



THE
ENVIRONMENT
PARTNERSHIP



BIODIVERSITY NET GAIN STUDY
MANCHESTER CITY COUNCIL
ASSESSMENT OF NEED FOR OFF-SITE BIODIVERSITY
UNITS
DECEMBER 2023

TEP
Genesis Centre
Birchwood Science Park
Warrington
WA3 7BH

Tel: 01925 844004
Email: tep@tep.uk.com
www.tep.uk.com

Offices in Warrington, Market Harborough, Gateshead, London and Cornwall

Document Title	Assessment of Need for Off-Site Biodiversity Units
Prepared for	Manchester City Council
Prepared by	TEP - Warrington
Document Ref	9998.017

Author	Francis Hesketh
Date	December 2023
Checked	Amy Russell
Approved	Francis Hesketh

Amendment History					
Version	Date	Modified by	Check / Approved by	Reason(s) issue	Status
1.0	13/9/23	AR	FH	First Draft for client comment (MCC ownership information awaited)	Draft
2.0	20/10/23	FH	FH	Second Draft for Steering Group comment	Draft
3.0	22/12/23	FH/AR	FH	Includes Steering Group comments and addition of MediPark Site	Final

CONTENTS	PAGE
Executive Summary	1
1.0 Aim and Objectives	3
2.0 Scope.....	5
3.0 Methodology.....	8
4.0 Results and analysis	22
5.0 Summary and Conclusions.....	26
6.0 Glossary.....	31

TABLES	PAGE
Table 1 Number and Area of Sites in Manchester's development pipeline	6
Table 2 Comparison of Biodiversity Units estimated by this study method with field survey data.....	11
Table 3 Modelling of baseline value of Jackson's Brickworks site	11
Table 4 Habitat Types across sites in Manchester's development pipeline	12
Table 5 Development Density set out in Places for Everyone	13
Table 6 Off-site Units by development type.....	22
Table 7 Location of developments and their resultant requirement for off-site BNG	23
Table 8 Pipeline of need for offsite BNG	25

FIGURES	PAGE
Figure 1: Example of Natural England Urban Habitat Layer	9
Figure 2 Distribution of predicted demand for off-site BNG	28

APPENDICES

APPENDIX A:	Master List of Study Sites
APPENDIX B:	Transposition from Urban Habitat Layer to UKHabs
APPENDIX C:	Mitigation Hierarchy for urban habitats in Manchester

DRAWINGS

Drawing 1: Development Sites included in this study

Executive Summary

1. This study focuses on the City of Manchester's future development plans from 2023/4 to 2038/9. It covers 211 sites spanning 690 hectares with a baseline biodiversity value of approximately 978 biodiversity units, measured using Defra metric 4.0. Baseline biodiversity intensity (1.41 biodiversity units per hectare) is low, indicating the inner urban nature of the city and the fact the City has sought to concentrate development on sites of relatively low environmental value.
2. The study estimates the need for off-site mandatory Biodiversity Net Gain arising from development schemes for which planning applications are made after January 2024.
3. The list of 211 development sites in this study is dynamic due to granting of planning permissions and potential future additions to the pipeline.
4. Out of the 211 sites, 11 have no baseline biodiversity value.
5. 123 are expected to have no need for off-site biodiversity provision because they:
 - Have no baseline biodiversity value
 - Are expected to meet the mandatory 10% Biodiversity Net Gain (BNG) requirement on-site through habitat creation measures, or
 - Benefit from existing permission, thus avoiding mandatory BNG.
6. 55 sites require an off-site provision of less than 1 biodiversity unit per site, and 33 sites need more than 1 unit per site off-site.
7. Policy drivers like the NPPF mitigation hierarchy, the City's tree replacement policy, and upcoming changes to SuDS adoption policy may increase the requirement to retain or provide habitats on site, thereby reducing the need for off-site BNG provision. An Urban Green Factor policy and the way the City drafts its own BNG policy in the Local Plan would influence developers to maximise on-site BNG.
8. The study makes a "central estimate" that about 172 mandatory off-site biodiversity units will be required during the Local Plan period, with the majority (131 units) stemming from development in the north of the city.
9. Housing development accounts for the most demand (138 units), followed by commercial development (29 units) and resubmitted permitted developments (5 units).
10. The estimated range for mandatory off-site BNG demand in the Local Plan period is between 130 and 295 units, depending on various factors like developer behaviour, field surveys, and policy changes. TEP expects the actual need for off-site units to fall in the lower third of this range.
11. About 50 units are likely to be required in the first 5 years of the Local Plan period.
12. Manchester City Council has significant freehold landholdings in the development pipeline. It is estimated that development on Council-owned land will generate a need for 135 biodiversity units in the Local Plan period i.e. 78% of the total BNG need arises from developments in which the City Council has an interest. Partner bodies in the public sector, such as NHS Trusts, may be unable, for operational reasons, to

provide on-site BNG and would also benefit from the City Council being able to assist in the supply of off-site biodiversity units.

13. While mandatory BNG encourages on site habitat retention and enhancement, it will not drive significant on-site urban greening in Manchester due to the low baseline values and limited incentives in the statutory metric for creating urban habitats like raingardens, civic trees, and living walls.

1.0 Aim and Objectives

Aim

- 1.1 The aim of this study is to identify the number of biodiversity units (BU's) that are likely to be needed to provide 10% Biodiversity Net Gain (BNG) as a result of the development expected to take place in Manchester City over the period 2023/24-2038/9.
- 1.2 Specifically the study aims to identify the "need" for off-site BU's that will not be delivered through on-site net gain measures implemented alongside development.

Context

- 1.3 The study will provide evidence that will be used to underpin policies on Biodiversity Net Gain within Manchester's Local Plan.
- 1.4 Manchester has the greatest number of development sites within Greater Manchester (GM) and will be delivering the largest number of homes of any individual GM authority during the Places for Everyone (PfE) plan period 2023/4-38/9. This development will be shaped by policies within both PfE, once adopted, and Manchester's Local Plan 2024/5-2039/40, once prepared.
- 1.5 Many of the development sites within Manchester are brownfield; some have begun to re-naturalise, whilst others have little or no biodiversity value. Manchester City Council (MCC) needs to understand how many biodiversity units are likely to be generated because of future development; how many, typically, will be able to be accommodated on site and how many will need to be provided off site through offsetting or habitat banking.
- 1.6 As part of a Greater Manchester-wide commission, Greater Manchester Ecology Unit (GMEU) carried out a BNG Need and Supply study in 2022/3¹. This examined 38 large development sites in Manchester City, over 0.5 hectares, and drew preliminary conclusions about the need for biodiversity units.
- 1.7 However, the City Council requires an updated and more granular assessment of need for the following reasons:
 - Manchester typically has a significant proportion of sites smaller than 0.5ha (78%) and smaller than 0.2ha (60%), which were not captured by GMEU.
 - Natural England has now made available an Urban Habitat database which provides more detailed information on baseline habitats than was available to GMEU.
 - The GM-wide assumptions on development density and footprint do not apply to inner urban schemes where it is possible to develop at much higher densities and thus retain more habitats on site.

