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Biodiversity Net Gain Plan

Fendyke Solar Farm, Sutton St James, Lincolnshire

Site	<i>Fendyke Solar Farm, Land at Fendyke Farm off Old Fendyke, Sutton St James</i>
Project number	<i>124522</i>
Client name / Address	<i>Integrum Renewable Energy Ltd, 120 Cavendish Street, London, W1W 6XX</i>

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Declaration of compliance

The information which we have provided is true, and has been prepared and provided in accordance with the Chartered Institute of Ecology and Environmental Management's (CIEEM) Code of Professional Conduct. We confirm that the opinions expressed are our true and professional bona fide opinions.



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1. EXECUTIVE SUMMARY

In April 2024 MKA Ecology Limited was commissioned to undertake a Biodiversity Net Gain assessment for Fendyke Solar Farm, Sutton St James. This Biodiversity Net Gain Plan has been prepared to detail how the biodiversity enhancements in the proposed scheme will lead to an overall benefit to biodiversity.

The Site currently comprises arable fields with small areas of grassland margins, limited native hedgerow and a number of ditches and drains running along the boundaries. The land is approximately 44.2ha in size. The Proposed Development involves the construction and operation of a solar farm and battery energy storage system (BESS), with associated access, landscaping and infrastructure. It will involve the conversion of the fields currently in arable cultivation. The proposed habitats include the creation of grassland (which is precautionarily classified as modified grassland for Biodiversity Net Gain purposes but will be managed as species-rich neutral meadow grassland) within and around the solar arrays, planting of individual trees and new native hedgerow planting.

To provide an objective assessment of the potential value of the proposed biodiversity enhancements, the Defra Statutory Biodiversity Metric (Defra, 2024) is applied. The measures, a proxy for biodiversity that use habitat types and their areas, are compared before (the existing condition) and after the completion of the Proposed Development.

It is concluded that the Proposed Development will lead to net gains of:

- **53.67% in area biodiversity;**
- **195.03% in hedgerow biodiversity; and**
- **16.75% in watercourse biodiversity.**

The vast majority of the area net gain is derived from the creation of the meadow grassland, classified in the Metric as modified grassland, which is anticipated to reach moderate condition. The hedgerow net gain is derived largely from the planting of seven new lengths of species-rich native hedgerow with trees. Watercourse units are derived from a reduction in encroachment in the riparian zone, which will be achieved via the implementation of buffers in all instances where the ditch is within or immediately adjacent to the Site boundary.

It should be noted that the predicted net-gain in biodiversity is reliant on the successful restoration and/or creation of habitats and their maintenance for the foreseeable future. It will be critical to ensure that appropriate management activities are put in place in order to achieve the desired condition of the proposed habitats. It is recommended that measures to ensure the successful creation and long-term management of proposed habitats are outlined in a Habitat Management and Monitoring Plan (HMMP) for the Site.

2. INTRODUCTION

2.1. Purpose

This Biodiversity Net Gain Plan is submitted for the approval of South Holland District Council to fulfil local and national requirements and show how a 10% net gain for biodiversity will be achieved at the Proposed Development across all habitats.

The purpose of this assessment is to review the existing biodiversity value of the Site, comparing this to the proposed landscape masterplan and calculate an overall biodiversity net change for the Site. The primary method of calculating this change will follow the Defra Statutory Biodiversity Metric (Defra, 2024). The aim of using this method is to demonstrate whether the Proposed Development and landscape masterplan will deliver a net gain in biodiversity.

The process of achieving and assessing Biodiversity Net Gain should follow the principles and rules, as set out within *Biodiversity Net Gain, Good Practice Principles for Development* (Baker *et al.*, 2019) (Table 1) and *The Statutory Biodiversity Metric – User Guide (draft)* (Defra, 2024) (Table 2).

This Biodiversity Net Gain Plan is in line with British Standard BS8683.

