3 hectares of publicly accessible greenspace per 1,000 residents. According to MKCC Open Space Assessment (unpublished draft, 2023) there are 2851.49ha of open spaces in Milton Keynes (see **Table 6.5**). According to the ONS 2021 census, the population of Milton Keynes was 287,100⁶⁸. Therefore, there is 9.93ha per 1000 population in Milton Keynes which exceeds this Accessible Greenspace Standard.

⁶⁸ ONS (2023) How life has changed in Milton Keynes: Census 2021. Accessed on 16/03/2023. Available at:

https://www.ons.gov.uk/visualisations/censusareachanges/E06000042/

Table 6.5: Area of open spaces in Milton Keynes

Open spaces	Area (ha)	Area (ha) per 1000 population
Amenity greenspace	204.4	0.71
Cemeteries, Churchyards and other Burial Grounds	23.35	0.08
Civic spaces and formal gardens	5.74	0.02
Common land and village greens	75.21	0.26
Country parks	155	0.54
District parks	33	0.11
Food growing areas	57.77	0.20
Formal outdoor playing facilities	227.99	0.79
Linear parks	1542	5.37
Local parks	142.42	0.50
Other natural & semi natural greenspace	316.09	1.10
Paddocks	21	0.07

Pocket parks	47.52	0.17
Total	2851.49	9.93

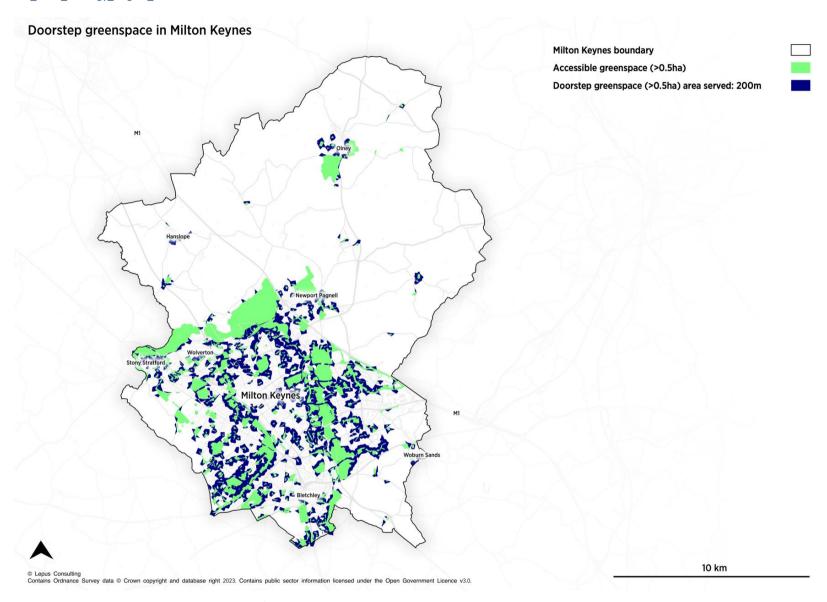


Figure 6.8: Doorstep greenspace in Milton Keynes

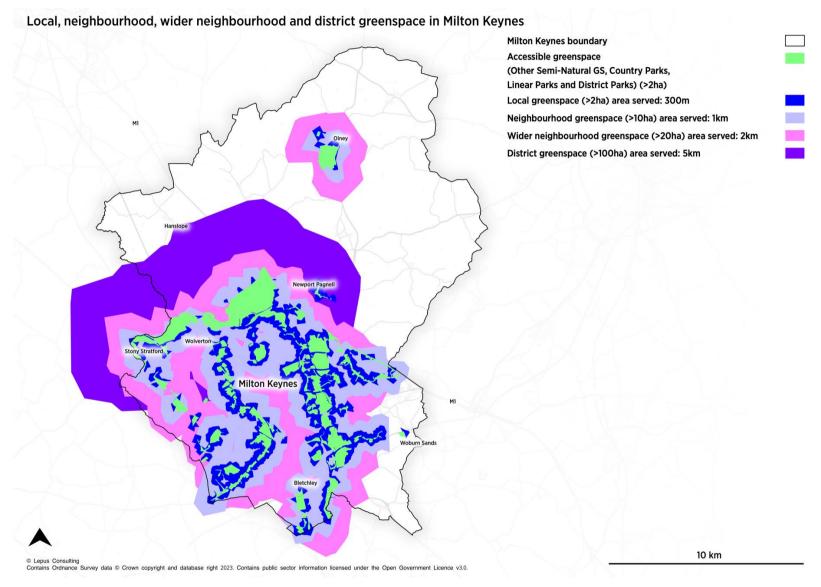


Figure 6.9: Local, neighbourhood, wider neighbourhood and district greenspace in Milton Keynes

MK NGBI Strategy August 2023

S2: Accessible greenspace standards – quality criteria

- 6.16.10 Accessible greenspace meets the Green Flag Award Criteria⁶⁹ and best practice in accessibility for all⁷⁰.
- 6.16.11 Green Flag Award Winners in Milton Keynes include the Milton Keynes Linear Parks, Chepstow Local Park and Great Linford Manor Park, which is also a Green Heritage Site⁷¹.
 - **S2: Major development**

S2: Accessible greenspace standards (AGS) – size and proximity Criteria

6.16.12 For all major residential developments, the local authority specifies to the developer the quantity, size and distance criteria for any accessible greenspace to be provided within/associated with the development, based on the Accessible Greenspace Standards.

S2: Accessible greenspace standards

6.16.13 All major residential development is designed to meet capacity targets (hectares of accessible greenspace per 1,000 population), specified by the local planning authority.

S2: Accessible greenspace standards - quality criteria

6.16.14 Accessible greenspace meets the Green Flag Award Criteria⁷² and best practice in accessibility for all⁷³ in major new developments⁷⁴.

⁶⁹ Green Flag Award (2023) Available at https://www.greenflagaward.org/ [Accessed on 10/02/23]

⁷⁰ The Sensory Trust (2020) 'By All Reasonable Means: Least restrictive access to the outdoors' Available at

https://www.sensorytrust.org.uk/uploads/documents/ByAllReasonableMeansEnglandAug 2020.pdf [Accessed on 10/02/23]

⁷¹ Green Flag Award (2023) Winners. Available at: https://www.greenflagaward.org/award-winners/ [Accessed on 20/03/23]

⁷² Green Flag Award (2023) Available at https://www.greenflagaward.org/ [Accessed on 10/02/23]

⁷³ The Sensory Trust (2020) 'By All Reasonable Means: Least restrictive access to the outdoors' Available at

https://www.sensorytrust.org.uk/uploads/documents/ByAllReasonableMeansEnglandAug 2020.pdf [Accessed on 10/02/23]

⁷⁴ Natural England (2023) Green Infrastructure Standards for England – Summary. Available at:

MK NGBI Strategy August 2023

6.17 Allotments standards

6.17.1 There are no national standards for food growing areas. The National Society of Allotment and Leisure Gardeners (NSALG) suggest a standard of 20 allotments per 1000 households which equates to 0.25ha per 1000 population. The demand for allotments and other food growing areas varies and therefore the 0.25ha per 1000 population can be applied as a starting point in estimating future demands.

6.18 Woodland access standard

- 6.18.1 The Woodland Trust has created a Woodland Access Standard ⁷⁵ which is a separate and complementary standard to the Accessible Greenspace Standards from Natural England's Green Infrastructure Framework. The Woodland Trust's Woodland Access Standard comprises the following two standards:
 - "No person should live more than 500m from at least one area of accessible woodland of no less than 2ha in size; and

- There should also be at least one area of accessible woodland of no less than 20ha within 4km (8km round trip) of people's homes."
- 6.18.2 The Woodland Trust recognises that whilst the ideal scenario would be for both standards to be met, in urban areas where there is a lack of available land, it would be acceptable for only the 4km threshold to be met.
- 6.18.3 A map showing forests and woodlands above 2ha with isochrones showing the area served within 500m and the area served within 4000m from forests and woodlands above 20ha is presented in **Figure 6.10**. The data used to prepare this map was created to inform MKCC's Open Space Assessment (unpublished draft, 2023).

 $[\]frac{https://designatedsites.naturalengland.org.uk/GreenInfrastructure/downloads/Green%20}{Infrastructure%20Standards%20for%20England%20Summary%20v1.1.pdf} [Accessed 15/03/23]$

⁷⁵ Woodland Trust (2017) Space for people. Targeting action for woodland access. Available at: https://www.woodlandtrust.org.uk/media/1721/space-for-people-woodland-access.pdf [Accessed on 15/03/2023]

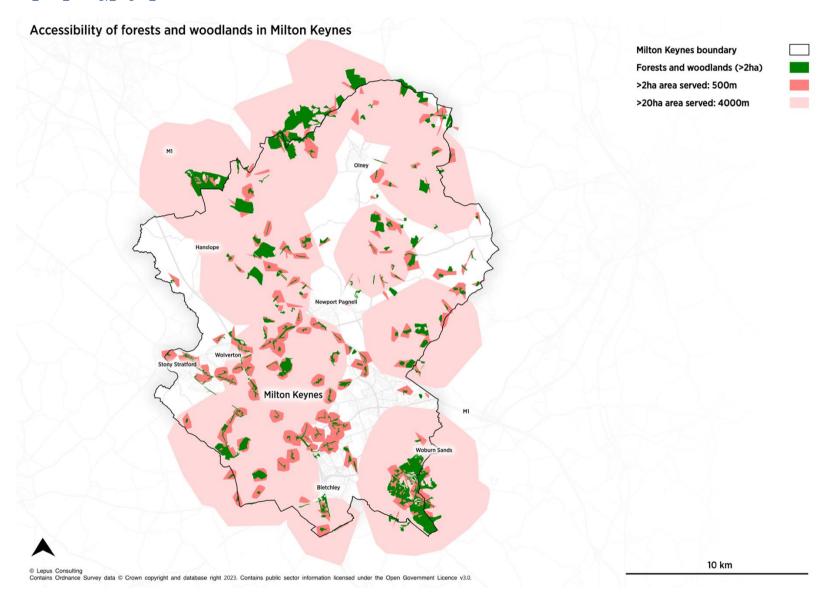


Figure 6.10: Accessibility of forests and woodlands in Milton Keynes

6.19 S3: Urban Nature Recovery standard

6.19.1 Aims to boost nature recovery, create and restore rich wildlife habitats and build resilience to climate change. Incorporating nature-based solutions, including trees and wildflowers, into the design of towns and cities will increase carbon capture, prevent flooding and reduce temperatures during heatwaves.

S3: Area wide

- 6.19.2 In urban and urban fringe areas, the proportion of green infrastructure that is designed and managed for nature recovery is increased by an agreed percentage based on a locally defined baseline and taking into account local needs, opportunities and constraints. This includes the creation and restoration of wildlife rich habitats, which can contribute to the delivery of local nature recovery objectives.
- 6.19.3 Local authorities in urban and urban fringe areas set targets for nature recovery through provision and sustainable management of Local Nature Reserves and Local Wildlife Sites, to:

- Provide 1 hectare of Local Nature Reserve (LNR) per 1,000 population (for nature conservation and quiet enjoyment); and
- Enhance existing and identify new areas that qualify as Local Wildlife Sites (for nature conservation).
- 6.19.4 Blue Lagoon Local Nature Reserve is the only LNR located within Milton Keynes. Blue Lagoon LNR is 33.12ha in size. According to the ONS 2021 census, the population of Milton Keynes was 287,100. Therefore, for every 1000 people there is 0.12 hectares of LNR in Milton Keynes. To meet the target set by Natural England, Milton Keynes will need 287.1 hectares in total, or an additional 253.98 hectares of LNRs.
- 6.19.5 Compared to LNRs, Milton Keynes has considerably more Local Wildlife Sites (LWSs), 33 in total (see **Figure 4.2**), that are spread across the local authority area. The LWSs in Milton Keynes comprise a range of habitats including woodlands, grassland and open water.

S3: Major development

MK NGBI Strategy August 2023

6.19.6 The developer identifies in the Green Infrastructure Plan the need for the development (or in the Design and Access Statement, as appropriate), its contribution to nature recovery and the creation and restoration of wildlife rich habitats, which can contribute to the delivery of local nature recovery objectives, including the potential for creation or enhancement of Local Nature Reserves or Local Wildlife Sites⁷⁶.

6.20 S4: Urban Greening Factor standard

S4: Area wide

6.20.1 The Urban Greening Factor has been developed as a planning tool to improve the provision of green infrastructure and increase the level of greening in urban environments.

6.20.3 The Natural England Green Infrastructure Framework Mapping Tool includes a 'Greenness Grid' layer. This layer provides a 250m square grid (aligned with OS grid) based assessment of the percent "manmade surface" (not vegetation, water or soils) within the grid squares covering all England. The grid is aligned with the OS grid and depicted in colour coded 10% deciles. See **Figure 6.11** for a map showing the greenness grid presented within the boundaries of MKCC.

S4: Major development

6.20.4 The standard for major development meets National Urban Greening Factors of at least 0.3 for commercial development, 0.4 for residential development, (and, where appropriate, 0.5 for residential greenfield development)⁷⁷.

^{6.20.2} This area wide standard requires at least 40% average green cover in urban residential neighbourhoods where they do not already meet that standard. There is no net loss of green cover in urban neighbourhoods.

 $^{^{76}}$ Natural England (2023) Green Infrastructure Standards for England – Summary. Available at:

https://designatedsites.naturalengland.org.uk/GreenInfrastructure/downloads/Green%20 Infrastructure%20Standards%20for%20England%20Summary%20v1.1.pdf [Accessed 15/03/23]

 $^{^{77}}$ Natural England (2023) Green Infrastructure Standards for England – Summary. Available at:

https://designatedsites.naturalengland.org.uk/GreenInfrastructure/downloads/Green%20 Infrastructure%20Standards%20for%20England%20Summary%20v1.1.pdf [Accessed 15/03/23]

6.20.5 The Urban Greening Factor for England User Guide ⁷⁸ published by Natural England as part of their Green Infrastructure Framework provides detailed guidance on the purpose and practice of applying Urban Greening Factors through the planning, design and development process.

6.21 S5 Urban Tree Canopy Cover standard

- 6.21.1 This standard promotes an increase in tree canopy cover in urban environments. Trees are vital for capturing carbon and can mitigate flood risk as they absorb excess water during flooding incidents.
- 6.21.2 MKCC tree guidelines state that MKCC remains committed to increasing the tree canopy cover across Milton Keynes. This will maximise the important range of benefits that trees can bring. MKCC will undertake new tree planting in appropriate locations when budget and funding opportunities are made available and will develop an overall planting strategy. External funding helps MKCC to implement and extend tree planting schemes⁷⁹.

S5: Area wide

6.21.3 Urban Tree Canopy Cover is increased by an agreed percentage based on a locally defined baseline and taking into account local needs, opportunities and constraints.

S5: Major development

6.21.4 Major residential and commercial development is designed to meet these targets.

⁷⁸ Natural England (2023) Urban Greening Factor for England User Guide Available at: https://designatedsites.naturalengland.org.uk/GreenInfrastructure/downloads/Urban%20 Greening%20Factor%20for%20England%20User%20Guide.pdf [Accessed 20/03/23]

⁷⁹ Milton Keynes Council (2022) Tree guidelines. Our operational tree policy. Available at: https://www.milton-keynes.gov.uk/environment-parks-and-open-spaces/landscape-maintenance/trees[Accessed 01/06/23]

6.21.5 New and existing trees are incorporated into new developments and new streets are tree lined (in line with NPPF requirements)⁸⁰.

https://designatedsites.naturalengland.org.uk/GreenInfrastructure/downloads/Green%20

<u>Infrastructure%20Standards%20for%20England%20Summary%20v1.1.pdf</u> [Accessed 15/03/23]

 $^{^{80}}$ Natural England (2023) Green Infrastructure Standards for England – Summary. Available at:

Natural England Greenness Grid in Milton Keynes

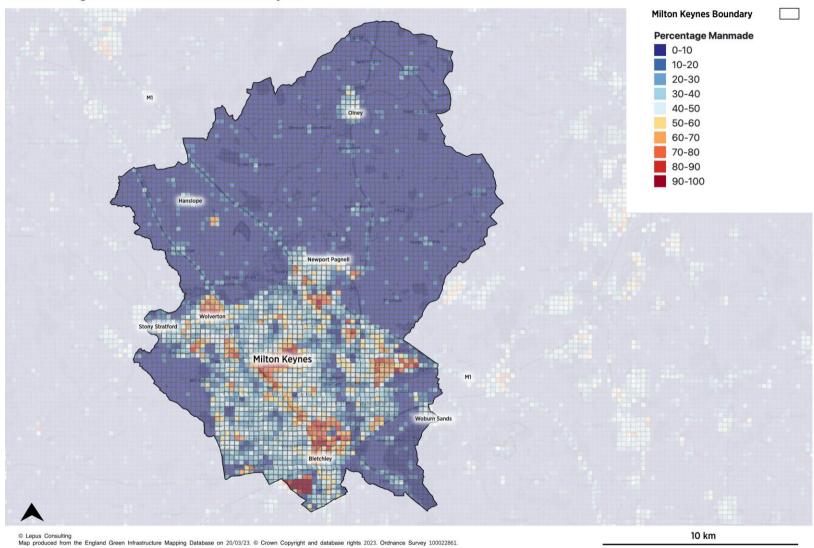


Figure 6.11: Natural England greenness grid in Milton Keynes

7 Vision for the Strategy

7.1 Introduction

- 7.1.1 The Process Journey for Local Authorities, which forms part of the Natural England Green Infrastructure Framework, states that developing the vision for the NGBI Strategy can be an aspirational description of the direction of travel and what can be accomplished in the long term.
- 7.1.2 The vision and aspirations will ensure that NGBI are planned with the consideration of nature-based solutions which increase resilience to climate change impacts, such as overheating, flooding and more frequent and intense storms as well as the overuse of natural resources.

7.2 Stakeholder Vision Workshop

- 7.2.1 The following vision, principles and objectives have been prepared based on the initial review of national, regional and local policy and guidance relating to green infrastructure as and following discussion and feedback from the Stakeholder Group at a Workshop held on 27th February 2023.
- 7.2.2 The Project Brief for the NGBI Strategy states,

"The vision and aspirations should as a minimum ensure that GBI is planned with the consideration of nature-based solutions which increase our resilience to climate change impacts – such as overheating, flooding and more frequent and intense storms to the overuse of natural resources".

7.3 Milton Keynes NGBI Strategy: Vision

A sustainable, healthy, inclusive city of communities, supported by a network of multifunctional green infrastructure that delivers a nature positive, net zero, climate resilient future.

7.4 Milton Keynes NGBI Strategy: The five Natural England principles

- 7.4.1 The following objectives for the emerging NGBI Strategy have been organised using the five 'benefit principles', the 'Why' principles, set out in Natural England's Green Infrastructure Framework:
 - 1. Nature rich and beautiful places.
 - 2. Active and healthy places.
 - 3. Thriving and prosperous places.
 - 4. Improved water management.
 - 5. Resilient and climate positive.

7.4.2 An additional category has been included which considers objectives relating to creating a multifunctional and connected green infrastructure network.

7.5 Milton Keynes NGBI Strategy: Objectives

7.5.1 The following objectives have been organised under the five Natural England Green Infrastructure Framework Principles, however, green infrastructure is capable of delivering multiple functions and there is likely to be crossover between the objectives. For example, in meeting Objective H5 relating to opportunities for food growing, green infrastructure assets may also support Objective H2 relating to active lifestyles and N2 which supports habitat creation and enhancement.

	Multifunctional and connected green infrastructure network
GI1	Supports the principles of multifunctionality and connectivity in the strategic green infrastructure network.
GI2	Protects, creates and enhances natural capital and the range of ecosystems services it supports.

	GI3	Ensures the sustainable stewardship of GI, which supports nature-based solutions including the development of planning policy to supports this objective.
Principle 1		Nature rich and beautiful places
*	N1	Support nature-based solutions, to address climate change mitigation, water management, air pollution and other challenges while benefitting biodiversity and improving human wellbeing.
	N2	Conserve, protect and enhance existing sites of biodiversity value.
*	N3	Restore, enhance and manage habitats and species appropriate to Milton Keynes and its wider regional context in a way that mitigates against and adapts to climate change.
*	N4	Support the Local Nature Recovery Network. Plan for Biodiversity Net Gain (BNG) and 'off-site' BNG provision.

*	N5	Support an Environmental Net Gain (ENG) approach, where land use change leaves the environment in a measurably better state than it was beforehand. Support a future national ENG metric.
Principle 2		Active and healthy places
	H1	Engage people with places rich in wildlife to allow them to experience the natural environment, bringing benefits to health and well-being.
	H2	Encourage active lifestyles by planning for everyone to live within fifteen minutes' walk of a well-designed, open space that connects into the wider active travel network. Based in the approach of Least Restrictive Access ⁸¹ .
	НЗ	Prioritise meeting needs in areas of greater deprivation where there may be greater benefits to public health.

	Н4	Support the provision of a range of places where communities can come together for shared experiences, including community gardens and spaces for cultural and sporting events.
	H5	Provide opportunities for local food growing, such as allotments and orchards to support healthy eating and food awareness.
	Н6	Support opportunities for educational activities, volunteering and community engagement.
Principle 3		Thriving and prosperous places
	P1	Ensure green infrastructure design responds to the local character and context. Protect and connect heritage assets. Increase tree planting in order that trees continue to be a characteristic feature of the city.

⁸¹ The Sensory Trust (2017) 'BY All Reasonable Means' Available at https://www.sensorytrust.org.uk/uploads/documents/ByAllReasonableMeansEnglandAug2020.pdf [Accessed on 17/03/23]

	P2	Plan for 'green gateways' at key entry points to the city, which help to display the commitment to green character.
	P3	Provide green infrastructure alongside commercial growth areas to enhance economic benefits, attracting high value, knowledgebased industries, an enhanced offer for employees and investment opportunities.
	P4	Support opportunities for enhancing the visitor economy.
	P5	Support opportunities for agriculture and food production.
Principle 4		Improved water management
*	W1	Support multifunctional, strategic sustainable drainage systems to support future growth to manage runoff and support adaptation to climate change.

\ 	W2	Support multifunctional, small scale sustainable drainage systems (tree pits, green or blue roofs, swales, basins, rain gardens, wetlands and others) to manage runoff and support adaptation to climate change.
	W3	Support the provision of green infrastructure which helps to use water efficiently. (For example, through reduced demand for water for maintenance or measures to support water harvesting and reuse).
	W4	Support the provision of green infrastructure which helps to improve water quality, supporting improvement in the biological and chemical status of water bodies.
Principle 5		Resilient and climate positive places
	C1	Support measures to mitigate climate change by reducing greenhouse gas emissions, for example by encouraging active or sustainable travel and reducing car use.

C2	Support measures which help to store carbon (for example, carbon stored in trees and other vegetation and through soil management measures).
C3	Support climate change adaptation through providing urban cooling and managing storm events such as low and high intensity rainfall and high winds.

8 Nature, Green and Blue Infrastructure Framework and Action Plan

8.1 Introduction

8.1.1 This chapter of the NGBI Strategy focuses on the challenges facing the NGBI network in Milton Keynes and provides management solutions for future enhancement.

8.2 Green Infrastructure Principles

- 8.2.1 Natural England has developed a set of green infrastructure principles that underpin the green infrastructure framework⁸²:
 - Principle Why 1 Nature rich beautiful places
 - Principle Why 2 Active and healthy places
 - Principle Why 3 Thriving and prospering places
 - Principle Why 4 Improved water management
 - Principle Why 5 Resilient and climate positive places

- 8.2.2 The following five chapters of this NGBI Strategy are organised by these five principles.
- 8.2.3 For each of the following five chapters, a description of each principle from Natural England is summarised and the local context and challenges facing the NGBI network in Milton Keynes are highlighted. Additionally, for each of the following five chapters, a table is provided which presents the NGBI framework for Milton Keynes.

8.3 Milton Keynes NGBI framework

8.3.1 To establish the strategic actions that will strengthen and enhance the NGBI network in Milton Keynes, a NGBI framework has been developed. The NGBI framework is designed to ensure that the NGBI Strategy is successfully meeting the requirements and needs of Milton Keynes at both the city and local authority scale. The NGBI framework enables a selection of NGBI actions based on the best available information.

⁸² Natural England (2023). Green Infrastructure Principles. Available at: https://designatedsites.naturalengland.org.uk/GreenInfrastructure/Principles/GIPrinciples_aspx [Accessed 25/04/23]

- 8.3.2 As part of the earlier stages of the NGBI Strategy and through consultation with the stakeholder group, a series of objectives were prepared. The NGBI framework provides actions to meet each objective set within the five Natural England green infrastructure principles to guide and advise decision making.
- 8.3.3 For each objective, the NGBI framework is guided by the following factors:
 - Why: The rationale for delivering each objective.
 Strategies, programmes and policies are reviewed that are presently operating or about to begin implementation in Milton Keynes;
 - How: The ways in which the action can be executed in order to achieve the objective;
 - Where: The location or locations within the Milton Keynes local authority area where action is required to achieve the objective;
 - Actions: The actions required to achieve the objective;
 - Who: The partners and stakeholders required to collaboratively achieve the objective;
 - When: The timescale for delivering the objective. Three timescales are considered: Short: 0-5 years, medium: 6-15 years and up to 2050: 16-27 years; and

• **Outcome:** The final result where the objective has been achieved.

8.4 Actions

- 8.4.1 The actions presented in the NGBI framework are designed to inspire and generate ideas amongst local groups and demonstrate how the NGBI framework can be used to facilitate intervention on the ground. It should be noted that there are other possible intervention actions that can be made and the NGBI framework and baseline data should be used to guide and identify these areas and actions.
- 8.4.2 The actions developed for Milton Keynes seek to assist in the delivery of the NGBI Strategy vision. The actions act as a guide to show how the NGBI framework can facilitate action on the ground. They are not designed to dictate what action should take place at specific locations but instead offer a guide as to what possible targeted activity could take place to strengthen the NGBI network. The actions can be taken forward, amended or rejected: they represent the kind of activities that should take place and are based on relevant policy and research. They should form the basis for discussion and consultation with local communities.
- 8.4.3 The actions in the NGBI framework are grouped into two types:

- Actions (authority-wide)
- Actions (location-specific)
- 8.4.4 For each action, three timescales are considered. Short term (0-5 years), medium term (6-15 years) and up to 2050 (16-27 years).

8.5 Principle 'why' 1: Nature rich beautiful places

8.5.1 NGBI supports nature to recover and thrive everywhere, in towns, cities and countryside, conserving and enhancing natural beauty, wildlife and habitats, geology and soils, and our cultural and personal connections with nature.

Table 8.1: NGBI framework: Nature rich beautiful places

			Nature rich	n beautiful places			
Objective	Why	How	Where	Actions (authority-wide)	Actions (location- specific)	Who (partners)	When (Short: 0-5 years Medium: 6-15 years Up to 2050: 16-27 years)
Support nature-based solutions, to address climate change mitigation, water management, air pollution and other challenges while benefitting biodiversity and improving	Natural Environment White Paper (2011) The Environment Act (2021) including Biodiversity Net Gain The Environmental Improvement Plan (2023)	 Embody nature-based management approach in New City Plan policies; Require new Green and Blue Infrastructure in areas of growth; Adopt nature- based solutions in MKCC's management 	MKCC, for example Grid Roads and public realm.	 Work with landowners to manage hedgerows and hedgerow trees; Planting or seeding of native species of local provenance to reflect local character; Allow natural succession of newly created habitats; Consider rewilding as a management approach to more extensive areas of green space; Planting to be with native species, ideally 		 Developers and landowners; National Highways; Parish Councils; The Parks Trust; MKCC; and Buckinghamshire & Milton Keynes Natural Environment Partnership. 	

human wellbeing.	The Wildlife & Countryside Act (1981) Oxford to Cambridge Pan Regional Partnership: Environmental principles Deliver ambitions of Milton Keynes Strategy for 2050 Forward to 2030: Biodiversity Action Plan for Buckinghamshire & Milton Keynes. MK Sustainability	•	of its land and property; Support The Parks Trust to use nature-based solutions to green and blue infrastructure management; Support residents to adopt Gardening for Wildlife approaches; Plant more trees; and Support flower rich grasslands.	Known areas of poor air quality e.g., main roads, town centres and Olney AQMA. Areas of greater surface water flood risk, particularly those areas associated with		frequency regimes in grassed areas and remove arisings;			
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	Strategy 2019- 2050 Health and Wellbeing Strategy (2018- 2028)			instead of using motor vehicles; Reduce noise pollution using noise barriers composed of soils and vegetation and introducing green roofs and green walls;	
	Climate Change Act (2008) Milton Keynes Climate Change Strategy (in preparation) AQ strategy To contribute to			Improve air quality through the provision of green infrastructure, such as hedges and climbing plants, between people and the pollution source, such as main roads; and Use Natural Flood Management (NFM) techniques in priority areas.	
Conserve, protect and enhance existing sites of biodiversity value.	Government's commitment to protecting 30% of land for nature conservation by	 Planning policy; Planning legislation; Raise awareness of nature conservation resource; and 	At identified biodiversity sites including: SSSIs, LWSs, Blue Lagoon LNR; Ancient Woodlands;	 Existing sites identified for their biodiversity value to be protected from the adverse impacts of development; Protect and enhance habitats at LWSs (33 in total); Protect and enhance habitats at SSSIs (Howe Park Wood 	 Developers and landowners; Berks, Bucks and Oxon Wildlife Short, Trust; Buckinghamshire and Up & Milton Keynes Natural Environment Partnership;

The urban forest. A strategy for sustainability. MKCC Heart of the Arc. MKCC (2022)	Engage stakeholders.	Opportunity Areas; and Strategic green infrastructure networks.	 Ancient Woodlands to be protected from adverse impacts of development (160 areas in total); Develop a greater understanding of ecological resources through surveying and monitoring; Enhance quantity of protected sites of biodiversity value through appropriate designation such as LNR, LWS or SSSI. Seek to meet Natural England Green Infrastructure Framework Standard S3: Urban Nature Recovery; and Connect protected sites and all parks and green spaces in new developments with appropriate linear or stepping stones of habitats to support 	SSSI, Oxley Mead SSSI and Yardley Chase SSSI (partially).	 Natural England; The Parks Trust; and The Woodland Trust. 	
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Restore, enhance and manage habitats and species appropriate to Milton Keynes and its wider regional context in a way that mitigates against and adapts to climate change.

		These decisions to be informed by consultation with the Local Nature Recovery Strategy (LNRS) to inform what connectivity is needed and where.		
 Promote habitat creation that helps with climate change adaptation e.g., provides shade, cooling etc; and Promote habitat creation that helps with climate change mitigation e.g., provides carbon sequestration e.g., woodland, trees, grassland. 	 Urban areas of high population density; and Authoritywide. 	 Increase urban tree canopy cover to an agreed percentage, based on a locally defined baseline and taking into account local needs, opportunities and constraints (in line with Natural England Green Infrastructure Framework S5: Urban Tree Canopy Cover Standard); Tree cover to be 19% across the authority, in line with the Environmental Principles of the Oxford to Cambridge Pan Regional Partnership; 	Natural an	nort, ledium nd Up o 2050.

	Increase tree cover,
	reedbeds and long
!	grasslands to sequester
	carbon throughout the
!	borough. Aim for 30%
	coverage of the
	borough;
	Maximise and link
	together habitats along
!	linear infrastructure;
	Provide steppingstones
	of habitats that allow
!	species with limited
	ability to disperse to
!	move through hostile
	environments, such as
!	built-up areas;
!	In the built
	environment, provide
!	habitats in the form of
!	appropriately designed
!	green roofs and green
!	walls as well as through
	tree planting and
!	habitats in greenspace;
!	Ecologically degraded
	areas of land (including
	former agricultural or
	industrial sites) to be
	restored to a mosaics of

Support the Local Nature Recovery Network. Plan for Biodiversity Net Gain (BNG) and 'offsite' BNG provision.

		habitats, trees, shrubs, flower rich grassland and wetland habitats, appropriate to the local context; and Plant more flowers in parks and cemeteries to encourage pollination and provide improved areas for insects and wildlife.		
 Planning policy; and Prepare BNG SPD. 	Authority-wide.	 Integrate this NGBI Strategy with the findings of the Local Nature Recovery Strategy and the identification of priority areas for habitat enhancement; Development to deliver a net gain in biodiversity; Seek to deliver 20% net gain for development in line with the Environmental Principles of the Oxford to Cambridge Pan Regional Partnership; and 	 Developers and landowners; Berks, Bucks and Oxon Wildlife Trust; Buckinghamshire & Milton Keynes Natural Environment Partnership; Natural England; The Parks Trust; and The Woodland Trust. 	Short, Medium and Up to 2050.

			 Doubling the area of land managed primarily for nature, in line with the Environmental Principles of the Oxford to Cambridge Pan Regional Partnership. 		
Support an Environmental Net Gain (ENG) approach, where land use change leaves the environment in a measurably better state than it was beforehand. Support a future national ENG metric.	 Planning policy Support a future ENG SPD 	Authority-wide.	Development to deliver and demonstrate an environmental net gain using an assessment of changes to ecosystem services.	Natural Environment	

8.6 Principle 'why' 2: Active and healthy places

8.6.1 Green neighbourhoods, green / blue spaces and green routes support active lifestyles, community cohesion and nature connections that benefit physical and mental health, wellbeing, and quality of life. NGBI also helps to mitigate health risks such as urban heat stress, noise pollution, flooding, and poor air quality⁸³.

https://designatedsites.naturalengland.org.uk/GreenInfrastructure/downloads/GreenInfrastructurePrinciples.pdf [Accessed 21/04/2023]

⁸³ Natural England (2023) Natural England Green Infrastructure Principles (Detailed version, date January 2023). Available at:

Table 8.2: NGBI framework: Active and healthy places

	Active and healthy places							
Objective	Why	How	Where	Actions (authority-wide)	Actions (location-specific)	Who (partners)	When (Short: 0-5 years Medium: 6-15 years Up to 2050: 16-27 years)	
Engage people with places rich in wildlife to allow them to experience the natural environment, bringing benefits to health and well-being.	Cambridge Pan Regional Partnership: Environmental	 Raise awareness of nature conservation resource; Outreach initiatives; Improve accessibility e.g., signage and the linear traffic-free access network; Increase quantity and connectivity of redways, leisure 	Areas; andStrategic green infrastructure	 Design outreach initiatives; Support new visitor centres and appropriate new facilities to encourage visitor use of existing greenspaces; Create circular walks and cycling routes suitable for different user groups, such as families and people with mobility issues; Support measures to increase access to 	 Maximise the potential of the linear parks that follow the river valleys across the city as important biodiversity corridors and as areas of accessible greenspace (including Ouzel Valley Park, Loughton Valley Linear Park, Tattenhoe 	 Partnership; Natural England; The Parks Trust; The Woodland Trust; MKCC Public Hoolth; and 	Short, Medium and Up	

Health and Wellbeing Strategy (2018-2028)

CC Strategy

Rights of Way Improvement Plan (2023-2033)

Heart of the Arc. MKCC (2022)

- routes, bridleways and footpaths;
- Create new accessible open spaces according to AGS analysis in MKCC Open Space Assessment (unpublished draft, 2023) to meet the needs of the growing population.

- nature for groups with identified needs, including children, teenagers and people with mobility issues;
- New open spaces and green infrastructure, including that delivered as part of new development, to be multi-functional and biodiverse;
- Green roofs and walls, street trees, flower-rich grassland and water features will allow people to connect with nature and encounter wildlife in the built environment;
- Support the Walking and Cycling Strategy and seek funding to deliver the Identified missing links.
- Improve access to the countryside and

- Valley Park, Broughton Brook Linear Park and Ouse Valley Park);
- The section of the Loughton Valley Linear Park at The Bowl between the Teardrop Lakes and **Furzton Lake** requires landscaping and landscape management to enable the park to function fully as an active open space connection and to maximise biodiversity corridor benefits; Create PRoW
- Create PRoW and cycle paths to connect the northern end of

NAV	NCDI	Ctratagu	August	2022	
IVIN	INGBI	Strategy	August	2023	

	open spaces by maintaining and enhancing PRoW and cycle paths, particularly in areas with deficiencies of open space; and Enhance habitats and associated biodiversity in existing publicly accessible open spaces and new developments where possible. The possible open space and evelopments where possible. The possible open spaces and new developments where possible. The possible open spaces and new developments where possible. The possible open spaces and new developments where possible. The possible open spaces and new developments where possible. The possible open space and new developments where possible. The possible open space and new developments where possible. The possible open space and new developments where possible. The possible open space and new developments where possible. The possible open space and new developments where possible. The possible open space and new developments where possible. The possible open space and new developments where possible. The possible open space and new developments where possible open s
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			of Stony Stratford to the east side of Newport Pagnell and the Sherington Lakes; and Protect and enhance the potential green corridor to prevent fragmentation along the western flank of Milton Keynes, focused on the North Bucks Way and providing a link from the Hazeley Wood area to connect		
			=		
Encourage active lifestyles by planning for everyone to live within	 Authority- wide; and Focus on areas not meeting the 15-minute 	 To encourage use, open spaces and pathways must be attractive, safe and accessible for 	-	 Developers and landowners; The Parks Trust; MKCC Leisure Services; and 	Short, Medium and Up to 2050.