Objectives

- 1.8 The study has the following specific objectives:

¹ Richardson, D. and Bolton, S. (2023) Biodiversity Net Gain in Greater Manchester - Assessment of off-site need for biodiversity units and supply - District Report - Manchester

- 1.9 To understand how many and, where possible, which development sites have no biodiversity value and would therefore not require a BNG uplift of 10%
- 1.10 To understand how many and, where possible, which sites will require 10% BNG.
- 1.11 To identify how many biodiversity units may need to be provided on offset sites or via Habitat Banks.
- 1.12 To help understand what, if any, form of BNG could realistically be provided on small sites below 0.2ha, and confirm the site size below which it would not be feasible to expect on site BNG to be applied, subject to the requirements of any relevant Regulations, still to be introduced.
- 1.13 To differentiate the need arising from housing and commercial developments.
- 1.14 To differentiate the need arising from development sites in public and private ownership, specifically the demand generated by MCC-led developments. This will inform a decision about whether to create a local habitat bank to provide biodiversity units specifically for such developments.

2.0 Scope

- 2.1 The need for mandatory off-site BNG in the Local Plan period to 2038/9 is expected to arise from the following main sources.

Housing Developments

- 2.2 Manchester's planning database lists "Capacity Sites" which includes all sites the City expects to deliver for housing but which do not yet have a planning permission. The database includes information on:

- Site Size and red line boundary
- Anticipated number of dwellings
- Estimated commencement year and delivery pipeline, in five year bands from 2023 to 2038
- Development density (dwellings per hectare)

- 2.3 Housing developments that already had a planning permission are excluded from the scope of this study as they would not be subject to mandatory BNG. However, it should be noted that some capacity sites have gained permission in 2023 and were analysed in this study. The off-site need estimated from such sites was subtracted from the final estimate provided in this report.

Office Developments

- 2.4 Manchester's planning database includes sites allocated for office development which do not yet have planning permission. Some information on site size, and development footprint is available, although the data is not as granular as for housing sites.

Industrial Developments

- 2.5 The planning database has a level of detail similar to Office Developments. At the time of writing, Manchester has a full pipeline of industrial development sites with planning permission, so there are no major industrial developments known to be making a planning application in the foreseeable future.

Resubmitted Schemes

- 2.6 If a scheme benefits from prior planning permission, but the permission lapses prior to construction, then a new planning application is required. Applications after January 2024 will fall into the scope of mandatory BNG. Manchester's development management team estimate that about 25% of permitted schemes fall into this category.
- 2.7 The planning database has details of housing, office and industrial sites with permission but where construction has not started. Since it is not possible to know which schemes will be resubmitted, a proportionate approach was taken to estimating the BNG need from these schemes. This is described in chapter 3 (Methodology).

Combined "Need" Sites

- 2.8 Table 1 summarises the number and area of sites in the above category which collectively summarises Manchester's development pipeline in the period 2023/24 to 20238/9.
- 2.9 The table also shows the number of sites where the City Council is the majority freehold owner.

Table 1 Number and Area of Sites in Manchester's development pipeline

Development Type	Total Number of sites	Total Area (hectares)	Total number in MCC control	Total area in MCC control
Housing over 0.5 hectares	84	367.02	65	323.76
Housing under 0.5 hectares	104	25.68	49	13.96
Office (inc. MediPark)	23	277.13	21	271.53
Industrial	0	0	0	0
Resubmitted Schemes with planning permission	Not Known	14.3 hectares (estimate)	Not knowable	Not knowable
Total	211	690	135	609.25

Exclusions

- 2.10 The following types of development are excluded from the scope of this assessment.

Post-2038/9 development

- 2.11 This study focuses on mandatory BNG need arising from development in the local plan period i.e. 2023/4 to 2038/9. The planning database includes sites that are not expected to be developed until later, but these are not included.

Development with permission and/or under construction

- 2.12 This study focuses on mandatory BNG and thus excludes BNG commitments made by developments that already have consent, although as noted above the study assumes that 25% of such developments will not be built in their anticipated form and the developer will make a new planning application which will be subject to mandatory BNG.

- 2.13 Note that some of the sites within the scope of the study have gained planning permission during 2023, some during the period of this study. Data on their BNG requirements is included in the report, but their off-site BNG need is excluded from the conclusions, as is explained in the methodology and results sections later.

Nationally Significant Infrastructure Projects and Northern Powerhouse Rail

- 2.14 These are excluded because the timescale for their implementation is not known and the project promoters have ultimate responsibility for securing and enforcing BNG. The City Council will work with the project promoters to ensure any contributions for off-scheme BNG deliver habitat enhancement in the City.

Windfall Sites and Planning Applications for redevelopment within existing built footprint

- 2.15 The number, location, footprint and BNG requirements of windfalls is unknowable, but given their small size and the fact they are mostly likely to occur on previously-developed land, BNG need is likely to be very small.

Householder Development

- 2.16 This is exempted from the statutory need for BNG.

Minor developments in parks and open spaces

- 2.17 It is assumed that any development carried out by the City to improve its open spaces will deliver 10% BNG on site, and not generate a demand for off-site units.

Local infrastructure works

- 2.18 Various statutory undertakers operating in the water, waste, rail, energy, telecomms and highways sectors carry out works, often of a temporary nature that may involve loss and reinstatement of habitats, outside the Town and Country Planning system and/or outside the scope of the Environment Act's BNG provisions.
- 2.19 It is expected that regulations will exempt any projects that reinstate habitats within 2 years so most projects may be exempt. Some of these undertakers (e.g. United Utilities and Network Rail) have BNG policies that will result in off-site BU's being needed, but it is not possible to accurately estimate the overall need for BU's within Manchester City Council from these works as:
- The number of units is unpredictable, albeit unlikely to be significant as the works will tend to have a very limited footprint, usually less than 0.5 hectares.
 - MCC will not be able to control or direct the undertakers about where these off-site units may be created.

3.0 Methodology

- 3.1 The method for estimation of the need for off-site biodiversity units on each site has the following steps.
- 3.2 Step 1: Estimate Baseline Biodiversity Value of the site [Value A]
- 3.3 Step 2: Using Value A and applying the mitigation hierarchy, estimate the likely loss of biodiversity units for the proposed development, and add a factor to account for 10% mandatory net gain. [Value B]
- 3.4 Step 3: Estimate the likely biodiversity value within the proposed development footprint i.e. the on-site biodiversity units [Value C]
- 3.5 Step 4: Estimate the potential number of biodiversity units that could be generated from enhancement of any habitats retained on site beyond the development footprint [Value D].
- 3.6 Step 5: Calculate the off-site biodiversity requirement arising from an individual development based on the following formula:

$$B - C - D$$

- 3.7 Step 6: Aggregate all the individual development requirements and provide a breakdown of the off-site requirements in terms of:
 - The development type that generates the requirement;
 - Location within the City;
 - Broad habitat types;
 - Timeframe within the Local Plan period;
 - Whether the need arises from a MCC or partner development; or from private development;
- 3.8 Each step has its own methodological challenges and limitations, as described below.

Step 1: Estimate Baseline Biodiversity Value of the Site - Value "A"

- 3.9 Site boundaries are taken from Manchester City's planning database, which shows proposed housing sites selected via the SHLAA process and office/industrial allocations. Drawing 1 (appended) shows all these, referred to as "Capacity" sites, including their location within the city (North, Central, South, Wythenshawe).
- 3.10 Appendix A contains the master list of all the 210 sites included in the study, together with details on size, development type, location, development timeframe.
- 3.11 The baseline habitat type and condition is estimated using Natural England's Urban Habitat Layer (UHL), a dataset that is not yet nationally or publicly available, but was made available to the City Council for this study (see Figure 1).
- 3.12 The UHL was clipped in ArcGIS Pro to the allocation boundaries and its habitat names were transposed to the UKHab categories used in Biodiversity Metric 4.0 on the basis of checking against aerial photographs and actual ecological survey data sourced from the planning portal.