Table 1: The UK's good practice principles for biodiversity net gain (Baker *et al.*, 2019)

Principle	In practice
1. Apply the mitigation hierarchy	Do everything possible to first avoid and then minimise impacts on biodiversity. Only as a last resort, and in agreement with external decision makers where possible, compensate for losses that cannot be avoided. If compensating for losses within the development footprint is not possible or does not generate the most benefits for nature conservation, then offset biodiversity losses by gains elsewhere.
2. Avoid losing biodiversity that cannot be offset elsewhere	Avoid impacts on irreplaceable biodiversity – these impacts cannot be offset to achieve No Net Loss/net gain.
3. Be inclusive and equitable	Engage stakeholders early, and involve them in designing, implementing, monitoring and evaluating the approach to net gain. Achieve net gain in partnership with stakeholders where possible.
4. Address risk	Mitigate difficulty, uncertainty and other risks to achieving net gain. Apply well-accepted ways to add contingency when calculating biodiversity losses and gains in order to account for any remaining risks, as well as to compensate for the time between losses occurring and gains being fully realised.
5. Make a measurable net gain contribution	Achieve a measurable, overall gain for biodiversity and the services ecosystems provide while directly contributing towards nature conservation priorities.

Principle	In practice
6. Achieve the best outcomes for biodiversity	Achieve the best outcomes for biodiversity by using robust, credible evidence and local knowledge to make clearly-justified choices when: - Delivering compensation that is ecologically equivalent in type, amount and condition, and that accounts for the location and timing of biodiversity losses - Compensating for losses of one type of biodiversity by providing a different type that delivers greater benefits for nature conservation - Achieving Net Gain locally to the development while also contributing towards nature conservation priorities at local, regional and national levels - Enhancing existing or creating new habitat - Enhancing ecological connectivity by creating more, bigger, better and joined areas for biodiversity
7. Be additional	Achieve nature conservation outcomes that demonstrably exceed existing obligations (i.e. do not deliver something that would occur anyway).
8. Create a Net Gain legacy	Ensure Net Gain generates long-term benefits by: - Engaging stakeholders and jointly agreeing practical solutions that secure Net Gain in perpetuity - Planning for adaptive management and securing dedicated funding for long-term management - Designing Net Gain for biodiversity to be resilient to external factors, especially climate change - Mitigating risks from other land uses - Avoiding displacing harmful activities from one location to another and - Supporting local-level management
9. Optimise sustainability	Prioritise Biodiversity Net Gain and, where possible, optimise the wider environmental benefits for a sustainable society and economy.
10. Be transparent	Communicate all Net Gain activities in a transparent and timely manner, sharing the learning with all stakeholders.

Table 2: Biodiversity net gain rules (Defra, 2024)

Rule	In practice
1	The trading rules of this biodiversity metric must be followed.
2	Biodiversity unit outputs, for each type of unit, must not be summed, traded, or converted between types. The requirement to deliver at least a 10% net gain applies to each type of unit.
3	To accurately apply the biodiversity metric formula, you must use the biodiversity metric calculation tool or small sites biodiversity metric tool (SSM) for small sites. The tools remove the need for a user to manually calculate the change in biodiversity value. The tool will summarise the results of the calculation and inform a user whether the biodiversity net gain objective has been met.
4	In exceptional ecological circumstances, deviation from this biodiversity metric methodology may be permitted by the relevant planning authority.

3. HABITATS

3.1. Present – baseline condition survey

A Preliminary Ecological Appraisal was conducted by MKA Ecology Ltd on 28 September 2023 (MKA Ecology Ltd, 2023) to inform the baseline habitats present. A subsequent field visit was made on 25 April 2024 to undertake condition assessments of the habitats present. The Site was found to cover a total of 44.2 hectares and comprises cereal cropland, drainage ditches bordered with wetland vegetation, single native hedgerow and native hedgerow with trees. The habitats at the Site were mapped during a condition assessment visit and are presented in Figure 1. The areas occupied by each habitat type are detailed in the Biodiversity Metric Calculation Tool, attached separately. More information on how habitat conditions were assigned is provided in Appendix 1. Survey constraints of the Preliminary Ecological Appraisal and subsequent condition assessment are described in Section 4.9.

No irreplaceable habitats are present within the red line boundary. Please note that any impacts on designated sites and protected species that may result from the development have been addressed in the Preliminary Ecological Appraisal and Ecological Impact Assessment, which also outline plans for mitigation and enhancement where required (MKA Ecology Ltd, 2023, 2024).

3.2. Future – proposed landscape and enhancements

The Proposed Development is for the construction and operation of a solar farm and battery energy storage system (BESS), vehicular access, internal access tracks, landscaping, boundary treatment, cabling and associated infrastructure. It will involve the conversion of the fields currently in arable cultivation. The proposed habitats include the creation of modified meadow grassland within and around the solar arrays, planting of individual native trees and new species-rich native hedgerow planting. The Landscape Masterplan for Fendyke Solar Farm is presented in Figure 2, with the resulting UK Habitats classification shown in Figure 3.