⁸⁴ The Sensory Trust (2017) 'BY All Reasonable Means' Available at https://www.sensorytrust.org.uk/uploads/documents/ByAllReasonableMeansEnglandAug2020.pdf [Accessed on 17/03/23]

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Prioritise meeting needs in areas of greater deprivation where there may be greater benefits to public health.	Health and Wellbeing Strategy (2018-2028)	Identify locations using IMD data and prepare green infrastructure prescriptions	• Focus on redevelopment areas within the 20% most deprived IMD deciles.	(focus on areas outside 200m from either Doorstep Greenspace or 300m from Local Greenspace and 1km from Neighbourhood Greenspace). Increase provision of accessible greenspaces across the authority with a focus on redevelopment areas in the most deprived areas (20% most deprived IMD deciles).	 Developers and landowners; The Parks Trust; MKCC Leisure Services; and MKCC Public Health. 	Short, Medium and Up to 2050.
Support the provision of a range of places where communities can come together for shared experiences, including community gardens and	Health and Wellbeing Strategy (2018-2028)	Create small scale type-specific facilities such as a Bowling green Recreation ground Golf course Equestrian centre Natural sports pitches	 Authority-wide In areas identified as having a shortfall in community areas. 	 New green infrastructure to provide focal points for cultural expression and events, helping to connect communities to their history; Support community events in existing greenspaces; and 	 Developers and landowners; The Parks Trust; MKCC Leisure Services; and MKCC Public Health. 	Short, Medium and Up to 2050.

spaces for cultural and sporting events.		 Artificial sports pitches Natural ball court Artificial ball court Multi use games areas (MUGAs) Skateparks Children's natural play space. Create large scale multi-functional locations such as parks. 		 Protect and where possible improve the multifunctional value of playing fields and outdoor sports facilities. 		
opportunities for food growing areas, such as allotments and orchards to support healthy eating and food awareness.	MK Sustainability Strategy 2019- 2050 Health and Wellbeing Strategy (2018-2028) MKCC Open Space	Create and enhance: Food growing areas such as allotments and community orchards; and Support Community growing areas.	 Authority-wide In areas identified as having an allotment shortfall using Allotment Standard Indicator In areas of demand for 	 Locate and convert suitable parcels of land into allotments and orchards within areas of shortfall; New development to provide food growing areas in areas of identified demand; and Integrate green roof community gardens 	 Parish Councils Developers and landowners The National Society of Allotment and Leisure Gardeners The Parks Trust MKCC. 	Short, Medium and Up to 2050.

	Assessment (unpublished draft, 2023)		community orchards.	into the design of new apartment buildings.			
Support opportunities for educational activities, volunteering and community engagement.	Environmental Improvement Plan (2023) Health and Wellbeing Strategy (2018-2028) Milton Keynes Creative and Cultural Strategy 2018-2027	 Create and enhance outdoor learning facilities; and Create and enhance outdoor classrooms. 	 Authority-wide Near schools and educational institutions. 	 Design outreach initiatives; Support The Parks Trust Volunteering Programme; Support The Parks Trust Outdoor Learning Programme; Create new educational facilities near schools and educational institutions; and Encourage education providers to think of school land as one whole 'National Education Nature Park', in line with the EIP. 	 Provide and encourage activities at existing educational institutions including Howe Park Wood Education and Visitor Centre and Linford Lakes Nature Reserve Education Centre. 	 The Parks Trust Local Education Authority. 	Short, Medium and Up to 2050.

8.7 Principle 'why' 3: Thriving and prosperous places

8.7.1 NGBI helps to create and support prospering communities that benefit everyone and adds value by creating high quality environments which are attractive to businesses and investors, create green jobs, support retail and high streets, and to help support the local economy and regeneration.

Table 8.3: NGBI framework: Thriving and prosperous places

	Thriving and prosperous places									
Objective	Why	How	Where	Actions (authority-wide)	Actions (location- specific)	Who (partners)	When (Short: 0-5 years Medium: 6-15 years Up to 2050: 16-27 years)			
Ensure green infrastructure design responds to the local character and context. Protect and connect heritage assets. Increase tree planting in order that trees continue	To protect landscape and heritage in line with legislation and national and local planning policy and Milton Keynes' history as an iconic New Town.	 Developers will adhere to MKCC design code for the New City Plan or cross reference to the Natural England Green Infrastructure Framework Design Guide. Improve accessibility e.g., signage 	Authority-wide Conservation Areas Area of heritage interest and their environmental settings	 Support tree and woodland planting, in particular where woodland planting enhances the network of existing woodland areas; Support street tree planting with SuDS tree pits in existing urban areas and in new residential and commercial developments; 	• Enhance green infrastructure opportunities and connectivity to heritage assets including Scheduled Monuments and archaeological sites at locations including at Ouzel Valley, Bancroft Roman Villa, Bletchley Park and Campbell Park.	 Developers and landowners Historic England MKCC. 	Short, Medium and Up to 2050.			

to be a	Enhance the		and the linear		Protect the character		
characteristic	local		traffic-free		and areas of tranquillity		
feature of the	economy, in		access network.		in the urban and rural		
city.	line with		Set out tree		landscape through		
City.	ambitions of	•					
	Oxford to		planting		planning policy;		
			requirements	•	The design of new		
	Cambridge		for new		green infrastructure to		
	Pan Regional		development in		be informed by an		
	Partnership		Planning Policy.		understanding of the		
		•	Increase street		area's character and		
	Keynes		tree planting on		sense of place;		
	Strategy for		public realm	•	Retain, enhance, or		
	2050.		and council		create distinctive semi-		
			managed land.		natural habitats, trees		
	Milton				and green spaces, as		
	Keynes				well as green roofs and		
	Creative and				walls, street trees,		
	Cultural				flower-rich grassland		
	Strategy				and water features that		
	2018-2027				reflect local landscape		
					character and which		
	Heart of the				will create or retain a		
	Arc. MKCC				'sense of place';		
				•	Create traffic-free		
	(2022)				connections to local		
					heritage and cultural		
					sites;		
				•	Retain and create		
					strategic green		
					infrastructure planned		
					iiii asti ucture piailileu		

and delivered as part of	
growth identified in the	
New City Plan, in	
particular in relation to	
delivering connected	
strategic green	
infrastructure along the	
Ouse Valley Park, Ouzel	
Valley, the linear park	
network to create a	
western edge to	
strategic green	
infrastructure and	
green buffers around	
smaller settlements,	
and contribute to the	
creation of a	
continuous network	
forming a regional	
park; and	
Support opportunities	
for the restoration of	
historic assets and their	
environmental settings	
in particular Whaddon	
Chase, the Greensand	
Ridge, the Ouse Valley,	
the Grand Union Canal	
and the Woburn	
Estate.	

Plan for 'green gateways' at key entry points to the city, which help to display the commitment to green character.	Supporting the local economy, retaining businesses and attracting inward investment in line with ambitions of Oxford to Cambridge Pan Regional Partnership and Milton Keynes Strategy for 2050. Heart of the Arc. MKCC (2022) MKCC, City of Trees, Urban Tree Planting 2023-2030	creation • Ponds and Lakes.	Gateway locations identified in the MK Strategy for 2050	• New trees to be planted using the fundamental golden rule of "right tree right place" (see MKCC, City of Trees, Urban Tree Planting 2023-2030).	• Liaise with National Highways to increase green infrastructure at key entry points to the city (locations identified in MK Strategy for 2050 as 'Green City Gateways').	MKCCThe ParksTrust	Short, Medium and Up to 2050.
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Provide green infrastructure alongside commercial growth areas to enhance economic benefits, attracting high value, knowledgebased industries, an enhanced offer for employees and investment opportunities.	Supporting the local economy, retaining businesses and attracting inward investment in line with ambitions of Oxford to Cambridge Pan Regional Partnership and Milton Keynes Strategy for 2050. Heart of the Arc. MKCC (2022)	Developers will adhere to MKCC design code for the New City Plan or cross reference to the Natural England Green Infrastructure Framework Design Guide.	New areas of commercial development. For example, at Midsummer Boulevard and Lloyds Court (see immediate projects in MKCC, City of Trees, Urban Tree Planting 2023-2030).		New commercial development to meet Natural England Green Infrastructure Framework Standard S4: Urban Greening Factor Standard of 0.3.			•	Developers and landowners	Short, Medium and Up to 2050.
Support opportunities for enhancing the visitor economy.	Enhance the local economy in line with ambitions of Oxford to	Optimising green infrastructure provision at tourist accommodation	Authority-wide	•	Support The Parks Trust Events Programme; and Support measures to enhance promoted routes such as The	•	Support access to blue infrastructure through enhancement of the Grand Union Canal and the associated	•	The Bletchley Park Trust The Parks Trust Highway authority	Short, Medium and Up to 2050.

	Milton Keynes Creative and Cultural Strategy 2018-2027 Rights of Way Improvement Plan (2023- 2033) Heart of the Arc. MKCC (2022)	and destinations. Promote active travel opportunities. Support and enhance 'green' visitor destinations including long distance footpaths and nature reserves e.g., North Bucks Way Long Distance Path. Support creation of expanded Long Distance Footpath network.		•	Grand Union Canal Walk, Ouse Valley Way, Milton Keynes Boundary Walk, North Buckinghamshire Way, Midshires Way, Swans Way and Grafton Way. Support the proposed multi-use trail linking Northampton, Olney and Bedford along the line of the disused Bedford-Northampton railway.	•	walking and cycling routes and visitor opportunities; Enhance opportunities for riverside experiences along the River Great Ouse, River Ouzel, River Tove, Broughton Brook, Chicheley Brook, Loughton Brook and Water Eaton Brook.		The Canal and River Trust	
opportunities for agriculture	MK Sustainability Strategy 2019-2050	 Creation of allotments and orchards 	Areas identified as having a shortfall in	•	Locate and convert suitable parcels of land into food growing areas such as allotments and community orchards			•	The Parks Trust Parish Councils	Short, Medium and Up to 2050.

MKCC Open Space	food growing areas	within areas of shortfall;	Natural England
Assessment (unpublished draft, 2023)		 Integrate green roof community gardens into the design of new apartment buildings; and 	
		 Protect areas of best and most versatile agricultural land as an irreplaceable soil resource. 	

8.8 Principle 'why' 4: Improved water management

8.8.1 NGBI reduces flood risk, improves water quality and natural filtration, helps maintain the natural water cycle and sustainable drainage at local and catchment scales, reducing pressures on the water environment and infrastructure, bringing amenity, biodiversity, economic and other benefits.

Table 8.4: NGBI framework: Improved water management

		ı	mproved w	ater management			
Objective	Why	How	Where	Actions (authority-wide)	Actions (location- specific)	Who (partners)	When (Short: 0-5 years Medium: 6-15 years Up to 2050: 16-27 years)
Support multifunctional, strategic sustainable drainage systems to support future growth to manage runoff and support adaptation to climate change.	principles	Identify locations where SuDS have the greatest potential to deliver multiple benefits	Areas with a high risk of surface water flooding.	provision of SuDS including retrofit SuDS in regeneration areas; Consider Natural Flood Management techniques, such as woody debris barriers, restore rivers and floodplains to a natural form and	 Support the historic strategic water management network including Willen Lake, Caldecotte Lake, Wolverton Mill, Furzton Lake, Lodge Lake and Teardrop Lakes; and Protect and enhance the role of floodplains including Floodplain Forest 	 Developers and landowners MKCC as Lead Local Flood Authority Internal Drainage Board Environment Agency DEFRA The Parks Trust. 	Short, Medium and Up to 2050.

	Heart of the Arc. MKCC (2022)		permeable surfaces such as green space, vegetated gardens, and permeable paving, and adding sustainable drainage options such as wetlands, ponds, bioswales, raingardens, green walls and roofs, and retention basins to help slow the flow of water.	Nature Reserve and Stony Stratford Nature Reserve.		
small scale sustainable drainage systems (tree pits, green or blue roofs, swales, basins, rain gardens, wetlands and others) to	Oxford to Cambridge Pan Regional Partnership: Environmental principles Deliver ambitions of Milton Keynes Strategy for 2050	(tree pits, green or blue roofs, swales, basins, rain gardens, wetlands and others) to manage runoff and support adaptation to climate change; and	 Seek funding for the provision of SuDS and other features to manage runoff; and New development to incorporate multifunctional SuDS meeting the four pillars of water quantity, water quality, biodiversity, and amenity. 	 Support strategic integrated SuDS schemes in future developments. Existing schemes include Ashland Lakes, Brooklands Meadows and Oxley Park. 	Lead Local Flood	Short, Medium and Up to 2050.

	SFRA (unpublished draft, 2023) Heart of the Arc. MKCC (2022)	policy provisions in the New City Plan.			the project, for example the Highways Agency The Parks Trust.	
Support the provision of green infrastructure which helps to use water efficiently.	Oxford Cambridge Pan Regional Partnership: Environmental principles Deliver ambitions of Milton Keynes Strategy for 2050 SFRA (unpublished draft, 2023) Heart of the Arc. MKCC (2022)	 Support retrofitting rainwater harvesting measures; Planning policy to require new green infrastructure to be suitable to being managed with low levels of irrigation especially during prolonged periods of dry weather and drought; and Measures to manage water to be designed to maximise biodiversity benefits. 	Authority- wide.	 Seek funding for the provision of measures to support water harvesting and reuse in retrofitting projects; Integrate water efficiency features into new development through planning policy in the New City Plan; and Require new development to use planting that requires low levels of irrigation to be supported, particularly during prolonged periods of dry weather and drought. 	Environment Agency	Short, Medium and Up to 2050.

Support the provision of green infrastructure which helps to improve water quality, supporting improvement in the biological and chemical status of water bodies.	Oxford to Cambridge Pan Regional Partnership: Environmenta principles Deliver ambitions of Milton Keynes Strategy for 2050 SFRA (unpublished draft, 2023) Heart of the Arc. MKCC (2022)	including attenuation ponds to manage storm water; • Seek to retain water and slow down runoff rates and fluxial.		 Seek funding for the provision of green infrastructure and natural flood management measures; and Require new development to create buffers of vegetation/green infrastructure along waterbodies through planning policy in the New City Plan. 		 MKCC as Lead Local Flood Authority Internal Drainage Board Environment Agency Anglian Water The Parks Trust 	Short, Medium and Up to 2050.
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8.9 Principle 'why' 5: Resilient and climate positive places

8.9.1 NGBI makes places more resilient and adaptive to climate change and helps to meet zero carbon and air quality targets. NGBI itself should be designed to adapt to climate change to ensure long term resilience.

 Table 8.5: NGBI framework: Resilient and climate positive places

	Resilient and climate positive places											
Objective	Why	How	Where	Actions (authority-wide)	Actions (location- specific)	Who (partners)	When (Short: 0-5 years Medium: 6-15 years Up to 2050: 16-27 years)					
Support measures to mitigate climate change by reducing greenhouse gas emissions.	Oxford to Cambridge Pan Regional Partnership: Environmental principles MK Sustainability Strategy 2019- 2050 Deliver ambitions of	 Creation of assets that support the traffic free 		Seek funding to promote and enhance the existing traffic free access network and identify locations for new traffic free routes including: Leisure routes/promoted routes Redways Bridleways Public rights of way. Increase the accessibility of public transport and promote car sharing schemes;		 Highways Authority Developers and landowners 	Short, Medium and Up to 2050.					

	Milton Keynes Strategy for 2050 Support the Milton Keynes Cycling and Walking Infrastructure Plan (2023) Heart of the Arc. MKCC (2022)	where people live or provide sustainable travel options to access these open spaces.		 Require new development to support low carbon travel to access green infrastructure through planning policy in the New City Plan; Use biosolar roofs in appropriate locations; and Support low carbon management solutions to green infrastructure, such as lower frequency mowing regimes. 			
which help to store carbon (for example, carbon stored in trees and other vegetation and through soil management	Oxford to Cambridge Pan Regional Partnership: Environmental principles MK Sustainability Strategy 2019- 2050 Deliver ambitions of Milton Keynes	helps with climate change mitigation e.g. provides carbon	Authority- wide.	 Tree cover to be 19% across the authority, in line with the shared regional principles of the Oxford-Cambridge arc; Green waste that is produced through the maintenance of green infrastructure, to be collected and used, for example composted, used for biogas or in biochar; Protect areas of best and most versatile agricultural 	 Where possible, increase green infrastructure within 200m of main roads (motorways and A-roads) to provide screening, sequester carbon and reduce air pollution between the source and receptors. 	 Highways Authority Developers and landowners. 	Short, Medium and Up to 2050.

	Strategy for 2050 The urban forest. A strategy for sustainability. MKCC Heart of the Arc. MKCC (2022)			land as an irreplaceable soil resource; and • Protect all soils (a valuable carbon store) by managing them in a sustainable way.		
adaptation through providing urban cooling and managing storm events such as low and high intensity rainfall and	Oxford to Cambridge Pan Regional Partnership: Environmental principles MK Sustainability Strategy 2019- 2050 Heart of the Arc. MKCC (2022)	 Local planning policy in the New City Plan Promote habitat creation that helps with climate change adaptation e.g., provides shade, cooling etc. 	Urban areas of high population density	 Increase planting in urban areas, particularly broadleaved woodlands and trees; Increase street tree planting with SuDS tree pits; Plant trees on the east, south or west side of existing and new buildings to provide shade in summer; Meet Natural England Green Infrastructure Framework Standard S4: Urban Greening Factor for commercial and residential development; 	 Highways Authority Developers and landowners. 	Short, Medium and Up to 2050.

 Green roofs and walls can also help to keep buildings cool in hot weather and warm in cold weather; and Focus on increasing greening in areas with a higher proportion of hard surfaces measured using the Natural 	
England Greenness Grid.	

8.10 Spatial expression of the NGBI Framework

- 8.10.1 Many of the actions in the NGBI Framework can be implemented across the authority area, some actions are more appropriate to particular types of areas and some actions may be project specific interventions.
- 8.10.2 Location specific actions taken from the NGBI framework are presented in **Table 8.6**. Each action corresponds to a numbered target note which are grouped into the five Natural England 'why' principles and colour coded. The target notes are located on the map presented in **Figure 8.1**.

Table 8.6: NGBI framework actions (location-specific)

NE Green Infrastructure Framework 'Why' Principles	Target note	Actions (location-specific)
Nature rich beautiful places	1	Protect and enhance habitats at Blue Lagoon LNR.
	2	Protect and enhance habitats at SSSIs (Howe Park Wood SSSI, Oxley Mead SSSI and Yardley Chase SSSI (partially)).
Active and healthy places	1	Provide and encourage activities at existing educational institutions including Howe Park Wood Education and Visitor Centre and Linford Lakes Nature Reserve Education Centre.
	2	Maximise the potential of the linear parks that follow the river valleys across the city as important biodiversity corridors and as areas of accessible greenspace (including Ouzel Valley Park, Loughton Valley Linear Park, Tattenhoe Valley Park, Broughton Brook Linear Park and Ouse Valley Park).
	3	The section of the Loughton Valley Linear Park at The Bowl between the Teardrop Lakes and Furzton Lake requires landscaping and landscape management to enable the park to function fully as an active open space connection and to maximise biodiversity corridor benefits.
	4	Create PRoW and cycle paths to connect the northern end of the River Ouzel at Pineham to the River Great Ouse at Newport Pagnell.
	5	Create PRoW and cycle paths to connect Broughton Brook, by the Coachway at Brook Furlong, to the River Ouzel east of the M1, and the related Brooklands Brook connection to the Broughton Brook.
	6	Maintain and enhance continuous paths and open spaces along the Ouse Valley from the Calverton side of Stony Stratford to the east side of Newport Pagnell and the Sherington Lakes.
	7	Maintain and enhance the potential green corridor to prevent fragmentation along the western flank of Milton Keynes, focused on the North Bucks Way and providing a link from the Hazeley Wood area to connect with Stony Stratford.

Thriving and prosperous places	1	Liaise with National Highways to increase green infrastructure at key entry points to the city (locations identified in MK Strategy for 2050 as 'Green City Gateways').
	2	Support access to blue infrastructure through enhancement of the Grand Union Canal and the associated walking and cycling routes and visitor opportunities.
	3	Enhance opportunities for riverside experiences along the River Great Ouse, River Ouzel, River Tove, Broughton Brook, Chicheley Brook, Loughton Brook and Water Eaton Brook.
	4	Enhance green infrastructure opportunities and connectivity to heritage assets including Scheduled Monuments and archaeological sites at locations including at Ouzel Valley, Bancroft Roman Villa, Bletchley Park and Campbell Park.
Improved water management	1	Support the historic strategic water management network including Willen Lake, Caldecotte Lake, Wolverton Mill, Furzton Lake, Lodge Lake and Teardrop Lakes.
	2	Protect and enhance the role of floodplains including Floodplain Forest Nature Reserve and Stony Stratford Nature Reserve.
	3	Support strategic integrated SuDS schemes in future developments. Existing schemes include Ashland Lakes, Brooklands Meadows and Oxley Park.
Resilient and climate positive places	1	Where possible, increase green infrastructure within 200m of main roads (motorways and A-roads) to provide screening, sequester carbon and reduce air pollution between the source and receptors.

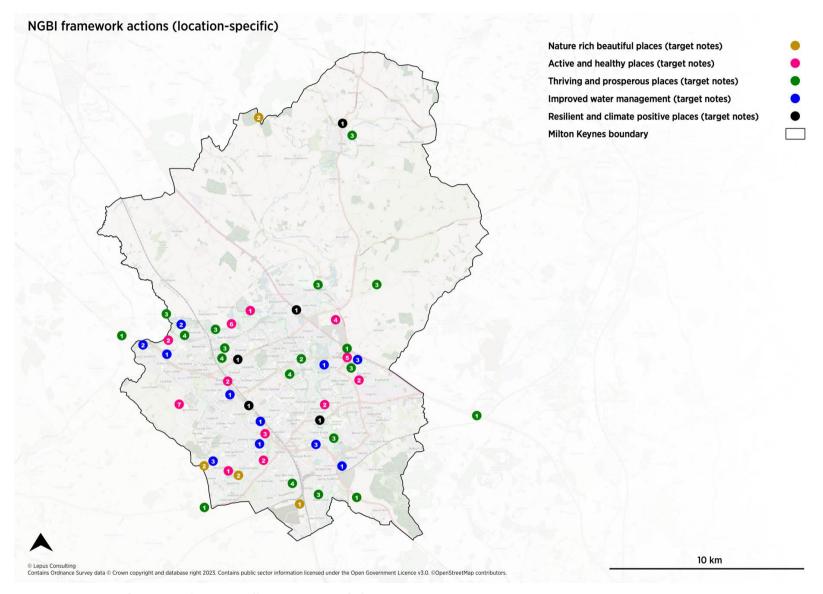


Figure 8.1: NGBI framework actions (location-specific)

9 Assessment ofRecommended GrowthOptions and PotentialIntensification Areas

9.1 Introduction

- 9.1.1 The New City Plan will set out the approach to deliver the ambitions described in the Milton Keyes Strategy to 2050, including the need to sustainably deliver new homes and employment to accommodate the existing and future needs of the population. In relation to meeting these needs, the Milton Keynes Strategy 2050 identifies and recommends a number of growth areas, referred to as the Recommended Growth Options (RGOs). In addition, two areas are being considered for the potential intensification of development, called Potential Intensification Areas (PIAs). These two PIAs cover Central Milton Keynes and Central Bletchley.
- 9.1.2 The following chapter of the NGBI Strategy comprises an assessment of RGOs and PIAs, using an ecosystem services approach.

9.1.3 The existing NGBI assets and statutory protections at each strategic RGO or PIA are identified to understand the existing supply of ecosystem services and the demand required to serve new development. Recommendations and justifications to create, enhance, protect and restore NGBI assets are provided for each RGO and PIA.

9.2 Ecosystem services and green infrastructure

- 9.2.1 Ecosystem services are the range of benefits provided to humans by natural systems, from the provision of food and water to recreation and climate regulation. The elements of the natural environment that provide benefits to humans can be referred to as 'natural capital'. In urban areas, the elements of the natural environment providing ecosystem services can be referred to as 'green infrastructure'.
- 9.2.2 Whilst it is widely recognised that an approach to land use change that includes a natural capital approach and consideration of ecosystem services is highly desirable, there is currently no widely agreed methodology for assessment.

9.3 Natural Capital Atlases

- 9.3.1 The Millennium Ecosystem Assessment split ecosystem services into four main categories: supporting services, regulating services, provisioning services and cultural services. The Common International Classification of Ecosystem Services (CICES) developed for natural capital accounting splits ecosystem services into regulating, provisioning and cultural services, with supporting services forming an integral part of functioning ecosystems.
- 9.3.2 The CICES was used to inform the Natural Capital Atlases prepared by Natural England. The Buckinghamshire Natural Capital Atlas: Mapping Indictors report uses sixteen ecosystem services and has adopted a plain English approach to the description of these services.
- 9.3.3 One approach to ecosystem services assessment set out in this report is to consider the supply and demand of ecosystem services in narrative form under the sixteen services used in the Natural Capital Atlases:
 - Timber
 - Fish and other marine products from wild sources
 - Plant-based energy
 - Cultivated crops and provision of community food
 - Water supply

- Livestock
- Water quality
- Air quality
- Noise regulation
- Erosion control
- Flood protection
- Pollination
- Biodiversity thriving plants and wildlife
- Climate regulation
- Cultural services
- Geodiversity services
- 9.3.4 The findings of the assessment of each RGO and PIA are set out in **Appendix F** and a summary of the recommendations relating to the provision of ecosystem services is detailed in the relevant chapter for the RGO/PIA.

9.4 Environmental Benefits from Nature tool (EBN)

- 9.4.1 The Environmental Benefits from Nature tool (EBN) was formerly called the Ecometric and is designed to be used alongside the Biodiversity Net Gain metric. The tool uses a habitat-based approach to consider the effects of land use change across eighteen ecosystem services. The results of using the tool are likely to illustrate the gains and losses in the different ecosystem services as a result of any particular land use change and can aid decision making.
- 9.4.2 The tool has been designed to be used at the project or site level. However, the accompanying advice states the tool can be trialled in considering the relative changes to ecosystem services for alternative proposed development site allocations.
- In order to undertake an assessment of ecosystem services 9.4.3 using the EBN tool, data is required relating to the habitats available before and after the land use change. The approach would need to be based on assumptions about the nature of the development proposed. Currently, the size and type of development at each RGO and PIA is unknown. For the purposes of this assessment, it will be assumed that 40% of each area would be green infrastructure to broadly reflect both Standard 4: Urban Green Factor Standard from Natural England's Green Infrastructure Framework⁸⁵ and the existing level of green space provision across the Authority. An assumption has been made that development at each location will be primarily residential and be at a density of 35 dwellings per hectare (DPH). Development is assumed to be residential and comprise three demographics: children, a working population and an aging population.
- 9.4.4 An assessment of ecosystem services at RGO 1: North of Olney has been undertaken using the EBN Tool as a pilot study. The details of this assessment can be found in **Chapter 9.11.**

⁸⁵ Natural England (2023) Green Infrastructure Standards. Available at: https://designatedsites.naturalengland.org.uk/GreenInfrastructure/GIStandards.aspx [Accessed 14/04/23]

9.5 Natural England's Green Infrastructure Standards

9.5.1 Natural England has developed a Green Infrastructure Framework which includes five headline standards, at this stage. In relation to the potential growth locations the key standards relate to:

S1: Green Infrastructure Strategy Standard: Major development

9.5.2 Each major new development has a Green Infrastructure Plan setting out how the development will deliver the Green Infrastructure Framework's 15 Green Infrastructure Principles and the Green Infrastructure Standards as set out in local green infrastructure policies, proposals and development requirements in development plans and local design codes. The green infrastructure delivered within (or associated with) major new developments should be managed, maintained and monitored for a minimum of 30 years.

S2: Accessible Greenspace Standards: Major development

Accessible Greenspace Standards – Size and Proximity Criteria

9.5.3 For all major residential developments, the local authority specifies to the developer the quantity, size and distance criteria for any accessible greenspace to be provided within/associated with the development, based on the Accessible Greenspace Standards.

Accessible Greenspace Standards - Capacity

9.5.4 All major residential development is designed to meet capacity targets (hectares of accessible greenspace per 1,000 population), specified by the local planning authority.

Accessible Greenspace Standards - Quality Criteria

9.5.5 Accessible greenspace meets the Green Flag Award Criteria and best practice in accessibility for all ⁸⁶ in major new developments.

https://www.sensorytrust.org.uk/uploads/documents/ByAllReasonableMeansEnglandAug 2020.pdf [Accessed on 10/02/23]

⁸⁶ The Sensory Trust (2020) 'By All Reasonable Means: Least restrictive access to the outdoors' Available at

S3: Urban Nature Recovery Standard: Major development

9.5.6 The developer identifies in the Green Infrastructure Plan for the development its contribution to nature recovery and the creation and restoration of wildlife rich habitats, which can contribute to the delivery of local nature recovery objectives, including the potential for creation or enhancement of Local Nature Reserves or Local Wildlife Sites.

S4: Urban Greening Factor Standard: Major development

9.5.7 The standard for major development meets National Urban Greening Factors of at least 0.3 for commercial development, 0.4 for residential development, (and, where appropriate, 0.5 for residential greenfield development).

S5: Urban Tree Canopy Cover Standard: Major development

- 9.5.8 Major residential and commercial development is designed to meet locally agreed targets.
- 9.5.9 New and existing trees are incorporated into new developments and new streets are tree lined (in line with NPPF requirements).

9.6 Other standards likely to be required in major residential development based on the MK OSA

Woodland Access Standard

- 9.6.1 The Woodland Trust have created a Woodland Access Standard which is a separate and complementary standard to the Accessible Greenspace Standards from Natural England's Green Infrastructure Framework. The Woodland Trust's Woodland Access Standard comprises the following two standards:
 - "No person should live more than 500m from at least one area of accessible woodland of no less than 2ha in size; and
 - There should also be at least one area of accessible woodland of no less than 20ha within 4km (8km round trip) of people's homes."
- 9.6.2 The Woodland Trust recognises that whilst the ideal scenario would be for both standards to be met, in urban areas where there is a lack of available land, it would be acceptable for only the 4km threshold to be met.

Allotments

9.6.3 The National Society of Allotment and Leisure Gardener (NSALG) suggests a standard of 20 allotments per 1000 households which equates to 0.25ha per 1000 population.

9.7 Use of Natural England Green Infrastructure Framework Standards and Ecosystem Services

9.7.1 At present there is no published guidance regarding how to integrate an ecosystem services assessment with the Green Infrastructure Framework Standards. In relation to the assessment of the Growth Options, the Green Infrastructure Framework Standards can be used to consider future demand for Green Infrastructure assets and the related ecosystem services. For example, the provision of AGS to the Green Infrastructure Framework S2 Standard would demonstrate meeting some aspects of demand for cultural ecosystem services.

9.8 Assessment locations

- 9.8.1 The numbering and naming of the RGOs and PIAs has been developed uniquely for this NGBI Strategy and may not reflect the naming or identifiers used in the preparation of other Local Plan documents.
- 9.8.2 A map showing the location of the RGOs and PIAs is presented in **Figure 9.1.**

- 9.8.3 The eight RGOs are as follows.
 - RGO 1: North of Olney
 - RGO: 2: West of Olney
 - RGO 3: North east of Newport Pagnell
 - RGO 4: North of Moulsoe
 - RGO 5: North of M1 Motorway
 - RGO 6: West of Cranfield University
 - RGO 7: North of Woburn Sands
 - East of Fenny Stratford
- 9.8.4 The two PIAs are as follows:
 - PIA: Central Milton Keynes
 - PIA: Central Bletchley

9.8.5 The area (in hectares) of habitats in each RGO has been calculated in QGIS using habitat mapping produced in the MK Natural Capital Mapping Project⁸⁷.

⁸⁷ Milton Keynes Natural Capital Mapping Report (2021) Available at: https://bucksmknep.co.uk/projects/natural-capital-mapping/ [Accessed 03/04/23]

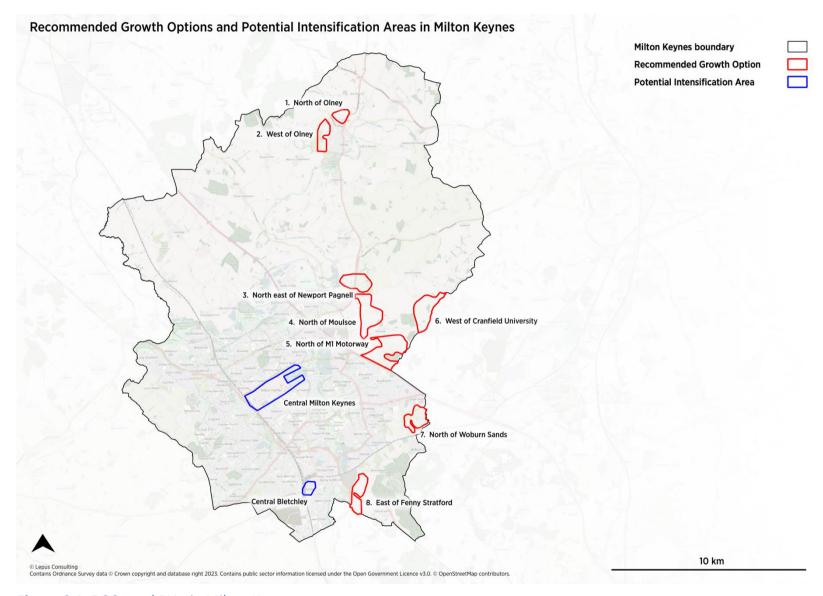


Figure 9.1: RGOs and PIAs in Milton Keynes

10 Recommended Growth Option 1: North of Olney

10.1 Location

- 10.1.1 This 41.6ha RGO is located to the north of Olney and comprises 28.9ha of cultivated/disturbed land which is 69.4% of the total land area. Fields are mostly divided with hedgerows and hedgerow trees. The southwestern boundary meets the urban area of Olney and the eastern boundary runs adjacent to the A509 road. The northern boundary is not defined by field boundaries and meets open countryside. Olney Sewage Treatment Works is located within this RGO in the south. A recent development named 'Olney Park' is located within this RGO (in the far southern field) which contains commercial and industrial units.
- 10.1.2 In a future development layout it has been assumed that 40% of the land use in this RGO would be used for green space, which would comprise 16.64ha.

10.2 Existing NGBI assets including agricultural land

• Grade 2 ALC land (34.5ha) and Grade 3 ALC land (7.1ha)

- Private domestic gardens are located in the southern part of this RGO associated with new residential development
- Broadleaved woodland (0.3ha)
- Hedgerows and scattered hedgerow trees
- PRoW: Footpath providing connectivity from Warrington Road to Olney Hyde
- Watercourse: Tertiary river (unnamed) lies at the southern boundary connecting to the River Great Ouse

10.3 Prescriptions and justifications

Protect

10.3.1 Protect the considerable amount of Grade 2 ALC land (34.5ha) and Grade 3 ALC land (7.1ha). Losing 20 hectares or more of potentially best and most versatile agricultural land is considered to be a high loss of ecosystem services relating to cultivated crops and food production. Soils are a valuable carbon store and contribute to climate change mitigation, as well as provide a habitat for biodiversity.

- 10.3.2 Protect and enhance the linear area of broadleaved woodland and the network of hedgerows and hedgerow trees that cross through this RGO. Hedgerows have the potential to support five ecosystem services including air quality, noise regulation, habitats for biodiversity, climate change regulation and cultural services. Broadleaved woodlands also have the potential to support these five services as well as water supply, water quality and flood protection.
- 10.3.3 Protect the footpath that crosses through the centre of this RGO which provides cultural services relating to health and wellbeing. Many public rights of way have historic alignments.
- 10.3.4 Protect and enable the setting of the Scheduled Monument (Roman site at Olney) which is located adjacent to the site on the eastern side of the A509 (Warrington Road).

Create

10.3.5 Create new and expand the existing 0.3ha linear strip of broadleaved woodland. The creation and expansion of publicly accessible broadleaved woodlands should be prioritised as this green infrastructure asset has the potential to provide a high level of multifunctionality (9 ecosystem services).

- 10.3.6 Create community food growing areas including allotments and orchards within 1km from this location. This RGO does not lie within 1km of existing community food growing area and new opportunities should be provided to meet the needs of the new and existing communities. Community food growing could take the form of allotments or orchards and should meet the standard provided by The National Society of Allotment and Leisure Gardeners (NSALG) who suggest a standard of 20 allotments per 1000 households which equates to 0.25ha per 1000 population.
- 10.3.7 Create multifunctional SuDS to reduce risks of surface water flooding, improve water quality and enhance the amenity and biodiversity services. No areas of Flood Zone 2 and 3 are located within this RGO. This RGO includes an area of 1.051ha at risk of flooding from surface water 1% risk in any year (1 in 100 year event). SuDS features would also contribute to restoring the ecological status of the Ouse (Newport Pagnell to Roxton) River Water Body from 'moderate' to 'good' and its chemical status from 'fail' to 'good'.
- 10.3.8 Support pollinators through provision of pollinator plants, for example by creating flowering meadows.

- 10.3.9 Create neighbourhood greenspaces within 1km, local greenspaces within 300m and doorstep greenspaces within 200m of new development to meet the needs of the new community and support cultural services.
- 10.3.10 Integrate green infrastructure buildings blocks into new development including private domestic gardens, trees in hard landscapes and green, blue and biosolar roofs.

- 10.3.11 Enhance the existing hedgerow and trees along the eastern boundary to provide air quality management services and reduce air pollution and noise from the A509 road for the new community.
- 10.3.12 Enhance the existing broadleaved woodland to increase the quantity of ecosystem services supported and provide connectivity for biodiversity across the RGO.

10.4 The Environmental Benefits from Nature Tool

10.4.1 An assessment of ecosystem services at RGO 1: North of Olney has been undertaken using the EBN Tool as a pilot study. The following section presents the methodology and results from using this tool.