- 3.13 Appendix B shows the transposition of Natural England's UHL habitat types to UKHab types and condition categories used in metric 4.0. This transposition is specific to Manchester's development sites and should not be used in other circumstances; for example NE has a UHL "Parkland - Park Wood Pasture" which when ground-truthed against the development sites encountered in Manchester clearly relates to planted or semi-natural regenerated woodland and not to classic wood pasture associated with historic landscapes. Thus it was transposed to the UKHab type "Other woodland; mixed".
- 3.14 As a default, Habitat Condition was assumed to be poor for all habitats encountered in the development sites, consistent with the GMEU approach.
- 3.15 However, an alternative model was also run where certain habitats were assumed to be in moderate condition, in order to guard against an over-pessimistic assessment of baseline biodiversity - the alternative model is also shown at Appendix B. For example NE habitat type "Undifferentiated Grassland" is categorised as UKHab "Modified Grassland" and for the alternate run of the baseline habitat value model, it is assumed to be in moderate condition.



Figure 1: Example of Natural England Urban Habitat Layer

- 3.16 The baseline value for each site was calculated using the formulae used in Metric 4.0 i.e:
- 3.17 $\sum (\text{Area Habitat Type} \times \text{Habitat Distinctiveness Score} \times \text{Habitat Condition Score})$

- 3.18 All development sites were deemed not to fall into Areas of Strategic Significance, hence no multiplier was applied in this regard. Whilst this may understate the actual habitat value, it is of no consequence for this study because the on-site post-development habitats would be subject to the same Strategic Significance multiplier i.e. the calculation of off-site BNG requirement is unaffected by the scheme's location.
- 3.19 Where sites are for mixed uses or where one development type is nested within a wider proposal for a different type of development, the sites are listed in Appendix A based on the following hierarchy:
- 3.20 Housing Sites take precedence over office sites which take precedence over industrial sites. Thus where a mixed site includes a housing site, this is analysed as such, with the residual area analysed as an office site.
- 3.21 Appendix A includes the baseline habitats and biodiversity values for each site.

Limitations for Step 1

- 3.22 The Natural England UHL is generated from remote sensing and assumptions were made by an experienced urban ecologist about the transposition of its habitat typology to UKHab types encountered in Manchester, based on aerial photography, site knowledge and comparison with ecological assessments available on the planning portal.
- 3.23 The Natural England UHL when transposed to UKHab baseline habitats treats urban trees as 2D habitats with an exclusive area, whereas the biodiversity metric allows urban trees to be measured as 3D habitats whose canopy area can oversail (and therefore double-measure) ground-level habitats. In other words, an urban tree over mown grass is accounted for in the metric as $n \text{ m}^2$ urban tree and $n \text{ m}^2$ modified grassland.
- 3.24 For urban trees that are lost to development, this method does not account for their 3D nature i.e. the underlying habitat is not accounted for in the baseline site value. However, the method also means that the 3D nature of replacement urban trees is equally not factored in, as the newly-created underlying habitat is not accounted for. Given that there is relatively little anticipated net tree loss, this underestimate is not significant for the purpose of this study.
- 3.25 The transposition from Natural England UHL to UKHab compares well (within 10%) to another mass-site habitat database used by TEP (HabiTEP).
- 3.26 When the results generated from the NE UHL were compared to site-specific phase 1 habitat data and BNG metrics applied to live planning applications in 2023, it was found to be reasonably accurate with the habitats assumed to be in poor condition-see Table 2.

Table 2 Comparison of Biodiversity Units estimated by this study method with field survey data

Planning Application	Red Bank (Application Reference 136812)	Rodney Street (Application reference 134154)
Baseline Estimated from Natural England UHL, transposed by TEP	32.86	1.71
Baseline Estimated by Scheme ecologists from field survey	32.6 units	2.04 units

- 3.27 However, in limited circumstances where the development footprint is on sites that are fully vegetated with mature habitats, better correlation between predicted and actual results occurs using the alternate model of some moderate condition habitats (see 3.13-15 above). Jackson's Brickworks is an example of such a site - see Table 3.

Table 3 Modelling of baseline value of Jackson's Brickworks site

Scenario	Number of Baseline Habitat Units
Using NE UHL with all habitats in poor condition	44.33
Using NE UHL with some habitats in moderate conditions	88.59
Actual Assessment from site ecological report	82.15

- 3.28 The decision about which baseline value to use is taken at Step 2.
- 3.29 The analysis is limited to habitat areas, and excludes linear features i.e. hedgerows and rivers. This is not a significant limitation because there are very few hedgerows or rivers and canals in Manchester's proposed development sites.
- 3.30 However, the watercourse metric requires that even if there is no adverse effect, any watercourse or associated riparian zone within the planning application boundary should be factored into the 10% net gain calculation. Depending on the width of the watercourse, the riparian zone may extend 10 metres from the bank.

- 3.31 Where rivers or canals are encountered, it can be assumed that they would not be culverted or significantly adversely affected; indeed it is more likely that enhancement of the river environment would be secured through the watercourse metric requiring enhancement and through planning conditions, given the weight of Manchester's river valley policy. However, it is possible that a small number of off-site watercourse units may be required for development adjacent canals. It is difficult to calculate this, but the topic is addressed in the conclusions.
- 3.32 Table 4 lists the habitat types, their estimated area and estimated biodiversity units across all the study sites, excluding MediPark.

Table 4 Habitat Types across sites in Manchester's development pipeline

Habitat Type	Estimated Area in hectares	Estimated Biodiversity Units (based on poor baseline condition)
Allotments	0.01	0.02
Developed land; sealed surface	356.56	0
Introduced shrub	1.07	2.14
Mixed scrub	28.26	113.06
Modified grassland	130.69	261.38
Other green roof	0.72	1.43
Other woodland; mixed	69.87	279.47
Reedbeds	3.71	22.23
Ruderal/Ephemeral	17	68.01
Unvegetated garden	6.24	0
Urban tree	53.76	215.03
Vegetated garden	1.95	3.91

Step 2: Estimate likely loss of biodiversity for development and the resultant 10% net gain requirement - Value "B"

3.33 For future housing schemes, the development footprint can be calculated by reference to the estimated number of dwellings and the development density required by policy set out in Places for Everyone - see Table 5. Much of the development pipeline will be delivered at high densities, typically more than standard suburban greenfield densities (over 120 dwellings per hectare).

3.34 Table 5 lists the minimum net residential density assumed in the study.

Table 5 Development Density set out in Places for Everyone

Location	Minimum net residential density (dwellings per ha) Within location	Minimum net residential density Within 400m of location	Minimum net residential density Within 800m of location
City Centre	200	120	70
Designated town centres	120	70	50
Other designated centres	70	50	35
All other locations	35	35	35

3.35 The biodiversity mitigation hierarchy would apply to scheme design, as a matter of policy and legislation. This means there would be a presumption to retain semi-natural grasslands, scrub, trees and woodlands as far as possible, focussing development on previously-developed land, bare ground and amenity grassland. TEP scripted a programme which allocated the development footprint to habitats in rank order (see Appendix C).

3.36 For many schemes in this study, the development footprint will be much less than 90% of the allocation area. For example, Lower Medlock Valley has an overall allocation area of 17.8 hectares and is allocated for 700 houses. At a density of 120 dph, the development footprint will be c 5.8 hectares, meaning that the allocation will not require significant loss of higher distinctive habitats.

3.37 However, for numerous schemes, the notional development footprint (using the standard densities) exceeds 90% of the site area; and in several cases, this would involve theoretical loss of higher-ranking habitats. However, when ground-truthed against the Red Bank planning application, it was clear that the developer had increased housing density to over 300dph to enable retention of better value habitats, and to create a riverside park in response to the City's Strategic Regeneration Framework for Victoria North. In doing so, this avoided on-site net loss of biodiversity. In fact a 16% net gain was predicted from the actual planning application.

- 3.38 Consultation with MCC's planning team confirmed, for 18 sites of highest baseline biodiversity value with a development footprint likely to occupy over 90% of the site area, that it was likely that development would be able to retain higher-ranking habitats, notably trees where there is a very strong policy presumption against removal in any case.
- 3.39 Thus two models were run, one which assumed no more than 80% of the allocation area was lost to development, and one which assumed no more than 90% was lost.
- 3.40 The loss of habitats under the notional development footprint was evaluated using the biodiversity metric i.e. unit loss is calculated by multiplying habitat type and area of loss. The predicted loss in terms of broad habitat type can also be estimated (urban, grassland, scrub and woodland).
- 3.41 As a default, the assessment of impact assumed the development footprint was comprised of "poor" condition habitats, but for sites with higher biodiversity intensity, the impact assessment assumed a mix of poor and moderate condition habitats - refer to earlier discussion at paragraphs 3.13-3.15 and 3.26 and 3.27. Higher biodiversity intensity sites were defined as those where the baseline value was > 3 units per hectare, even with a poor condition assessment.
- 3.42 Once the impact of development was known, in terms of loss of units, a net gain factor was applied to derive the requirement for 10% BNG. In other words, if a site has a baseline value of 10 BU's, the BNG requirement is for a post-development value of 11 units.
- 3.43 The 10% BNG requirement applies to the whole planning application area, including retained habitats, not just the development footprint. At this stage, the planning application area is not knowable, particularly for the larger allocations. Nevertheless the effect of the biodiversity metric and the cost of planning application fees which are based on site area means the planning application boundary will tend to be drawn relatively tightly to the development footprint for financial reasons.
- 3.44 However to calculate 10% BNG purely on the basis of adding 10% to the value of lost habitats would underestimate the actual requirement on larger sites. Thus a 12.5% uplift was added to the value of lost habitats in order to factor in the need for a site-wide uplift of 10%.

Limitations

- 3.45 The ability for housing schemes to "flex" around existing vegetation is not absolute so it is accepted that, even with the application of the mitigation hierarchy, more higher value habitats may be lost than predicted, for example to create accesses or for decontamination.
- 3.46 To compensate for this, the maximum development footprint for housing schemes was set to 90%, whereas it is TEP and GMEU's experience that it is usually possible to retain some 30% of open space especially if that 30% is of biodiversity value.
- 3.47 In inner Manchester there is more opportunity to viably increase building height and massing to minimise the development footprint than there is in suburban boroughs where use of apartments is less attractive to the housing market.

- 3.48 In suburban Manchester, the relatively lower densities and the demand for family housing mean there is less ability to build upwards to enable greater retention of existing vegetation. This was reflected in the assessment for Jackson's Brickworks, a large family housing scheme of 2/3 storeys, plus some townhouses and apartments; where the net loss of biodiversity was notably higher than inner urban schemes of similar area.

Step 3: Estimate the likely biodiversity value within the proposed development footprint (onsite BNG) - Value "C"

- 3.49 Step 2 assumes that all habitats within the proposed development footprint would be cleared.
- 3.50 However, the development itself will usually be able to create some habitats, e.g. vegetated gardens, amenity grassland, introduced shrub, urban trees, raingardens. These will tend to be low distinctiveness habitats. Natural England advice for outline applications is to make a cautious estimate of 70% developed land and 30% vegetated land. On the basis of low distinctive habitats typically scoring at 2 units per hectare, a development footprint should normally be capable of generating 0.6 units per developed hectare.
- 3.51 Study of some actual planning applications in Manchester showed that development is capable of delivering biodiversity units at a higher rate per hectare in situations where there is reasonable open space around the buildings, typically in higher-density schemes using apartments. The developments at Red Bank and Rodney Street were able to deliver biodiversity within the footprint at rates of 1.6 and 2.4 units per hectare respectively.
- 3.52 However, a proportion of this uplift is due to the establishment of urban trees which the metric allows to "oversail" habitats at ground level and thus have a 3D element to their value. As explained at Step 1, the model cannot calculate the baseline 3D value of urban trees and the potential loss of exiting trees, so it would not be appropriate to include the contribution of urban trees to habitat creation; for the purposes of this study.
- 3.53 For this study, three models were run:
- For medium density housing and office development, where there is less scope for the creation of public open space, a habitat creation rate of 0.6 BU's per hectare is applied to the development footprint, as per Natural England advice.
 - For a small selection of medium density housing schemes with a higher baseline biodiversity value, a habitat creation rate of 1.2 BU's per hectare was applied, based on comparison of a real-time planning application at Jackson's Brickworks where there was an increased incentive for developers to create a biodiverse scheme.
 - For high-density apartment-based housing where there is more scope for creation of open space, a habitat creation rate of 1.2 BU's per hectare is applied to the development footprint.

Step 4: Estimate the potential number of biodiversity units that could be generated from enhancement of any habitats retained on site - Value "D"

- 3.54 Outside the development footprint, some sites have retained vegetation. It would be reasonable to expect a developer may wish to enhance this as part of the on-site component of BNG.
- 3.55 Not all habitats are capable of an uplift in condition, but it is reasonable to expect that any scrub and woodland habitats, and some grassland types, could be enhanced.
- 3.56 The metric has a 100% gain factor built in when any habitat is uplifted from a poor to a moderate condition.
- 3.57 Given that some habitats are incapable of condition uplift, two models were run:
- 3.58 A: 25% uplift in habitat units associated with retained vegetation - this is applied to;
- small sites below 1 hectare where management of retained vegetation will be difficult, so there is lower optimism about enhancement
 - all sites where the area of retained habitat is likely to be less than 0.2 hectares, again because of the difficulty of managing smaller habitat fragments
 - all sites where the baseline is already high (>3 units per hectare) because it is less likely that significant % enhancement is feasible
- 3.59 B: 50% uplift in habitat units associated with retained vegetation. This is applied to larger sites over 1 hectare and where the area of retained habitat exceeds 0.2 hectares.
- 3.60 The Red Bank planning application included a proposal for enhancement of retained woodland, scrub and grassland. Collectively this delivered a c70% enhancement of existing habitat value. This suggests that the above assumptions are appropriately conservative.
- 3.61 Nevertheless it is recognised the development industry will be nervous about commitments to maintain urban habitats for the 30 year period of mandatory BNG, since these will be subject to enforcement action. With this in mind, TEP also noted the number of biodiversity units derived from on-site enhancements, in order to estimate the effect this might have on the demand for off-site units, if developers decide to avoid committing to on-site enhancements for fear of enforcement action.