Baseline habitats

- 10.4.2 First, the area of the pre-existing (baseline) habitat types before the proposed changes at this RGO were calculated using GIS and entered into the EBN Tool. The pre-existing habitats were entered into the tool by choosing the most appropriate eco-metric habitat provided by the tool. These are taken from Phase 1, UK Habitats and Biodiversity Metric 3.0 habitats.
- 10.4.3 The pre-existing habitats and areas at this RGO are listed below:
 - Broadleaved woodland (0.3ha)
 - PRoW: Footpath (0.18ha)
 - Private domestic gardens (0.05ha)
 - Hedgerows (0.61ha)
 - Tertiary river (0.12ha)
 - Improved grassland (3ha)
 - Urban Olney Sewage Treatment Works (3.1ha)
 - Arable cereal crops (28.9ha)

Urban houses (5.34ha)

Post development habitats

- 10.4.4 Second, a proposed scenario for post development habitats were entered based on an assumption regarding the nature of proposed development at this location. This proposed scenario assumes that all arable land and improved grassland will be lost. The area of the Olney Sewage Treatment Works, the tertiary river and the footpath will remain the same. New residential development will comprise 25ha including 12.5 for houses and 12.5 for gardens. The broadleaved woodland and hedgerows will be expanded and allotments and a local park will be created. The proposed post development habitats and areas are listed below:
 - Broadleaved woodland (6ha)
 - Allotment (1ha)
 - PRoW: Footpath (0.18ha)
 - Private domestic gardens (12.5ha)
 - Hedgerows (1.2ha)
 - Tertiary river (0.12ha)
 - Improved grassland (0ha)
 - Urban Olney Sewage Treatment Works (3.1ha)
 - Arable cereal crops (0ha)

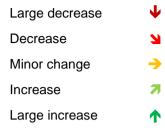
- Urban houses (12.5ha)
- Local park (5ha)

Results

- 10.4.5 The results provided by the EBN are detailed below. The potential impact of habitat change on 18 ecosystem services are presented in Table 10.1. The changes in natural capital assets before and after development are presented in Figure 10.1.
- 10.4.6 The arrows in **Table 10.1** indicate the direction and magnitude of the change in score for each ecosystem service at three points in time compared to baseline before the intervention. They do not take account of the cumulative impact up to that time.
- 10.4.7 The interpretation of the results show that the majority of ecosystem services would see an increase with the proposed development scenario. However, there would be a large decrease in the ecosystem services of food production (due to the entire loss of arable land). There would also be an ecosystem service decrease in water supply.

Table 10.1: Potential impact of habitat change at three time points

Whole area	1 year	10 year	30 year
Food production	+	•	Ψ
Wood production	71	71	71
Fish production	→	→	→
Water supply	Ä	7	2
Flood regulation	71	71	71
Erosion protection	71	71	71
Water quality regulation	71	27	7
Carbon storage	71	77	7
Air quality regulation	71	77	7
Cooling and shading	71	27	7
Noise reduction	→	→	→
Pollination	71	27	7
Pest control	71	27	7
Recreation	71	7	7
Aesthetic value	71	27	7
Education	71	7	7
Interaction with nature	71	7	7
Sense of place	71	77	71



10.4.8 The charts presented in **Figure 10.1** show the percentages of the extent (area) of different habitats, comprising soil, rocks, water, plants and the species these habitats support for baseline and the proposed post development scenario.

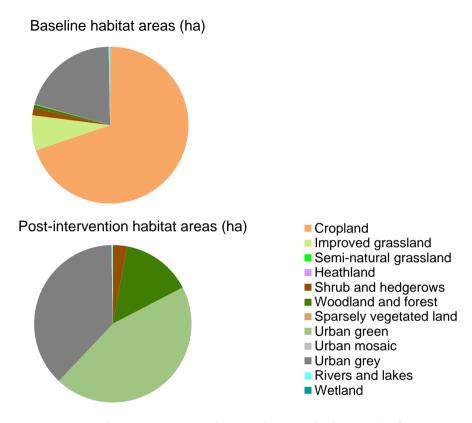


Figure 10.1: Changes in natural capital assets before and after development

11 Recommended Growth Option 2: West of Olney

11.1 Location

- 11.1.1 This 75.8ha RGO is located to the west of Olney and comprises 48.5ha of cultivated/disturbed land which comprises 64% of the total land area. Fields are divided with hedgerows and hedgerow trees. The eastern boundary meets the urban area of Olney and the RGO excludes Ousedale School Olney Campus. The southern boundary meets Weston Road and the western boundary is not defined by field boundaries and meets open countryside. The north western boundary crosses through the new development named Yardley Manor. Notably, this RGO contains Barn Field Local Wildlife Site (LWS) with Olney Beacon in the centre.
- 11.1.2 In a future development layout it has been assumed that 40% of the land use in this RGO would be used for green space, which would comprise 30.32ha.

11.2 Existing NGBI assets including agricultural land

- Grade 3 ALC land (75.77ha)
- Broadleaved woodland (2ha)

- Hedgerows and scattered hedgerow trees
- PRoW: Bridleway along Long Lane connecting Olney with countryside to the west
- PRoW: Network of footpaths cross through the site
- Barn Field Local Wildlife Site.

11.3 Prescriptions and justifications

Protect

- 11.3.1 Protect the Grade 3 ALC land (75.77ha), which is potentially best and most versatile agricultural land. Losing 20 hectares or more of best and most versatile agricultural land is considered to be a high loss of ecosystem services relating to cultivated crops and food production. Soils are a valuable carbon store and contribute to climate change mitigation, as well as provide a habitat for biodiversity.
- 11.3.2 Protect and enhance Barn Field LWS, the broadleaved woodland and the network of hedgerows and hedgerow trees that cross through this RGO. Hedgerows have the potential to support five ecosystem services including air quality, noise regulation, habitats for biodiversity, climate change regulation and cultural services. Broadleaved woodlands also have the potential to support these five services as well as water supply, water quality and flood protection.

11.3.3 Protect and enhance the bridleway and footpaths that cross through this RGO which provide cultural services relating to health and wellbeing, providing access to the open countryside to the north and west and access to Emberton Country Park to the south. Many public rights of way have historic alignments and contribute to cultural services in protecting sense of place.

Create

11.3.4 Create new and expand the existing 2ha area of broadleaved woodland. The creation and expansion of publicly accessible broadleaved woodlands should be prioritised as this green infrastructure asset has the potential to provide a high level of multifunctionality (nine ecosystem services).

- 11.3.5 Create opportunities for community food growing areas including allotments and orchards within 1km from this location. This RGO does not lie within 1km of existing community food growing areas and new opportunities should be provided to meet the needs of the new and existing communities. Community food growing could take the form of allotments or orchards and should meet the standard provided by The National Society of Allotment and Leisure Gardeners (NSALG) who suggest a standard of 20 allotments per 1000 households which equates to 0.25ha per 1000 population.
- 11.3.6 Create multifunctional SuDS to reduce risks of surface water flooding, improve water quality and enhance amenity and biodiversity services. No areas of Flood Zone 2 and 3 are located within this RGO. SUDs features would also contribute to restoring the ecological status of the Ouse (Newport Pagnell to Roxton) River Water Body from 'moderate' to 'good' and its chemical status from 'fail' to 'good'.

- 11.3.7 Barn Field LWS is located within this RGO and Emberton Country Park is located within 1km from the southern half of this RGO. However, in the north of this RGO particularly, to meet the needs of the new community and support cultural services, create additional neighbourhood greenspaces within 1km, local greenspaces within 300m and doorstep greenspaces within 200m of new development.
- 11.3.8 Integrate green infrastructure buildings blocks into new development including private domestic gardens, trees in hard landscapes and green, blue and biosolar roofs.

Enhance

- 11.3.9 Enhance the existing broadleaved woodland to increase the quantity of ecosystem services supported and provide connectivity for biodiversity across the RGO.
- 11.3.10 There is the potential to create a green corridor through the RGO providing ecological connectivity between the Biodiversity Opportunity Areas to the north and south and enhancing opportunities for public accessibility and access to nature.

11.3.11 Enhance Barn Field, Long Lane, Olney – Lowland Meadows LWS to support pollinators through the provision of pollinator plants. This LWS comprises a meadow habitat with excellent community access and high learning value.

12 Recommended Growth Option 3: North east of Newport Pagnell

12.1 Location

- 12.1.1 This 110ha RGO is located to the north east of Newport Pagnell and comprises 98.4ha of cultivated/disturbed land which is 89.2% of the total land area. Fields are divided with hedgerows and hedgerow trees. The boundary of this RGO is not defined by field boundaries and meets open countryside. The western area is in close proximity to the River Great Ouse and the southern boundary is in close proximity to Chicheley Brook. The A509 road crosses through the centre of this RGO and Hill Farm is located in the eastern area.
- 12.1.2 In a future development layout it has been assumed that 40% of the land use in this RGO would be used for green space, which would comprise 44.12ha.

12.2 Existing NGBI assets including agricultural land

- Grade 3 ALC land (86.5ha)
- Private domestic gardens at Hill Farm
- Broadleaved woodland (4.4ha)

- Trees/parkland (1.26ha)
- Hedgerows and hedgerow trees
- PRoW: Bridleway connecting Hill Farm with North Crawley Road
- ProW: Footpath connecting Hill Farm with Tickford End
- Roadside grass verges

12.3 Prescriptions and justifications

Protect

- 12.3.1 Protect the Grade 3 ALC land (86.5ha). Losing 20 hectares or more of potentially best and most versatile agricultural land is considered to be a high loss of ecosystem services relating to cultivated crops and food production. Soils are a valuable carbon store and contribute to climate change mitigation, and provide a habitat for biodiversity.
- 12.3.2 Protect and enhance the broadleaved woodland and the network of hedgerows and hedgerow trees that cross through this RGO. Hedgerows have the potential to support five ecosystem services including air quality, noise regulation, habitats for biodiversity, climate change regulation and cultural services. Broadleaved woodlands also have the potential to support these five services as well as water supply, water quality and flood protection.

12.3.3 Protect and enhance the footpath and bridleway that cross through the centre of this RGO which provides cultural services relating to health and wellbeing. Many public rights of way have historic alignments.

Create

- 12.3.4 Create new and expand the existing 4.4ha of broadleaved woodland and 1.26ha of trees/parkland. The creation and expansion of publicly accessible broadleaved woodlands should be prioritised as this green infrastructure asset has the potential to provide a high level of multifunctionality (nine ecosystem services).
- 12.3.5 Create community food growing areas including allotments and orchards within 1km from this location. This RGO partly lies within 1km of existing community food growing areas at Tickford and new opportunities should be provided to meet the needs of the new and existing communities. Community food growing could take the form of allotments or orchards and should meet the standard provided by The National Society of Allotment and Leisure Gardeners (NSALG) who suggest a standard of 20 allotments per 1000 households which equates to 0.25ha per 1000 population.
- 12.3.6 Create multifunctional SuDS to reduce risks of surface water flooding, improve water quality and enhance the amenity and biodiversity services. Small areas of Flood Zone 2 and 3 are located within this RGO. This RGO also contains an area of 6.2ha at risk of flooding from surface water 1% risk in any year (1 in 100 year event). SuDS features would also contribute to restoring the ecological status of the Ouse (Newport Pagnell to Roxton) River Water Body from 'moderate' to 'good' and its chemical status from 'fail' to 'good'. SuDS features would contribute to restoring the ecological status of the Chicheley Brook River Water Body from 'poor' to 'good' and its chemical status from 'fail' to 'good'.
- 12.3.7 Support pollinators through provision of pollinator plants, for example by creating flowering meadows.
- 12.3.8 Create neighbourhood greenspaces within 1km, local greenspaces within 300m and doorstep greenspaces within 200m of new development to meet the needs of the new community and support cultural services.
- 12.3.9 Integrate green infrastructure buildings blocks into new development including private domestic gardens, trees in hard landscapes and green, blue and biosolar roofs.

- 12.3.10 Enhance the existing embankment along the A509 road, planted with grassland, trees and hedgerows to provide air quality management services and reduce air pollution and noise from the A509 road for the new community.
- 12.3.11 Enhance the existing broadleaved woodland to increase the quantity of ecosystem services supported and provide connectivity for biodiversity across the RGO.
- 12.3.12 This RGO, and the Growth Options North of Moulsoe and North of the M1, provide the opportunity to create strategic green infrastructure, providing public access and habitat connectivity at the north eastern side of Milton Keynes and extending the existing strategic green infrastructure network.

13 Recommended Growth Option 4: North of Moulsoe

13.1 Location

- 13.1.1 This 166.7ha RGO is located to the north of Moulsoe and comprises 132.5ha of cultivated/disturbed land which is 79.5% of the total land area. Fields are divided with hedgerows and hedgerow trees. The boundary of this RGO is not defined by field boundaries and meets open countryside. North Crawley Road and associated residential properties crosses through the northern area of this option. This RGO also includes Tickford Lodge Farm in the north and Tickford Park Farm in the east.
- 13.1.2 In a future development layout it has been assumed that 40% of the land use in this RGO would be used for green space, which would comprise 66.68ha.

13.2 Existing NGBI assets including agricultural land

- Grade 3 ALC land (121.7ha)
- Private domestic gardens at North Crawley Road,
 Tickford Lodge Farm and Tickford Park Farm
- Broadleaved woodland (1.4ha)
- Trees/parkland (0.4ha)

- Hedgerows and hedgerow trees
- PRoW: Bridleway connecting North Crawley Road with Newport Road
- PRoW: Network of footpath cross through this RGO
- Roadside grass verges
- Watercourse: Primary river (Chicheley Brook), culvert and tertiary river
- Priority habitat Traditional orchard (0.2ha)

13.3 Prescriptions and justifications

Protect

13.3.1 Protect the Grade 3 ALC land (121.7ha). Losing 20 hectares or more of potentially best and most versatile agricultural land is considered to be a high loss of ecosystem services relating to cultivated crops and food production. Soils are a valuable carbon store and contribute to climate change mitigation, and provide a habitat for biodiversity.

- 13.3.2 Protect and enhance the broadleaved woodland and the network of hedgerows and hedgerow trees that cross through this RGO. Hedgerows have the potential to support five ecosystem services including air quality, noise regulation, habitats for biodiversity, climate change regulation and cultural services. Broadleaved woodlands also have the potential to support these five services as well as water supply, water quality and flood protection.
- 13.3.3 Protect the bridleway and network of footpaths that crosses through this RGO which provides cultural services relating to health and wellbeing. Many public rights of way have historic alignments. Enhance connectivity between the bridleways along North Crawley Road which has the potential to improve connectivity for horse riders and cyclists around the eastern side of Milton Keynes.
- 13.3.4 Protect the small traditional orchard located at Tickford Lodge Farm, which is identified as a priority habitat.

Create

- 13.3.5 Create new and expand the existing 1.4ha of broadleaved woodland and 0.4ha of trees/parkland. The creation and expansion of publicly accessible broadleaved woodlands should be prioritised as this green infrastructure asset has the potential to provide a high level of multifunctionality (nine ecosystem services).
- 13.3.6 Create community food growing areas including allotments and orchards within 1km from this location. This RGO does not lie within 1km of existing community food growing area and new opportunities should be provided to meet the needs of the new and existing communities. Community food growing could take the form of allotments or orchards and should meet the standard provided by The National Society of Allotment and Leisure Gardeners (NSALG) who suggest a standard of 20 allotments per 1000 households which equates to 0.25ha per 1000 population.

- Create multifunctional SuDS to reduce risks of surface water flooding, improve water quality and enhance amenity and biodiversity services. Very small areas of Flood Zone 2 and 3 are located within this RGO. This RGO contains an area of 4.6ha at risk of flooding from surface water 1% risk in any year (1 in 100 year event). SuDs features would also contribute to restoring the ecological status of the Ouse (Newport Pagnell to Roxton) River Water Body from 'moderate' to 'good' and its chemical status from 'fail' to 'good'. SuDs features would contribute to restoring the ecological status of the Broughton Brook Water Body from 'poor' to 'good' and its chemical status from 'fail' to 'good'. SuDs features would contribute to restoring the ecological status of Ouzel US Caldecote Mill Water Body from 'moderate' to 'good' and its chemical status from 'fail' to 'good'.
- 13.3.8 Support pollinators through provision of pollinator plants, for example by creating flowering meadows.
- 13.3.9 Create neighbourhood greenspaces within 1km, local greenspaces within 300m and doorstep greenspaces within 200m of new development to meet the needs of the new community and support cultural services.

13.3.10 Integrate green infrastructure buildings blocks into new development including private domestic gardens, trees in hard landscapes and green, blue and biosolar roofs.

- 13.3.11 Enhance the existing embankment along the A509 road, planted with grassland, trees and hedgerows to reduce air pollution and noise to provide air quality management services and reduce air pollution and noise from the A509 road for the new community. Part of this RGO is located within 200m from the A509 road.
- 13.3.12 Enhance the existing broadleaved woodland to increase the quantity of ecosystem services supported and provide connectivity for biodiversity across the RGO.
- 13.3.13 This RGO, and the Growth Options North of Newport Pagnell and North of the M1, provide the opportunity to create strategic green infrastructure, providing public access and habitat connectivity at the north eastern side of Milton Keynes and extending the existing strategic green infrastructure network.

14 Recommended GrowthOption 5: North of M1Motorway

14.1 Location

- The M1 motorway is located immediately adjacent to the 14.1.1 southern boundary of this 211.5ha RGO. This RGO contains approximately 187ha of cultivated/disturbed land which is 88.4% of the total land area. Fields are divided with hedgerows and hedgerow trees. This RGO is located to the north of Broughton Gate and Brooklands (to the south of the M1). The western and northern boundaries are not defined by field boundaries and meet open countryside. The eastern boundary follows the boundary of MKCC local authority area excluding an area of woodland named Old Covert. This RGO contains Broughton Grounds Business Park in the east and a small number of residential properties and commercial buildings are located in close proximity to the M1 in the south. Broughton Grounds Lane crosses through this option.
- 14.1.2 In a future development layout it has been assumed that 40% of the land use in this RGO would be used for green space, which would comprise 84.6ha.

14.2 Existing NGBI assets including agricultural land

- Grade 2 ALC land (46.6ha) and Grade 3 ALC land (164.8ha)
- Private domestic gardens in the south of this RGO near the M1 motorway
- Broadleaved woodland (1.9ha)
- Trees/parkland (0.8ha)
- Mixed woodland (2.4ha)
- Hedgerows and hedgerow trees
- PRoW: Bridleway connecting Old Covert Woodland to Moulsoe Road
- PRoW: Network of footpaths cross through the option
- Roadside grass verges
- Watercourse: Secondary river and tertiary river
- Ponds

14.3 Prescriptions and justifications

Protect

- 14.3.1 Protect the considerable amount of Grade 2 ALC land (46.6ha) and Grade 3 ALC land (164.8ha). Losing 20 hectares or more of best and most versatile agricultural land is considered to be a high loss of ecosystem services relating to cultivated crops and food production. Soils are a valuable carbon store and contribute to climate change mitigation, and provide a habitat for biodiversity.
- 14.3.2 Protect and enhance the broadleaved woodlands and the network of hedgerows and hedgerow trees that cross through this RGO. Hedgerows have the potential to support five ecosystem services including air quality, noise regulation, habitats for biodiversity, climate change regulation and cultural services. Broadleaved woodlands also have the potential to support these five services as well as water supply, water quality and flood protection.
- 14.3.3 Protect the bridleway and network of footpaths that cross through this RGO which provides cultural services relating to health and wellbeing. Many public rights of way have historic alignments.

Create

- 14.3.4 Create new and expand the existing 1.49ha of broadleaved woodland, 0.8ha of trees/parkland and 2.4ha of mixed woodland. The creation and expansion of publicly accessible broadleaved woodlands should be prioritised as this green infrastructure asset has the potential to provide a high level of multifunctionality (nine ecosystem services).
- 14.3.5 Create community food growing areas including allotments and orchards within 1km from this location. This RGO does not lie within 1km of existing community food growing areas and new opportunities should be provided to meet the needs of the new and existing communities. Community food growing could take the form of allotments or orchards and should meet the standard provided by The National Society of Allotment and Leisure Gardeners (NSALG) who suggest a standard of 20 allotments per 1000 households which equates to 0.25ha per 1000 population.

- 14.3.6 Create multifunctional SuDS to reduce risks of surface water flooding, improve water quality and enhance amenity and biodiversity services. Areas of Flood Zone 2 and 3 are located within this RGO. This growth option contains an area of 32.5ha at risk of flooding from surface water 1% risk in any year (1 in 100 year event). SuDS features would also contribute to restoring the ecological status of the Broughton Brook Water Body from 'poor' to 'good' and its chemical status from 'fail' to 'good'.
- 14.3.7 Use nature-based solutions to mitigate potential noise and air impacts from the M1, for example, soil banks planted with trees and shrubs.
- 14.3.8 Support pollinators through provision of pollinator plants, for example by creating flowering meadows.
- 14.3.9 The southern part of this RGO is located within 1km from an area of open greenspace adjacent to the M1 motorway. However, in the north of this RGO, to meet the needs of the new community and support cultural services, create additional neighbourhood greenspaces within 1km, local greenspaces within 300m and doorstep greenspaces within 200m of new development.

14.3.10 Integrate green infrastructure buildings blocks into new development including private domestic gardens, trees in hard landscapes and green, blue and biosolar roofs.

- 14.3.11 Enhance the northern side of the M1 Motorway which is currently lined with a fragmented hedgerow and trees providing minimal screening. Planting denser vegetation including hedgerows and trees to provide full planted coverage will provide air quality management services and reduce air pollution and noise from the M1 Motorway for the new community.
- 14.3.12 Enhance the existing broadleaved woodland to increase the quantity of ecosystem services supported and provide connectivity for biodiversity across the RGO.
- 14.3.13 This RGO, and the Growth Options North of Newport Pagnell and North of Moulsoe provide the opportunity to create strategic green infrastructure, providing public access and habitat connectivity at the north eastern side of Milton Keynes and extending the existing strategic green infrastructure network.

15 Recommended Growth Option 6: West of Cranfield University

15.1 Location

- 15.1.1 This 159ha RGO is located to the west of Cranfield University and comprises 83ha of cultivated/disturbed land which is 52.2% of the total land area. Fields are divided with hedgerows and hedgerow trees. The eastern boundary follows the boundary of MKCC local authority area. The western and northern boundaries are not defined by field boundaries and meet open countryside. Folly Lane crosses through the centre of this option, connecting Cranfield with North Crawley. Murtlands Farm is partially located in the far north and farm buildings are located adjacent to Folly Lane in the centre.
- 15.1.2 In a future development layout it has been assumed that 40% of the land use in this RGO would be used for green space, which would comprise 63.6ha.

15.2 Existing NGBI assets including agricultural land

- Grade 3 ALC land (159ha)
- Private domestic gardens at Murtlands Farm

- Broadleaved woodland (7.2ha) in particular the small areas of Ancient Woodland
- Trees/parkland (0.3ha)
- Hedgerows and hedgerow trees
- PRoW: Network of footpaths
- Roadside grass verges
- Watercourse: Tertiary river
- Ponds

15.3 Prescriptions and justifications

Protect

15.3.1 Protect the Grade 3 ALC land (159ha). Losing 20 hectares or more of potentially best and most versatile agricultural land is considered to be a high loss of ecosystem services relating to cultivated crops and food production. Soils are a valuable carbon store and contribute to climate change mitigation and provide a habitat for biodiversity.

- 15.3.2 Protect and enhance the broadleaved woodland and the network of hedgerows and hedgerow trees that cross through this RGO. Hedgerows have the potential to support five ecosystem services including air quality, noise regulation, habitats for biodiversity, climate change regulation and cultural services. Broadleaved woodlands also have the potential to support these five services as well as water supply, water quality and flood protection. There are two patches of Ancient Woodland within the Growth Option and two more substantial areas of Ancient Woodland lies to the west and south. Ancient Woodlands are defined as an irreplaceable habitat, taking hundreds of years to establish. They are protected under the NPPF.
- 15.3.3 Protect the network of footpaths that cross through this RGO which provides cultural services relating to health and wellbeing. Many public rights of way have historic alignments.

Create

15.3.4 Create new and expand the existing 7.2ha of broadleaved woodland and 0.3ha of trees/parkland. The creation and expansion of publicly accessible broadleaved woodlands should be prioritised as this green infrastructure asset has the potential to provide a high level of multifunctionality (nine ecosystem services).

- 15.3.5 Create community food growing areas including allotments and orchards within 1km from this location. This RGO partly lies within 1km of an existing community food growing area to the south of North Crawley at Folly Lane. New opportunities should be provided to meet the needs of the new and existing communities. Community food growing could take the form of allotments or orchards and should meet the standard provided by The National Society of Allotment and Leisure Gardeners (NSALG) who suggest a standard of 20 allotments per 1000 households which equates to 0.25ha per 1000 population.
- 15.3.6 Create multifunctional SuDS to reduce risks of surface water flooding, improve water quality and enhance amenity and biodiversity services. No areas of Flood Zone 2 and 3 are located within this RGO. This RGO includes an area of 1.9ha at risk of flooding from surface water 1% risk in any year (1 in 100 year event). SuDS features would also contribute to restoring the ecological status of the Chicheley Brook Water Body from 'poor' to 'good' and its chemical status from 'fail' to 'good'. SuDS features would also contribute to restoring the ecological status of the Broughton Brook Water Body from 'poor' to 'good' and its chemical status from 'fail' to 'good'.

- 15.3.7 Support pollinators through provision of pollinator plants, for example by creating flowering meadows.
- 15.3.8 Create neighbourhood greenspaces within 1km, local greenspaces within 300m and doorstep greenspaces within 200m of new development to meet the needs of the new community and support cultural services.
- 15.3.9 Integrate green infrastructure buildings blocks into new development including private domestic gardens, trees in hard landscapes and green, blue and biosolar roofs.

Enhance

15.3.10 Enhance the existing broadleaved woodland to increase the quantity of ecosystem services supported and provide connectivity for biodiversity across the RGO, particularly to enhance habitat connectivity between existing Ancient Woodland.

16 Recommended Growth Option 7: North of Woburn Sands

16.1 Location

- 16.1.1 This 101.6ha RGO is located to the north of Woburn Sands and comprises 44.7ha of cultivated/disturbed land which is 44% of the total land area. Fields are divided with hedgerows and hedgerow trees. This RGO contains part of the grounds associated with Wavendon House which includes small pockets of broadleaved woodland. Residential properties and commercial buildings in Woburn Sands are located in the south and adjacent to Cranfield Road which crosses through the centre.
- 16.1.2 In a future development layout it has been assumed that 40% of the land use in this RGO would be used for green space, which would comprise 40.64ha.

16.2 Existing NGBI assets including agricultural land

- Grade 3 ALC land (98.2ha)
- Private domestic gardens at Woburn Sands in the south and in the north adjacent to Cranfield Road

- Formal gardens: Partially contains Wavendon House
 Landscape Grade II Registered Park and Garden
- Broadleaved woodland (2.9ha)
- Trees/parkland (4.1ha)
- Hedgerows and hedgerow trees
- Leisure routes: National cycle network adjacent to northern boundary
- PRoW: Footpath connecting Cranfield Road with Wavendon
- Roadside grass verges at Cranfield Road
- Golf Course: Partially contains Wavendon Golf Academy (now closed)
- One Traditional Orchard, a Priority Habitat
- Watercourse: Culvert and tertiary river
- Ponds in the grounds of Wavendon House

16.3 Prescriptions and justifications

Protect

16.3.1 Protect the Grade 3 ALC land (98.2ha). Losing 20 hectares or more of potentially best and most versatile agricultural land is considered to be a high loss of ecosystem services relating to cultivated crops and food production. Soils are a valuable carbon store and contribute to climate change mitigation, as well as provide a habitat for biodiversity.

- 16.3.2 Protect and enhance the existing 2.9ha of broadleaved woodland and 4.1ha of trees/parkland and the network of hedgerows and hedgerow trees that cross through this RGO. Hedgerows have the potential to support five ecosystem services including air quality, noise regulation, habitats for biodiversity, climate change regulation and cultural services. Broadleaved woodlands also have the potential to support these five services as well as water supply, water quality and flood protection.
- 16.3.3 Protect the footpaths that cross through the centre of this RGO and along the northern boundary, which provide cultural services relating to health and wellbeing. Many public rights of way have historic alignments.
- 16.3.4 Protect and enhance the setting of the Wavendon House Landscape, a Registered Park and Garden (Grade II listed) which is partially located within this RGO.

Create

16.3.5 Create new and expand the existing 2.9ha of broadleaved woodland and 4.1ha of trees/parkland. The creation and expansion of publicly accessible broadleaved woodlands should be prioritised as this green infrastructure asset has the potential to provide a high level of multifunctionality (nine ecosystem services).

- 16.3.6 Create community food growing areas including allotments and orchards within 1km from this location. This RGO lies partly within 1km of existing community food growing areas at Woburn Sands and at Wavendon and new opportunities should be provided to meet the needs of the new and existing communities. One traditional orchard, a Priority Habitat, is located within this RGO. Community food growing could take the form of allotments or orchards and should meet the standard provided by The National Society of Allotment and Leisure Gardeners (NSALG) who suggest a standard of 20 allotments per 1000 households which equates to 0.25ha per 1000 population.
- 16.3.7 Create multifunctional SuDS to reduce risks of surface water flooding, improve water quality and enhance amenity and biodiversity services. No areas of Flood Zone 2 and 3 are located within this RGO. This RGO includes an area of 1.5ha at risk of flooding from surface water 1% risk in any year (1 in 100 year event). SuDS features would also contribute to restoring the ecological status of the Broughton Brook Water Body from 'poor' to 'good' and its chemical status from 'fail' to 'good'.
- 16.3.8 Support pollinators through provision of pollinator plants, for example by creating flowering meadows.

- 16.3.9 Create neighbourhood greenspaces within 1km, local greenspaces within 300m and doorstep greenspaces within 200m of new development to meet the needs of the new community and support cultural services.
- 16.3.10 Integrate green infrastructure buildings blocks into new development including private domestic gardens, trees in hard landscapes and green, blue and biosolar roofs.

- 16.3.11 Enhance the existing broadleaved woodland to increase the quantity of ecosystem services supported and provide connectivity for biodiversity across the RGO.
- 16.3.12 Plan green infrastructure to contribute to the network of strategic green infrastructure at the south eastern extents of the urban area of Milton Keynes, creating sustainable access routes for people and habitat connectivity.

17 Recommended Growth Option 8: East of Fenny Stratford

17.1 Location

- 17.1.1 This 102.8ha RGO is located to the east of Fenny Stratford and comprises 91.7ha of cultivated/disturbed land which is 89.2% of the total land area. Fields are divided with hedgerows and hedgerow trees. The western boundary is located adjacent to the A4146 and Brickhill Road. The southern boundary is adjacent to the boundary of MKCC local authority area. The eastern and northern boundaries are not defined by field boundaries and meet open countryside. The A5 crosses through the centre and includes commercial buildings adjacent to Watling Street.
- 17.1.2 In a future development layout it has been assumed that 40% of the land use in this RGO would be used for green space, which would comprise 41.12ha.

17.2 Existing NGBI assets including agricultural land

- Grade 3 ALC land (73.7ha)
- Broadleaved woodland (0.2ha)
- Hedgerows and hedgerow trees

- PRoW: Bridleway connecting Watling Street with the A4146 road
- Watercourse: Tertiary river

17.3 Prescriptions and justifications

Protect

- 17.3.1 Protect the Grade 3 ALC land (73.7ha). Losing 20 hectares or more of potentially best and most versatile agricultural land is considered to be a high loss of ecosystem services relating to cultivated crops and food production. Soils are a valuable carbon store and contribute to climate change mitigation and provide a habitat for biodiversity.
- 17.3.2 Protect and enhance the existing broadleaved woodland and the network of hedgerows and hedgerow trees that cross through this RGO. Hedgerows have the potential to support five ecosystem services including air quality, noise regulation, habitats for biodiversity, climate change regulation and cultural services. Broadleaved woodlands also have the potential to support these five services as well as water supply, water quality and flood protection.

- 17.3.3 Protect and enhance the bridleway that crosses through this RGO, providing connectivity to Little Brickhill and supporting cultural services relating to health and wellbeing. Many public rights of way have historic alignments.
- 17.3.4 Protect and enhance the setting of the Scheduled Monument (Roman town of Magiovinium and Roman fort) which is located to the west of this RGO on the western side of the A4146 road.

Create

17.3.5 Create new and expand the existing 0.2ha area of broadleaved woodland. The creation and expansion of publicly accessible broadleaved woodlands should be prioritised as this green infrastructure asset has the potential to provide a high level of multifunctionality (nine ecosystem services). Areas of Ancient Woodland lie to the east of the Growth Option and there is the opportunity to create stepping stones of habitat to enhance connectivity with these areas. Create lowland meadow habitats to create stepping stones of habitat to enhance connectivity to the existing areas of this priority habitat located to the west of the Growth Option.

- 17.3.6 Create community food growing areas including allotments and orchards within 1km from this location. This RGO does not lie within 1km of existing community food growing areas and new opportunities should be provided to meet the needs of the new and existing communities. Community food growing could take the form of allotments or orchards and should meet the standard provided by The National Society of Allotment and Leisure Gardeners (NSALG) who suggest a standard of 20 allotments per 1000 households which equates to 0.25ha per 1000 population.
- 17.3.7 Create multifunctional SuDS to reduce risks of surface water flooding, improve water quality and enhance amenity and biodiversity services. No areas of Flood Zone 2 and 3 are located within this RGO. This RGO includes an area of 2ha at risk of flooding from surface water 1% risk in any year (1 in 100 year event). SuDS features would also contribute to restoring the ecological status of the Ouzel US Caldecote Mill Water Body from 'moderate' to 'good' and its chemical status from 'fail' to 'good'.
- 17.3.8 Support pollinators through provision of pollinator plants, for example by creating flowering meadows.

- 17.3.9 Create neighbourhood greenspaces within 1km, local greenspaces within 300m and doorstep greenspaces within 200m of new development to meet needs of the new community and support cultural services. Currently, a small area in the western part of this RGO is located within 1km from an area of neighbourhood green space (Waterhall Park to the west in Bletchley).
- 17.3.10 Integrate green infrastructure buildings blocks into new development including private domestic gardens, trees in hard landscapes and green, blue and biosolar roofs.

- 17.3.11 Enhance the existing hedgerow and trees that line the A5 road on both sides to provide air quality management services and reduce air pollution and noise from the A5 road for the new community.
- 17.3.12 Enhance the existing hedgerow and trees that line the A4146 road, particularly on the eastern side to provide air quality management services and reduce air pollution and noise from the A4146 road for the new community.
- 17.3.13 Enhance the existing broadleaved woodland to increase the quantity of ecosystem services supported and provide connectivity for biodiversity across the RGO.

18 Potential Intensification Area: Central Milton Keynes

18.1 Location

- 18.1.1 This 270.1ha PIA is located in Central Milton Keynes. Builtup areas and infrastructure comprise approximately 174.7ha of this PIA which is 64.7% of the total area. The boundary of this area follows the road network surrounding the commercial centre of Milton Keynes. Campbell Park is excluded from this area.
- 18.1.2 Future development in this location is assumed to be mixed commercial and residential development and should seek to achieve Natural England's Green Infrastructure Framework Standard S4 for Urban Greening which seeks an Urban Greening Factor of 0.3 for commercial development and 0.4 for residential development.

18.2 Existing NGBI assets

- Amenity grassland
- Amenity greenspace
- Broadleaved woodland (9.4ha)
- Trees/parkland (8.3ha)
- Mixed woodland (0.1ha)

- Civic spaces and formal gardens
- Leisure routes: Redways and national cycle network
- Local parks
- Pocket parks
- Ponds
- Private domestic gardens
- Scheduled Monument: Secklow Hundred Mound
- Urban hedgerows

18.3 Prescriptions and justifications

Protect

- 18.3.1 Protect and enhance the broadleaved woodland and street trees and the urban hedgerows that are located within this PIA. Hedgerows have the potential to support five ecosystem services including air quality, noise regulation, habitats for biodiversity, climate change regulation and cultural services. Broadleaved woodlands also have the potential to support these five services as well as water supply, water quality and flood protection.
- 18.3.2 Protect the Redways and the National Cycle Network that cross through this PIA which provides cultural services relating to health and wellbeing.

- 18.3.3 Protect and enhance the setting of the Scheduled Monument located within this PIA named 'Secklow Hundred mound: a moot at the junction of North Row and North Ninth Street'.
- 18.3.4 Protect and enable the setting of Campbell Park (Grade II)
 Registered Park and Garden which is located directly
 adjacent to the north east of this PIA.
- 18.3.5 Protect and enhance open green spaces located within this PIA to meet needs of the new community and support cultural services. These include the following open spaces highlighted in MKCC Open Space Assessment (unpublished draft, 2023):
 - Pocket Parks
 - Amenity Green Spaces
 - Civic Spaces and Formal Gardens
 - Local Parks

Create

- 18.3.6 Create new and expand the existing 9.4ha of broadleaved woodland, 8.3ha of trees/parkland and 0.1ha of mixed woodland. The creation and expansion of publicly accessible broadleaved woodlands should be prioritised as this green infrastructure asset has the potential to provide a high level of multifunctionality (nine ecosystem services).
- 18.3.7 Street trees provide a similar range of ecosystem services as woodlands in urban areas. New development should seek to retain existing trees where appropriate and plant new street trees, particularly on the southern, eastern and western sides of buildings.
- 18.3.8 Create opportunities for community food growing within 1km from this location. This PIA does not contain any food growing areas but is partially located within 1km (15 minute walk) from food growing areas highlighted in MKCC Open Space Assessment (unpublished draft, 2023). New opportunities should be provided to meet the needs of the new and existing communities. Community food growing could take the form of small scale community food growing areas or orchards of fruit trees.

- 18.3.9 Create multifunctional SuDS to reduce risks of surface water flooding, improve water quality and enhance amenity and biodiversity services. No areas of Flood Zone 2 and 3 are located within this PIA. This PIA includes an area of 9.12ha at risk of flooding from surface water 1% risk in any year (1 in 100 year event). SuDS features would also contribute to restoring the ecological status of the Ouzel US Caldecote Mill Water Body from 'moderate' to 'good' and its chemical status from 'fail' to 'good'. SuDS features would also contribute to restoring the ecological status of the Loughton Brook Water Body from 'moderate' to 'good' and its chemical status from 'fail' to 'good'.
- 18.3.10 Support pollinators through provision of pollinator plants, for example by changing landscape management techniques to support more diversity in the grassed road verges, which have the potential to be strong corridors of habitats through the PIA.
- 18.3.11 Currently, parts of this PIA in the east and west are located within 1km from neighbourhood greenspaces. However, particularly in the central parts of this PIA, to meet the needs of the new community and support cultural services, create additional neighbourhood greenspaces within 1km, local greenspaces within 300m and doorstep greenspaces within 200m of new development.