Step 5: Calculate the off-site biodiversity requirement arising from each individual development

- 3.62 The net effect of each development proposal in terms of biodiversity units is summarised in the following equation, by reference to the values generated during steps 1 to 4.

$$B - C - D$$

- 3.63 The figure generated for each site represents the shortfall or exceedance against a benchmark of 10% BNG. A shortfall indicates a likely need for off-site BNG.
- 3.64 As has been noted in the above narrative, a number of different models were run:
- 3.65 For Value A, models were run for a poor condition baseline and for a mixed baseline (with some habitats in moderate condition).
- 3.66 For Value B, models were run for a maximum loss of up to 80% and up to 90% of the allocation site to development.
- 3.67 For Value C, models were run for development footprint biodiversity intensity of 0.6 and 1.2 units per hectare, respectively.
- 3.68 For Value D, models were run for enhancement of retained habitats at rates of 25% and 50%.
- 3.69 A decision framework was then used to apply the model that best fits the specific development, taking account of ground-truthing from actual planning applications. The decision framework generates the likely requirement for off-site BNG, based on the mandatory 10% threshold:
- 3.70 All small sites below 1.0 hectares are assessed as **90% / 0.6 / 25%** - the constrained size of the site means most of the site is likely to be cleared and there will be relatively low biodiversity value within the built footprint, and only 25% allowance for enhancement of retained habitats.
- 3.71 All office schemes > 1.0 ha are assessed as **90% / 1.2 / 25%** - this assumes most of the site will need to be cleared for building footprints, but given larger site size and the corporate nature of the landscape, there is scope for some more biodiversity within the built footprint, hence a 1.2 unit per hectare allowance.
- 3.72 All medium and low density residential schemes >1.0ha are assessed as **90% / 0.6 / 25%** - this assumes most of the site will need to be cleared for building footprints, and given the relative shortage of public realm and the predominance of private curtilage, there is little scope for biodiversity within the built footprint, hence a 0.6 unit per hectare allowance.
- 3.73 All inner urban high density residential schemes >1.0ha are assessed as **80% / 1.2 / 50%**. This is based on experience where high densities can be achieved through a reduced development footprint and use of high-rise apartments. Use of green roofs and/or biodiverse SuDS in public realm is possible and greater possibilities exist for enhancement of any retained vegetation. This assumption correlates well with the real-time assessments of Red Bank and Rodney Street noted earlier (Table 2).

- 3.74 For a small minority of sites with a higher baseline biodiversity value (threshold set at 3 units per hectare on a poor condition assumption), the **Mixed Baseline 90% / 1.2 / 25%** scenario is used where the proposed development is for low density residential uses, but because of the higher baseline value, the developer makes additional effort to retain and enhance and create habitats. This assumption correlates well with the real-time assessment of Jacksons Brickworks (Table 3).

Step 6: Aggregate all the individual development requirements

- 3.75 The detailed results generated at step 5 can be classified in terms of:
- The development type that generates the off-site requirement;
 - Location within the City;
 - Timeframe within the Local Plan period;
 - Whether the need arises from a MCC or partner development; or from private development;

Allowance for Resubmitted Schemes

- 3.76 In Manchester, approximately 25% of planning permissions are not implemented and the developer returns with a new application. The City Council has a register of planning permissions that have not yet commenced.
- 3.77 In this case, the land covered by these unbuilt permissions covered 57.24 hectares. It can be assumed that 25% of this will return for a new permission post January 2024 i.e. 14.3 hectares.
- 3.78 The sites covered by this study and described above cover 669.8 hectares and result in a collective need for off-site BNG of c 152 units i.e. a rate of 0.325 BU's per hectare. This rate is applied to the resubmitted schemes.
- 3.79 As it is not known which schemes may be resubmitted, a detailed classification as per paragraphs 3.70 to 3.74 is not possible.

Allowance for open mosaic habitats

- 3.80 The NE UHL does not identify the s41 habitat type "Open Mosaic Habitats on Previously-Developed Land".
- 3.81 This habitat type is impossible to identify from remote sensing, as it cannot be separated from ruderal/ephemeral habitats without detailed survey. Given its transitory nature it may emerge over time, or current examples may become scrubbed over and be lost.
- 3.82 Under metric 4.0, OMHPDL over 0.25ha in extent may be classed as a highly-distinctive habitat. Due to its distinctiveness, it scores highly (6 units per hectare when in poor condition, 12 units in moderate condition). It is particularly difficult to retain in situ because it may overlie contaminated land and require to be removed for development.
- 3.83 As Manchester has a significant pipeline of brownfield development, an allowance should be made in this study for the need for off-site creation of equivalent habitats.

- 3.84 The only available dataset to estimate coverage of OMHPDL is from the national habitat inventory (NHI). However, this is a draft dataset and is quite unreliable. Its presence and condition can only be assessed through contemporary botanical and invertebrate field survey, and many provisional assessments of OMH end up with the site being downgraded to ruderal/ephemeral habitats, or to a mosaic of other neutral grassland, scrub and bare ground.
- 3.85 The quantity of OMHPDL on the sites was measured from the NHI. This was subject to a sense-check against the NE urban habitat layer, to ensure that it seemed comparable with the habitat on the ground.
- 3.86 To build a contingency for the presence of OMHPDL, a score of 2 extra units per hectare is given for potential OMHPDL. This is on the basis that poor condition OMHPDL scores 6 units per hectare, whereas poor condition mixed scrub, modified grassland and ruderal/ephemeral land score 4, 2 and 4 units per hectare (with an average differential of ca 3 units per hectare from OMHPDL; and it is these habitats that form the basis of the scores assigned for each site. However, given that much potential OMHPDL may not turn out to be actual OMHPDL, the 3 units differential is adjusted to 2 units per hectare. The OMH allowance is added in full to the off-site requirement, since it is unlikely that developments will be able to retain OMH on site, given that it is often associated with highly-disturbed and possibly contaminated ground.
- 3.87 Sites where there is a recent ecology report that discounts presence of OMHPDL are excluded from this contingency e.g. Red Bank, Jacksons Brickworks both have records of OMHPDL on the national habitat inventory, but the actual habitat was not encountered.

Correction for Planning Permissions and Design Guidance offered by City Planning Officers

- 3.88 The list of sites includes some which have recently gained planning permission, and therefore fall outside the scope of mandatory BNG e.g. Jacksons Brickworks, Red Bank and Rodney Street.
- 3.89 Manchester City Council officers also provided some commentary on certain sites where they considered that planning policy and design input from the Council is expected to ensure that the 10% BNG can be delivered on site. This was checked by TEP.

Worked Example - Pinfold/Raycroft Avenue

- 3.90 This is a housing site in the north. The site covers 1.64ha and is referenced as TEP091 / MCC Site Ref Char_Cap_006 in the master sheet at Appendix A. It is likely to be developed as a medium density residential scheme with an expected yield of 52 housing units.

Step 1 - Assess Baseline Biodiversity Value

- 3.91 The site's baseline biodiversity is quite high as it is well-vegetated. Even when the baseline habitats are assessed as being in poor condition, it has a baseline value of 5.65 units. If assessed as being in moderate condition, its baseline value would be 11.244 units (Value A). The upper value is taken forward for calculation of baseline value because it is in a small proportion of sites in Manchester with a baseline value of >3 units per hectare, even when assessed as being in poor condition.

Step 2 - Estimate on site loss and retention and generate 10% net gain requirement

- 3.92 As this is a low/medium density development, based on standard densities (Table 5) it would be developed at a rate of 35 dwellings per hectare, as it not close to any service centres or transport hubs. This means that development of 52 units would be likely to occupy a built footprint of 1.49ha which is close to 90% of the site. The 90% clearance assumption (1.475 hectares) is applied.
- 3.93 The script used for this study assumes that clearance will seek to retain the better quality habitats in the 10% retained area. In this case the script estimated a loss of 9.93 BU's and retention of 1.311 BU's on site. As explained at Step 2, a 12.5% multiplier is applied to the lost units to generate an estimate for what the 10% BNG requirement would be for the wider planning application area. 12.5% net gain on a value of 9.93 units is 11.175 units (Value B)

Step 3 - Estimate Newly Created Biodiversity Value within the development footprint

- 3.94 As this is a site with a relatively high baseline score, the developer would be incentivised to create as much biodiversity on site as possible. Thus an estimated 1.2 BU's per hectare would be created within the scheme, totalling 1.788 units. (Value C)

Step 4 - Estimate Biodiversity Units arising from enhancement of retained habitats