18.3.12 Integrate green infrastructure buildings blocks into new development including private domestic gardens, trees in hard landscapes and green, blue and biosolar roofs, with a focus on providing climate positive places through the provision of urban cooling and surface water management.

- 18.3.13 Enhance the existing embankment planted with grassland and trees along both sides of the A5 road and the railway line to provide air quality management services and reduce air pollution and noise pollution and to provide habitats for wildlife.
- 18.3.14 Enhance the existing wide grass verges and thick wooded corridors that line both sides of the A509 road to provide air quality management services and reduce air pollution and noise from the A509 road for the new development.
- 18.3.15 Enhance the existing broadleaved woodland to increase the quantity of ecosystem services supported and provide connectivity for biodiversity across the PIA.

19 Potential Intensification Area: Central Bletchley

19.1 Location

- 19.1.1 This 37ha PIA is located in Central Bletchley. This area mostly contains residential and commercial buildings. Built-up areas and infrastructure comprise approximately 25.5ha of this PIA which is 69% of the total area. The West Coast Main Line, East West Rail and the B4034 road cross through the area.
- 19.1.2 Future development in this location is assumed to be mixed commercial and residential development and should seek to achieve Natural England's Green Infrastructure Framework Standard S4 for Urban Greening which seeks an Urban Greening Factor of 0.3 for commercial development and 0.4 for residential development.

19.2 Existing NGBI assets

- Amenity grassland
- Amenity greenspace
- Broadleaved woodland (0.5ha)
- Trees/parkland (0.5ha)
- Leisure routes: Redways and national cycle network

- Private domestic gardens
- Urban hedgerows
- Roadside grass verges

19.3 Prescriptions and justifications

Protect

- 19.3.1 Protect and enhance the broadleaved woodland and street trees and the urban hedgerows that are located within this PIA. Hedgerows have the potential to support five ecosystem services including air quality, noise regulation, habitats for biodiversity, climate change regulation and cultural services. Broadleaved woodlands also have the potential to support these five services as well as water supply, water quality and flood protection.
- 19.3.2 Protect the Redways and the National Cycle Network that cross through this PIA which provides cultural services relating to health and wellbeing.

Create

- 19.3.3 Create new and expand the existing 0.5ha of broadleaved woodland and 0.5ha of trees/parkland. The creation and expansion of publicly accessible broadleaved woodlands should be prioritised as this green infrastructure asset has the potential to provide a high level of multifunctionality (nine ecosystem services).
- 19.3.4 Street trees provide a similar range of ecosystem services as woodlands in urban areas. New development should seek to retain existing trees where appropriate and plant new street trees, particularly on the southern, eastern and western sides of buildings.
- 19.3.5 This PIA does not contain any food growing areas but is wholly located within 1km (15 minute walk) from allotments located to the south east adjacent to Manor Road. Ensure local allotments have capacity for additional demand resulting from new development at this PIA. Community food growing could take the form of allotments or orchards and should meet the standard provided by The National Society of Allotment and Leisure Gardeners (NSALG) who suggest a standard of 20 allotments per 1000 households which equates to 0.25ha per 1000 population.
- 19.3.6 Create multifunctional SuDS to reduce risks of surface water flooding, improve water quality and enhance amenity and biodiversity services. No areas of Flood Zone 2 and 3 are located within this PIA. This PIA includes an area of 2ha at risk of flooding from surface water 1% risk in any year (1 in 100 year event). SuDS features would also contribute to restoring the ecological status of the Ouzel US Caldecote Mill Water Body from 'moderate' to 'good' and its chemical status from 'fail' to 'good'. SuDS features would also contribute to restoring the ecological status of the Newton Longville Brook Water Body from 'poor' to 'good' and its chemical status from 'fail' to 'good'.
- 19.3.7 Create neighbourhood greenspaces within 1km, local greenspaces within 300m and doorstep greenspaces within 200m of new development to meet needs of the new community and support cultural services. Most of this PIA is located within 1km from areas of neighbourhood greenspace. Currently part of a small area of amenity green space is located within this PIA.
- 19.3.8 Support pollinators through provision of pollinator plants, for example by creating flowering meadows.
- 19.3.9 Integrate green infrastructure buildings blocks into new development including private domestic gardens, trees in hard landscapes and green, blue and biosolar roofs.

Enhance

- 19.3.10 Enhance the green infrastructure assets surrounding the West Coast Main Line and East West Rail that cross through the western area of this PIA to provide air quality management services and reduce air pollution and noise from the railway network for the new development.
- 19.3.11 Enhance the roadside grass verges and coverage of trees that surround the B4034 road that crosses through this PIA to provide air quality management services and reduce air pollution and noise from the B4034 road for the new development.
- 19.3.12 Enhance the existing broadleaved woodland to increase the quantity of ecosystem services supported and provide connectivity for biodiversity across the PIA.

20 Location of Future Country Parks

- 20.1.1 MKCC is interested in exploring potential options for the location of future country parks within the local authority area.
- 20.1.2 Country parks are areas for people to visit and enjoy recreation in a countryside environment.

20.2 Country park accreditation

20.2.1 Guidance from Natural England and Department for Environment, Food & Rural Affairs (DEFRA)⁸⁸ states that to get accreditation, a potential Country Park location must meet all of the essential criteria and at least 10 of the desirable criteria to get accreditation. The criteria are detailed below.

Essential criteria

- 20.2.2 Your park must be:
 - at least 10 hectares in size

- defined by a clear boundary marked on a map, whether it's open or fenced in
- accessible less than 10 miles from a residential area
- free to enter
- inclusive and accessible show how you've met equality and disability needs and provided for varied groups
- predominantly natural or semi-natural landscape, for example woodland, grassland, wetland, heathland or parkland, with no more than 5% of the area built upon (excluding car parks)
- signposted and easy to navigate you should show visitors where they can go, what they can do and direct them along footpaths, bridleways and cycle routes
- visibly staffed, for example litter collection and maintenance
- available for public or educational events
- near public toilets either on-site or a 2 minute walk away

https://www.gov.uk/guidance/get-accreditation-for-your-country-park [Accessed 11/05/23]

⁸⁸ Natural England and Department for Environment, Food & Rural Affairs (2022) Get accreditation for a country park you manage in England. Available at:

 informed by the local community – the public should have some influence over the management and development of your site⁸⁹.

Desirable criteria

20.2.3 Your park should ideally have:

- a visitor centre
- play facilities
- catering
- bike and horse trails
- art and sculpture
- permanent staff presence during the day
- detailed information available to visitors, such as leaflets
- brown and white tourist directional signs and shown on an OS map
- activities outside, such as water sports and adventure sports
- achieved, or is working towards, Green Flag Award (GFA) status

- a green transport policy, such as buses and cycle routes to your site
- facilities for less able visitors, such as easy trails, seats and information available in accessible formats
- planned for the management of biodiversity, geodiversity and preservation of historical environment
- opportunities for practical community involvement, such as volunteering
- promoted the health benefits of walking
- an outreach programme promoting your site to less represented sectors of the community
- a programme of events and guided walks, promoting healthy living and environmental awareness⁹⁰.

20.3 Milton Keynes City Council Open Space Assessment

20.3.1 Country Parks are included in MKCC Open Space Assessment (unpublished draft, 2023) and are defined as:

"Open space areas in a countryside environment, accessible to wider population. Predominantly natural or semi-natural landscape and defined by a clear boundary. Country Parks can be accredited by Natural England if they fulfil essential

⁸⁹ Natural England and Department for Environment, Food & Rural Affairs (2022) Get accreditation for a country park you manage in England. Available at: https://www.gov.uk/guidance/get-accreditation-for-your-country-park [Accessed 11/05/23]

⁹⁰ Natural England and Department for Environment, Food & Rural Affairs (2022) Get accreditation for a country park you manage in England. Available at: https://www.gov.uk/guidance/get-accreditation-for-your-country-park [Accessed 11/05/23]

- criteria. Green Flag Award status is used to review their status."
- 20.3.2 The primary and secondary purposes of Country Parks are as follows:
- 20.3.3 **Primary purpose:** "Provide formal recreation opportunities. Provide social interaction. Provides play facilities, catering, and permanent staffing. Usually contain visitor centres, bike, and horse trails. Should provide facilities that are accessible to all."
- 20.3.4 **Secondary Purpose:** "Planned for the management of biodiversity geodiversity and preservation of historical environment. Provide opportunities for community involvement. Promote health."
- 20.3.5 Proposed open space standards for Country Parks in Milton Keynes as defined in MKCC Open Space Assessment are presented below in **Table 20.1**.

Table 20.1: Country Parks proposed standards for Milton Keynes (MKCC OSA)

Quantity	Quality Standard	Accessibility Standard	Catchment area
 Minimum 20ha in size To meet the provision shortage there is a potential to deliver a park West of the City and upgrade larger existing district parks into Country Park Status as per Natural England's accreditation. 	 Sites to be established in line with requirements set for accredited Country Parks by Natural England (work towards achieving accreditation status and Green Flag award) Parking including disabled parking, available on site. 	 Public Transport links within 5 min walking distance from site entrance Linkages via redways/cycleways to be provided to and within the sites Linkages via footpath/pedestrian routes to and within the site All key access points to be fully accessible. 	 Strategic facilities that serve wider public across the boundaries Sites containing at least 20 ha of natural greenspace to be within 2km of residential properties via accessible road network Sites containing at least 100ha of natural greenspace that are within 5km of residential properties of residential properties via accessible road network.

20.4 Emberton Country Park

- 20.4.1 There is currently one country park in the area of Milton Keynes; Emberton Country Park.
- 20.4.2 Originally a gravel works, Emberton Country Park covers approximately 57ha of attractive parkland in the village of Emberton, close to the historic town of Olney and just a few miles north east of Milton Keynes. The site was transformed by Milton Keynes City Council into England's first country park⁹¹.
- 20.4.3 The origins of the country park date back to the 1960s and were borne out of a concern to protect the greater countryside from the perceived threat of thousands of recreational urban dwellers. The country park was intended to act as a 'honey pot'. Emberton Country Park was established in 1965 as a 'country park' and others followed its example. However, today the park at Emberton is not accredited as a 'country park' by Natural England⁹².

20.4.4 Emberton Country Park contains three children's play areas, bird watching platforms, duck feeding and picnic areas. Fishing is permitted on all four lakes as well as sailing. There are pitches for camping and caravanning.

NGBI assets located at Emberton Country Park

- Broadleaved woodland
- Grasslands
- Lakes (Grebe Lake, Heron Water, Otter Pool and Snipe Pool)
- Watercourses (River Great Ouse and Old River Ouse)
- Hedgerows
- PRoW (bridleway and footpaths)

⁹¹ Milton Keynes City Council (2023) Emberton Country Park. Available at: https://www.milton-keynes.gov.uk/environment-parks-and-open-spaces/emberton-country-park/things-do [Accessed 02/04/23]

⁹² Natural England (2022) Accredited country parks in England. Available at: https://www.gov.uk/government/publications/accredited-country-parks-in-england [Accessed 01/08/23]

20.5 Area of search

- 20.5.1 The essential criteria from Natural England and Department for Environment, Food & Rural Affairs (DEFRA)⁹³ guidance states that a country park must be at least 10ha in size. The MKCC Open Space Assessment defines a country park as having a minimum size of 20ha.
- 20.5.2 The Accessible Greenspace Standards from the Natural England Green Infrastructure Framework define an area of greenspace with a minimum size of 20ha as a 'Wider Neighbourhood Greenspace'.
- 20.5.3 Wider Neighbourhood Greenspaces should be accessible within a maximum distance of 2km from homes (35 minutes' walk).
- 20.5.4 Therefore, the best locations for future country parks in Milton Keynes are considered to be areas that are currently not located within 2km from areas of Wider Neighbourhood Greenspace.

20.5.5 The MKCC Open Space Assessment (unpublished draft, 2023) has mapped areas of Wider Neighbourhood Greenspace including Other Semi-Natural Greenspace, Country Parks, Linear Parks and District Parks (over 20ha in size). Isochrones have also been created by MKCC to identify the areas served within 2km (presented in **Figure 6.9**). The area of search is therefore the area outside the 2km isochrones.

20.6 Potential locations for future Country Parks

20.6.1 Within the area of search identified above, and within 2km from residential properties, the following locations are considered to be potential options for future Country Parks.

Wavendon Golf Academy

20.6.2 The area of land comprising the former Wavendon Golf Academy is located to the east of the city. This site comprises an area of approximately 39ha (excluding the adjacent Wavendon House Landscape Registered Park and Garden).

https://www.gov.uk/guidance/get-accreditation-for-your-country-park [Accessed 11/05/23]

⁹³ Natural England and Department for Environment, Food & Rural Affairs (2022) Get accreditation for a country park you manage in England. Available at:

20.6.3 Approximately half of this site is located within the recommended growth option: North of Woburn Sands (7). This former golf course is located within 2km from residential development, notably the town of Woburn Sands to the south and the village of Wavendon to the west. This location is comprised mostly of improved grasslands and broadleaved trees and is crossed by a PRoW (footpath) and the Milton Keynes Boundary Walk Long Distance Path.

Moulsoe Old Wood

20.6.4 Moulsoe Old Wood is located to the north east of the city and comprises an area of approximately 40ha. Moulsoe Old Wood is surrounded by open countryside and contains areas of broadleaved, coniferous and felled woodland, divided with tracks.

20.6.5 The entire woodland is Ancient Woodland. This woodland is also designated as a Biological Notification Site (BMERC). PRoW (footpaths) are located adjacent to the southern and eastern boundaries and the Milton Keynes Boundary Walk Long Distance Path crosses the south eastern corner. This area of woodland is located within 2km from residential development, notably the village of Moulsoe to the west. This area of woodland is also located within 2km from three growth options: North of Moulsoe (4), North of M1 Motorway (5) and West of Cranfield University (6). The woodland can be accessed via Cranfield Road to the south.

Sherington Lakes

20.6.6 To the north of Castle Meadow at Newport Pagnell, there exists an area of lakes known as Sherington Lakes (including Kingfisher Lake), surrounding grasslands and broadleaved woodlands which is bounded by the River Great Ouse to the east and south and by Northampton Road (B526) and Sherington Road to the west.

20.6.7 This area comprises approximately 60ha. The lakes in this area are contained within a Biological Notification Site (BMERC) named: 'Newport Pagnell gravel pits' and described as 'a series of disused gravel pits filled with water'. No PRoW cross through this area although there are tracks running between the lakes. Ouse Valley Way Long Distance Path runs along the western boundary. This area is located nearby a recommended growth option: North east of Newport Pagnell (3).

Gayhurst Wood

- 20.6.8 To the north west of Newport Pagnell there exists a large area (approximately 67ha) of broadleaved and mixed woodland including Gayhurst Wood and Bunsty Wood. Longland's Wood is also connected to the north west.
- 20.6.9 The entire woodland is Ancient Woodland. This woodland is also designated as a Biological Notification Site (BMERC). The northern boundary meets a road linking the villages of Gayhurst with Tathall End. Part of the southern boundary meets the M1 motorway. A PRoW (footpath) runs adjacent to the southern boundary of the woodland. This area of woodland is located within 2km from residential development, notably the villages of Gayhurst to the east and Tathall End to the west.

Land west of the city

- 20.6.10 MKCC Open Space Assessment (unpublished draft, 2023) identifies a potential location for a country park to the west of the city.
- 20.6.11 There exists an area of countryside to the west of the city (and within the Milton Keynes local authority boundary) comprising mostly fields of improved grassland and cultivated/disturbed land, divided with hedgerows and trees. This area stretches from Stony Stratford in the north to Oakhill Wood (Ancient Woodland) in the south. This area includes the villages of Lower Weald and Upper Weald. A network of PRoW (footpaths and bridleways) cross through this area. This area is mostly located within 2km from areas of existing Wider Neighbourhood Greenspace.

21 Delivering the Strategy

21.1 Delivering the NGBI strategy

21.1.1 This chapter sets out the ways to deliver a successful and multifunctional NGBI network in Milton Keynes.

21.2 Integrating the NGBI strategy

- 21.2.1 Stage five in Natural England's Green Infrastructure Framework: Process Journey for Local Planning Authorities is: "Integrating the green infrastructure strategy" ⁹⁴. NGBI should be integrated into plans and policies in the following ways:
 - Ensure join up between Local Nature Recovery
 Strategies and green infrastructure strategies and green infrastructure delivery plans
 - Using the evidence on local character to design good green infrastructure as part of Local Design Guides
 - Including Green Infrastructure Standards in Local Design Codes
 - Embedding green infrastructure in relevant chapters in local plans including local plan site allocations

- Set requirements for green infrastructure information within planning validation checklists
- Ensuring green infrastructure is included across local government and stakeholder policies and strategies

21.3 Managed, valued, monitored and evaluated

- 21.3.1 Stage six (the final stage) in Natural England's Green Infrastructure Framework: Process Journey for Local Planning Authorities is: "Managed Valued Monitored Evaluated"95.
- 21.3.2 The following sections provide guidance on how NGBI in Milton Keynes can be managed, funded and monitored for the long term.

21.4 Management

21.4.1 The interrelationship between management of different sites to achieve NGBI outcomes requires a strategic approach to management across land parcels, organisations and boundaries. Delivering this NGBI strategy will require collaboration with a wide range of stakeholders.

⁹⁴ Natural England (2023) Process Journey for Local Planning Authorities. Available at: https://designatedsites.naturalengland.org.uk/GreenInfrastructure/ProcessJourneys.aspx [Accessed 04/05/23]

⁹⁵ Natural England (2023) Process Journey for Local Planning Authorities. Available at: https://designatedsites.naturalengland.org.uk/GreenInfrastructure/ProcessJourneys.aspx [Accessed 04/05/23]

Public bodies

21.4.2 Public bodies provide guidance and support for delivering NGBI. Public bodies include Natural England, Environment Agency, Forestry Commission, Sport England, Health and Wellbeing Boards.

Voluntary sector

- 21.4.3 The voluntary sector comprises non-governmental non-profit organisations that play a valuable role in creating, enhancing and maintaining the NGBI network in Milton Keynes.
- 21.4.4 Environmental organisations include The Royal Society for the Protection of Birds (RSPB), Woodland Trust, The Berks, Bucks & Oxon Wildlife Trust (BBOWT) and Canal and River Trust.

The Buckinghamshire and Milton Keynes Natural Environment Partnership

- 21.4.5 The Buckinghamshire and Milton Keynes Natural Environment Partnership (BMKNEP) brings together local authorities and organisations from across the public, private, health and education sectors, as well as conservation and community organisations to champion the value of the environment in decision-making.
- 21.4.6 The BMKNEP encourages environmental protection and improvement for the environment, businesses and the economy, and the health and wellbeing of communities across Buckinghamshire and Milton Keynes⁹⁶.

The Parks Trust

21.4.7 The Parks Trust is the independent charity that owns and manages most of the major parks, open spaces and grid road landscaped areas of Milton Keynes.

⁹⁶ Buckinghamshire and Milton Keynes Natural Environment Partnership. Available at: https://bucksmknep.co.uk [Accessed 10/05/23]

21.4.8 The Parks Trust is an independent charity and not funded from council tax or business rates. It is self-financing through income generated by its commercial property and investments, tenants, graziers, events and grant aid⁹⁷.

Neighbouring authorities

21.4.9 Collaboration with neighbouring authorities (North Northamptonshire Council, Bedford Borough Council, Central Bedfordshire Council, Buckinghamshire Council and West Northamptonshire Council) is important to ensure the NGBI network extends across the Milton Keynes local authority boundary.

Internal Drainage Boards

21.4.10 Internal Drainage Boards (IDBs) are the Risk Management Authorities (RMA) for ordinary watercourses within their drainage districts. For ordinary watercourses in Milton Keynes, outside an IDB area, the RMA is MKCC. The process for works on or near to all ordinary watercourses in Milton Keynes is managed by the Bedford Group of IDBs on behalf of MKCC⁹⁸.

Landowners and the farming community

21.4.11 Landowners and the farming community can play a significant role in enhancing the rural NGBI network through agri-environment schemes.

Developers

21.4.12 Developers will contribute to future NGBI projects in Milton Keynes. It will be crucial to engage with developers to fully integrate NGBI into development proposals.

Local communities

21.4.13 Engaging with local communities in discussions on long term planning, and opportunities for involvement in delivery and ongoing management including volunteering will be valuable.

Factsheet for Riparian Owners. Available at: https://www.milton-keynes.gov.uk/flood-and-water-management/watercourse-management-and-consenting [Accessed 01/06/23]

⁹⁷ Milton Keynes City Council. The Parks Trust. Available at: https://www.milton-keynes.gov.uk/coin/parks-trust [Accessed 09/05/23]

⁹⁸ Milton Keynes City Council (2022) Watercourse Management

21.5 Funding

21.5.1 NGBI is most likely to be successful where there is a mix of public, private and voluntary sectors, working together. This can include joint approaches to securing funding. Funding for NGBI can be secured through a range of different funding streams and models of governance. Current key sources of funding for NGBI projects in the UK are summarised below.

Biodiversity Net Gain

21.5.2 Biodiversity net gain (BNG) is a way to contribute to the recovery of nature while developing land. It is making sure the habitat for wildlife is in a better state than it was before development. This will apply from November 2023 for developments in the Town and Country Planning Act 1990, unless exempt. It will apply to small sites from April 2024.

21.5.3 Developers must try to avoid loss of habitat to a piece of land they plan to do development work on. If they cannot do this, they must create habitat either on-site or off-site. On-site means on the land their development work is on. Off-site is either their own land away from the development site, or they have bought units from a land manager. If developers cannot use on-site or off-site land, they must buy statutory credits from the government. Developers must provide evidence for using this option. This must be a last resort. The government will invest in habitat creation elsewhere in England⁹⁹.

Community Infrastructure Levy

21.5.4 The Community Infrastructure Levy (CIL) is a charge which can be levied by local authorities on new development in their area. It is an important tool for local authorities to use to help them deliver the infrastructure needed to support development in their area¹⁰⁰.

⁹⁹ Department for Environment, Food & Rural Affairs (2023) Understanding biodiversity net gain. Available at: https://www.gov.uk/guidance/understanding-biodiversity-net-gain [Accessed 09/05/23]

¹⁰⁰ Department for Levelling Up, Housing and Communities and Ministry of Housing, Communities & Local Government (2023) Community Infrastructure Levy. Available at: https://www.gov.uk/guidance/community-infrastructure-levy [Accessed 09/05/23]

Planning obligations

21.5.5 Under national planning regulations local authorities can require a developer to contribute towards providing infrastructure or taking other steps to offset the impact of a development; these are called Planning Obligations. These obligations are contained in legally binding agreements, often referred to as Section 106 or S106 Agreements (after the relevant section in the 1990 Town and Country Planning Act)¹⁰¹.

Funding for Flood and Coastal Erosion Risk Management

- 21.5.6 Defra provides the majority of its funding for Funding for Flood and Coastal Erosion Risk Management (FCERM) to the Environment Agency (EA) as Grant-in-Aid (GiA), which is the mechanism for financing Non-Departmental Public Bodies (NDPB), such as the EA. The EA spends this funding directly on manging flood risk, but it also passes some of this funding on as capital grants for flood or coastal erosion defence improvements to local authorities or Internal Drainage Boards which are local public authorities established in areas of special drainage need which manage water levels within their respective drainage districts¹⁰².
- 21.5.7 As well as the central government funding there are a number of other funding sources for FCERM. These include a levy on local authorities (local levy) raised by the EA. EA levies are subject to approval of the relevant Regional Flood and Coastal Committee (RFCC).¹⁰³

¹⁰¹ Milton Keynes City Council. Planning obligations and section 106 explained. Available at: https://www.milton-keynes.gov.uk/planning-and-building/developingmk/planning-obligations/planning-obligations-and-section-106 [Accessed 09/05/23]

¹⁰² Department for Environment, Food & Rural Affairs (2022) Central Government Funding for Flood and Coastal Erosion Risk Management in England. Available at:

https://www.gov.uk/government/statistics/funding-for-flood-and-coastal-erosion-risk-management-in-england [Accessed 01/05/23]

¹⁰³ Department for Environment, Food & Rural Affairs (2022) Central Government Funding for Flood and Coastal Erosion Risk Management in England. Available at: https://www.gov.uk/government/statistics/funding-for-flood-and-coastal-erosion-risk-management-in-england [Accessed 01/05/23]

Milton Keynes tariff agreement

21.5.8 The Milton Keynes Tariff is an umbrella Section 106 arrangement which the City Council deploys to fund infrastructure requirements associated with the large scale development in its expansion areas and strategic urban extensions. Contributions to the Tariff are utilised to fund a wide range of both local infrastructure, including schools, community facilities, play areas, generally delivered on-site and also to contribute to the expansion of city wide infrastructure generally located off-site, such as the hospital and further education college, which need to expand capacity to deal with the increasing population. Altogether the Tariff contributes to delivery of additional infrastructure across a total of 19 different portfolios including open space and drainage and flood alleviation.

Environmental, Social and Corporate Governance

21.5.9 Natural England's Green Infrastructure Framework: Process Journey for Local Planning Authorities ¹⁰⁴ recognises that investing in nature-based solutions is now perceived as a reputational necessity by many companies. Through the Environmental Social and Corporate Governance agenda, interest in investment in nature to reduce business risk is growing. This is becoming a practical reality as supply chains are affected by climate change. Approaches such as biophilic design are creating greener, healthier working environments for staff which can enhance mental and physical health and enhance productivity.

National Lottery Heritage Fund

21.5.10 The National Lottery Heritage Fund is the largest dedicated grant funder of the UK's heritage. Funding is available for a broad range of projects that connect people and communities to the UK's heritage. This includes heritage projects concerning nature, designated landscapes, large-scale rural projects, community archaeology and the historic environment¹⁰⁵.

¹⁰⁴ Natural England (2023) Process Journey for Local Planning Authorities. Available at: https://designatedsites.naturalengland.org.uk/GreenInfrastructure/ProcessJourneys.aspx [Accessed 04/05/23]

¹⁰⁵ Heritage Fund. Available at: https://www.heritagefund.org.uk [Accessed 10/05/23]

21.6 Monitoring and evaluation

- 21.6.1 It will be important to monitor and evaluate how NGBI objectives are performing over time at the strategic scale. Monitoring and measuring the objectives will assess the relative success of the NGBI Strategy and assist in refining NGBI targeted action and guidance.
- 21.6.2 Natural England ¹⁰⁶ recommend that Local Planning Authorities should aim to report progress against green infrastructure targets every five years. Learning from the evaluation and monitoring should prompt adaptive management and refining of the plans and policies.
- 21.6.3 The Natural England green infrastructure standards set out that green infrastructure delivered within (or associated with) major new developments should be managed, maintained and monitored for a minimum of 30 years¹⁰⁷.
- 21.6.4 Progress towards the objectives of this NGBI strategy will be measured against the key performance indicators and the outcomes presented in the monitoring and evaluation framework from **Table 21.1** to **21.5**.

¹⁰⁶ Natural England (2023) Process Journey for Local Planning Authorities. Available at: https://designatedsites.naturalengland.org.uk/GreenInfrastructure/ProcessJourneys.aspx [Accessed 10/05/23]

¹⁰⁷ Natural England (2023) Process Journey for Local Planning Authorities. Available at: https://designatedsites.naturalengland.org.uk/GreenInfrastructure/ProcessJourneys.aspx [Accessed 10/05/23]

Table 21.1: Monitoring and evaluation framework: Nature rich beautiful places

	Nature rich beautiful places	
Objective	Key performance indicator	Outcomes
Support nature-based solutions, to address climate change mitigation, water management, air pollution and other challenges while benefitting biodiversity and improving human wellbeing.	 Hectares of new woodlands planted within 200m of main roads Number of projects installing and enhancing Natural Flood Management (NFM) techniques Hectares of new woodlands planted in urban areas Number of properties installed with green roofs and walls. 	 Reduced flood risk Increased carbon sequestration Improved air quality in areas surrounding main
Conserve, protect and enhance existing sites of biodiversity value.	 Hectares of sites identified for biodiversity value Number of sites designated as LNR, LWS and SSSI Number of hectares of LNR per 1,000 population (NE Green Infrastructure Framework Standard S3). 	 1 hectare of LNR per 1,000 population (NE Green Infrastructure Framework Standard S3: Urban Nature Recovery) Increased number of sites designated for biodiversity value.
Restore, enhance and manage habitats and species appropriate to Milton Keynes and its wider regional context in a way that mitigates against and adapts to climate change.	 Percentage of tree cover across the authority (NE Green Infrastructure Framework Standard S5: Urban Tree Canopy Cover Standard) Percentage of tree cover, reedbeds and long grasslands to sequester carbon Extent of habitat connectivity Number of restored ecologically degraded former agricultural or industrial sites 	 19% tree cover across the authority (target in line with the shared regional principles of the Oxford to Cambridge Pan Regional Partnership) (NE Green Infrastructure Framework Standard S5: Urban Tree Canopy Cover Standard) 30% coverage of tree cover, reedbeds and long grasslands to sequester carbon in the authority area

	 Hectares of new woodlands planted in urban areas Number of properties installed with green roofs and walls. 	 Integrated and robust habitat network resilient to climate change Increased carbon sequestration, reduced urban temperatures and increased biodiversity in urban areas due to the installation of green roofs, green walls and street trees.
Support the Local Nature Recovery Network. Plan for Biodiversity Net Gain (BNG) and 'off-site' BNG provision.	 Percentage increase in BNG resulting from new development. 	 20% net gain in biodiversity (target in line with the shared regional principles of the Oxford to Cambridge Pan Regional Partnership).
Support an Environmental Net Gain (ENG) approach, where land use change leaves the environment in a measurably better state than it was beforehand. Support a future national ENG metric.	 Percentage increase in ENG resulting from new development as calculated using a future ENG approach. 	 Authority-wide increase in natural capital benefits including flood protection, recreation and improved water and air quality associated with new development.

Table 21.2: Monitoring and evaluation framework: Active and healthy places

	Active and healthy places	
Objective	Key performance indicator	Outcomes
Engage people with places rich in wildlife to allow them to experience the natural environment, bringing benefits to health and well-being.	 Number of visitors to accessible green and blue spaces rich in wildlife Hectares of new accessible green and blue spaces to meet the needs of the growing population Number of new visitor centres and appropriate new facilities to encourage visitor use of existing greenspaces Quantity, quality and connectivity of redways, leisure routes, bridleways and footpaths. 	 Increased quantity and quality of accessible green and blue spaces, visitor centres, redways, leisure routes, bridleways and footpaths Improved physical and mental well-being due to increased access to green and blue spaces rich in wildlife.
Encourage active lifestyles by planning for everyone to live within fifteen minutes' walk that connects into the wider active travel network. Based in the approach of Least Restrictive Access ¹⁰⁸ .	 Hectares of new accessible green and blue spaces to meet the needs of the growing population Percentage of homes in the local authority area located within fifteen minutes' walk of accessible green and blue spaces (NE Green Infrastructure Framework Standard S2: Accessible Greenspace Standards) Number of hectares of publicly accessible greenspace per 1,000 population (NE Green Infrastructure Framework Standard S2: Accessible Greenspace Standards). 	 Everyone has access to good quality green and blue spaces close to home (within fifteen minutes' walk) for health and wellbeing and contact to nature.
Prioritise meeting needs in areas of greater deprivation where	 Percentage of homes in areas of greater deprivation (identified using IMD data) located within fifteen 	 Everyone has access to good quality green and blue spaces close to home (within fifteen

¹⁰⁸ The Sensory Trust (2017) 'BY All Reasonable Means' Available at https://www.sensorytrust.org.uk/uploads/documents/ByAllReasonableMeansEnglandAug2020.pdf [Accessed on 17/03/23]

there may be greater benefits to public health.	minutes' walk of accessible green and blue spaces (NE Green Infrastructure Framework Standard S2: Accessible Greenspace Standards).	minutes' walk) for health and wellbeing and contact to nature.
Support the provision of a range of places where communities can come together for shared experiences, including community gardens and spaces for cultural and sporting events.	 Number of new accessible facilities for community events identified in the NGBI framework Percentage of homes in the local authority area located within fifteen minutes' walk of accessible green and blue spaces (NE Green Infrastructure Framework Standard S2: Accessible Greenspace Standards). 	 Everyone has access to good quality green and blue spaces close to home (within fifteen minutes' walk) for health and wellbeing and contact to nature.
Provide opportunities for food growing areas, such as allotments and orchards to support healthy eating and food awareness.	Number of allotments per 1000 households.	 20 allotments per 1000 households which equates to 0.25ha per 1000 population (The National Society of Allotment and Leisure Gardeners (NSALG) standard).
Support opportunities for educational activities, volunteering and community engagement.	 Number of new outdoor educational facilities near schools and educational institutions Number of educational activities at existing educational institutions including Howe Park Wood Education and Visitor Centre and Linford Lakes Nature Reserve Education Centre Number of opportunities available in The Parks Trust Volunteering Programme. 	 Increased access to outdoor educational activities, volunteering and community engagement.

Table 21.3: Monitoring and evaluation framework: Thriving and prosperous places

	Thriving and prosperous places	
Objective	Key performance indicator	Outcomes
Ensure green infrastructure design responds to the local character and context. Protect and connect heritage assets. Increase tree planting in order that trees continue to be a characteristic feature of the city.	 Hectares of new woodlands planted in urban areas Hectares of new strategic NGBI created alongside future growth Amount of funding acquired for the restoration of historic assets Quantity and connectivity of redways, leisure routes, bridleways and footpaths to connect heritage assets. 	 Enhanced NGBI network that responds to local character Restored historic assets and their environmental settings Connected network of historic assets.
Plan for 'green gateways' at key entry points to the city, which help to display the commitment to green character.	 Hectares of new woodlands created at key entry points to the city. 	 Enhanced NGBI network delivering ecosystem services at key entry points to the city.
Provide green infrastructure alongside commercial growth areas to enhance economic benefits, attracting high value, knowledgebased industries, an enhanced offer for employees and investment opportunities.	 Urban Greening Factor (NE Green Infrastructure Framework Standard S4: Urban Greening Factor Standard) Hectares of new woodlands created at commercial growth areas Amount invested in NGBI at commercial growth areas Area of land designated for NGBI assets in commercial development proposals. 	 Major development meets Urban Greening Factor Standard of at least 0.3 for commercial development (NE Green Infrastructure Framework Standard S4: Urban Greening Factor Standard) Improved worker happiness; opportunities for open air recreation during lunchtimes, before and after work Enhanced NGBI network delivering ecosystem services at commercial growth locations.
Support opportunities for enhancing the visitor economy.	 Amount of funding for and number of events provided by The Parks Trust Events Programme 	Enhanced NGBI network delivering ecosystem services at tourist accommodation and destinations.

	 Hectares of new woodlands created at tourist accommodation and destinations Quantity and connectivity of redways, leisure routes, bridleways and footpaths to tourist destinations including Centre:MK, the Grand Union Canal, Bletchley Park and Campbell Park Amount of funding available for the promotion and enhancement of 'green and blue' visitor destinations including parks, woodlands, lakes, local nature reserves and long-distance footpaths. 	 Increased quantity and quality of accessible green and blue spaces, visitor centres, redways, leisure routes, bridleways and footpaths.
Support opportunities for agriculture and food production.	 Development proposals located in areas of best and most versatile agricultural land Number of allotments per 1000 households. 	 Protection of best and most versatile agricultural land as an irreplicable soil resource 20 allotments per 1000 households which equates to 0.25ha per 1000 population (The National Society of Allotment and Leisure Gardeners (NSALG) standard).

Table 21.4: Monitoring and evaluation framework: Improved water management

	Improved water management	
Objective	Key performance indicator	Outcomes
systems to support future growth to manage runoff and	 Number of development proposals including the creation of SuDS Hectares of new woodlands created to increase water absorption, catch rainfall and slow down surface water run-off Volume of water stored in balancing lakes Area of floodplains surrounding rivers protected from development. 	 Installation of multifunctional, strategic sustainable drainage systems to support future growth to manage runoff and support adaptation to climate change Enhanced biodiversity, community, recreation and education benefits through the installation of SuDS.
Support multifunctional, small scale sustainable drainage systems (green or blue roofs, swales, basins, rain gardens, wetlands and others) to manage runoff and support adaptation to climate change.	 Number of development proposals including the creation of SuDS. 	 Installation of multifunctional, small scale sustainable drainage systems (tree pits, green or blue roofs, swales, basins, rain gardens, wetlands and others) to manage runoff and support adaptation to climate change Enhanced biodiversity, community, recreation and education benefits through the installation of SuDS.
Support the provision of green infrastructure which helps to use water efficiently.	 Volume of water used per person per day Volume of water recycled through the harvesting and storage of rainwater, stormwater and greywater Number of water efficiency features included into development proposals Proportion of planting schemes that include planting that requires low levels of irrigation in development proposals. 	 Authority-wide reduction in water consumption Fewer than 110 litres of water used per person per day (MK Strategy for 2050 target).

Support the provision of green infrastructure which helps to improve water quality, supporting improvement in the biological and chemical status of water bodies.

- Number of development proposals including the creation of SuDS
- Area of riparian buffers along waterbodies to protect from eutrophication and improve water quality
- Hectares of new woodlands created to provide water quality benefits including storage and interception of rainfall, filtering of pollutants and infiltration at the root zone.
- Reduced eutrophication into waterbodies
- Improved water quality through nature-based solutions.