- 3.95 It is estimated that 10% of the site's existing habitats would be retained. The developer would have some incentive to enhance these habitats, although the opportunities for a 100% increase in condition value are limited, so a cautionary 25% enhancement is considered - this might be achieved by enhancement of retained trees or scrub or modified grassland habitat. As noted at Step 2, 1.311 units are retained on site. A 25% enhancement generates 0.327 units (Value D)

Step 5 - Estimate Off-Site BNG requirement

- 3.96 Using the decision framework, the 90-1.2-25 model was selected. This generates a requirement for off-site provision of 9.06 units; by reference to the values B, C and D outlined above (B- C - D).
- 3.97 $11.175 - 1.788 - 0.327 = \underline{9.06}$

Correction for Open Mosaic Habitat on previously-developed land

- 3.98 This site is shown on the national habitat inventory as having 1.229 hectares of OMHPDL, albeit at a low level of certainty. It is not evident from the Natural England UHL that OMHPDL is likely. However, in the interests of precaution, an additional allowance of 2 units per hectare for OMHPDL is made; in this case an additional 2.458 units, on top of the 9.06 units estimated at Step 5.

Conclusion

- 3.99 This site is estimated as having an overall requirement for 11.52 biodiversity units off-site.

4.0 Results and analysis

4.1 The overall need for mandatory BNG to be delivered off-site for all types of development in the Local Plan period 2023/4 to 2038/9 is given as a **"central estimate"**, along with upwards and downwards variations.

4.2 The central estimate is **171.5 biodiversity units**.

Source of Need

4.3 Table 6 breaks this down in terms of the type of development driving the need.

Table 6 Off-site Units by development type

Development Type	Number of Biodiversity Units
Housing	137.9
Office, including MediPark	29
Industrial	0
Allowance for resubmitted schemes	4.6
Total for All Types	171.5

Upwards Pressures on the Central Estimate

4.4 Jackson's Brickworks has planning permission but requires a significant number of biodiversity units. Given the City Council's interest in ensuring quality and affordability of the scheme, the City Council may wish to enable supply of the off-site requirement, estimated at 44 units using this study's methodology.

4.5 MCC Officer's and TEP's consideration of on-site delivery of BNG on some inner urban schemes may be over-optimistic (see para. 3.88 and 3.89), estimated at 26 units.

4.6 Whilst there is a policy push to retain on-site biodiversity, the requirement to maintain it for 30 years or be subject to enforcement action may deter some developers from entering retained habitats into a long-term management plan if they are concerned about stability of long-term stewardship and funding. This concern is most likely for SME developers on smaller sites where communal landscapes are handed over to residents' associations, whereas experienced developers and those working in partnership with the City Council will feel more confident that on-site habitats can be maintained.

4.7 There may also be a reluctance to provide on-site BNG on land held for future development or operational requirements.

4.8 Thus, in the event that developers decide not to enter retained open space into an enforceable BNG-compliant management plan, further off-site units would be required. This may result in an additional demand for 54 units.

- 4.9 If all these upward pressures are taken into account, the upper estimate would be **ca 295 units**.

Downwards Pressures on the Central Estimate

- 4.10 The allowance for potential presence of “Open Mosaic Habitats on Previously Developed Land” may prove too high when field surveys are done – estimated 35 units
- 4.11 TEP’s estimate of on-site delivery of BNG in some inner-urban schemes may prove too pessimistic as has been evidenced at Red Bank – estimated 6 units
- 4.12 Developer behaviour, and/or the introduction of an Urban Green Factor may drive more retention of biodiversity on-site. The effect of this on the central estimate is unquantifiable.
- 4.13 If these downwards pressures are taken into account, the lower estimate would be **ca. 130 units** not accounting for developer behaviour change and the effect of UGF policy, which would place further downwards pressure on the estimate.

Location

- 4.14 Table 7 provides an estimate of the BNG need arising from developments in different areas of the City. The vast majority (>85%) of off-site BNG need arises from development in the north.

Table 7 Location of developments and their resultant requirement for off-site BNG

Location	Number of Off-site Biodiversity Units (Required)
North	130.63 units
Central	9.21 units
South	7.74 units
Wythenshawe	19.35 units
<i>City Centre (a subset of part of North and part of Central)</i>	<i>4.14 units</i>
Resubmitted schemes (location unknown)	4.65 units
All	171.58 units

City Council and partner development

- 4.15 The BNG need arising from development on City-owned land totals 134.6 units. This relates to land where the City Council has a freehold title, although in many cases there are leasehold interests on the land. Thus the City Council has a significant interest in securing supply sites that can deliver the likely BNG need for developments in the plan period.
- 4.16 Other public sector bodies such as the NHS Trusts have large operational sites that will require redevelopment in the Local Plan period. They may be reluctant to provide mandatory BNG on-site for fear of "sterilising" future operational flexibility and development options. Whilst demand is unlikely to be significant in terms of the number of BU's, nevertheless the City Council's ability to supply off-site solutions will be appreciated.

Sites with no biodiversity value

- 4.17 Draft Regulations² indicate exemptions from mandatory BNG for development impacting habitat of an area below a 'de minimis' threshold of 25 m². A habitat is said to be impacted where "*the habitat is lost or degraded such that there is a decrease in the biodiversity value of that habitat*". It seems that developments that can protect and retain all vegetated habitats >25m² in aggregated extent would be exempt. Individual tree canopies count as habitat for the purposes of the Regulations and their area should be measured using the formula in the metric.
- 4.18 Of the 211 sites in the study, 11 appear to fall below the *de minimis* threshold in terms of current habitat area and value. These are all very small housing sites. It is likely that some other developments may be able to protect sufficient existing habitats to enjoy this exemption, although it is not possible to predict how many

² The Biodiversity Gain Requirements (Exemptions) Regulations 2024 ([publishing.service.gov.uk](https://www.gov.uk/publishing.service.gov.uk))

Pipeline

- 4.19 Table 8 provides an approximate pipeline of the need for off-site BNG city-wide, based on the central estimate. The figure for years 1-5 (2023/4 to 2027/8) and Years 6-10 (2028/9 to 2033/4) includes the 4.65 units allocated to resubmitted planning applications, divided equally between the periods.
- 4.20 The final column only includes a small number of schemes that may continue as a natural extension of others permitted in the earlier phase - it does not include all future developments, many of which are of course unknown. In practice there is only scheme (Eggington Street / Smedleys Dip in Victoria North), that falls into this category

Table 8 Pipeline of need for offsite BNG

	2023/4 to 2027/8	2028/9 to 2033/4	2034/5 to 2038/9	2039 on
Total number of biodiversity units	46.37 units	29.04 units	80.77 units	15.38 units
Number of development schemes	96 schemes	68 schemes	35 schemes	4 schemes

5.0 Summary and Conclusions

- 5.1 This study examined 211 sites in Manchester City's future development pipeline³ for the period 2023/4 to 2038/9. These sites cover 690 hectares and have a collective baseline of about 978 biodiversity units, based on desktop assessment and the use of Defra metric 4.0⁴. Appendix A lists all the sites in the study and a drawing showing the site location is appended to this report.
- 5.2 This biodiversity intensity (1.42 units per hectare) is low, reflecting the urban character of Manchester's development pipeline. It is also a reflection that, in aggregate, the City's proposed development allocations are on land of little biodiversity value; in line with the mitigation hierarchy.
- 5.3 The future development pipeline is subject to continuous change as some of the 211 sites have recently gained permission and the City is likely to add further sites to the pipeline. Nevertheless the study gives a reliable estimate of the order of magnitude of the off-site BNG need arising in the plan period.
- 5.4 Of the 211 sites, 11 have no biodiversity value, defined in terms of the *de minimis* habitat area of 25m² exempted from mandatory 10% BNG requirements. 25m² is a very low threshold i.e. the canopy of one or two trees can cover this area. The *de minimis* exemption applies to situations where more than 25m² is lost or degraded, rather than the mere presence of 25m².
- 5.5 Of the 211 sites, 123 are not expected to require an off-site provision to satisfy the mandatory 10% BNG requirement. This is because it is likely that landscape and habitat creation measures can secure the BNG requirement on-site, or in some cases because the sites have an existing permission that means mandatory BNG will not apply.
- 5.6 55 sites are expected to require an off-site provision of less than 1 biodiversity unit per site, generally because they are small sites <1 hectare.
- 5.7 33 sites are expected to require an off-site provision of more than 1 unit per site.
- 5.8 Various policy drivers such as the NPPF mitigation hierarchy, the City's use of strategic development frameworks to guide development quality, the City's tree replacement policy, forthcoming changes to SuDS adoption policy, and developer desire to avoid the administrative burdens and local concerns about offsetting; will combine to reduce the number of sites where the developer seeks an off-site BNG provision.

³ i.e. sites proposed for allocation for housing, commercial or industrial use, excluding sites that already have planning permission.

⁴ [The Biodiversity Metric 4.0 - JP039 \(naturalengland.org.uk\)](https://naturalengland.org.uk/jp039) - accessed 7th September 2023.

- 5.9 This trend for on-site provision would occur even more if the City introduces an Urban Green Factor policy, as that would result in greater use of civic trees, raingardens, living walls, green roofs etc. Drafting of the City's own BNG policy can also influence the extent to which developers provide on-site BNG e.g. if following the mitigation hierarchy and BNG best-practice principles is made a default requirement with limited exemptions, on-site provision is likely to increase.
- 5.10 However, this study indicates that for a very large number of smaller sites, a strict policy on mitigation hierarchy would have limited benefits in terms of the actual number of units retained or created on site.
- 5.11 The central estimate of the number of mandatory off-site biodiversity units required during the Local Plan period is ca 172 units. The great majority (76%) of this demand arises from development in the north of the city - see Figure 2.
- 5.12 It is estimated that demand in the early years of the Local Plan period will be c50 units.

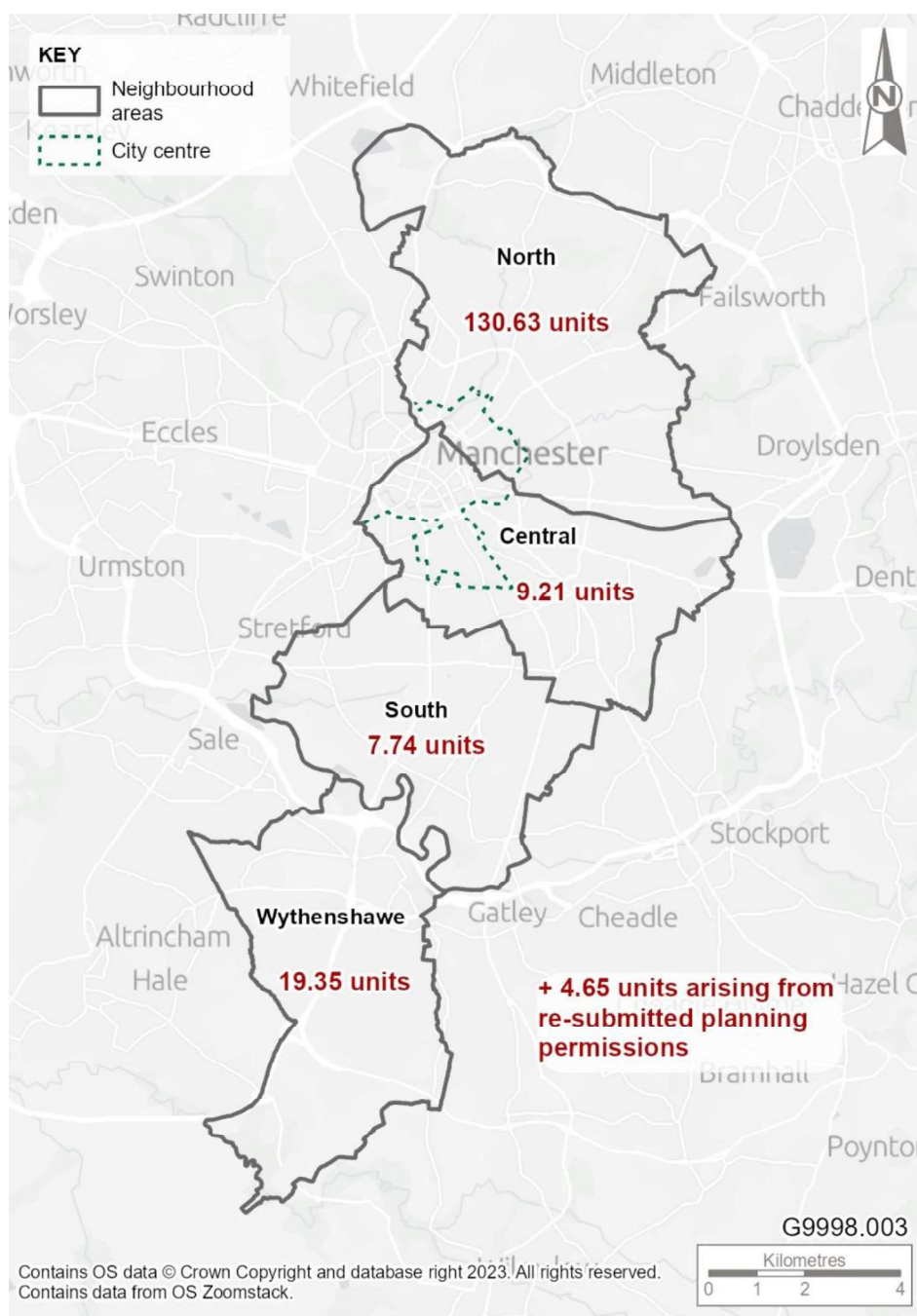


Figure 2 Distribution of predicted demand for off-site BNG

- 5.13 Most of the demand arises from housing development (138 units), with 29 units from office/commercial development and 4.6 units from resubmissions of permitted developments.
- 5.14 Manchester City Council is a significant freehold landowner and its land forms a major part of the development pipeline. Some 78% of the estimated need for off-site biodiversity net gain (134.6 units) will be generated from developments on City Council freehold land.
- 5.15 The central estimate is subject to various pressures, both upwards and downwards.

5.16 Upwards pressures may arise from the following:

- A decision by the City Council to support the developers of the Jacksons Brickworks site by including their off-site requirement (ca 44 units) in any habitat bank provision.
- Over-optimism in the methodology used (26 units)
- Developer nervousness about including onsite habitat management in an enforceable 30 year management plan, leading to decisions to fund the mandatory off-site requirement via a third party (54 units)
- Developer reluctance to allocate parts of their landholdings for BNG because of a desire not to restrict future development or operational requirements (unquantifiable, but probably not great given the precautionary approach taken in this methodology)

5.17 Downwards pressures may arise from the following:

- The allowance in the model for the presence of highly distinctive "Open Mosaic Habitats on previously-developed land" proves too high when field survey is actually carried out (35 units)
- Over-pessimism in the methodology used (6 units)
- Developer behaviour, and/or introduction of an Urban Green Factor drives more retention of biodiversity on-site (unquantifiable)

5.18 Thus the expected range of mandatory off-site demand for BNG in the Local Plan period is between 130 and 295 units. Whilst much depends on developer behaviour which will be influenced by Local Plan policy and how developers respond to Regulations about assessment, implementation and management of on-site BNG, TEP expects the likely number of off-site units to be in the lower third of the range.