Table 21.5: Monitoring and evaluation framework: Resilient and climate positive places

	Resilient and climate positive pla	ces
Objective	Key performance indicator	Outcomes
Support measures to mitigate climate change by reducing greenhouse gas emissions.	 Number of people who use public transport and car sharing schemes Funding available for promoting and enhancing the redways, leisure routes, bridleways and footpaths Number of development proposals including biosolar roofs. 	 Authority-wide reduction in greenhouse gas emissions Increased usage of sustainable travel options Increased energy generation from low-carbon sources.
Support measures which help to store carbon (for example, carbon stored in trees and other vegetation and through soil management measures).	 Percentage of tree cover across the authority (NE Green Infrastructure Framework Standard S5: Urban Tree Canopy Cover Standard) Hectares of new woodlands planted within 200m of main roads Number of properties installed with green roofs and walls. 	 Infrastructure Framework Standard S5: Urban Tree Canopy Cover Standard) Reduced air pollution within 200m of main roads Increased carbon sequestration, reduced urban
Support climate change adaptation through providing urban cooling and managing storm events such as low and high intensity rainfall and high winds.	 Urban Greening Factor (NE Green Infrastructure Framework Standard S4: Urban Greening Factor Standard) Percentage of tree cover across the authority (NE Green Infrastructure Framework Standard S5: Urban Tree Canopy Cover Standard) Hectares of new woodlands planted in urban areas Number of new street trees planted in urban areas 	 Major development meets Urban Greening Factor Standard of at least 0.3 for commercial development (NE Green Infrastructure Framework Standard S4: Urban Greening Factor Standard) 19% tree cover across the authority (target in line with the shared regional principles of the Oxford to Cambridge Pan Regional Partnership) (NE Green Infrastructure Framework Standard S5: Urban Tree Canopy Cover Standard)

Number of properties installed with green roofs and	Urban neighbourhoods adapted to climate change
walls.	(reduced urban temperatures and more resilient to
	extreme weather events).

22 Policy Recommendations

22.1 Preparing a robust NGBI Policy

- 22.1.1 Stage four in Natural England's Green Infrastructure Framework: Process Journey for Local Planning Authorities is: 'Plan strategically and develop NGBI policy' 109. This chapter provides policy recommendations for maintaining, enhancing, and developing NGBI and measures that will contribute to addressing climate change. The recommendations are based on best practice and the empirical evidence and data presented in **Chapter 4** of this strategy. Any policy that is included in the forthcoming Milton Keyes Local Plan must be underpinned with evidence. This strategy is the main evidence source for the following policies.
- 22.1.2 To assist with the formulation of local plan policies, the Natural England Green Infrastructure Framework Process, Journey for Local Planning Authorities ¹¹⁰, includes the following advice:

'To assess whether new local planning policy or policies cover the breadth of green infrastructure at a strategic level, it can be useful to review whether the issues in the 5 'Why' green infrastructure Principles - green infrastructure for nature, health, prosperity, water management and climate resilience and the 5 'What' green infrastructure Principles - multifunctional, varied, connected, accessible and reflecting local character, are fully considered in local planning policy'.

22.2 Existing Milton Keynes Green Infrastructure Policy NE4 (2015)

22.2.1 See **Appendix B** for existing local planning green infrastructure policy context.

¹⁰⁹ Natural England (2023) Process Journey for Local Planning Authorities. Available at: https://designatedsites.naturalengland.org.uk/GreenInfrastructure/ProcessJourneys.aspx [Accessed 04/05/23]

¹¹⁰ Natural England (2023) Process Journey for Local Planning Authorities. Available at: https://designatedsites.naturalengland.org.uk/GreenInfrastructure/ProcessJourneys.aspx [Accessed 04/05/23]

22.3 Best practice

- 22.3.1 An expert paper ¹¹¹ written by Alister J Scott and Max Hislop titled; 'what does good green infrastructure policy look like?', was published by the PERFECT (Planning for Environment and Resource efficiency in European Cities and Towns) project in 2020, which was an international green infrastructure partnership led by the Town and Country Planning Association (TCPA).
- 22.3.2 This paper reports on the design and testing of a green infrastructure policy tool which assesses the multifunctionality and strength of green infrastructure policy wording using the English National Planning Policy Framework (NPPF) and Planning Policy Wales 10 (PPW10) as case studies.
- 22.3.3 Once green infrastructure policies have been identified, the methodology for using the self-assessment tool follows two key steps as detailed below.

- 22.3.4 Policies are assessed against the assessment criteria to determine the extent of coverage of the criterion and are given a score from 1 to 3 (some coverage, most coverage and full coverage). The green infrastructure policy assessment framework categorises the assessment criteria into seven 'GI design elements':
 - · Policy plan mainstreaming
 - Development integration
 - Biodiversity/ habitats
 - Physical environment
 - Access networks
 - Green space
 - Stewardship
- 22.3.5 An assessment of the strength of the policy wording is undertaken and given a score from 1 to 3 (weak phrasing, medium phrasing and strong phrasing). For example, the word 'should' would get a score of 2 (medium phrasing) as this is weaker than using stronger phrases such as 'must', 'required' or 'expected'.

¹¹¹ Alister J Scott and Max Hislop (2020) Expert paper: What does good green infrastructure policy look like? Available at: https://www.tcpa.org.uk/resources/expert-paper-what-does-good-green-infrastructure-policy-look-like/ [Accessed 05/05/23]

- 22.3.6 A key finding from this paper is that the assessment of the NPPF and the PPW10 shows a lack of strong policy wording across the green infrastructure functions. This suggests that green infrastructure policies are potentially vulnerable to being outweighed by other policy priorities such as viability and economic growth which command significant policy weight.
- 22.3.7 This paper also presents model policies designed from the highest scoring green infrastructure policies identified in a pilot using this assessment tool involving 19 local authorities within the Central Scotland Green Network (CSGN) area. These model policies are presented in **Table 22.1.**

Table 22.1: A suite of 'exemplar' green infrastructure policies derived from the highest-scoring policies identified in the Central Scotland local authority green infrastructure policy review

	GI is integral to place-making underpinned by the qualities of successful places, and therefore must be part of the design process from the outset, proving water management, access networks, habitat enhancements and open space functions.
	To achieve this, developments are expected to:
Green infrastructure primary policy	discuss what green infrastructure is appropriate for the site at pre-application meetings with the planning authority and relevant stakeholders;
	appraise the site context for green infrastructure functions, undertake habitat and hydrological assessments of the site as requested through pre-application discussions, and demonstrate how they have influenced the design; and
	take opportunities to achieve multi-functionality by bringing green infrastructure functions together.
	Water management
	Development proposals will integrate naturalised SuDS features into the design of green infrastructure, and where they are part of open space obligations, will be safe and accessible, creating an attractive and distinctive setting for new developments.
	Access networks
Green infrastructure functions policies	Development proposals will maintain and enhance the quality and connectivity of access networks, integrating active travel routes (linking workplaces, schools, community facilities and public transport hubs) and recreation routes into green infrastructure.
	Habitat enhancements
	Development proposals will conserve and enhance on-site biodiversity and habitat networks within and adjacent to the site.
	Open space
	Development proposals will meet local accessibility, quality and quantity standards for open space, and will be designed to cater for the needs of the community.

Stewardship of green
infrastructure policy

Developers will provide details of the green infrastructure functions and maintenance requirements, and the party responsible for them, and demonstrate funding arrangements for their long-term delivery to the satisfaction of the local authority before construction starts.

- 22.3.8 These 'exemplar' green infrastructure policies can be adapted to specific contexts, supported by a relevant evidence base.
- 22.3.9 The authors stress the importance of breadth as well as depth in green infrastructure policies. The authors warn against an all-encompassing green infrastructure policy in one chapter alone without sufficient connections across other policy chapters. The authors recommend not exclusively including green infrastructure policies within the 'natural environment' chapters of policy guidance. They provide an example in the NPPF where green infrastructure functions policies are perhaps better located in the 'climate change and flooding', 'healthy communities', 'sustainable transport' and 'well-designed places' chapters.

22.3.10 This is also highlighted in the Natural England Green Infrastructure Framework Process Journey for Local Planning Authorities: 'Due to the broad nature of green infrastructure the local plan should also make reference to green infrastructure in chapters which are not environment based, to ensure join up across, health, transport and employment programmes and projects.' 112

22.4 Standards and targets

- 22.4.1 The Natural England Green Infrastructure Framework states that local authorities are encouraged to use standards and targets in developing and writing policies¹¹³.
- 22.4.2 Standards can provide the output measures so that developers have certainty over what green infrastructure is needed on site. They should be included as site-specific and area-based requirements in site allocation policies. The Natural England Green Infrastructure Framework includes the following Headline Standards:
 - Green Infrastructure Strategy Standard
 - Accessible Greenspace Standards, including Quality Standards

¹¹² Natural England (2023) Process Journey for Local Planning Authorities. Available at: https://designatedsites.naturalengland.org.uk/GreenInfrastructure/ProcessJourneys.aspx [Accessed 04/05/23]

¹¹³ Natural England (2023) Process Journey for Local Planning Authorities. Available at: https://designatedsites.naturalengland.org.uk/GreenInfrastructure/ProcessJourneys.aspx [Accessed 04/05/23]

- Urban Nature Recovery Standard
- Urban Greening Factor Standard
- Urban Tree Canopy Cover Standard
- 22.4.3 These 5 Headline Standards can be used as the starting point for locally developed policy.
- 22.4.4 These standards are explored in greater detail in **Chapter 6**.

22.5 Draft NGBI policy recommendations for Milton Keynes

The following policy recommendations are written with the aim of providing full coverage of the assessment criteria from the green infrastructure policy assessment framework (presented in the 'what does good green infrastructure policy look like?' expert paper 114). The policy wording deliberately adopts strong phrasing to enforce the need for action to be taken. The recommended policies are guided by the objectives of this NGBI strategy (see **Chapter 7**) and have been grouped into the 5 'Why' green infrastructure Principles from the Natural England Green Infrastructure Framework.

22.6.1 Background context for policies relating to 'nature rich beautiful places' are provided in **Chapter 4.3 and 4.4**.

Biodiversity and habitat networks

Development proposals will conserve and enhance on-site biodiversity and habitat networks within and adjacent to the site.

Development proposals will deliver a 20% net gain in biodiversity in line with the shared regional principles for protecting, restoring and enhancing the environment in the Oxford to Cambridge Pan Regional Partnership.

Development proposals will deliver and demonstrate an environmental net gain using an assessment of changes to ecosystem services.

Urban nature recovery

Development proposals will safeguard Local Nature Reserves and support the provision of 1 hectare of Local Nature Reserves per 1,000 population (for nature conservation and quiet enjoyment).

^{22.6} Nature rich beautiful places

¹¹⁴ Alister J Scott and Max Hislop (2020) Expert paper: What does good green infrastructure policy look like? Available at: https://www.tcpa.org.uk/resources/expert-paper-what-does-good-green-infrastructure-policy-look-like/ [Accessed 05/05/23]

Development proposals will protect and enhance existing Local Wildlife Sites and support the identification and creation of new areas that qualify as Local Wildlife Sites (for nature conservation).

Urban greening factor

Development proposals will meet the urban greening factor standard where the average green cover in urban residential neighbourhoods is at least 40% where they do not already meet that standard.

Development proposals will not result in the net loss of green cover in urban neighbourhoods.

Major development proposals will meet National Urban Greening Factors of at least 0.3 for commercial development, 0.4 for residential development, (and, where appropriate, 0.5 for residential greenfield development)¹¹⁵.

¹¹⁵ Natural England (2023) Green Infrastructure Standards. Available at: https://designatedsites.naturalengland.org.uk/GreenInfrastructure/GIStandards.aspx [Accessed 04/05/23]

22.7 Active and healthy places

22.7.1 Background context for policies relating to 'active and healthy places' are provided in **Chapter 4.5 and 4.6**.

Provision of accessible greenspace

Development proposals will meet local accessibility, quality and quantity standards for open space, and will be designed to cater for the needs of the community.

Development proposals will meet the Accessible Greenspace Standards, with an initial focus on access to a variety of good quality green and blue spaces within fifteen minutes' walk (1km) from home¹¹⁶.

Within 15 minutes' walk either:

- A Doorstep Greenspace of at least 0.5ha within 200 metres
- A Local Greenspace of at least 2ha within 300 metres.

And a Neighbourhood Greenspace:

 A medium sized Neighbourhood Greenspace (10ha) within 1km.

And, beyond 15 minutes' walk

 A medium/large Wider Neighbourhood Greenspace (20ha) within 2km

- And large District Greenspace (100ha) within 5-km
- A very large Sub-regional Greenspace within (500 ha) within 10 km.

The Accessible Greenspace Standards include a target for 80% of people having good quality publicly accessible greenspaces within 15 minutes' walk from home by 2030, 90% by 2040 and 100% by 2050.

There will be at least 3 hectares of publicly accessible greenspace per 1,000 population and there will be no net loss or reduction in capacity of accessible greenspace per 1,000 population at an area-wide scale.

Accessible woodlands

Development proposals will protect existing woodlands and create new woodlands to meet the Woodland Access Standard:

- No person should live more than 500m from at least one area of accessible woodland of no less than 2ha in size; and
- There will also be at least one area of accessible woodland of no less than 20ha within 4km (8km round trip) of people's homes.

¹¹⁶ Natural England (2023) Green Infrastructure Standards. Available at: https://designatedsites.naturalengland.org.uk/GreenInfrastructure/GIStandards.aspx [Accessed 04/05/23]

Food growing areas

Development proposals will provide 20 allotments per 1000 households which equates to 0.25ha per 1000 population to meet the standard suggested by the National Society of Allotment and Leisure Gardeners (NSALG).

Access networks

Development proposals will maintain and enhance the quality and connectivity of access networks, integrating active travel routes (linking workplaces, schools, community facilities and public transport hubs) and recreation routes into NNGBI.

22.8 Thriving and prospering places

22.8.1 Background context for policies relating to 'thriving and prospering places' are provided in **Chapter 4.7 and 4.8**.

Local economy

Development proposals will protect and enhance the NGBI network in line with the MK NBGI Strategy to create high quality environments that are attractive to businesses and investors, create green jobs, support retail and high streets, and help to support the local economy and regeneration.

Local character

Development proposals will protect, enhance and create seminatural habitats including woodlands, grasslands and wetlands that respond to local landscape character and create or retain a 'sense of place'.

Development proposals will protect areas of tranquillity and dark sky areas and reduce light pollution where possible.

Development proposals will protect and enhance heritage assets and their settings including:

- Listed Buildings
- Scheduled Monuments
- Registered Parks and Gardens
- Conservation Areas

22.9 Improved water management

22.9.1 Background context for policies relating to 'improved water management' are provided in **Chapter 4.9 and 4.10**.

Water quality

Development proposals will protect, enhance and create habitats including re-naturalising river corridors and providing riparian buffer zones of at least 8 metres from any main river or 9 metres for all other ordinary watercourses¹¹⁷ to protect from eutrophic surface runoff and improve water quality.

Development proposals will protect, enhance and create woodlands and urban trees which provide water quality benefits including the storage and interception of rainfall, filtration of pollutants in the canopy and infiltration at the root zone.

Water efficiency

Development proposals will incorporate measures to improve water efficiency including installing water efficient internal fixtures, rainwater harvesting, water re-use and storage options. Development proposals will include planting that requires low levels of irrigation to continue providing ecosystem services during prolonged periods of dry weather and drought.

Water management

Development proposals will integrate naturalised SuDS features into the design of green infrastructure, and where they are part of open space obligations will be safe and accessible, creating an attractive and distinctive setting for new developments.

agreed by the Environment Agency, Lead Local Flood Authority or Internal Drainage Board, in order to provide an adequate undeveloped buffer zone.

 $^{^{117}}$ Plan:MK 2016-2031 'Policy FR3: Protecting and enhancing watercourses' requires all new development must be set back at a distance of at least 8 metres from any main rivers, at least 9 metres from all other ordinary watercourses, or at an appropriate width as

22.10 Resilient and climate positive places

22.10.1 Background context for policies relating to 'resilient and climate positive places' are provided in **Chapter 4.11 and 4.12**.

Climate change adaptation

Development proposals will incorporate NGBI 'building blocks' including SuDS, rain gardens, features for species, urban trees, green and blue roofs, green walls and private domestic gardens to provide summer shade and cooling, improve air quality, provide a habitat for wildlife and reduce flood risk.

Development proposals will increase woodland planting in locations within 200m from main roads to reduce air pollution by providing protection between the source and receptors.

Urban tree canopy cover

Development proposals will meet the urban tree canopy cover standard of at least 19% in residential and commercial developments, in line with the shared regional principles for protecting, restoring and enhancing the environment in the Oxford to Cambridge Pan Regional Partnership.

Development proposals will protect existing trees and incorporate new trees into new developments to provide summer shade and cooling, improve air quality, provide a habitat for wildlife and reduce flood risk.

- 22.10.2 Guidance from the Urban Forestry and Woodland Advisory Committee Network¹¹⁸ suggest that 20% tree canopy cover can be a good aspiration for towns and cities.
- 22.10.3 The shared regional principles for protecting, restoring and enhancing the environment in the Oxford to Cambridge Pan Regional Partnership include a target to increase tree and woodland cover across the area by 7.4% to 19%.¹¹⁹
- 22.10.4 For context, the results from the Urban Forest Canopy¹²⁰ assessments show that in 2016 the total canopy cover in Newport Pagnell was 13.2% and in Caldecotte it was 12.3%.

¹¹⁸ The Urban Forestry and Woodland Advisory Committee Network. England's Urban Forests. Using tree canopy cover data to secure the benefits of the urban forest. Available at: https://www.forestresearch.gov.uk/tools-and-resources/fthr/tree-canopy-cover-leaflet/ [Accessed 05/05/23]

¹¹⁹ Arc Environment Working Group (2021) Shared regional principles for protecting, restoring and enhancing the environment in the Oxford-Cambridge Arc. Available at: https://www.oxford-cambridge-partnership.info [Accessed 05/05/23]

¹²⁰ Treeconomics and Forest Research (2016) Urban Forest Cover. Available at: https://urbantreecover.org [Accessed 05/05/23]

23 Appendix A: National Legislation and Planning Policy

23.1 The 25 Year Environment Plan

23.1.1 The 25 Year Environment Plan¹²¹, published in 2018, clearly sets out the need to "improve existing green infrastructure by encouraging more investment while making sure there is a presumption in favour of sustainable development". Natural England has developed the Green Infrastructure Framework (NE Green Infrastructure Framework)¹²² to help fulfil the Government's commitments and actions set out in the 25 Year Environment Plan.

23.2 The Environment Act

- 23.2.1 The Environment Act (2021) includes provisions that will make Biodiversity Net Gain mandatory in England for most development types. BNG is an approach which aims to leave biodiversity and the natural environment in a measurably better state when land use changes and when development occurs. The Biodiversity Metric used to calculate BNG includes many common green infrastructure habitat features as well as Sustainable Drainage Systems, green roofs and walls, and their inclusion in a scheme design can contribute towards meeting BNG requirements.
- 23.2.2 Enhancing the biodiversity value of, or creating new, offsite green infrastructure, such as parks and other green and blue spaces and linear green infrastructure can also be used to meet BNG requirements.

 $^{^{121}\,\}mathrm{HMG}$ (2018) 'A Green Future: Our 25 Year Plan to Improve the Environment' Available at

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachmen t data/file/693158/25-year-environment-plan.pdf [Accessed on 14/02/23]

¹²² Natural England (2023) 'Introduction to the Green Infrastructure Framework' Available at https://designatedsites.naturalengland.org.uk/GreenInfrastructure/Home.aspx [Accessed on 14/02/23]

23.2.3 Local Nature Recovery Strategies are locally led, mandatory spatial strategies for nature required by the Environment Act 2021. They will bring together communities and decision makers across the public, private and voluntary sectors in local areas across the country to collaborate in planning and prioritising action for nature's recovery. This will support delivery of the Nature Recovery Network.

23.3 Environmental Improvement Plan

23.3.1 The Environmental Improvement Plan (EIP) 2023 ¹²³ for England is the first revision of the 25 Year Environment Plan¹²⁴. The 'Apex Goal' for the EIP is to 'improve nature', halting losses and supporting thriving biodiversity. The goals and targets in the EIP will support progress towards the UN's Sustainable Development Goals internationally.

23.3.2 The EIP commits to the following actions:

- Launch the Species Survival Fund to create, enhance and restore habitats
- Create, restore, and extend around 70 areas for wildlife through projects including new National Nature

- Reserves, and the next rounds of the Landscape Recovery Projects
- Protect 30% of our land and sea for nature through the Nature Recovery Network and enhanced protections for our marine protected areas
- Implement the Environment Act 2021, including rolling out Local Nature Recovery Strategies to identify areas to create and restore habitat, and Biodiversity Net Gain to enhance the built environment
- Support a transformation in the management of 70% of our countryside by incentivising farmers to adopt nature friendly farming practices
- Publish an updated Green Finance Strategy, setting out the steps we are putting in place to leverage in private finance to deliver against these goals. We have a goal to raise at least £500 million per year of private finance into nature's recovery by 2027 and more than £1 billion by 2030.

 $^{^{123}}$ HM Government (2023) Environmental Improvement Plan 2023: First Revision of the 25 Year Environment Plan Available at

https://www.gov.uk/government/publications/environmental-improvement-plan [Accessed on 07/02/23]

 $^{^{124}\,\}mathrm{HMG}$ (2018) 'A Green Future: Our 25 Year Plan to Improve the Environment' Available at

 $[\]frac{\text{https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachmen}}{\text{t} \ \ data/file/693158/25-year-environment-plan.pdf} \ [\text{Accessed on 10/02/23}]$

- 23.3.3 The EIP sets out ten goals and how it will deliver each of the goals for improving the environment, matched with targets to measure progress in order to help restore nature, reduce environmental pollution, and increase prosperity.
- 23.3.4 The ten goals in the EIP are:
 - Goal 1: Thriving plants and wildlife
 - Goal 2: Clean air
 - Goal 3: Clean and plentiful water
 - Goal 4: Managing exposure to chemicals and pesticides
 - Goal 5: Maximise our resources, minimise our waste
 - Goal 6: Using resources from nature sustainably
 - Goal 7: Mitigating and adapting to climate change
 - Goal 8: Reduced risk of harm from environmental hazards
 - Goal 9: Enhancing biosecurity
 - Goal 10: Enhanced beauty, heritage, and engagement with the natural environment.
- 23.3.5 Green infrastructure is specifically considered under Goal 8 'Reduced risk of harm from environmental hazards' and Goal 10 'Enhancing beauty, heritage and engagement with the natural environment'.

- 23.3.6 Goal 8 the EIP states, "use green infrastructure to reduce the risk and impact of extreme heat and surface water flooding through street trees and Sustainable Drainage Systems".
- 23.3.7 Goal 10 states, "Good quality green infrastructure is important for health and wellbeing, air quality, nature recovery and for delivering net zero targets, as well as for adapting to climate change by providing urban cooling and reducing flood risk. It can help to address issues of social disparities and environmental decline, whilst also making better places to live".
- 23.3.8 The publication of the EIP coincided with the launched the 'Green Infrastructure Framework: Principles and Standards for England', discussed further in **Chapter 6**.
- 23.3.9 The EIP states it will,

"Encourage more urban street trees, using the amended National Planning Policy Framework which has an expectation that all new streets are tree-lined and that opportunities are taken to include trees elsewhere in developments (such as through parks and community orchards)".

"Make green and blue spaces more inclusive and support more people to benefit from nature. Green and blue spaces can support communities through providing opportunities for a diverse range of people to connect with nature. There is a new commitment to ensure that anyone can reach green or blue space within 15 minutes from their front door".

23.4 Climate Change Act

- 23.4.1 The Climate Change Act (2008) commits the UK government to reducing greenhouse gas emissions by at least 100% of 1990 levels (net zero) by 2050.
- 23.4.2 Addressing climate change is one of the core planning principles which the NPPF expects to underpin both planmaking and decision-taking. To be found sound, Local Plans need to reflect this principle and enable the delivery of sustainable development in accordance with the policies in the NPPF. These include the requirements for local authorities to adopt proactive strategies to mitigate and adapt to climate change in line with the provisions and objectives of the Climate Change Act 2008¹²⁵.
- 23.4.3 The Climate Change Committee (CCC) was established under the Climate Change Act. Part of the CCC's role is to advise on emissions targets and to report to Parliament on progress in reducing greenhouse gas emissions and preparing for and adapting to the impacts of climate change. The findings from the third UK Climate Change Risk Assessment (CCRA3) Evidence Report 2021¹²⁶ looks at risks and opportunities for the UK under two climate change scenarios, corresponding to approximately a 2°C or a 4°C rise in global temperature by 2100. In relation to terrestrial biodiversity the report identifies the following risks:
 - Expected climatic changes including changing rainfall leading to periods of water scarcity or flooding at different times, extreme heat and wildfire, could affect the rate and extent of terrestrial species losses or gains across the UK; and
 - The negative consequences on native UK terrestrial species from a greater number of pests, pathogens and invasive non-native species (INNS) are already thought to be increasing, particularly due warmer winters.
 Other new species arriving in the UK as the climate changes also have the potential to enhance species

¹²⁵ Available at https://www.legislation.gov.uk/ukpga/2008/27/introduction [Accessed on 13/03/23]

¹²⁶ Available at https://www.ukclimaterisk.org/wp-content/uploads/2021/06/CCRA3-Briefing-Terrestrial-Biodiversity.pdf [Accessed on 13/03/23]

richness and contribute to community adaptation to climate change. The balance between these effects is uncertain.

- 23.4.4 Recommended beneficial actions in the next five years include:
 - Increase current efforts to reduce existing human pressures on biodiversity, improve the ecological condition of protected wildlife sites and restore degraded ecosystems such as peatlands, wetlands and native woodlands. An ecosystem with greater biological variety will be more resilient to climate change as well as to other pressures;
 - Conservation planning could include further consideration of actions that will maximise natural capital alongside protecting specific species, including further realignment of the coast, catchment-scale management strategies and landscape-scale initiatives to increase habitat extent and improve habitat condition and connectivity;
 - Account for climate change more explicitly in conservation planning at site level; and

¹²⁷ MHC&LG (2021) 'National Planning Policy Framework' Available at https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment/data/file/1005759/NPPF_July_2021.pdf [Accessed on 07/02/23]

 Ensure that nature-based solutions are at the heart of the UK's actions to achieve Net Zero as well as to adapt to climate change impacts like flooding and heat.

23.5 National Planning Policy Framework

- 23.5.1 The National Planning Policy Framework¹²⁷ (NPPF) sets out three overarching objectives relating to social, economic and environmental matters, which should be pursued in mutually supportive ways. Planning should contribute to conserving and enhancing the natural, built and historic environment; including making effective use of land, improving biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy.
- 23.5.2 The NPPF provides a definition of green infrastructure, which is also used in the recently launched Natural England Green Infrastructure Framework (described further in **Chapter 3**). The NPPF defines green infrastructure as,

"A network of multi-functional green and blue spaces and other natural features, urban and rural, which is capable of delivering a wide range of environmental, economic, health and wellbeing benefits for nature, climate, local and wider communities and prosperity".

23.5.3 Paragraph 20 states,

"Strategic policies should set out an overall strategy for the pattern, scale and design quality of places, and make sufficient provision for:

... d) conservation and enhancement of the natural, built and historic environment, including landscapes and green infrastructure, and planning measures to address climate change mitigation and adaptation".

23.6 National Planning Practice Guidance

23.6.1 Planning Practice Guidance (PPG) for the Natural Environment¹²⁸ defines green infrastructure and sets out an overview of the multiple benefits green infrastructure can deliver, called ecosystem services.

What can green infrastructure include?

"Green infrastructure can embrace a range of spaces and assets that provide environmental and wider benefits. It

can, for example, include parks, playing fields, other areas of open space, woodland, allotments, private gardens, sustainable drainage features, green roofs and walls, street trees and 'blue infrastructure' such as streams, ponds, canals and other water bodies. References to green infrastructure in this guidance also apply to different types of blue infrastructure where appropriate."

Why is green infrastructure important?

"Green infrastructure is a natural capital asset that provides multiple benefits, at a range of scales. For communities, these benefits can include enhanced wellbeing, outdoor recreation and access, enhanced biodiversity and landscapes, food and energy production, urban cooling, and the management of flood risk. These benefits are also known as ecosystem services."

What planning goals can green infrastructure help to achieve?

23.6.2 The PPG states green infrastructure can help deliver multiple benefits and planning goals, as set out in **Table** 13.1.

¹²⁸ MHC&LG (2019) 'Planning Practice Guidance for the Natural Environment' Available at https://www.gov.uk/guidance/natural-environment [Accessed on 31/01/23]

Table 23.1: Overview of the benefits of green infrastructure set out in PPG for the Natural Environment

Building a strong, competitive economy

Green infrastructure can drive economic growth and regeneration, helping to create high quality environments which are attractive to businesses and investors.

Achieving well-designed places

The built environment can be enhanced by features such as green roofs, street trees, proximity to woodland, public gardens and recreational and open spaces. More broadly, green infrastructure exists within a wider landscape context and can reinforce and enhance local landscape character, contributing to a sense of place and natural beauty.

Promoting healthy and safe communities

Green infrastructure can improve the wellbeing of a neighbourhood with opportunities for recreation, exercise, social interaction, experiencing and caring for nature, community foodgrowing and gardening, all of which can bring mental and physical health benefits. Outdoor Recreation Value (ORVal) is a useful online tool that can be used to quantify the recreational values provided by greenspace. Green infrastructure can help to reduce health inequalities in areas of socio-economic deprivation and meet the needs of families and an ageing population. It can also help to reduce air pollution and noise.

Mitigating climate change, flooding and coastal change

Green infrastructure can contribute to carbon storage, cooling and shading, opportunities for species migration to more suitable

habitats and the protection of water quality and other natural resources. It can also be an integral part of multifunctional sustainable drainage and natural flood risk management.

Conserving and enhancing the natural environment

High-quality networks of multifunctional green infrastructure contribute a range of benefits, including ecological connectivity, facilitating biodiversity net gain and nature recovery networks and opportunities for communities to undertake conservation work.

23.6.3 The PPG goes on to describe the strategic approach to green infrastructure and how green infrastructure should be treated in planning applications.

How can a strategic approach be taken to green infrastructure?

"Strategic policies can identify the location of existing and proposed green infrastructure networks and set out appropriate policies for their protection and enhancement. To inform these, and support their implementation, green infrastructure frameworks or strategies prepared at a district-wide scale (or wider) can be a useful tool. These need to be evidence-based and include assessments of the quality of current green infrastructure and any gaps in provision. Existing national and local strategies - for example on tree and woodland provision - can inform the

approach to green infrastructure; and standards such as the Accessible Natural Greenspace Standard can be applied when assessing provision.

The green infrastructure strategy can inform other plan policies, infrastructure delivery requirements and Community Infrastructure Levy schedules. In view of their potential scope and use, authorities need to collaborate with neighbouring authorities and stakeholders such as Local Nature Partnerships, Health and Wellbeing Boards and Local Enterprise Partnerships when developing green infrastructure strategies"

How can green infrastructure be considered in planning decisions?

"Green infrastructure opportunities and requirements need to be considered at the earliest stages of development proposals, as an integral part of development and infrastructure provision, and taking into account existing natural assets and the most suitable locations and types of new provision.

Depending on individual circumstances, planning conditions, obligations, or the Community Infrastructure Levy may all be potential mechanisms for securing and funding green infrastructure.

Green infrastructure will require sustainable management and maintenance if it is to provide benefits and services in the long term. Arrangements for funding need to be identified as early as possible, and factored into the design and implementation, balancing the costs with the benefits. Local community engagement can assist with management and tailoring provision to local needs".

23.7 Implications for the NGBI Strategy

- 23.7.1 The EIP sets out the critical need to halt biodiversity loss and support a thriving natural environment and recognises the role green infrastructure has in relation to supporting biodiversity and the benefits people gain from it.
- 23.7.2 Other legislation and national planning policy and guidance provides a strong basis for the need to consider well-funded nature-based, green infrastructure solutions and that a multifunctional and connected network of green infrastructure can help deliver a range of benefits for biodiversity and people.

24 Appendix B: Summary of Existing Plan:MK Policies Relating to Green Infrastructure

24.1 Plan MK: Local Plan Policy

24.1.1 In order to inform the direction of the future green infrastructure approach for Milton Keynes, it is helpful to consider the existing Local Plan policy. The current Local Pan for Milton Keynes is 'Plan:MK 2016 – 2031', adopted in 2019¹²⁹. Green infrastructure is mentioned throughout the plan, including in Strategic Objective 17, which seeks to ensure the consideration of green infrastructure is given a high priority.

Strategic objective 17:

"To work with public service and infrastructure providers (principally via the Local Investment Plan) to ensure that the social and economic growth planned in the Borough and neighbouring local authorities is facilitated by the timely provision of appropriate new and improved facilities such as public transport, schools, <u>areen infrastructure</u>, community halls, sport and recreation facilities, transport interchanges, health services (including Milton Keynes University Hospital), emergency services, highways and rail improvements, and a residual waste treatment plant".

- 24.1.2 Adopted Policy NE4 relates directly to the requirements for the identification, protection, provision and enhancement of green infrastructure, a copy of which is provided in **Table 24.1**.
- 24.1.3 Other policies also cross reference to green infrastructure requirements, reflecting the multifunctional nature of these assets, summarised in **Table 24.2**.

<u>05/PlanMK%20Adoption%20Version%20%28March%202019%29.pdf</u> [Accessed on 06/02/23]

¹²⁹ Milton Keynes City Council (2019) 'Plan:MK 2016 – 2031' Available at https://www.milton-keynes.gov.uk/sites/default/files/2022-

Table 24.1: Existing Policy NE4: Green infrastructure

Policy NE4

GREEN INFRASTRUCTURE

- A. The network of green infrastructure throughout the Borough will be protected, extended and enhanced for its biodiversity, recreational, accessibility, health and landscape value and for the contribution it makes towards combating climate change. This is in accordance with the vision and principles (and the large-scale zone maps of Green Infrastructure Opportunity⁽³⁹⁾) set out by the Buckinghamshire and Milton Keynes NEP.
- B. Development proposals will provide new green infrastructure or, if it is not possible, will contribute to the enhancement and strengthening of existing green infrastructure to provide wellbeing benefits to people through access to nature.
- C. Development proposals will ensure that existing ecological networks are identified and wherever possible maintained to avoid habitat fragmentation, and that ecological corridors, including water courses, form an essential component of their green infrastructure provision to support habitat connectivity.
- D. Green infrastructure protection, improvements and creation must be prioritised in locations where it can deliver most benefits. It should be multi-functional to deliver as many ecosystem services as the site requires, for example flood mitigation, access to nature (wellbeing benefits), plants for pollinators, carbon sequestration, and habitat for wildlife.
- E. The existing network of linear parks and linked parks and green spaces will be extended into the urban extensions and along the Ouse and Ouzel Valleys to the north to provide a well connected network of green infrastructure that:
 - 1. Is strategically planned.
 - 2. Is attractive and enhances the surrounding landscape.
 - 3. Is safe and well used for recreation.
 - 4. Meets the needs of existing and future residents.
 - Is designed to provide a range of ecosystem services e.g. manage flood risk or provide flower rich habitats that supports a diverse range of pollinators.
 - 6. Is designed to support mitigation and adaptation to climate change e.g. through vegetation for carbon uptake (carbon sequestration).
 - 7. Achieves a net gain in biodiversity.
 - 8. Is managed into the long-term.
 - 9. Where possible improves connectivity with other green infrastructure networks e.g. by linkages to the urban parks.
 - 10. Where appropriate explores economic opportunities that will support the network's sustainability - for example in conservation, agriculture, renewable energy or outdoor environmental education or recreation; such activity must not result in a negative impact to the integrity of the network, the ecosystem services provided or on biodiversity.
- F. Where green infrastructure is provided outside the linear parks system, applicants should detail how it will address the above requirements.

Table 24.2: Plan:MK policy relating to green infrastructure

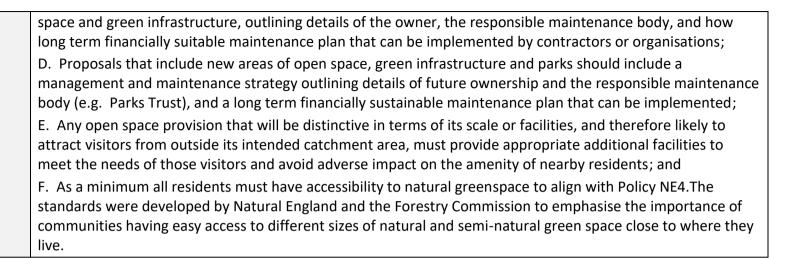
Policy number and name	Summary
NE4: Green Infrastructure	The overarching green infrastructure policy, set out in full in Table 14.1.
SD1: Place-making principles for development	Existing natural assets including green infrastructure features connections and functions should be identified prior to development; and enhanced, extended, protected and connected appropriately – i.e. designed and planned for so it provides multiple benefits to the environment and wildlife, also to the health and wellbeing of residents and to supporting the local economy. Cross references to NE1-6 and HE1.
DS6: Linear Parks	Green infrastructure and open space are key features of the city The city is well served by linear parks, mostly along the river valleys that run through the city and along its edges. These are multi-purpose green spaces that are maintained by the Parks Trust and primarily provide flood water storage alongside recreational facilities, ecological resources and attractive settings for development on their boundary. They also contribute to the overall quality of life for residents by providing opportunities for formal and informal recreation, improving health and well-being.
L1: Facilities acceptable in the parks	Polixy L1 concerns the granting of planning permission for facilities for leisure and recreation uses, or proposals that are ancillary to and directly support such uses within the parks.
SD3: Central Milton Keynes – Growth and Areas of Change	Recognises the role of CMK as a regional centre and that new growth will be needed in this location to support this tole. The policy cross references to Policy NE4.
SD4: Central Milton Keynes – Connectivity	Supports measures to improve accessibility of CMK including an enhanced high quality network of pedestrian and cycle routes, public open spaces, squares and green infrastructure.
SD9 and S10 General principles for strategic urban extensions and Delivery of strategic urban extensions	Proposals for Strategic Urban Extensions should be prepared in accordance with the principles set out below, v. A green infrastructure and open space strategy to improve biodiversity, provide advanced structural planting, extend the "forest city" concept, create green road and street scenes, and incorporate public art and leisure and recreation facilities. viii. The monitoring of biodiversity or green infrastructure improvement should be delivered in accordance with the relevant Development Brief.

SD11 and SD12 Strategic urban extensions	Specific recommendations for green infrastructure within the urban extensions.
SD15: Place-making principles for sustainable urban extensions in adjacent authorities	 B. When and if development comes forward for an area on the edge of Milton Keynes which is wholly or partly within the administrative boundary of a neighbouring authority, this Council will put forward the following principles of development during the joint working on planning, design and implementation. 5. Linear parks should be extended into the development where possible to provide recreational, walking and cycling links within the development area and to continue the city's extensive green infrastructure and redway network.
SD16: Central Bletchley prospectus area	To provide green infrastructure in line with Policy NE4.
CT8: Grid road network	C. Opportunities for extending the grid road system design and redway super network route into any major new development areas will be required to ensure that the grid continues to function effectively and sufficient land/corridors are safeguarded for future highway/transit links around the district to accommodate and manage increased travel demands changing and future travel demands. The Council will also seek to extend grid roads and redway super network route to link with new cross-boundary developments. New grid roads should also include green infrastructure buffers to improve air quality, reduce noise and vibration and enhance the landscape and result in a net gain in biodiversity. D. New grid roads will be designed with the following characteristics: 1. Grid roads will run in generous multi-functional green infrastructure reservations (which are designed to allow for future upgrading to dual carriageways if and when required); and 7. The overall green character and multi-functional green infrastructure of the grid road reserves should also still be maintained.
INF1: Delivering infrastructure	 A. New development that generates a demand for infrastructure, facilities and resources will only be permitted if the necessary on and off-site infrastructure required to support and mitigate the impact of that development is either: 1. Already in place; or 2. There is a reliable mechanism in place to ensure that infrastructure, facilities and resources will be delivered in the most appropriate places and at the earliest opportunity, to the required minimum high standards

	demanded by this Council and its partners. This might include improvements for highway schemes such as bus and rail provisions and enhancement for walking and cycling facilities, or the provision of improved and better connected green infrastructure, local health, shopping and recreational facilities.
	A. All new development must incorporate a surface water drainage system with acceptable flood control and demonstrate that water supply, foul sewerage and sewage treatment capacity is available or can be made available in time to serve the development. Suitable access is safeguarded for the maintenance of water supply and drainage infrastructure.
	B. Plan:MK will seek to steer all new development towards areas with the lowest probability of flooding. The sequential approach to development, as set out in national guidance, will therefore be applied across the Borough, taking into account all sources of flooding as contained within the Council's Strategic Flood Risk Assessment (SFRA).
	C. Development within areas of flood risk from any source of flooding, will only be acceptable if it is clearly demonstrated that it is appropriate at that location, and that there are no suitable available alternative sites at a lower flood risk.
	D. Development proposed in an area at risk of flooding will be required:
FR1: Managing Flood Risk	1. To be supported by a site specific Flood Risk Assessment (FRA) (subject to the triggers set out below);
	2. To take into account all forms of flooding including, but not limited to: fluvial, groundwater, surface water and reservoir flooding;
	3. To ensure that opportunities to reduce the causes and impacts of flooding to the site and the surrounding area are taken as far as possible, in order to improve the existing situation, taking into account climate change. At a minimum, proposals will need to demonstrate no increase in flood risk of the site or surrounding area; 4. To clearly demonstrate that the benefits of the development to the community, outweigh the risk of flooding when applying the sequential test and exception test (where required);
	5. When applying the sequential test, to clearly demonstrate that the impacts of climate change are taken into account;
	6. To demonstrate the application of a sequential approach to the site design and layout to ensure highest vulnerability land uses are located within areas of the site at lowest risk of flooding;
	7. To build resilience into a site's design;

	8. To ensure that a site's design and any flood mitigation measures implemented are designed with an allowance for climate change and the potential impact it may have over the lifetime of the proposed development;
	9. To provide a safe access and egress route for future users of the development;
	10. To attenuate surface water run-off in line with Policy FR2 developers should refer to Environment Agency guidance on the use of climate changes allowances, available at: Flood risk assessments: climate change allowances; and
	11 . To consult the Fire and Rescue Service as to the feasibility of undertaking rescue and recovery operations during and in the aftermath of flooding events.
	E. A site specific FRA will be required for:
	1. All sites of 1ha or more in Flood Zone 1;
	2. All sites within Flood Zone 2 or 3;
	3. All sites highlighted as being at high risk from surface water flooding, or which are located within a Critical Drainage Catchment (CDC), as identified in the Milton Keynes Surface Water Management Plan. In this case the FRA will be required to demonstrate that the development will not increase the flood risk to the CDC and where possible will provide an improvement to the existing situation.
	F. The FRA should include an assessment of flood risk to and from the proposed development, and demonstrate how the development will be safe, will not increase flood risk elsewhere and where possible will reduce flood risk overall in accordance with the NPPF and PPG.
FR2: Sustainable drainage systems (SuDS) and	Policies FR1 - FR3 include locally specific strategic flood risk management policies to maintain and continue the exemplar sustainable drainage model of Milton Keynes which prohibits development within the floodplain and seeks flood management and drainage infrastructure to be provided as strategically as possible and as part of a maintained, multi-functional blue-green infrastructure.
integrated flood risk	Policy FR2 relates to SuDS and Integrated Flood Risk Management:
management	It is expected that:
	1. Flood risk management and SuDS will be provided at a strategic scale and in an integrated manner, wherever possible;

	2. Space will be specifically set aside for SuDS and fluvial flood risk reduction features and used to inform the overall layout of development sites;
	3. Above ground attenuation will be provided in preference to below ground attenuation; and
	4. SuDS will be designed as multi-purpose green infrastructure and open space, to maximise additional environmental, biodiversity, social and amenity value, wherever possible. The use of land to provide flood storage capacity should not conflict with required amenity and recreation provision - floodplains and floodplain habitats should be safeguarded.
FR3: Protecting and enhancing watercourses	A. All new development must be set back at a distance of at least 8 metres from any main rivers, at least 9 metres from all other ordinary watercourses, or at an appropriate width as agreed by the Environment Agency, Lead Local Flood Authority or Internal Drainage Board, in order to provide an adequate undeveloped buffer zone. Development that restricts future de-culverting of waterways should be avoided
	B. The Council will resist proposals that would adversely affect the natural functioning of main rivers, ordinary watercourses and wet or dry balancing lakes, this includes through the culverting of open channels, unless for access purposes.
L3 Change of use of Amenity Open Space	A. In certain cases, the loss of amenity open space may be acceptable if it is adequately compensated by proposals for improvements to the quality of green infrastructure and appearance of amenity space elsewhere in the locality or the wider open space network.
L4 Public Open Space Provision in new estates.	A. New housing development will be required to provide new or contribute to improved open space and recreational facilities in accordance with the Council's adopted standards in Appendix C, the Council's Leisure, Recreation and Sports Facilities SPG and policies in this Plan which support the delivery of a linked network of multi-functional, resilient and sustainable green infrastructure;
	B. Policies of this Plan support the delivery of a linked network of multi-functional, resilient and sustainable green infrastructure. Where appropriate the Council will encourage developing play areas, sport and leisure facilities within the existing or proposed parks;
	C. The provision, future management and maintenance of open space, parks and any artificial grass pitches or surfaces should be an integral part of new development, which should be considered at the beginning of the design process. Proposals will include a management and maintenance strategy for new or extended open



25 Appendix C: Regional Green Infrastructure Context

25.1 The Oxford-Cambridge Pan-Regional Partnership: Environmental principles

25.1.1 Milton Keynes lies at the centre of a regional investment area, formerly known as the OxCam Arc, as shown in **Figure 25.1**¹³⁰. In early 2023, the government announced support for the establishment of a new 'Oxford to Cambridge Pan-Regional Partnership' (PRP). The PRP will champion the Oxford to Cambridge region as a world leader of innovation and business, seeking to achieve environmentally sustainable and inclusive growth that brings benefits to existing and future communities.

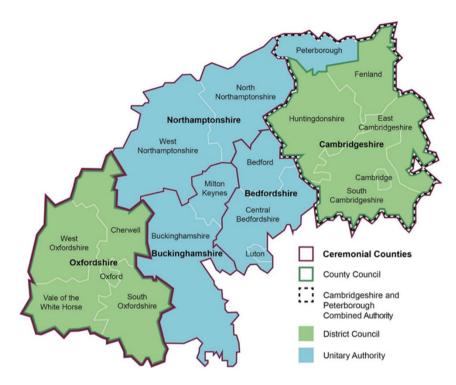


Figure 25.1: Location of Milton Keynes within the Oxford to Cambridge Region

25.1.2 The PRP will carry over the five Environmental Principles¹³¹ which were established for the OxCam Arc, namely:

¹³⁰ HMG (2021) 'Creating a vision for the Oxford-Cambridge Arc' Available at https://www.gov.uk/government/consultations/creating-a-vision-for-the-oxford-cambridge-arc [Accessed on 09/02/23]

¹³¹ Environment Working Group, Oxford-Cambridge Arc (2021) 'Shared regional principles for protecting, restoring and enhancing the environment in the Oxford-Cambridge Arc' Available at https://www.oxford-cambridge-partnership.info/ [Accessed on 08/03/23]

- 1. Work towards a target of net zero carbon at PRP level by 2040:
- Ensuring all decisions about development and new infrastructure support this goal
- Working with Government to enhance building regulations and planning policy to actively reduce the carbon footprint of, and energy consumption in, new buildings
- Pursuing a major programme of transformation in existing settlements and infrastructure to reduce energy intensity and carbon emissions
- Construction, operational and transport activities.
 - 2. Protect, restore, enhance and create new nature areas and natural capital assets, including nationally and locally designated wildlife sites and priority habitats, and links between them. We will implement the spatial planning mitigation hierarchy of avoid, minimise, remediate, compensate and gain. This will include:
- Doubling the area of land managed primarily for nature in the area ('Doubling Nature') to contribute to Government's commitment to protecting 30% of land for nature conservation by 2030. We will seek to

- maximise public, private and third sector funding opportunities to protect, restore and enhance the natural environment and maintain existing, and increase investment in, natural capital assets, working with partners including major landowners and our important agriculture sector across the area
- Coordinating work on local nature recovery strategies and the area's contribution to the Nature Recovery Network for England by creating more, bigger, betterconnected places, in the required condition, for nature including landscape scale interventions
- Delivering biodiversity net gain for Town and Country Planning Act developments of 20%. This is above the 10% Government mandated minimum to reflect the Arc's world leading environmental ambitions
- Delivering biodiversity net gain for all developments of 20% with a minimum requirement of 10% including Nationally Significant Infrastructure and projects brought forward outside of the Town & Country Planning Act. This is to reflect the Arc's world leading environmental ambitions
- Working with Government to develop a suitable net environment gain metric that incorporates biodiversity net gain and, once available, to set an ambitious target

- to reflect the Arc's world leading environmental ambitions
- Establishing human and nature mobility corridors across the Arc – using existing or new transport corridors for maximum environmental benefit/gain
- Increasing tree and woodland cover across the Arc from 7.4% to 19%. This is in recognition of the ability of trees and woodlands to deliver a wide range of environmental, health, social and economic benefits.
 We will ensure the right trees are planted in the right places
- Protecting and enhancing protected landscapes.
 Enhancing landscape character areas, recognising the intrinsic character and beauty of the wider countryside.
- 3. Be an exemplar for environmentally sustainable development, in line with the ambitions set out in the government's 25 year plan. This will incorporate a systems-based and integrated assessment and implementation approach and will fully recognise the associated health and wellbeing benefits. We will aim to

go beyond the minimum legislated requirements for development. This will include:

- All new settlements, urban extensions and infrastructure contributing to the achievement of delivering net biodiversity gain, net environmental gain, and net zero carbon both in site and route selection and in the design of settlements and transport corridors. In addition, areas of tranquillity will be protected and measures taken to avoid light pollution and protect dark sky areas. Making cycling and walking more attractive ways to travel and investing in zero emission public transport of the future
- Understanding the impact of development on the natural environment, including cumulative and indirect impacts (taking into account associated housing and other forms of development), so that these can be addressed in line with the mitigation hierarchy, and carrying out environmental and strategic assessments as appropriate for the type and scale of development programmes including options and proper community consultation
- Understanding the Arc's environmental capacity to accommodate different levels of growth and development in different locations and ensuring that

- planned growth and development remains well within environmental capacity limits
- Working with Government to enhance the building regulations and the role of planning policy so that they align with sustainability principles, and actively reduce the carbon footprint, water and energy consumption in new and existing buildings. We will encourage local partners to exceed the minimum standards required by building regulations
- Promoting the switch to renewable and other sustainable energy supplies, improving travel choices, and supporting changing working practices. This will enable improvements to the design and development of sustainable communities and the protection and enhancement of the natural environment.

4. Ensure that existing and new communities see real benefits from living in the area including through:

 Maximising the health and wellbeing benefits of nature by providing sector leading areas of accessible nature rich greenspace in, and accessible to, new settlements, urban extensions and commercial zones and increasing and enhancing greenspace, and access to it, for existing settlements in the Arc Promoting and increasing equality of sustainable access
to nature and its benefits by investing in, increasing and
enhancing nature-rich greenspace in the places and
communities where it is most lacking. We will improve
access to greenspace and nature, ensuring Natural
England's Access to Natural Greenspace standards, and
(once available) Green Infrastructure Standards, are
maximised for existing housing and delivered for future
developments.

5. Use natural resources wisely by:

- Working to address existing water resource, water quality and flood management issues and through an integrated approach across the water agenda ensure future issues and risks are managed, including in the context of climate change, with a focus on nature-based interventions
- Ensuring that soil quality is properly protected and improved including within development, infrastructure and agricultural activities
- Making more efficient use and management of waste and resources, working towards a circular economy with no net waste and promoting the use of sustainable building materials and construction guidelines

- Working with local authorities to share best practice and coordinate action being taken on local air quality management plans including addressing emissions from agriculture and from installations regulated by the Environment Agency
- Supporting the development of interventions that reduce the impact of agriculture on the environment and support productivity.
- Helping to build collaboration between farmers to generate catchment and landscape scale environmental improvement under the Environmental Land Management Scheme
- Ensuring that the required mineral resources for the area are sourced in an environmentally sensitive manner and that mineral sites are restored in a coordinated manner to after-uses that benefit nature and people, as well as helping to provide ecosystem services such as carbon sequestration and water management.

25.2 Integrated Water Management Framework

- 25.2.1 The region faces significant challenges in relation to water resources. The Anglian Water Region is the driest in the UK with two thirds of the national average rainfall and is classed as seriously water-stressed by the Environment Agency.
- The Integrated Water Management Framework (IWMF) will 25.2.2 explore how to draw together current and ongoing water, flood, natural capital, and land use planning work, to create a fully interconnected water and flood risk approach to planning and decision making. The goal is to enable a more proactive, holistic approach to decision making and solution planning for water management infrastructure, focusing on addressing the needs of the natural environment and avoiding reactive water management solutions. programme is hosted by the Environment Agency's Oxford to Cambridge Team on behalf of the Defra Group, working with stakeholders across the sector. This project offers the opportunity to shape and trial mechanisms and policy approaches to help deliver a step-change in the way water, including flood risk, is managed.

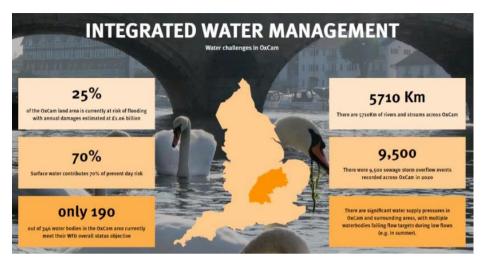


Figure 25.2: Water challenges in OxCam. Taken from the Oxford to Cambridge Programme Update February 2023

25.3 Buckinghamshire and Milton Keynes Natural Environment Partnership

Vision and principles for the improvement of green infrastructure

- 25.3.1 In 2016 the Milton Keynes and Buckinghamshire Natural Environment Partnership (NEP) published a report 'Vision for Green Infrastructure in Buckinghamshire¹³²', along with a set of nine principles which should be followed to achieve the Vision by 2030. The Vision and Principles were seen as supplementing the 2008 Green Infrastructure Plan. While Natural England's more recent guidance in the Natural England Green Infrastructure Framework may supersede this work in some respects, the NEP provides useful early guidance in relation to planning green infrastructure.
- 25.3.2 The NEP expects draft Local Plans will explicitly support the principles included in the document. In particular Local Plans should require all development to:
 - Focus on protecting, improving and providing a multifunctional green infrastructure network in Bucks and MK that improves economic, environmental and quality of life benefits
 - Seek opportunities to protect, enhance, extend, create and connect green infrastructure for all its benefits (including landscape-scale connectivity of habitats for biodiversity outcomes)

- Place emphasis on adequate access to high quality green recreation and productive space for community health and wellbeing (at least conforming to ANGSt standards at the strategic scale)
- Ensure the size and location of green infrastructure is suitable for the function it is intended to fulfil
- Require green infrastructure management into the long-term, to ensure that it develops in accordance with its stated intention. Mechanisms to achieve this must be outlined in development proposals
- Require the monitoring of green infrastructure improvement, and remedial measures if not achieving satisfactory green infrastructure condition within stipulated timeframes
- Allocate and develop sufficient funding mechanisms to improve the quality, location and functions provided by GI. This could include developer contributions, biodiversity offsetting, and/or CIL payments.

Keynes. Available at: https://bucksmknep.co.uk/projects/vision-and-principles-for-the-improvement-of-green-infrastructure/ [Accessed 22/05/23]

¹³² Buckinghamshire and Milton Keynes Natural Environment Partnership (2016) Vision and Principles for the Improvement of Green Infrastructure in Buckinghamshire & Milton

25.3.3 The NEP emphasises that the above approach would require identifying (mapping) where current green infrastructure is located, the functions it serves gaps in provision, and opportunities for how and where it should be improved.

Green infrastructure opportunities mapping

- 25.3.4 In collaboration with their partners, in May 2018, the NEP Board has approved a map of green infrastructure opportunities in Buckinghamshire and Milton Keynes (see Figure 25.3).¹³³
- 25.3.5 This green infrastructure opportunity zone map has been informed by a detailed exploration of the mapped networks of access, biodiversity, and water as well as an understanding of other considerations including development pressures and existing designations of relevance.

25.3.6 Opportunities for green infrastructure exist everywhere in Buckinghamshire and Milton Keynes and 'opportunity zones' have been identified which show large-scale, broad areas of needs for green infrastructure, and/or provide specific large-scale opportunities for green infrastructure in the future to provide benefits to landscape, wildlife, water and people. There are five green infrastructure opportunity zones located in Milton Keynes, these are:

- The Forest Ridge (7)
- The Ouse Valley (8)
- Whaddon Chase and Surrounding Links (9)
- Bedford and Milton Keynes Waterways Park (11)
- Ouzel Corridor (13)
- 25.3.7 For each green infrastructure opportunity zone, the current value/green infrastructure functions provided, the issues/threats and the main green infrastructure opportunity/needs (functions) have been identified.

¹³³ Buckinghamshire and Milton Keynes Natural Environment Partnership (2018) Green infrastructure opportunities mapping. Available at: https://bucksmknep.co.uk/projects/gi-opportunities-mapping/ [Accessed 22/05/23]

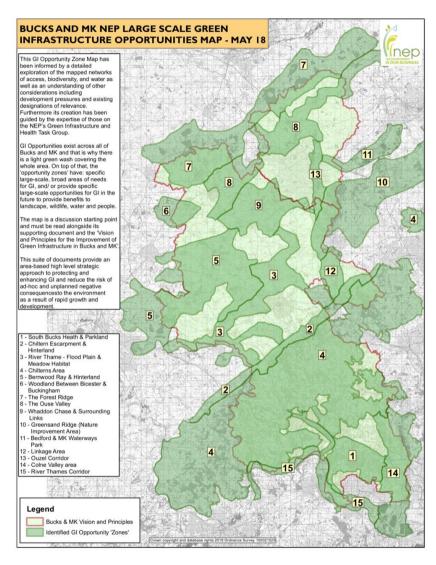


Figure 25.3: Buckinghamshire and Milton Keynes NEP green infrastructure opportunities map (May 2018)

25.4 Implications for the NGBI Strategy

- 25.4.1 The PRP's 'Environmental Principles' set out a series of targets that are often higher than the government's requirements including net zero carbon target at PRP level by 2040, 20% biodiversity net gain, doubling the area of land managed primarily for nature, establishing human and nature mobility corridors using existing or new transport corridors for maximum environmental benefit/gain and increasing tree and woodland cover.
- 25.4.2 Water management issues across the region include water supply issues and low flows in many waterbodies, risks from surface water flooding across the region, the biological and chemical status of waterbodies and sewerage storm overflow events. The main report for NGBI Strategy will consider local water management objectives and the contribution that green infrastructure can take to water issues in Milton Keynes.
- 25.4.3 Natural capital underpins all other types of capital and is the foundation on which our economy, society and prosperity is built. Green infrastructure planning, as part of a suite of planning interventions has a key role to play in supporting ecosystem services and the range of economic benefits these services deliver.

26 Appendix D: The context for Green Infrastructure in Milton Keynes

26.1 Milton Keynes New Town

- 26.1.1 Milton Keynes was planned and designed as a New Town, developed to help address the housing pressures in the southeast of England in the mid-20th century. The New Towns programme was a highly ambitious town building programme undertaken in the UK and led to the delivery of 32 New Towns. Designated in 1967, the government saw Milton Keynes as a project of national importance.
- 26.1.2 Reflecting the spirit of the Garden City movement, the purpose of the New Towns was not only to provide homes and jobs, but also to create socially mixed communities that integrated employment, homes and social life to provide opportunities for all. The New Towns were designed and delivered following the principles of innovation, experimentation and social development¹³⁴.

26.1.4 Historic village settlements were retained within areas of greenspace and the new town planned around them to create a mosaic of communities. Milton Keynes' linear parks, balancing lakes, woodlands and Grid Road network create a strong, urban landscape character, overlying the historic settlements.

^{26.1.3} The Milton Keynes Development Corporation led the development of Milton Keynes, and sought to achieve opportunity and freedom of choice, easy movement, good communications, social balance, an attractive city, public participation, as well as the efficient and imaginative use of resources.

¹³⁴ TCPA (2021) 'A New Future for New Towns: Lessons from the TCPA New Towns Network' Available at A New Future for New Towns: Lessons from the TCPA New Towns Network [Accessed on 07/03/23]

- 26.1.5 The strategic greenspace network was established as an integral element of the design of the city, principally comprising the linear parks and generous landscape zones associated with the Grid Roads. Much of the strategic green and blue infrastructure network was designed to manage flood risk and continues to support this function today. The green spaces also provide an extensive recreation resource, key to the health and wellbeing of communities, as well as creating a landscape setting that attracts investment, supports community cohesion and provides space for biodiversity.
- 26.1.6 The original landscape design policy, devised in 1971, had four objectives:
 - To achieve a visual character consistent with the vegetation of lowland UK
 - To create species zones in the city to create a sense of place and for zones to have comprehendible boundaries aiding navigation through the zones
 - To achieve a plant mixture within each zone which is capable of responding to the full range of situations that might arise, as envisaged at the time
 - To make it possible to forecast plant requirements with reasonable accuracy for years to come.

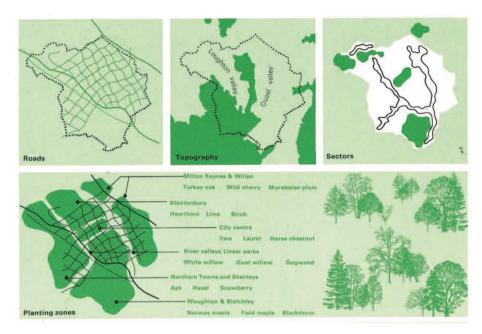


Figure 26.1: Extract from 'Milton Keynes Infrastructure' Milton Keynes development Corporation (1972)

26.1.7 Milton Keynes aspires to be a unique 'City in a Forest' with 40% green space and more biodiversity in the modern city than was found in the agricultural land it replaced.

- 26.1.8 Green spaces also function as community events spaces and are regularly used for the festivals, for example India Day, the African Diaspora Festival, Playday and MK Pride. The Tree Cathedral, one of only three in the UK, offers space for quiet contemplation, compared to the MK Bowl, a space for more boisterous celebrations. MKCC intends to plant hundreds of additional trees in the coming years.
- 26.1.9 The legacy of the design and development of the New Town has led to some challenging matters to consider in the context of planning for communities today¹³⁵:
 - The separated cycleway network (called Redways) is considered, by some, to be unsafe as it is not overlooked
 - Although it was designed to accommodate all modes of transport, including a rapid bus system along its grid roads, Milton Keynes has been criticised for encouraging reliance on the private car
 - Viability for public transport is challenging, few people cycle in the city, and parking in the city is affordable

- The need to respond to the key issues of climate change and biodiversity loss.
- 26.1.10 Sustainable transport, climate change and biodiversity gain are key considerations to be addressed in the preparation of the new local plan for Milton Keynes.
- 26.1.11 To the north of the city, within the authority area, Milton Keynes has a more rural character, the important qualities of which are described in the Milton Keynes Landscape Character Assessment. The Landscape Character Assessment describes the extensive views over the valleys from the clay plateau farmland in the north, the tranquil character of the rural river valley, to the open agricultural landscape of the clay lowland farmland to the south east. The latter is described as providing a visually important setting for the Greensand Ridge. Historically important and culturally significant landscapes include the medieval royal hunting chases, such as Whaddon Chase to the south west and Yardley Chase, at the north western boundary to Milton Keynes City Council.

¹³⁵ TCPA (2021) 'A New Future for New Towns: Lessons from the TCPA New Towns Network' Available at A New Future for New Towns: Lessons from the TCPA New Towns Network [Accessed on 07/03/23]

26.1.12 With strong road and rail transport connections, the city has continued to grow, and Milton Keynes is now the UK's largest and fastest growing New Town. Its strategic location has been key to its success in attracting industry and investment and the authority now accommodates an estimated population of 287,000¹³⁶.

26.2 2018 Milton Keynes Green Infrastructure Strategy

- 26.2.1 A Green Infrastructure Strategy was prepared in 2018 to accompany Plan:MK¹³⁷. The 2018 Green Infrastructure Strategy set out the green infrastructure typologies, focusing on publicly accessible open spaces and the consideration of the distribution of habitats, with or without public access. The range of ecosystem services that can be delivered by green infrastructure was described.
- 26.2.2 Green Infrastructure Strategies have been prepared for neighbouring authorities, at the time of the preparation of the 2018 Green Infrastructure Strategy these strategies included:
 - Aylesbury Vale Green Infrastructure Strategy

- Bedford and Luton Green Infrastructure Plan
- Northamptonshire Environmental Character and Green Infrastructure Suite.
- 26.2.3 The main report accompanying this NGBI Strategy will review available updates to the green infrastructure strategies relevant to neighbouring authorities.
- 26.2.4 The 2018 Green Infrastructure Strategy for Milton Keynes also considered meeting future needs, in relation to housing growth, biodiversity needs, landscape character, water resources and economic growth. Green Infrastructure Objectives were then set out under four heading of 'Planned Growth', 'Grid Roads', 'Connecting Missing Links' and 'Preparing for Longer Term Growth'.

26.3 The Parks Trust

26.3.1 The Parks Trust is an independent charity that funds its work from the income generated from its invested endowment funds and commercial property portfolio.

¹³⁶ Office for National Statistics (2023) How life has changed in Milton Keynes: Census 2021. Available at:

https://www.ons.gov.uk/visualisations/censusareachanges/E06000042/ [Date accessed 28/06/23]

¹³⁷ AECOM (2018) 'Milton Keynes Green Infrastructure Strategy' Available at https://www.milton-keynes.gov.uk/sites/default/files/2022-02/280318 Milton%20Keynes%20Green%20Infrastructure%20Strategy Final Clean.pdf [Accessed on 14/03/23]

26.3.2 In 2021 The Park's Trust published 'Milton Keynes Landscapes Now and Forever' 138. The Vision set out in this document is based on five principles. Principle 1 sets out the need and approach for the updated Green Infrastructure Strategy.

Principle 1: The Need for a New Green Infrastructure Strategy:

- 26.3.3 The New Green Infrastructure Strategy should:
 - Identify new green infrastructure in areas of growth and focus on enhancing these
 - Ensure design responds to local context and local need
 - Plan for biodiversity net gain where development leaves biodiversity in a better state than before
 - Include a network of leisure routes (footpaths and cycleways as well as the adopted redways), horse riding trails and adopted bridleways
 - Plan for more large, dedicated and functional events areas allowing for cultural and community celebrations as well as opportunities for sporting spectaculars.

- Provide communities with places where they can come together for shared experiences aiding cohesion and civic pride.
- Plan for an area-wide strategic sustainable urban drainage systems network which is capable of alignment with the Water Resource Long Term Planning Framework and the emerging Water Resources Management Plan.
- Link linear parks with other green infrastructure features in the wider area.
- Form a central role in the Oxford to Cambridge open space arc.

26.4 Health and wellbeing

- 26.4.1 The health and wellbeing strategy for Milton Keynes, called 'Lifelong Wellbeing' ¹³⁹ describes being healthy as "much more than the absence of illness or disease. It's about being able to lead fulfilling lives, and to be actively involved in families and communities".
- 26.4.2 Key issues identified in the health and wellbeing strategy include:

¹³⁸The Parks Trust Milton Keynes (2021) 'Milton Keynes Inspirational Landscapes Now and Forever' Available at https://www.theparkstrust.com/media/6655/mk-inspirational-landscapes-now-forever.pdf [Accessed on 07/02/23]

¹³⁹ Milton Keynes Council (2018) 'Lifelong Wellbeing' Available at https://www.milton-keynes.gov.uk/health-and-wellbeing-strategy-2018-2028 [Accessed on 14/03/23]

- Almost one in ten 5-16 year olds have mental health issues
- More than one in ten children are obese
- One in five children are living in poverty
- One in six adults has a mental health problem such as anxiety or depression
- Greater obesity in the adult population of Milton Keynes in comparison to UK
- There is an increasing proportion of elderly people in the population
- For older residents, social isolation is a contributing factor to over 60% of preventative illness.
- 26.4.3 The health and wellbeing strategy sets out key priorities to address these issues, which includes,
 - SW6: Promote access to green spaces and public transport for children and young people
 - AW1: Older citizens are supported to stay healthy and maintain their independence.

26.4.4 The Joint Strategic Needs Assessment for Children and Young People ¹⁴⁰ states that the causes of obesity are complex and multi-faceted, but can include the social factors such as the built environment, transport systems and green space. As well as helping children and young people maintain a healthy weight, there is increasing evidence of the mental health benefits of participating in regular physical activity for children and young people. including feeling good about themselves and better concentration in addition to the physical health benefits.

26.5 Implications for the NGBI Strategy

26.5.1 Milton Keynes was planned as a New Town which has led to a distinctive townscape character with a planned network of strategic green spaces. Future development of the city should respect and enhance the characteristics of this legacy.

¹⁴⁰ Milton Keynes Council (2021) Joint Strategic Needs Assessment' Available at https://www.milton-keynes.gov.uk/joint-health-and-wellbeing-strategy-2018-2028 [Accessed on 14/03/23]

- 26.5.2 The city and its communities benefit from having extensive connected areas of strategic green infrastructure, much of which is managed by The Parks Trust. This legacy should be celebrated and maintained while responding to current drivers for change including climate change and biodiversity loss, as well as the need to support active lifestyles, the efficient use of land and sustainable stewardship.
- 26.5.3 Milton Keynes is now the UK's largest and fastest growing New Town. Its strategic location has been key to its growth and success in attracting industry and investment. The authority now accommodates an estimated population of 287,000¹⁴¹.
- 26.5.4 Despite Milton Keynes' successes, there are challenges for existing communities, including obesity in children and mental health issues across the age ranges, from young people to the elderly.

https://www.ons.gov.uk/visualisations/censusareachanges/E06000042/ [Date accessed 28/06/23]

¹⁴¹ Office for National Statistics (2023) How life has changed in Milton Keynes: Census 2021. Available at:

27 Appendix E: Milton Keynes to 2050

27.1 Milton Keynes Sustainability Strategy

- 27.1.1 The Council believes that addressing climate change and biodiversity loss are critical to creating a liveable, sustainable city. This ambition is captured the Sustainability Strategy (2019 2050)¹⁴² which confirms the aspiration to become a world-leading, low carbon, sustainable city.
- 27.1.2 The vision of Milton Keynes set out in the Sustainability Strategy is,

"Milton Keynes can be the world's greenest and most sustainable city, using the opportunities of growth to tackle the challenges of climate change and resource competition to create a more prosperous city for all our people and future generations which is carbon negative by 2050".

27.1.4 The strategy has three sustainability principles, which frame a series of aims, many of which are relevant to this NGBI Strategy.

1. Green energy

- All new developments to include green energy generation schemes
- MK Council to produce and distribute energy
- Council procurement to drive low carbon suppliers
- Use energy efficient and carbon passive technology on new and existing buildings
- Drive lower and more efficient energy use.

2. Circular economy

- Focus on encouraging green jobs and inward investment
- Encourage more local food and materials production

The objective of the strategy is to set the intention to be the Greenest City in the World and set a framework to achieve this, with the overall aim that carbon emissions are brought down to zero by 2050.

¹⁴² Milton Keynes Council (2019) 'MK Sustainability Strategy 2019-2050' Available at https://www.milton-keynes.gov.uk/sites/default/files/2022-07/2019%2001%2015%20sustainability%20strategy%20v4.pdf [Accessed on 07/03/23]

- Continue the green heritage of Milton Keynes
- Ensure excellent sustainable design
- Use more land to capture and store carbon
- Work with all landowners to encourage biodiversity
- Promote low impact and sustainable building methods and materials
- Continue to encourage waste reduction, reusing and recycling
- Ensure better water management and usage.

3. Low emissions

- Seek to be a carbon neutral by 2030, and carbon negative by 2050
- Reduce transport emissions by promoting low-emission vehicles and public transport
- Ensure the source of transport power is sustainable
- Have the best urban air-quality in the UK, especially around public buildings
- Robustly monitor emissions and air quality.

27.2 The Greenest City: Physical and Natural Environment Vision

- 27.2.1 The Greenest City in the World: Physical and Natural Environment Vision ¹⁴³ reinforces that the natural environment of Milton Keynes is fundamental to our wellbeing and health as well as being part of the identity of the city for the future.
- 27.2.2 This vision is explored through the 'Three Pillars' of 'nature', 'water' and 'trees' and reinforcing their interaction, as well as four core objectives to guide delivery.

Conserve

27.2.3 Conserve and protect existing sites of biodiversity, wildlife areas and the principles of multi-functional green spaces, linear parks, wildlife corridors and designated sites.

Restore

27.2.4 Restore and manage species and habitats appropriate to Milton Keynes and its wider regional physical and geographical context in a way that mitigates against and adapts to a changing climate.

¹⁴³ Milton Keynes Council (2019) 'The Greenest City in the World - Physical and Natural Environment: Position Statement'

Create

27.2.5 Create new green infrastructure and biodiversity assets that are interconnected and integrate with the way ecosystems work, and enhance the capacity of our natural environment to provide ecosystem services.

Engage

27.2.6 Engage people with natural environments rich in wildlife, enabling and promoting access to allow them to enjoy and experience the natural environment and the benefits to public health, regardless of age, race, ability or gender.

27.3 Milton Keynes Strategy for 2050

27.3.1 The Milton Keynes Strategy for 2050¹⁴⁴, published in 2020, considers the nature of existing communities as well as future development of the city and the economy. The strategy is a non-statutory planning document and was prepared following the recommendations of the MK Futures 2050 Commission in their 2016 report, 'Making a Great City Greater'.

27.4.1 The Strategy sets out seven 'Big Ambitions' for the existing and future communities in Milton Keynes.

^{27.4} Seven big ambitions

¹⁴⁴ Milton Keynes Council (2020) 'Milton Keynes Strategy for 2050' Available at https://www.mkfutures2050.com/ files/ugd/02d3f7 0e68db27402441c49a453b4c945ed c83.pdf [Accessed on 08/03/23]



Figure 27.1: The seven big ambitions for Milton Keynes, set out in the MK Strategy for 2050

27.4.2 The strategy identifies key opportunities and challenges in the area, summarised in **Table 27.1**.

Table 27.1: Milton Keynes Strategy 2050 Success, challenges and opportunities

People

Our aim is to grow by a steady population increase to around 410,000 people living in the borough by 2050.

Our people are our greatest asset. We are a highly diverse place, which is an immense strength. The proportion of children in our schools from a BME (Black and Minority Ethnic) family is now at around 44%. Whilst our population is comparatively young, the number of older people is increasing at a rate well above the average for England.

Place

As we continue to grow, we want to protect those things that are so important to the city's character. Our network of open spaces, parks, woodlands, lakes, canals and rivers, linked by paths and redways are valuable for our mental and physical health. This network also provides important habitats for wildlife and plants, manages flood risk, helps to improve air quality and reduces our carbon footprint.

Milton Keynes includes a large rural area, with thriving market towns at Woburn Sands, Olney and Newport Pagnell, and many smaller villages set in an attractive landscape which complements the urban nature of our city.