5.19 The development needs of the City Council and other public sector bodies means that the City Council's ability, as a significant owner of open space, to supply off-site BNG solutions will be appreciated.

5.20 Whilst mandatory BNG will encourage more retention and enhancement of existing habitats, it will not drive significant on-site urban greening, simply because baseline values are low, coupled with the low incentive in the statutory 4.0 for creation of urban habitats such as raingardens, civic trees, living walls etc.

5.21 Finally, this study focusses on the category of habitat area units in the biodiversity metric. Another metric category is watercourse units. Watercourse BNG assessment is triggered when a planning application includes the "riparian zone" of a river or canal; the riparian zone being variable dependent on width of the waterway. It is unlikely that many planning applications will result in an adverse effect on Manchester's waterways, given that few applications will include riparian zones. For those that do include riparian zones in the "red-line-boundary", the weight of protective policy relating to rivers and floodplains, means that adverse effects and the need for off-site watercourse BNG unit provision is unlikely.

- 5.22 However, the practical interpretation of how the 10% BNG requirement will apply to watercourses that are unaffected but happen to be captured within a red line boundary is still unclear, and it may be a little while before best-practice is established.
- 5.23 Thus it is prudent for the City to monitor this and be prepared to develop a watercourse offset scheme in a river valley or a canal corridor. Such a scheme could involve a programme of micro-wetland creation and invasive species control.

6.0 Glossary

- 6.1 **Baseline Biodiversity Value**: The aggregated number of biodiversity units on a development site prior to any development
- 6.2 **Biodiversity Intensity**: A term used only for this study. It calculates the number of biodiversity units per hectare. Habitats of low distinctiveness and low condition have low biodiversity intensity. For this study, any sites where the estimated baseline value is <3 BU's per hectare are classed as low intensity, whereas those with a baseline score >3 BU's per hectare are classed as moderate intensity
- 6.3 **Biodiversity Unit (BU)**: For BNG, biodiversity is measured in standardised biodiversity units. There are three broad categories of BU:
- Habitat Areas e.g. grasslands, woodlands, wetlands, urban habitat types
 - Hedgerows and Linear features
 - Watercourses
- 6.4 The biodiversity metric measures the biodiversity value of habitats by calculating the number of biodiversity units it contains.
- 6.5 **Capacity Sites**: A Manchester City Council internal planning database which includes all sites the City expects to deliver for housing but which do not yet have a planning permission
- 6.6 **Habitat Condition**: The statutory metric requires users to classify some habitat types as poor, moderate or good, based on measurable criteria such as species diversity, absence of invasive species. Through the use of multipliers, the metric incentivises retention of existing habitats in good condition, and enhancement of retained habitats to better condition than prior to development. Condition assessment measures a specific area of habitat against its ecological optimum state.
- 6.7 **Habitat Distinctiveness**: The statutory metric classes the distinctiveness of habitats in bands from "Very Low" to "Very High", and allocates baseline scores from 0 to 8 accordingly. The BNG mitigation hierarchy discourages development that results in loss or deterioration of habitats of High or Very High distinctiveness. Distinctiveness is measured based on the type of habitat and its distinguishing features. This includes:
- consideration of species richness and rarity
 - the extent to which the habitat is protected by designations
 - the degree to which a habitat supports species rarely found in other habitats

- 6.8 **Mandatory Biodiversity Net Gain:** Biodiversity net gain (BNG) is a way of creating and improving natural habitats. BNG makes sure development has a measurably positive impact ('net gain') on biodiversity, compared to what was there before development. In England, biodiversity net gain (BNG) is becoming mandatory in 2024 under Schedule 7A of the Town and Country Planning Act 1990 (as inserted by Schedule 14 of the Environment Act 2021). For this report, mandatory BNG is the term used for the BNG requirements for developments where planning applications are expected to be submitted after January 2024. BNG is already offered, as a matter of planning policy compliance, for many developments already in the planning system, but these are not mandatory. Local Authorities will be expected to register, monitor and enforce BNG commitments made under the mandatory system.
- 6.9 **Mitigation hierarchy:** The mitigation hierarchy is a widely used tool that guides developers towards limiting as far as possible the negative impacts on biodiversity from development projects. It emphasises best-practice of avoiding and minimising any negative impacts, before finally considering offsetting residual impacts. In the specific context of BNG, the mitigation hierarchy seeks to avoid or reduce impacts on existing habitats of "high" or "very high" distinctiveness.
- 6.10 **On-site Biodiversity:** For this study, this term is taken to mean the provision of habitats within the development boundary. This includes retained and newly-created habitats.
- 6.11 **Off-site Biodiversity:** For this study, this term refers to the provision of habitats outside the development boundary, including those created at some distance from the development. The need for off-site biodiversity is triggered when a development cannot deliver mandatory 10% BNG within its boundary.
- 6.12 **Open Mosaic Habitats on Previously-Developed Land:** A class of habitats which is confined to brownfield sites where soil conditions are severely limiting on plant growth. This means an unusual or diverse flora can develop, often with high value to pollinating insects.
- 6.13 **Places for Everyone (PfE):** The Joint Strategic Development Plan for 9 of the 10 Greater Manchester Local Authorities.
- 6.14 **Re-submitted Applications:** In Manchester, approximately 25% of planning permissions are not implemented and the developer returns with a new application.
- 6.15 **Statutory Metric:** Government has published the statutory (official) biodiversity metric calculation tool which must be used by all developers in England required to provide mandatory BNG. It calculates the number of biodiversity units for existing habitat or habitat enhancements in accordance.
- 6.16 **Strategic Significance:** The statutory metric includes a multiplier which provides a slightly higher value to sites and habitats that are of strategic significance. In the long term it is intended that Local Nature Recovery Strategies will identify which areas and habitats are of high significance, but in the interim, significance is assessed by an ecologist based on site designations and local policy priorities.

- 6.17 **Sustainable drainage systems (SuDS)**. The term covers techniques used to manage water runoff from development to reduce the quantity, and increase the quality, of surface water that drains into sewers. A general SuDS definition is that it mimics natural systems, and differs from traditional drainage in aiming to manage rain close to where it falls, ideally using techniques that incorporate wetland habitats.
- 6.18 **UKHab**: The UK Habitat Classification is a free-to-use, unified and comprehensive approach to classifying habitats, designed to provide a simple and robust approach to survey and monitoring for the 21st century. The classification covers terrestrial and freshwater habitats and is used as the basis for identifying the type of habitat within the BNG system, specifically the statutory metric. It is available by through registration at <https://ukhab.org/>
- 6.19 **Urban Greening Factor (UGF)**: A planning tool to improve the provision of Green Infrastructure (GI) particularly in urban areas. The system assesses urban land in terms of Surface Cover Types. Developments can be scored in terms of the Weighted Scores for Surface Cover Types such as green infrastructure elements used in development including – vegetation and tree planting; green roofs and walls; sustainable drainage systems and water features; and paved surfaces. Surface Cover Types with higher permeability and vegetation canopy score highest.
- 6.20 **Urban Habitat Layer (UHL)**: A Natural England dataset that is not yet nationally or publicly available, but was made available to the City Council for this study. It allocates every single land parcel on the Ordnance Survey's MasterMap system to a specific habitat type, based on a remote-sensing model, rather than ground-truthed survey.