We are recognised as one of the best places for 'good growth' that balances jobs, skills and health alongside relatively affordable housing, transport, work-life balance and the environment.

CMK: Around 3,500 people live in Central Milton Keynes today. Despite the large numbers of companies based in the city centre, parts of it sometimes feel deserted.

Our economy

182,000 people work in our borough across a wide range of sectors. Located at the centre of the Oxford-Cambridge investment area, Milton Keynes is a place with world-leading universities and research institutions with many businesses in areas such as technology and high-performance engineering that will be important for the UK's future economy.

Our connections

The distinctive network of high speed grid roads makes car travel generally fast and easy. East West Rail (EWR) will provide new rail links to Oxford (due to open in 2024) and to Cambridge (due to open by 2030). Bletchley and Milton Keynes Central will be key stations, connecting EWR and the West Coast Mainline. The north-south connectivity will also be improved when HS2 opens, releasing space for more frequent services to London and the Midlands on the West Coast Mainline. A new mass transit system is proposed.

Our innovation

Milton Keynes is famous for being "different by design" and for fresh thinking. Milton Keynes had the UK's first solar powered house and led the way on carbon off-setting policies. Innovation continues today with autonomous delivery robots. The structure of our city was designed to be flexible and help us adapt to new circumstances over time. In our neighbourhoods, sites were reserved to provide space for future community facilities and our

grid network was built with room to introduce new forms of transport.

Health

The health of residents is unequal across the city with big differences in life expectancy between neighbourhoods and earlier deaths from coronary and cardiovascular disease compared to national averages. It can be hard for some of our residents to get around by public transport, making it difficult to get to workplaces or other opportunities, especially for those who don't have access to a car. This can make poverty and deprivation even worse as car ownership is often lowest in our more disadvantaged areas. Child poverty is high and rising.

Affordability of homes

Private rents and our affordability ratio have sharply increased and more people are homeless or in temporary accommodation.

Our skills

The average skill and qualification levels of our residents are now slightly above the national average, but many local companies still struggle to find local workers with the right skills.

Our carbon agenda

Milton Keynes City Council has set an ambition to be carbon neutral by 2030 and carbon negative by 2050. Substantial progress has been made, with a 30% reduction in carbon emissions per head of population since 2013. To continue this trend the strategy focuses on reducing emissions from transport as these have not reduced over the same period.

27.5 A sustainable city

- 27.5.1 The Strategy for 2050 describes the predicted population growth in the authority area. The adopted local plan for Milton Keynes, Plan:MK, proposes approximately 25,000 new homes to be built in the period to 2031. Building these homes would see the number of people living in the area increase to at least 335,000 people. It is predicted that Milton Keynes will continue to grow beyond 2031 to reach a population of around 410,000 people in 2050. The Milton Keynes Strategy for 2050, considers the provision of a further 30,000-35,000 homes across the authority area by 2050.
- 27.5.2 Chapter 3 of the Strategy to 2050 describes the ambition to create a sustainable city and to change the way the city works, which can be summarised as follows:
 - Transport is the largest source of carbon emissions in Milton Keynes, there is a need to minimise travel by car.
 Walkable, compact mixed use developments, will be promoted. A Mass Rapid Transit system is proposed for longer journeys;
 - Promoting energy conservation, recycling and solar energy generation;

- Green and blue infrastructure will be protected and invested in, described as being of greatest importance;
 and
- 27.5.3 The MK Strategy for 2050 goes on to set out aspirations for the area. In relation to green infrastructure key messages from the document include the following.

27.6 Green and blue city

- 27.6.1 The Council has an ambition to be the greenest city with the aim that around 40% of the city will continue to be green and blue space. The MK Strategy for 2050 states that more large-scale open spaces will be created as the city grows, including new country parks and major extensions to the linear park network to the south, east and west of the city.
- 27.6.2 The potential spatial strategy for the growth of the city set out in the MK Strategy to 2050 is shown in **Figure 27.2**. For the first stage in planning strategic spaces, the Strategy developed a proposal that shows what the 'major' green and blue infrastructure networks might look by 2050, as shown in **Figure 27.3**. This includes the following key aspirations:
 - Green gateways at key entry points to the city, which help to display the commitment to green character;

- Everyone should be within a few minutes walk of a beautiful, open space that connects into the wider network of such spaces;
- Individual new developments will be required to provide new parks, paths and wildlife habitats. This will include many more trees and planting to help to make local neighbourhoods attractive and add to our quality of life, as well as maintain our green character;
- Improving connections in the existing networks, such as linking the Blue Lagoon to Waterhall Park in Bletchley
- Improving connectivity in public rights of way to improve connections with neighbouring settlements and new developments; and
- Ensuring residents in our existing communities have excellent access to high quality open spaces near to their homes.

Milton Keynes – City of Trees

27.6.3 The strategy states trees will continue to be a defining feature of the city, with a commitment to plant two trees for every one that is lost, with a range of species. Tree planting will provide habitats for nature, create shade, improve air quality and help prevent floods. The approach will include creating pocket forests and expanding our existing woodland areas.

Biodiversity

27.6.4 The strategy supports biodiversity net gain, conserving and restoring wildlife habitats and creating new areas for plants and animals to flourish. Sites of Special Scientific Interest, Local Wildlife Sites and nature reserves will be protected. Wildlife habitats across the borough will be connected.

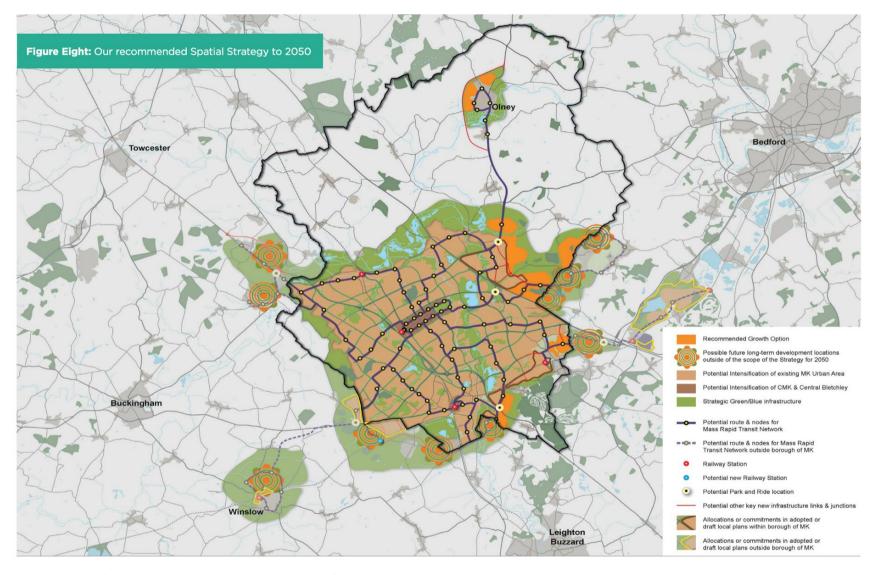


Figure 27.2: Milton Keynes Strategy to 2050 Spatial Strategy

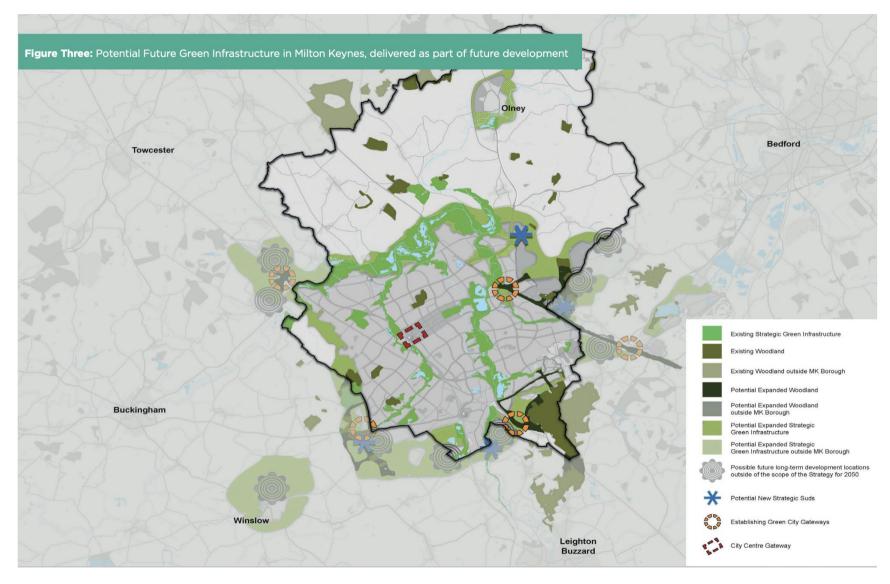


Figure 27.3: Potential future green infrastructure illustrated in MK Strategy

27.6.5 Working collaboratively with neighbouring councils, the Environment Agency, Anglian Water as well as with partners across the Oxford-Cambridge Arc (now the PRP) the Council will create a plan for the area that considers natural capital and ecosystems

Managing water and preventing flooding

27.6.6 The strategy seeks to plan for water management at a city-wide level for existing areas as well as for future development areas, using the green and blue infrastructure network. Potential solutions may include new balancing lakes, local wet/dry ponds, and strategic river maintenance and management. Projects such as the Bedford and Milton Keynes Waterway and the restoration of the Buckingham Canal would continue to be supported.

Maintenance and long-term stewardship

27.6.7 The strategy states, the long-term stewardship and maintenance of open space needs to be planned. The Parks Trust owns and manages the city's strategic open space network, supported by the rental income from its commercial property portfolio. Support for the Parks Trust model will be continued.

27.7 Addressing climate change

Travel

27.7.1 The use of electric cars and buses will continue to be promoted, however, transport would still be a main source of carbon emissions in the future across the city. A major part of the strategy is to introduce a Mass Rapid Transit network and create neighbourhoods that are more compact and walkable in order that travel by car is reduced.

Sustainable neighbourhoods and buildings

27.7.2 New buildings and development schemes will need to meet the highest standards of sustainability, including the use of building materials, minimising construction waste, positioning buildings to maximise solar gain, using solar panels and green roofs, installing water and energy efficient appliances and technologies.

Reducing water consumption

27.7.3 Milton Keynes residents use less water each day than average (131 litres each, compared to 150 litres nationally). A growing population and the risk of increased drought through climate change will mean water resources must be used more efficiently. The aim is to reduce use to fewer than 110 litres of water per person per day through approaches like harvesting and storing rainwater, stormwater and 'grey' water.

27.8 Healthy and creative places

Everyday facilities on the doorstep

27.8.1 The strategy's ambition is for everyone to live in a place that has easy access to facilities and services. People should be able to walk or cycle a short distance to services they use on a day-to-day basis, including shops, schools, a community centre, a local café or takeaway, playing fields and open space.

Welcoming to everyone

- 27.8.2 Access to a range of free and affordable activities is important for everyone, especially young people. It is also essential for voluntary organisations and the work they do for communities. Community spaces can help to reduce isolation and loneliness and so contribute to managing our mental health. Schools play an important role as hubs for local communities and this can include sharing the use of their facilities.
- 27.8.3 The strategy also seeks to ensure design schemes that are sensitive to their local surroundings.

Creative and cultured city

- 27.8.4 Culture makes a place attractive and vibrant and contributes to wider ambitions for achieving a good quality of life. It helps attract people to live, work, spend time or study in the area and is an important way of creating a sense of belonging. Events hosted by different parts of the community, from a range of cultural traditions, are one way to celebrate diversity.
- 27.8.5 The strategy emphasises the importance of investing in and developing the cultural sector and will seek to integrate creativity, heritage and public art as part of the approach to placemaking.

27.9 Transport and mobility

- 27.9.1 The strategy states that the existing grid network could be adapted to provide multi-modal corridors which have space to accommodate for a range of transport options, including cars and the proposed MRT vehicles.
- 27.9.2 The city was created using a design that has made travel by car easier than other means. The strategy's approach is to change the balance and make active travel more attractive for many journeys and supports public transport and new mobility services.
- 27.9.3 The city benefits from an extensive 320km redway network of shared walking and cycling routes that are segregated from traffic. They tend to be used for leisure cycling rather than commuting. The strategy seeks to improve and extend the network through providing more direct routes for commuting.

27.10 The New City Plan – Ambitions and Objectives Consultation 2023

27.10.1 Milton Keynes City Council is preparing a new Local Plan called 'The New City Plan'. The 'Ambitions and Objectives' report is currently out for public consultation. The New City Plan seeks to take forward the Milton Keynes Strategy for 2050¹⁴⁶. The following key messages have been summarised from the Ambitions and Objectives document.

Green city

27.10.2 The New City Plan seeks to create a strong positive environmental legacy to reflect the ambition to reduce carbon emissions to net zero by 2030. This also includes achieving net gain in biodiversity, strengthening the networks of parks and open spaces, and providing opportunities for everyone to easily access attractive open areas.

¹⁴⁵ Milton Keynes City Council (2023) 'Ambitions and Objectives' Available at https://www.milton-keynes.gov.uk/sites/default/files/2023-01/MK NEW CITY PLAN REPORT 30.01.23.pdf [Accessed on 06/02/23]

¹⁴⁶ Milton Keynes City Council (2020) 'Milton Keynes Strategy for 2050' Available at https://www.mkfutures2050.com/ files/ugd/02d3f7 0e68db27402441c49a453b4c945ed 83.pdf [Accessed on 01/02/23]

Beautiful city

27.10.3 The design of Milton Keynes is unique and treasured by many. Whilst some areas will experience change, as the city grows, there is also a need to ensure valued historic environments and buildings are protected. Guidance will be prepared that enables new developments to achieve the aspiration for high quality and innovate design, which will include the preparation of a new Design Code for the city.

Movement

27.10.4 The Strategy for 2050 is based around the development of a new Mass Rapid Transit network. A study has been commissioned to consider this proposal in detail and how it could be delivered, alongside supporting a greater focus on walking and cycling through the Local Cycling and Walking Infrastructure Plans.

Housing growth and regeneration

27.10.5 The need to identify more areas to take new housing growth over the next 30 years is considered. For some communities the plan will focus on how some areas of housing can be replaced that do not meet the aim to provide high quality housing for all communities.

Economic growth

27.10.6 The city has performed very strongly over recent years and generated significant economic growth. This benefits our residents and businesses and is something important to maintain.

Central Milton Keynes (CMK)

27.10.7 There are some major developments taking place in CMK. Development of the city centre will be encouraged where it supports a strong, healthy and vibrant communities, and maintains CMK role as an economic driver for the wider city. This includes the need to provide a wide range of shopping and leisure opportunities that a growing city will need.

Infrastructure

27.10.8 Residents always ask to put "I before E" (Infrastructure before Expansion). The Council is preparing a significant study that is looking at the future need for all future types of infrastructure.

The New City Plan Ambition

27.10.9 The Ambitions and Objectives Consultation 2023 document sets out the following overall ambition for the area.

27.10.10 "By 2050, Milton Keynes City and its rural hinterland will have continued to evolve as an innovative and successful place, founded upon its unique history and special characteristics. Well-planned ambitious growth has created greater economic prosperity and a high quality of life and wellbeing for all. Communities enjoy access to a range of good-quality affordable homes that meet their needs better, provides wider economic and cultural opportunities and healthy, sustainable places to live, learn and work, supported by infrastructure that is characteristic of a thriving and sustainable place."

27.11 New City Plan Themes

- Economic and Cultural Prosperity Theme
- Healthy Places Theme
- High Quality Homes and Neighbourhoods Theme
- Climate and Environmental Action Theme
- 27.11.1 Under the 'Climate and Environmental Action' theme there are five key aims:
 - Shape the built environment and transport systems to help achieve net zero carbon emissions by 2030 and be carbon negative by 2050
 - Support the efficient use of resources as part of a circular economy

- Enable a zero-waste economy by 2050 with waste managed as a valuable resource for meeting energy needs through low or zero carbon pathways
- Create space for nature and deliver significant gains in biodiversity
- Ensure that communities and nature cope well with and can bounce back from the predicted negative effects of climate and environmental change.

27.12 Implications for the NGBI Strategy

- 27.12.1 MKCC is forward thinking and ambitious in setting targets to be a sustainable city and meet the challenges of climate change and biodiversity loss to be the Greenest City in the World.
- 27.12.2 Making Milton Keynes a leading green and cultural city is described as one of the Big Ambitions for the city. The population of Milton Keynes continues to grow, reflecting its success in attracting jobs and investment. However, the health of existing residents is unequal across the city with large differences in life expectancy between communities.

- 27.12.3 Alongside growth, the important aspects of the city's character should be protected. Around 40% of the city should continue to be green and blue space, this may include new country parks and extensions to the linear park network. Everyone should be within a few minute's walk of an accessible open space that connects into the wider network to benefit health and wellbeing. Individual new developments will be required to provide new parks, paths and wildlife habitats.
- 27.12.4 The city's grid road network can be adapted to incorporate other users, including the new MRT vehicles. The redway network could be extended to facilitate more commuting by cycling.
- 27.12.5 Trees will continue to be a defining feature of the city. The approach will include creating pocket forests and expanding existing woodland areas. The strategy supports biodiversity net gain, conserving and restoring wildlife habitats and creating new areas for plants and animals to flourish.
- 27.12.6 Milton Keynes City Council has set an ambition to be carbon neutral by 2030 and carbon negative by 2050. Delivering sustainable buildings with high energy efficiency and reduced water consumption are important as well as creating compact communities to reduce car use. Water management will continue to be planned a city-wide level.

28 Appendix F: Assessment of Recommended Growth Options and Potential Intensification Areas: Ecosystem Services Assessment Context

28.1 Recommended Growth Option 1: North of Olney: Ecosystem services assessment

Timber

28.1.1 Only 0.3ha of broadleaved woodland is located within this RGO. Broadleaved woodland is considered to provide low to medium timber production capacity. The area of broadleaved woodland is also less than 1ha therefore, there is a low capacity for timber production.

Fish and other marine products from wild sources

28.1.2 There is currently no potential for commercial levels of fish production. One unnamed tertiary river flows through this RGO. No data on the hydrological regime.

Plant-based energy

28.1.3 There is no evidence of commercial forestry in this RGO.

Cultivated crops and provision of community food

- 28.1.4 This RGO contains 28.9ha of cultivated/disturbed land which is 69.4% of the total land area.
- 28.1.5 Best and most versatile land (BMV) is defined as Grade 1, 2 or 3a in the Agricultural Land Classification. For the purposes of this assessment, Grade 3 is considered to be 3a.
- 28.1.6 This RGO contains 34.5ha of Grade 2 and 7.1ha of Grade 3 land. Losing 20 hectares of best and most versatile land is considered to be a high loss of ecosystem services.
- 28.1.7 Community growing opportunities: No food growing areas highlighted in MKCC Open Space Assessment (unpublished draft, 2023) are located within 1km (15 minute walk) from this RGO.

Water supply

- 28.1.8 One unnamed tertiary river flows through this RGO.
- 28.1.9 Surface water availability: According to the Water Resource Availability and Abstraction Reliability (Cycle 2), this RGO is located within an area of water available for licensing at the Q95 flow (the flow exceeded 95% of the year).

- 28.1.10 Groundwater availability: This RGO is located within Upper Bedford Ouse Principal Oolite 2 Water Body (Groundwater Body). Quantitative status element: Good. Also located within Ouse Upper Bedford Secondary Oolite Water Body (Groundwater Body). Quantitative status element: Good.
- 28.1.11 Soil drainage: One type of soil is located within this RGO:
 - Soilscape 5: Freely draining lime-rich loamy soils.
 Drainage: freely draining. Drains to chalk or limestone groundwater.

Livestock

28.1.12 This RGO contains approximately 8.4ha of improved grassland. However, this amount has been reduced due to the development of 'Olney Park' in the southern corner.

Water quality

- 28.1.13 This RGO is located within the Ouse (Newport Pagnell to Roxton) River Water Body Catchment.
- 28.1.14 Naturalness of water body: The hydromorphological designation of the Ouse Newport Pagnell to Roxton Water Body is 'heavily modified'.
- 28.1.15 Water quality: The ecological status of the Ouse (Newport Pagnell to Roxton) River Water Body is 'moderate'.

- 28.1.16 The chemical status of the Ouse (Newport Pagnell to Roxton) River Water Body is 'fail'.
- 28.1.17 Water quality management area: This RGO is within an area of 'high priority' within the Countryside Stewardship Water Quality Priority Areas.

Air quality

- 28.1.18 Evidence of trees or hedgerows likely to filter air pollutants (close to source or close to receptor). 1.5 to 2.5 m hedges planted along such roads can improve air quality.
- 28.1.19 The northern half of the eastern boundary is lined with a fragmented hedge alongside the A509 road.
- 28.1.20 Inside an AQMA or within 200m of an AQMA or main road (motorway or A road): Beyond 200m the demand for ecosystem services associated with reducing air pollution is negligible. The A509 is adjacent to the eastern boundary of this RGO.

Noise regulation

28.1.21 The A509 road runs alongside the eastern boundary of this RGO. The fragmented hedge and occasional trees provide minimal screening to regulate road noise.

Erosion control

28.1.22 This RGO is located within Soilscape 5: Vulnerable to leaching of nitrate to groundwater; surface capping and erosion of chalk soils under cereals is linked with nutrient enrichment and silting of chalk streams and their gravel spawning beds.

Flood protection

- 28.1.23 This RGO is not located within flood zone 2 or 3.
- 28.1.24 Surface water flooding: This RGO includes an area of 1.051ha at risk of flooding from surface water 1% risk in any year (1 in 100 year event).
- 28.1.25 This RGO is located within a water body catchment with a low priority for Natural Flood Management.

Pollination

28.1.26 Pollinator plants: There are no flowering meadows located within this RGO according to Plan:MK Priority Habitats.

Biodiversity - thriving plants and wildlife

28.1.27 Designated sites: No nationally or locally designated sites for biodiversity are located within this RGO.

- 28.1.28 Woodland: Broadleaved woodland comprises approximately 0.3ha of this RGO which is 0.7% of the total area.
- 28.1.29 Hedgerows: A network of hedgerows with occasional trees cross through this RGO.

Climate regulation

28.1.30 Built-up areas and infrastructure comprise approximately 1.2ha of this RGO which is 2.9% of the total area. The built form in this RGO is mostly due to the Olney Sewage Treatment Works. However, the area of built form will have increased since the recent development of 'Olney Park'.

Cultural services

- 28.1.31 Recreation: This RGO is not located within 1km of neighbourhood green space, within 300m of local green space or within 200m of doorstep green space.
- 28.1.32 Public rights of way: One footpath crosses through the centre of this RGO.
- 28.1.33 Interaction with nature: No accessible woodlands are located within this RGO.
- 28.1.34 Community space: No open spaces for community or cultural events are located within this RGO.

- 28.1.35 Sense of place: This RGO is located within 'Undulating Valley Slopes' Landscape Character Type and 'Ouse Northern Undulating Valley Slopes' Landscape Character Area from the Milton Keynes Landscape Character Assessment (2022).
- 28.1.36 This RGO is located adjacent to a Scheduled Monument (Roman Site at Olney) which lies to the east of the A509 road.
- 28.1.37 Education: No evidence NGBI is used for education in this RGO.
- 28.1.38 Population density: This RGO is located within Milton Keynes 001C LSOA. Population (mid-2020) was 1,739. Population density in this LSOA was 320.97 per sq km (mid-2020).
- 28.1.39 Index of Multiple Deprivation: This RGO is located within IMD Decile 10.

Geodiversity services

28.1.40 No evidence of supply of mineral products or other geo materials in this RGO.

28.2 Recommended Growth Option 2: West of Olney: Ecosystem services assessment

Timber

28.2.1 Approximately 2ha of broadleaved woodland is located within this RGO. Broadleaved woodland is considered to provide low to medium timber production capacity.

Fish and other marine products from wild sources

28.2.2 There is currently no potential for commercial levels of fish production. No watercourses cross through this RGO.

Plant-based energy

28.2.3 There is no evidence of commercial forestry in this RGO.

Cultivated crops and provision of community food

- 28.2.4 This RGO contains approximately 48.5ha of cultivated/disturbed land which is 64% of the total land area.
- 28.2.5 Best and most versatile land (BMV) is defined as Grade 1, 2 or 3a in the Agricultural Land Classification. For the purposes of this assessment, Grade 3 is considered to be 3a.

- 28.2.6 This RGO contains approximately 75.77ha of Grade 3 land. Losing 20 hectares of best and most versatile land is considered to be a high loss of ecosystem services.
- 28.2.7 Community growing opportunities: No food growing areas highlighted in MKCC Open Space Assessment (unpublished draft, 2023) are located within 1km (15 minute walk) from this RGO.

Water supply

- 28.2.8 No watercourses cross through this RGO.
- 28.2.9 Surface water availability: According to the Water Resource Availability and Abstraction Reliability (Cycle 2), this RGO is located within an area of water available for licensing at the Q95 flow (the flow exceeded 95% of the year).
- 28.2.10 Groundwater availability: This RGO is located within Upper Bedford Ouse Principal Oolite 2 Water Body (Groundwater Body). Quantitative status element: Good. Also located within Ouse Upper Bedford Secondary Oolite Water Body (Groundwater Body). Quantitative status element: Good.
- 28.2.11 Soil drainage: Two types of soils are located within this RGO:

- Soilscape 5: Freely draining lime-rich loamy soils.
 Drainage: freely draining. Drains to chalk or limestone groundwater
- Soilscape 9: Lime-rich loamy and clayey soils with impeded drainage. Drainage: Slightly impeded drainage. Drains to: Stream network

Livestock

28.2.12 This RGO contains approximately 21.17ha of improved grassland suitable for supporting livestock.

Water quality

- 28.2.13 This RGO is located within the Ouse (Newport Pagnell to Roxton) River Water Body Catchment.
- 28.2.14 Naturalness of water body: The hydromorphological designation of the Ouse Newport Pagnell to Roxton Water Body is 'heavily modified'.
- 28.2.15 Water quality: The ecological status of the Ouse (Newport Pagnell to Roxton) River Water Body is 'moderate'.
- 28.2.16 The chemical status of the Ouse (Newport Pagnell to Roxton) River Water Body is 'fail'.

28.2.17 Water quality management area: This RGO is within an area of 'high priority' within the Countryside Stewardship Water Quality Priority Areas.

Air quality

28.2.18 This RGO is not located within 200m of an AQMA or main road (Motorway or A Road).

Noise regulation

28.2.19 This RGO is not located within 200m of an AQMA or main road (Motorway or A Road).

Erosion control

- 28.2.20 Two types of soils are located within this RGO:
 - Soilscape 5: Vulnerable to leaching of nitrate to groundwater; surface capping and erosion of chalk soils under cereals is linked with nutrient enrichment and silting of chalk streams and their gravel spawning beds
 - Soilscape 9: Land is drained and nitrate vulnerable; potential for rapid pollutant transport; surface capping can trigger sheet erosion of fine sediment to stream network

Flood protection

28.2.21 This RGO is not located within flood zone 2 or 3.

- 28.2.22 Surface water flooding: This RGO contains no risk of flooding from surface water 1% risk in any year (1 in 100 year event).
- 28.2.23 This RGO is located within a water body catchment with a low priority for Natural Flood Management.

Pollination

28.2.24 Pollinator plants: This RGO contains a Local Wildlife Site named Barn Field, Long Lane, Olney – Lowland Meadows. This Local Wildlife Site comprises a meadow habitat with excellent community access and high learning value.

Biodiversity - thriving plants and wildlife

- 28.2.25 Designated sites: This RGO contains a Local Wildlife Site named Barn Field, Long Lane, Olney – Lowland Meadows. This Local Wildlife Site comprises a meadow habitat with excellent community access and high learning value.
- 28.2.26 Woodland: Broadleaved woodland comprises approximately 2ha of this RGO which is 2.6% of the total area.
- 28.2.27 Hedgerows: A network of hedgerows with trees cross through this RGO.

Climate regulation

28.2.28 Built-up areas and infrastructure comprise approximately 0.3ha of this RGO which is 0.4% of the total area.

Cultural services

- 28.2.29 Recreation: This RGO contains a Local Wildlife Site named Barn Field, Long Lane, Olney Lowland Meadows. This Local Wildlife Site comprises a meadow habitat with excellent community access and high learning value. This LWS is recognised as 'other natural and semi-natural greenspace' within MKCC Open Space Assessment (unpublished draft, 2023). This RGO is partially located within 1km from Emberton Country Park.
- 28.2.30 Public rights of way: One bridleway crosses through the centre along Long Lane. Network of footpaths cross through this RGO that meet at the south west corner of Barn Field LWS.
- 28.2.31 Interaction with nature: A footpath and bridleway runs adjacent to broadleaved woodland in Barn Field LWS. Barn Field LWS accessible via Long Lane bridleway and footpaths.
- 28.2.32 Community space: Barn Field LWS (see above).

- 28.2.33 Sense of place: This RGO is located within 'Undulating Valley Slopes' Landscape Character Type and 'Ouse Northern Undulating Valley Slopes' Landscape Character Area from the Milton Keynes Landscape Character Assessment (2022).
- 28.2.34 Education: Barn Field LWS (see above).
- 28.2.35 Population density: This RGO is located within Milton Keynes 001D LSOA. Population (mid-2020) was 1,179. Population density in this LSOA was 95.28 per sq km (mid-2020).
- 28.2.36 Index of Multiple Deprivation: This RGO is located within IMD Decile 8.

Geodiversity services

28.2.37 No evidence of supply of mineral products or other geo materials in this RGO.

28.3 Recommended Growth Option 3: North east of Newport Pagnell: Ecosystem services assessment

Timber

28.3.1 Approximately 4.4ha of broadleaved woodland and 1.26ha of trees/parkland are located within this RGO. Broadleaved woodland is considered to provide low to medium timber production capacity.

Fish and other marine products from wild sources

28.3.2 There is currently no potential for commercial levels of fish production. No watercourses cross through this RGO.

Plant-based energy

28.3.3 There is no evidence of commercial forestry in this RGO.

Cultivated crops and provision of community food

- 28.3.4 This RGO contains approximately 98.4ha of cultivated/disturbed land which is 89.2% of the total land area.
- 28.3.5 Best and most versatile land (BMV) is defined as Grade 1, 2 or 3a in the Agricultural Land Classification. For the purposes of this assessment, Grade 3 is considered to be 3a.

- 28.3.6 This RGO contains approximately 86.5ha of Grade 3 land and 23.8ha of Grade 4 land. Losing 20 hectares of best and most versatile land is considered to be a high loss of ecosystem services.
- 28.3.7 Community growing opportunities: Part of this RGO is located within 1km (15 minute walk) from food growing areas highlighted in MKCC Open Space Assessment (unpublished draft, 2023).

Water supply

- 28.3.8 No watercourses cross through this RGO.
- 28.3.9 Surface water availability: According to the Water Resource Availability and Abstraction Reliability (Cycle 2), this RGO is located within an area of water available for licensing at the Q95 flow (the flow exceeded 95% of the year).
- 28.3.10 Groundwater availability: No data.
- 28.3.11 Soil drainage: Three types of soils are located within this RGO:
 - Soilscape 8: Slightly acid loamey and clayey soils with impeded drainage. Drainage: Slightly impeded drainage. Drains to: Stream network

- Soilscape 9: Lime-rich loamy and clayey soils with impeded drainage. Drainage: Slightly impeded drainage. Drains to: Stream network
- Soilscape 20: Loamey and clayey floodplain soils with naturally high groundwater. Drainage: Naturally wet.
 Drains to: Local groundwater feeding into river

Livestock

28.3.12 This RGO contains approximately 1.5ha of improved grassland suitable for supporting livestock.

Water quality

- 28.3.13 This RGO is located within the Ouse (Newport Pagnell to Roxton) and Chicheley Brook River Water Body Catchment.
- 28.3.14 Naturalness of water body: The hydromorphological designation of the Ouse Newport Pagnell to Roxton Water Body is 'heavily modified' and Chicheley Brook Water Body is 'not designated artificial or heavily modified'.
- 28.3.15 Water quality: The ecological status of the Ouse (Newport Pagnell to Roxton) River Water Body is 'moderate' and Chicheley Brook Water Body is 'poor'.
- 28.3.16 The chemical status of the Ouse (Newport Pagnell to Roxton) River Water Body is 'fail' and Chicheley Brook River Water Body is 'fail'.

28.3.17 Water quality management area: This RGO is within an area of 'high priority' within the Countryside Stewardship Water Quality Priority Areas.

Air quality

- 28.3.18 Evidence of trees or hedgerows likely to filter air pollutants (close to source or close to receptor). 1.5 to 2.5 m hedges planted along such roads can improve air quality.
- 28.3.19 The A509 road crosses through centre of this RGO. Both sides of the A509 are lined with an embankment, planted with grassland, trees and hedgerows.

Noise regulation

28.3.20 The A509 road crosses through centre of this RGO. Both sides of the A509 are lined with an embankment, planted with grassland, trees and hedgerows.

Erosion control

- 28.3.21 Three types of soils are located within this RGO:
 - Soilscape 8: Farmed land is drained and therefore vulnerable to pollution run-off and rapid through-flow to streams; surface capping can trigger erosion of fine sediment

- Soilscape 9: Land is drained and nitrate vulnerable; potential for rapid pollutant transport; surface capping can trigger sheet erosion of fine sediment to stream network
- Soilscape 20: Close proximity to river results in pollution risk from floodwater scouring and from drainage water after spreading of fertiliser or slurry

Flood protection

- 28.3.22 This RGO is partially located within flood zone 2 and 3.
- 28.3.23 Surface water flooding: This RGO contains an area of 6.2ha at risk of flooding from surface water 1% risk in any year (1 in 100 year event).
- 28.3.24 This RGO is located within a water body catchment with a low priority for Natural Flood Management.

Pollination

28.3.25 Pollinator plants: No flowering meadows are located within this RGO according to Plan:MK Priority Habitats.

Biodiversity - thriving plants and wildlife

28.3.26 Designated sites: No nationally or locally designated sites for biodiversity are located within this RGO.

- 28.3.27 Woodland: Woodland comprises approximately 5.7ha of this RGO which is 5.2% of the total area.
- 28.3.28 Hedgerows: A network of hedgerows with trees cross through this RGO.

Climate regulation

28.3.29 Built-up areas and infrastructure comprise approximately 2.4ha of this RGO which is 2.2% of the total area.

Cultural services

- 28.3.30 Recreation: This RGO is not located within 1km of neighbourhood green space, within 300m of local green space or within 200m of doorstep green space.
- 28.3.31 Public rights of way: A footpath and bridleway cross through this RGO.
- 28.3.32 Interaction with nature: A footpath and bridleway run adjacent to small pockets of mixed and broadleaved woodland.
- 28.3.33 Community space: This RGO contains no open spaces for community or cultural events.

- 28.3.34 Sense of place: This RGO is located within 'Clay Vales' Landscape Character Type and 'Lower Ouzel Clay Vale' Landscape Character Area from the Milton Keynes Landscape Character Assessment (2022).
- 28.3.35 No heritage features or biodiversity designations are located within or adjacent to this RGO.
- 28.3.36 Education: No evidence NGBI is used for education in this RGO.
- 28.3.37 Population density: This RGO is located within Milton Keynes 002D LSOA. Population (mid-2020) was 1,262. Population density in this LSOA was 53.84 per sq km (mid-2020).
- 28.3.38 Index of Multiple Deprivation: This RGO is located within IMD Decile 8.

Geodiversity services

28.3.39 No evidence of supply of mineral products or other geo materials in this RGO.

28.4 Recommended Growth Option 4: North of Moulsoe: Ecosystem services assessment

Timber

28.4.1 Approximately 1.4ha of broadleaved woodland and 0.4ha of trees/parkland are located within this RGO. Broadleaved woodland is considered to provide low to medium timber production capacity.

Fish and other marine products from wild sources

- 28.4.2 This RGO contains one small pond. Chicheley Brook and unnamed secondary and tertiary watercourses also flow through.
- 28.4.3 There is currently no potential for commercial levels of fish production.

Plant-based energy

28.4.4 There is no evidence of commercial forestry in this RGO.

Cultivated crops and provision of community food

28.4.5 This RGO contains approximately 132.5ha of cultivated/disturbed land which is 79.5% of the total land area.

- 28.4.6 Best and most versatile land (BMV) is defined as Grade 1, 2 or 3a in the Agricultural Land Classification. For the purposes of this assessment, Grade 3 is considered to be 3a.
- 28.4.7 This RGO contains approximately 121.7ha of Grade 3 land and 45ha of Grade 4 land. Losing 20 hectares of best and most versatile land is considered to be a high loss of ecosystem services.
- 28.4.8 Community growing opportunities: No food growing areas highlighted in MKCC Open Space Assessment (unpublished draft, 2023) are located within 1km (15 minute walk) from this RGO.

Water supply

- 28.4.9 Chicheley Brook flows into the boundary of this RGO slightly in the north and secondary and tertiary watercourses also flow through.
- 28.4.10 Surface water availability: According to the Water Resource Availability and Abstraction Reliability (Cycle 2), most of this RGO is located within an area of water available for licensing at the Q95 flow (the flow exceeded 95% of the year).
- 28.4.11 Groundwater availability: No data.
- 28.4.12 Soil drainage: One type of soil is located within this RGO:

 Soilscape 9: Lime-rich loamy and clayey soils with impeded drainage. Drainage: Slightly impeded drainage. Drains to: Stream network.

Livestock

28.4.13 This RGO contains approximately 25.1ha of improved grassland suitable for supporting livestock.

Water quality

- 28.4.14 This RGO is located within three River Water Body Catchments:
 - Chicheley Brook;
 - Ouzel US Caldecote Mill; and
 - Broughton Brook.
- 28.4.15 Naturalness of water body: The hydromorphological designation of Chicheley Brook Water Body is 'not designated artificial or heavily modified', Ouzel US Caldecote Mill is 'heavily modified' and Broughton Brook is 'heavily modified'.
- 28.4.16 Water quality: The ecological status of Chicheley Brook Water Body Catchment is 'poor', Broughton Brook Water Body is 'poor' and Ouzel US Caldecote Mill Water Body is 'moderate'.

- 28.4.17 The chemical status of Chicheley Brook Water Body is 'fail', Broughton Brook Water Body Catchment is 'fail' and Ouzel US Caldecote Mill Water Body is 'fail'.
- 28.4.18 Water quality management area: This RGO is within an area of 'high priority' within the Countryside Stewardship Water Quality Priority Areas.

Air quality

- 28.4.19 Evidence of trees or hedgerows likely to filter air pollutants (close to source or close to receptor). 1.5 to 2.5 m hedges planted along such roads can improve air quality.
- 28.4.20 Small area in north western corner of this RGO is located within 200m of the A509 road. Both sides of the A509 are lined with an embankment, planted with grassland, trees and hedgerows.

Noise regulation

28.4.21 No main roads within this RGO (motorways or A roads). The A509 road is located adjacent to the north west corner. Both sides of the A509 are lined with an embankment, planted with grassland, trees and hedgerows.

Erosion control

28.4.22 One type of soil is located within this RGO:

 Soilscape 9: Land is drained and nitrate vulnerable; potential for rapid pollutant transport; surface capping can trigger sheet erosion of fine sediment to stream network.

Flood protection

- 28.4.23 A very small area in the north of this RGO is located within flood zone 2 and 3.
- 28.4.24 Surface water flooding: This RGO contains an area of 4.6ha at risk of flooding from surface water 1% risk in any year (1 in 100 year event).
- 28.4.25 This RGO is located within three water body catchments with low, medium and high priority for Natural Flood Management.

Pollination

28.4.26 Pollinator plants: No flowering meadows are located within this RGO according to Plan:MK Priority Habitats.

Biodiversity - thriving plants and wildlife

- 28.4.27 Designated sites: No nationally or locally designated sites for biodiversity are located within this RGO.
- 28.4.28 Woodland: Woodland comprises approximately 1.8ha of this RGO which is 1.1% of the total area.

- 28.4.29 Orchards: One small traditional orchard highlighted in Plan:MK Priority Habitats is located at Tickford Lodge Farm.
- 28.4.30 Hedgerows: A network of hedgerows with trees cross through this RGO.

Climate regulation

28.4.31 Built-up areas and infrastructure comprise approximately 3.9ha of this RGO which is 2.4% of the total area.

Cultural services

- 28.4.32 Recreation: This RGO is not located within 1km of neighbourhood green space, within 300m of local green space or within 200m of doorstep green space.
- 28.4.33 Public rights of way: A bridleway and network of footpaths cross through this RGO.
- 28.4.34 Interaction with nature: Footpaths run adjacent to a small pocket of woodland.
- 28.4.35 Community space: This RGO contains no open spaces for community or cultural events.

- 28.4.36 Sense of place: This RGO is located within 'Clay Vales' and 'Undulating Clay Plateau' Landscape Character Types and 'Lower Ouzel Clay Vale' and 'North Crawley Undulating Clay Plateau' Landscape Character Areas from the Milton Keynes Landscape Character Assessment (2022).
- 28.4.37 No heritage features or biodiversity designations are located within or adjacent to this RGO.
- 28.4.38 Education: No evidence NGBI is used for education in this RGO.
- 28.4.39 Population density: This RGO is located within Milton Keynes 002F LSOA. Population (mid-2020) was 1,277. Population density in this LSOA was 34.84 per sq km (mid-2020).
- 28.4.40 Index of Multiple Deprivation: This RGO is located within IMD Decile 5.

28.4.41 No evidence of supply of mineral products or other geo materials in this RGO.

28.5 Recommended Growth Option 5: North of M1 Motorway: Ecosystem services assessment

Timber

28.5.1 Approximately 1.9ha of broadleaved woodland, 0.8ha of trees/parkland and 2.4ha of mixed woodlands are located within this RGO. Broadleaved woodland is considered to provide low to medium timber production capacity.

Fish and other marine products from wild sources

- 28.5.2 One small pond is located within this RGO. A network of unnamed tertiary rivers, secondary rivers and a culvert flow through this RGO.
- 28.5.3 There is currently no potential for commercial levels of fish production.

Plant-based energy

28.5.4 There is no evidence of commercial forestry in this RGO.

Cultivated crops and provision of community food

28.5.5 This RGO contains approximately 187ha of cultivated/disturbed land which is 88.4% of the total land area.

- 28.5.6 Best and most versatile land (BMV) is defined as Grade 1, 2 or 3a in the Agricultural Land Classification. For the purposes of this assessment, Grade 3 is considered to be 3a.
- 28.5.7 This RGO contains approximately 46.6ha of Grade 2 land and 164.8ha of Grade 3 land. Losing 20 hectares of best and most versatile land is considered to be a high loss of ecosystem services.
- 28.5.8 Community growing opportunities: No food growing areas highlighted in MKCC Open Space Assessment (unpublished draft, 2023) are located within 1km (15 minute walk) from this RGO.

- 28.5.9 A network of unnamed tertiary rivers, secondary rivers and a culvert flow through this RGO.
- 28.5.10 Surface water availability: According to the Water Resource Availability and Abstraction Reliability (Cycle 2), this RGO is located within an area of restricted water available for licensing at the Q95 flow (the flow exceeded 95% of the year).
- 28.5.11 Groundwater availability: No data.

- 28.5.12 Soil drainage: Three types of soils are located within this RGO:
 - Soilscape 8: Slightly acid loamey and clayey soils with impeded drainage. Drainage: Slightly impeded drainage. Drains to: Stream network
 - Soilscape 9: Lime-rich loamy and clayey soils with impeded drainage. Drainage: Slightly impeded drainage. Drains to: Stream network
 - Soilscape 20: Loamey and clayey floodplain soils with naturally high groundwater. Drainage: Naturally wet.
 Drains to: Local groundwater feeding into river

Livestock

28.5.13 This RGO contains approximately 14.3ha of improved grassland suitable for supporting livestock.

Water quality

- 28.5.14 This RGO is located within Broughton Brook River Water Body Catchment.
- 28.5.15 Naturalness of water body: The hydromorphological designation of Broughton Brook is 'heavily modified'.
- 28.5.16 Water quality: The ecological status of Broughton Brook Water Body is 'poor'.

- 28.5.17 The chemical status of Broughton Brook Water Body is 'fail'.
- 28.5.18 Water quality management area: This RGO is within an area of 'high priority' within the Countryside Stewardship Water Quality Priority Areas.

Air quality

- 28.5.19 Evidence of trees or hedgerows likely to filter air pollutants (close to source or close to receptor). 1.5 to 2.5 m hedges planted along such roads can improve air quality.
- 28.5.20 The M1 Motorway is located immediately adjacent to the southern boundary of this RGO. The northern side of the M1 Motorway is lined with a fragmented hedgerow and trees.

Noise regulation

28.5.21 Minimal screening is evident along most of the northern boundary of the M1 Motorway that runs immediately adjacent to the southern boundary of this RGO.

Erosion control

- 28.5.22 Three types of soils are located within this RGO:
 - Soilscape 8: Farmed land is drained and therefore vulnerable to pollution run-off and rapid through-flow

- to streams; surface capping can trigger erosion of fine sediment
- Soilscape 9: Land is drained and nitrate vulnerable; potential for rapid pollutant transport; surface capping can trigger sheet erosion of fine sediment to stream network
- Soilscape 20: Close proximity to river results in pollution risk from floodwater scouring and from drainage water after spreading of fertiliser or slurry

Flood protection

- 28.5.23 This RGO contains areas of flood zone 2 and 3.
- 28.5.24 Surface water flooding: This RGO contains an area of 32.488ha at risk of flooding from surface water 1% risk in any year (1 in 100 year event).
- 28.5.25 This RGO is located within a water body catchment with a high priority for Natural Flood Management.

Pollination

28.5.26 Pollinator plants: No flowering meadows are located within this RGO according to Plan:MK Priority Habitats.

Biodiversity – thriving plants and wildlife

- 28.5.27 Designated sites: No nationally or locally designated sites for biodiversity are located within this RGO.
- 28.5.28 Woodland: Woodland comprises approximately 5.1ha of this RGO which is 2.4% of the total area.
- 28.5.29 Hedgerows: A network of hedgerows with trees cross through this RGO.

Climate regulation

28.5.30 Built-up areas and infrastructure comprise approximately 2.9ha of this RGO which is 1.4% of the total area.

- 28.5.31 Recreation: This RGO is partially located within 1km of neighbourhood green space, within 300m of local green space and within 200m of doorstep green space.
- 28.5.32 Public rights of way: A network of footpaths and a bridleway cross through this RGO.
- 28.5.33 Interaction with nature: A bridleway and footpaths run adjacent to an area of broadleaved woodland named 'Old Covert' which is located outside the boundary of this RGO.

- 28.5.34 Community space: This RGO contains no open spaces for community or cultural events.
- 28.5.35 Sense of place: This RGO is located within 'Clay Vales' Landscape Character Type and 'Lower Ouzel Clay Vale' Landscape Character Area from the Milton Keynes Landscape Character Assessment (2022).
- 28.5.36 No heritage features or biodiversity designations are located within or adjacent to this RGO.
- 28.5.37 Education: No evidence NGBI is used for education in this RGO.
- 28.5.38 This RGO is located within Milton Keynes 002F LSOA. Population (mid-2020) was 1,277. Population density in this LSOA was 34.84 per sq km (mid-2020).
- 28.5.39 Index of Multiple Deprivation: This RGO is located within IMD Decile 5.

28.5.40 No evidence of supply of mineral products or other geo materials in this RGO.

28.6 Recommended Growth Option 6: West of Cranfield University: Ecosystem services assessment

Timber

28.6.1 Approximately 7.2ha of broadleaved woodland and 0.3ha of trees/parkland are located within this RGO. Broadleaved woodland is considered to provide low to medium timber production capacity.

Fish and other marine products from wild sources

- 28.6.2 Four small ponds are located within this RGO. Two unnamed tertiary rivers (drains) flow through.
- 28.6.3 There is currently no potential for commercial levels of fish production.

Plant-based energy

There is no evidence of commercial forestry in this RGO.

Cultivated crops and provision of community food

28.6.5 This RGO contains approximately 83ha of cultivated/disturbed land which is 52.2% of the total land area.

- 28.6.6 Best and most versatile land (BMV) is defined as Grade 1, 2 or 3a in the Agricultural Land Classification. For the purposes of this assessment, Grade 3 is considered to be 3a.
- 28.6.7 This RGO contains approximately 158.96ha of Grade 3 land. Losing 20 hectares of best and most versatile land is considered to be a high loss of ecosystem services.
- 28.6.8 Community growing opportunities: Part of this RGO is located within 1km (15 minute walk) from food growing areas highlighted in MKCC Open Space Assessment (unpublished draft, 2023).

- 28.6.9 Two unnamed tertiary rivers (drains) flow through this RGO.
- 28.6.10 Surface water availability: According to the Water Resource Availability and Abstraction Reliability (Cycle 2), approximately two thirds of this RGO is located within an area of water available for licensing and one third is located in area of restricted water available for licensing at the Q95 flow (the flow exceeded 95% of the year).
- 28.6.11 Groundwater availability: No data.
- 28.6.12 Soil drainage: One type of soil is located within this RGO:

 Soilscape 9: Lime-rich loamy and clayey soils with impeded drainage. Drainage: Slightly impeded drainage. Drains to: Stream network

Livestock

28.6.13 This RGO contains approximately 62.9ha of improved grassland suitable for supporting livestock.

Water quality

- 28.6.14 This RGO is located within Chicheley Brook and Broughton Brook River Water Body Catchment.
- 28.6.15 Naturalness of water body: The hydromorphological designation of Chicheley Brook is 'not designated artificial or heavily modified' and Broughton Brook is 'heavily modified'.
- 28.6.16 Water quality: The ecological status of Chicheley Brook Water Body is 'poor' and Broughton Brook Water Body is 'poor'.
- 28.6.17 The chemical status of Chicheley Brook Water Body is 'fail' and Broughton Brook Water Body is 'fail'.
- 28.6.18 Water quality management area: This RGO is within an area of 'high priority' within the Countryside Stewardship Water Quality Priority Areas.

Air quality

28.6.19 This RGO is not located within 200m of an AQMA or a main road (motorway or A road).

Noise regulation

28.6.20 This RGO is not located within 200m of a main road (motorway or A road).

Erosion control

- 28.6.21 One type of soil is located within this RGO:
 - Soilscape 9: Land is drained and nitrate vulnerable; potential for rapid pollutant transport; surface capping can trigger sheet erosion of fine sediment to stream network

Flood protection

- 28.6.22 This RGO does not contain areas of flood zone 2 and 3.
- 28.6.23 Surface water flooding: This RGO contains an area of 1.9ha at risk of flooding from surface water 1% risk in any year (1 in 100 year event).
- 28.6.24 This RGO is located within water body catchments with a low and high priority for Natural Flood Management.

Pollination

28.6.25 Pollinator plants: No flowering meadows are located within this RGO according to Plan:MK Priority Habitats.

Biodiversity - thriving plants and wildlife

- 28.6.26 Designated sites: No nationally or locally designated sites for biodiversity are located within this RGO.
- 28.6.27 Woodland: Woodland comprises approximately 7.5ha of this RGO which is 4.7% of the total area.
- 28.6.28 Hedgerows: A network of hedgerows with trees cross through this RGO.

Climate regulation

28.6.29 Built-up areas and infrastructure comprise approximately 2.7ha of this RGO which is 1.7% of the total area.

Cultural services

- 28.6.30 Recreation: This RGO is not located within 1km of neighbourhood green space, within 300m of local green space or within 200m of doorstep green space.
- 28.6.31 Public rights of way: Four footpaths cross through this RGO.
- 28.6.32 Interaction with nature: Footpaths in the north and south run adjacent to small pockets of broadleaved woodland.

- 28.6.33 Community space: This RGO contains no open spaces for community or cultural events.
- 28.6.34 Sense of place: This RGO is located within 'Undulating Clay Plateau' Landscape Character Type and 'North Crawley Undulating Clay Plateau' Landscape Character Area from the Milton Keynes Landscape Character Assessment (2022).
- 28.6.35 No heritage features or biodiversity designations are located within or adjacent to this RGO.
- 28.6.36 Education: No evidence NGBI is used for education in this RGO.
- 28.6.37 This RGO is located within Milton Keynes 002F LSOA. Population (mid-2020) was 1,277. Population density in this LSOA was 34.84 per sq km (mid-2020).
- 28.6.38 Index of Multiple Deprivation: This RGO is located within IMD Decile 5.

Geodiversity services

28.6.39 No evidence of supply of mineral products or other geo materials in this RGO.

28.7 Recommended Growth Option 7: North of Woburn Sands: Ecosystem services assessment

Timber

28.7.1 Approximately 2.9ha of broadleaved woodland and 4.1ha of trees/parkland are located within this RGO. Broadleaved woodland is considered to provide low to medium timber production capacity.

Fish and other marine products from wild sources

- 28.7.2 Small ponds within the grounds of Wavendon House are located within this RGO. An unnamed tertiary river and a culvert flow through this RGO.
- 28.7.3 There is currently no potential for commercial levels of fish production.

Plant-based energy

28.7.4 There is no evidence of commercial forestry in this RGO.

Cultivated crops and provision of community food

28.7.5 This RGO contains approximately 44.7ha of cultivated/disturbed land which is 44% of the total land area.

- 28.7.6 Best and most versatile land (BMV) is defined as Grade 1, 2 or 3a in the Agricultural Land Classification. For the purposes of this assessment, Grade 3 is considered to be 3a.
- 28.7.7 This RGO contains approximately 98.2ha of Grade 3 land and 3.4ha of Grade 4 land. Losing 20 hectares of best and most versatile land is considered to be a high loss of ecosystem services.
- 28.7.8 Community growing opportunities: Part of this RGO is located within 1km (15 minute walk) from food growing areas highlighted in MKCC Open Space Assessment (unpublished draft, 2023).

- 28.7.9 An unnamed tertiary river and a culvert flow through this RGO.
- 28.7.10 Surface water availability: According to the Water Resource Availability and Abstraction Reliability (Cycle 2), this RGO is located within an area of restricted water available for licensing at the Q95 flow (the flow exceeded 95% of the year).
- 28.7.11 Groundwater availability: No data.
- 28.7.12 Soil drainage: Two types of soil are located within this RGO:

- Soilscape 8: Slightly acid loamey and clayey soils with impeded drainage. Drainage: Slightly impeded drainage. Drains to: Stream network
- Soilscape 9: Lime-rich loamy and clayey soils with impeded drainage. Drainage: Slightly impeded drainage. Drains to: Stream network

Livestock

28.7.13 This RGO contains approximately 15.4ha of improved grassland suitable for supporting livestock.

Water quality

- 28.7.14 This RGO is located within Broughton Brook River Water Body Catchment.
- 28.7.15 Naturalness of water body: The hydromorphological designation of Broughton Brook is 'heavily modified'.
- 28.7.16 Water quality: The ecological status of Broughton Brook Water Body is 'poor'.
- 28.7.17 The chemical status of Broughton Brook Water Body is 'fail'.
- 28.7.18 Water quality management area: This RGO is within an area of 'high priority' within the Countryside Stewardship Water Quality Priority Areas.

Air quality

28.7.19 This RGO is not located within 200m of an AQMA or a main road (motorway or A road).

Noise regulation

28.7.20 This RGO is not located within 200m of a main road (motorway or A road).

Erosion control

- 28.7.21 Two types of soil are located within this RGO:
 - Soilscape 8: Farmed land is drained and therefore vulnerable to pollution run-off and rapid through-flow to streams; surface capping can trigger erosion of fine sediment
 - Soilscape 9: Land is drained and nitrate vulnerable; potential for rapid pollutant transport; surface capping can trigger sheet erosion of fine sediment to stream network

Flood protection

- 28.7.22 This RGO does not contain areas of flood zone 2 and 3.
- 28.7.23 Surface water flooding: This RGO contains an area of 1.5ha at risk of flooding from surface water 1% risk in any year (1 in 100 year event).

28.7.24 This RGO is located within a water body catchment with a high priority for Natural Flood Management.

Pollination

28.7.25 Pollinator plants: No flowering meadows are located within this RGO according to Plan:MK Priority Habitats.

Biodiversity - thriving plants and wildlife

- 28.7.26 Designated sites: No nationally or locally designated sites for biodiversity are located within this RGO.
- 28.7.27 Woodland: Woodland comprises approximately 7ha of this RGO which is 6.9% of the total area.
- 28.7.28 Orchards: One small traditional orchard highlighted in Plan:MK Priority Habitats is located within this RGO.
- 28.7.29 Hedgerows: A network of hedgerows with trees cross through this RGO.

Climate regulation

28.7.30 Built-up areas and infrastructure comprise approximately 7.8ha of this RGO which is 7.7% of the total area.

- 28.7.31 Recreation: This RGO is not located within 1km of neighbourhood green space, within 300m of local green space or within 200m of doorstep green space.
- 28.7.32 Public rights of way: One footpath crosses through this RGO.
- 28.7.33 Interaction with nature: The footpath that crosses through this RGO runs adjacent to small pockets of broadleaved trees.
- 28.7.34 Community space: This RGO contains no open spaces for community or cultural events.
- 28.7.35 Sense of place: This RGO contains part of Wavendon House Landscape Registered Park and Garden (Grade II listed). Wavendon House Grade II* Listed Building is located in close proximity to the boundary of this RGO.
- 28.7.36 This RGO is located within 'Clay Vales' Landscape Character Type and 'Upper Ouzel Clay Vale' Landscape Character Area from the Milton Keynes Landscape Character Assessment (2022).
- 28.7.37 Education: NGBI may be used for education within the Registered Park and Garden.

- 28.7.38 This RGO is located within Milton Keynes 024B LSOA. Population (mid-2020) was 2,916. Population density in this LSOA was 470.63 per sq km (mid-2020).
- 28.7.39 Index of Multiple Deprivation: This RGO is located within IMD Decile 8.

28.7.40 No evidence of supply of mineral products or other geo materials in this RGO.

28.8 Recommended Growth Option 8: East of Fenny Stratford: Ecosystem services assessment

Timber

28.8.1 Approximately 0.2ha of broadleaved woodland is located within this RGO. Broadleaved woodland is considered to provide low to medium timber production capacity.

Fish and other marine products from wild sources

- 28.8.2 One unnamed tertiary river flows through this RGO.
- 28.8.3 There is currently no potential for commercial levels of fish production.

Plant-based energy

28.8.4 There is no evidence of commercial forestry in this RGO.

Cultivated crops and provision of community food

- 28.8.5 This RGO contains approximately 91.7ha of cultivated/disturbed land which is 89.2% of the total land area.
- 28.8.6 Best and most versatile land (BMV) is defined as Grade 1, 2 or 3a in the Agricultural Land Classification. For the purposes of this assessment, Grade 3 is considered to be 3a.

- 28.8.7 This RGO contains approximately 73.7ha of Grade 3 land and 29.1ha of Grade 4 land. Losing 20 hectares of best and most versatile land is considered to be a high loss of ecosystem services.
- 28.8.8 Community growing opportunities: No food growing areas highlighted in MKCC Open Space Assessment (unpublished draft, 2023) are located within 1km (15 minute walk) from this RGO.

- 28.8.9 One unnamed tertiary river flows through this RGO.
- 28.8.10 Surface water availability: According to the Water Resource Availability and Abstraction Reliability (Cycle 2), this RGO is located within an area of water available for licensing at the Q95 flow (the flow exceeded 95% of the year).
- 28.8.11 Groundwater availability: No data.
- 28.8.12 Soil drainage: One type of soil is located within this RGO:
 - Soilscape 8: Slightly acid loamey and clayey soils with impeded drainage. Drainage: Slightly impeded drainage. Drains to: Stream network

Livestock

28.8.13 This RGO contains approximately 6.6ha of improved grassland suitable for supporting livestock.

Water quality

- 28.8.14 This RGO is located within Ouzel US Caldecote Mill River Water Body Catchment.
- 28.8.15 Naturalness of water body: The hydromorphological designation of Ouzel US Caldecote Mill is 'heavily modified'.
- 28.8.16 Water quality: The ecological status of Ouzel US Caldecote Mill Water Body is 'moderate'.
- 28.8.17 The chemical status of Ouzel US Caldecote Mill Water Body is 'fail'.
- 28.8.18 Water quality management area: This RGO is within an area of 'high priority' within the Countryside Stewardship Water Quality Priority Areas.

Air quality

- 28.8.19 The A5 road runs through the centre of this RGO. The A5 road is lined with a hedgerow and trees on both sides.
- 28.8.20 Also located within 200m of the A4146 road. The eastern side of the A4146 road is lined with a hedgerow and trees.

Noise regulation

28.8.21 The A5 road runs through centre of this RGO. The A5 road is lined with a hedgerow and trees on both sides. The northern side of the A5 road has better screening than the south.

Erosion control

- 28.8.22 One type of soil is located within this RGO:
 - Soilscape 8: Farmed land is drained and therefore vulnerable to pollution run-off and rapid through-flow to streams; surface capping can trigger erosion of fine sediment

Flood protection

- 28.8.23 This RGO does not contain areas of flood zone 2 and 3.
- 28.8.24 Surface water flooding: This RGO contains an area of 2ha at risk of flooding from surface water 1% risk in any year (1 in 100 year event).
- 28.8.25 This RGO is located within a water body catchment with a medium priority for Natural Flood Management.

Pollination

28.8.26 Pollinator plants: No flowering meadows are located within this RGO according to Plan:MK Priority Habitats.

Biodiversity - thriving plants and wildlife

- 28.8.27 Designated sites: No nationally or locally designated sites for biodiversity are located within this RGO.
- 28.8.28 Woodland: Woodland comprises approximately 0.2ha of this RGO which is 0.2% of the total area.
- 28.8.29 Hedgerows: A network of hedgerows with trees cross through this RGO.

Climate regulation

28.8.30 Built-up areas and infrastructure comprise approximately 3ha of this RGO which is 2.9% of the total area.

- 28.8.31 Recreation: A small area in the west of this RGO is located within 1km from an area of neighbourhood green space (Waterhall Park to the west in Bletchley).
- 28.8.32 Public rights of way: One bridleway crosses through this RGO.

- 28.8.33 Interaction with nature: No accessible woodlands are located within this RGO.
- 28.8.34 Community space: This RGO contains no open spaces for community or cultural events.
- 28.8.35 Sense of place: No biodiversity designations are located within or adjacent to this RGO. A scheduled monument named 'Roman town of Magiovinium and Roman Fort' is located adjacent to the west of this RGO on the west side of the A4146 road.
- 28.8.36 This RGO is located within 'Clay Vales' Landscape Character Type and 'Upper Ouzel Clay Vale' Landscape Character Area from the Milton Keynes Landscape Character Assessment (2022).
- 28.8.37 Education: No evidence NGBI is used for education in this RGO.
- 28.8.38 This RGO is located within Milton Keynes 024A LSOA. Population (mid-2020) was 1,254. Population density in this LSOA was 97.06 per sq km (mid-2020).
- 28.8.39 Index of Multiple Deprivation: This RGO is located within IMD Decile 6.

28.8.40 No evidence of supply of mineral products or other geo materials in this RGO.

28.9 Potential Intensification Area: Central Milton Keynes: Ecosystem services assessment

Timber

28.9.1 Approximately 9.4ha of broadleaved woodland, 8.3ha of trees/parkland and 0.1ha of mixed woodland are located within this PIA. Broadleaved woodland is considered to provide low to medium timber production capacity.

Fish and other marine products from wild sources

- 28.9.2 One unnamed tertiary river flows slightly inside the boundary of this PIA from Campbell Park. Small ponds are located at Grafton Park.
- 28.9.3 There is currently no potential for commercial levels of fish production.

Plant-based energy

28.9.4 There is no evidence of commercial forestry in this PIA.

Cultivated crops and provision of community food

- 28.9.5 This PIA does not contain any cultivated/disturbed land.
- 28.9.6 Best and most versatile land (BMV) is defined as Grade 1, 2 or 3a in the Agricultural Land Classification. For the purposes of this assessment, Grade 3 is considered to be 3a.

- 28.9.7 This PIA contains approximately 201.4ha of Grade 3 land and 68.9ha of Grade 4 land. Losing 20 hectares of best and most versatile land is considered to be a high loss of ecosystem services.
- 28.9.8 Community growing opportunities: This PIA does not contain any food growing areas but is partially located within 1km (15 minute walk) from food growing areas highlighted in MKCC Open Space Assessment (unpublished draft, 2023).

- 28.9.9 One unnamed tertiary river flows slightly inside the boundary of this PIA from Campbell Park.
- 28.9.10 Surface water availability: According to the Water Resource Availability and Abstraction Reliability (Cycle 2), approximately one third of this PIA is located within an area of water available for licensing and two thirds are located in an area of water not available for licensing at the Q95 flow (the flow exceeded 95% of the year).
- 28.9.11 Groundwater availability: No data.
- 28.9.12 Soil drainage: One type of soil is located within this PIA:

 Soilscape 9: Lime-rich loamy and clayey soils with impeded drainage. Drainage: Slightly impeded drainage. Drains to: Stream network

Livestock

28.9.13 This PIA contains no areas of improved grassland suitable for supporting livestock.

Water quality

- 28.9.14 This PIA is located within Loughton Brook and Ouzel US Caldecote Mill River Water Body Catchment.
- 28.9.15 Naturalness of water body: The hydromorphological designation of Loughton Brook is 'heavily modified' and Ouzel US Caldecote Mill is 'heavily modified'.
- 28.9.16 Water quality: The ecological status of Loughton Brook Water Body is 'moderate' and Ouzel US Caldecote Mill Water Body is 'moderate'.
- 28.9.17 The chemical status of Loughton Brook Water Body is 'fail' and Ouzel US Caldecote Mill Water Body is 'fail'.
- 28.9.18 Water quality management area: This PIA is within an area of 'high priority' within the Countryside Stewardship Water Quality Priority Areas.

Air quality

- 28.9.19 The A5 road and the West Coast Main Line run adjacent to the south western boundary of this PIA. The A509 road runs adjacent to the northern boundary.
- 28.9.20 Both sides of the A5 road are lined with an embankment planted with grassland and trees. Wide grass verges and thick wooded corridors line both sides of the A509.

Noise regulation

28.9.21 Thick wooded corridors line both sides of the A5 road. Wide grass verges and thick wooded corridors line both sides of the A509.

Erosion control

- 28.9.22 One type of soil is located within this PIA:
 - Soilscape 9: Land is drained and nitrate vulnerable; potential for rapid pollutant transport; surface capping can trigger sheet erosion of fine sediment to stream network

Flood protection

28.9.23 This PIA does not contain areas of flood zone 2 and 3.

- 28.9.24 Surface water flooding: This PIA contains an area of 9.12ha at risk of flooding from surface water 1% risk in any year (1 in 100 year event).
- 28.9.25 Approximately two thirds of this PIA is located within a water body catchment with a high priority and one third is located within a water body catchment with a medium priority for Natural Flood Management.

Pollination

28.9.26 Pollinator plants: No flowering meadows are located within this PIA according to Plan:MK Priority Habitats.

Biodiversity - thriving plants and wildlife

- 28.9.27 Designated sites: No nationally or locally designated sites for biodiversity are located within this PIA.
- 28.9.28 Woodland: Woodland and trees comprises approximately 17.8ha of this PIA which is 6.6% of the total area.
- 28.9.29 Hedgerows: Urban hedgerows are present across this PIA.

Climate regulation

28.9.30 Built-up areas and infrastructure comprise approximately 174.7ha of this PIA which is 64.7% of the total area.

- 28.9.31 Recreation: The following open spaces highlighted in MKCC Open Space Assessment (unpublished draft, 2023) are located within this PIA:
 - Pocket Parks
 - Amenity Green Spaces
 - Civic Spaces and Formal Gardens
 - Local Parks
- 28.9.32 Public rights of way: Urban footpaths are found across this PIA adjacent to the road network. Redways and the National Cycle Network cross through this PIA.
- 28.9.33 Interaction with nature: Urban footpaths cross through and run adjacent to small areas of woodland in this PIA.
- 28.9.34 Community space: See recreation above.
- 28.9.35 Sense of place: This PIA is located to the north east of Loughton Conservation Area.
- 28.9.36 This PIA is located directly adjacent to Campbell Park (Grade II) Registered Park and Garden.
- 28.9.37 This PIA contains a Scheduled Monument named 'Secklow Hundred mound: a moot at the junction of North Row and North Ninth Street'.

- 28.9.38 Education: The NGBI assets highlighted in MKCC Open Space Assessment (unpublished draft, 2023) located within this PIA may be used for educational purposes.
- 28.9.39 Population density: Five LSOAs are located within this PIA:
 - Milton Keynes 014F: Population: 1,710 (mid-2020).
 Population density: 1,296.44 per sq km (mid-2020)
 - Milton Keynes 014E: Population: 1,960 (mid-2020).
 Population density: 1850.8 per sq km (mid-2020)
 - Milton Keynes 014D: Population: 2,263 (mid-2020).
 Population density: 906.29 per sq km (mid-2020)
 - Milton Keynes 016A: Population: 1,448 (mid-2020).
 Population density: 2092.49 per sq km (mid-2020)
 - Milton Keynes 014B: Population: 2,217 (mid-2020).
 Population density: 5143.85 per sq km (mid-2020)
- 28.9.40 Index of Multiple Deprivation: The IMD Deciles for each of the five LSOAs located within this PIA are as follows:
 - Milton Keynes 014F: IMD Decile 6
 - Milton Keynes 014E: IMD Decile 2
 - Milton Keynes 014D: IMD Decile 5
 - Milton Keynes 016A: IMD Decile 5
 - Milton Keynes 014B: IMD Decile 3

28.9.41 No evidence of supply of mineral products or other geo materials in this RGO.

28.10 Potential Intensification Area: Central Bletchley: Ecosystem services assessment

Timber

28.10.1 Approximately 0.5ha of broadleaved woodland and 0.5ha of trees/parkland are located within this PIA. Broadleaved woodland is considered to provide low to medium timber production capacity.

Fish and other marine products from wild sources

- 28.10.2 No watercourses flow through this PIA.
- 28.10.3 There is currently no potential for commercial levels of fish production.

Plant-based energy

28.10.4 There is no evidence of commercial forestry in this PIA.

Cultivated crops and provision of community food

- 28.10.5 This PIA does not contain any cultivated/disturbed land.
- 28.10.6 The ALC for this location is classified as 'urban'.
- 28.10.7 Community growing opportunities: This PIA does not contain any food growing areas but is wholly located within 1km (15 minute walk) from food growing areas highlighted in MKCC Open Space Assessment (unpublished draft, 2023).

Water supply

- 28.10.8 No watercourses flow through this PIA.
- 28.10.9 Surface water availability: According to the Water Resource Availability and Abstraction Reliability (Cycle 2), this PIA is located in an area of water available for licensing at the Q95 flow (the flow exceeded 95% of the year).
- 28.10.10 Groundwater availability: No data.
- 28.10.11 Soil drainage: Two types of soils are located within this PIA:
 - Soilscape 8: Slightly acid loamey and clayey soils with impeded drainage. Drainage: Slightly impeded drainage. Drains to: Stream network
 - Soilscape 9: Lime-rich loamy and clayey soils with impeded drainage. Drainage: Slightly impeded drainage. Drains to: Stream network

Livestock

28.10.12 This PIA contains no areas of improved grassland suitable for supporting livestock.

Water quality

- 28.10.13 This PIA is located within Newton Longville Brook and Ouzel US Caldecote Mill River Water Body Catchment.
- 28.10.14 Naturalness of water body: The hydromorphological designation of Newton Longville Brook is 'heavily modified' and Ouzel US Caldecote Mill is 'heavily modified'.
- 28.10.15 Water quality: The ecological status of Newton Longville Brook Water Body is 'poor' and Ouzel US Caldecote Mill Water Body is 'moderate'.
- 28.10.16 The chemical status of Newton Longville Brook Water Body is 'fail' and Ouzel US Caldecote Mill Water Body is 'fail'.
- 28.10.17 Water quality management area: This PIA is within an area of 'high priority' within the Countryside Stewardship Water Quality Priority Areas.

Air quality

- 28.10.18 This PIA is not located within an AQMA or within 200m of a main road (motorway or A road).
- 28.10.19 The West Coast Main Line and East West Rail cross through the western area of this PIA.

28.10.20 The B4034 road crosses through this PIA. Parts of the B4034 road are lined with roadside grass verges and trees.

Noise regulation

28.10.21 Parts of the B4034 road are lined with roadside grass verges and trees.

Erosion control

- 28.10.22 Two types of soil are located within this PIA:
 - Soilscape 8: Farmed land is drained and therefore vulnerable to pollution run-off and rapid through-flow to streams; surface capping can trigger erosion of fine sediment
 - Soilscape 9: Land is drained and nitrate vulnerable; potential for rapid pollutant transport; surface capping can trigger sheet erosion of fine sediment to stream network

Flood protection

- 28.10.23 This PIA does not contain areas of flood zone 2 and 3.
- 28.10.24 Surface water flooding: This PIA contains an area of 2ha at risk of flooding from surface water 1% risk in any year (1 in 100 year event).

28.10.25 Most of this PIA is located within a water body catchment with a high priority for Natural Flood Management.

Pollination

28.10.26 Pollinator plants: No flowering meadows are located within this PIA according to Plan:MK Priority Habitats.

Biodiversity - thriving plants and wildlife

- 28.10.27 Designated sites: No nationally or locally designated sites for biodiversity are located within this PIA.
- 28.10.28 Woodland: Woodland and trees comprises approximately 1.1ha of this PIA which is 2.9% of the total area.
- 28.10.29 Hedgerows: A small number of urban hedgerows are present in this PIA.

Climate regulation

28.10.30 Built-up areas and infrastructure comprise approximately 25.5ha of this PIA which is 69% of the total area.

- 28.10.31 Recreation: Part of a small area of amenity green space highlighted in MKCC Open Space Assessment (unpublished draft, 2023) is located within this PIA.
- 28.10.32 Small areas of this PIA in the south are located within 200m from doorstep green spaces and within 300m from local natural green spaces. Most of this PIA is located within 1km from neighbourhood green spaces.
- 28.10.33 Public rights of way: Urban footpaths are located in this PIA adjacent to the road network. Redways and the National Cycle Network cross through this PIA.
- 28.10.34 Interaction with nature: This PIA contains no accessible woodlands.
- 28.10.35 Community space: See recreation above.
- 28.10.36 Sense of place: This PIA is located to the east of Bletchley Conservation Area which is located to the west of the West Coast Main Line.
- 28.10.37 Education: No evidence NGBI is used for education in this PIA.
- 28.10.38 Population density: Four LSOAs are located within this PIA:

- Milton Keynes 030B: Population: 2,030 (mid-2020).
 Population density: 4,951.22 per sq km
- Milton Keynes 031B: Population: 1,708 (mid-2020).
 Population density: 3,278.31 per sq km
- Milton Keynes 023F: Population: 1,713 (mid-2020).
 Population density: 759.31 per sq km
- Milton Keynes 030C: Population: 2,347 (mid-2020).
 Population density: 4,060.55 per sq km
- 28.10.39 Index of Multiple Deprivation: The IMD Deciles for each of the four LSOAs located within this PIA are as follows:
 - Milton Keynes 030B: IMD Decile 3
 - Milton Keynes 031B: IMD Decile 8
 - Milton Keynes 023F: IMD Decile 2
 - Milton Keynes 030C: IMD Decile 4

28.10.40 No evidence of supply of mineral products or other geo materials in this RGO.

Habitats Regulations Assessments
Sustainability Appraisals
Strategic Environmental Assessments
Landscape Character Assessments
Landscape and Visual Impact Assessments
Green Belt Reviews
Expert Witness
Ecological Impact Assessments
Habitat and Ecology Surveys



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