It is these proposed habitats that will form the basis of the calculation of ‘net-change’ in biodiversity using the Defra metric (see Section 4).

Figure 1: UK Habitats Classification Map of Fendyke Solar Farm, Sutton St James

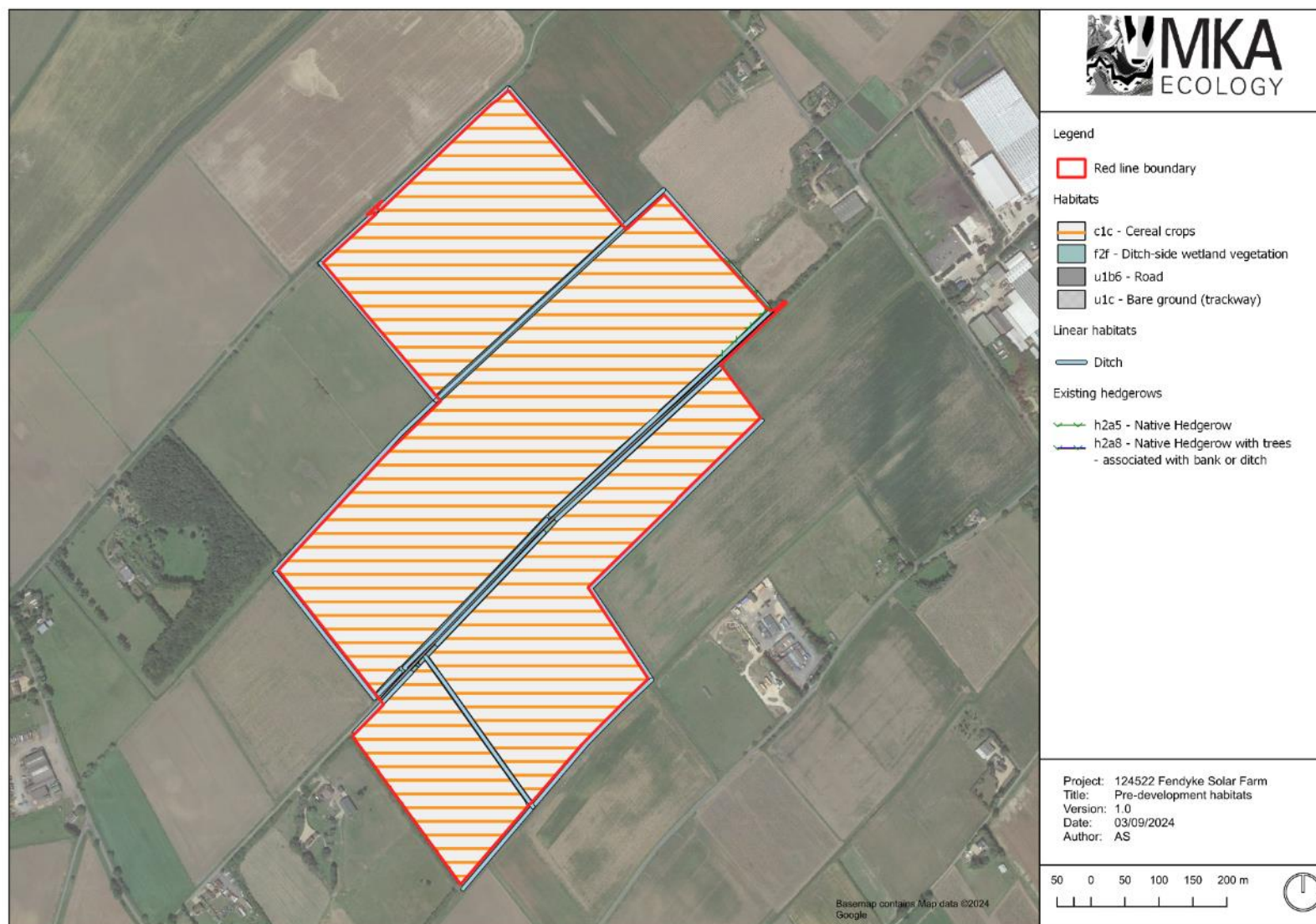
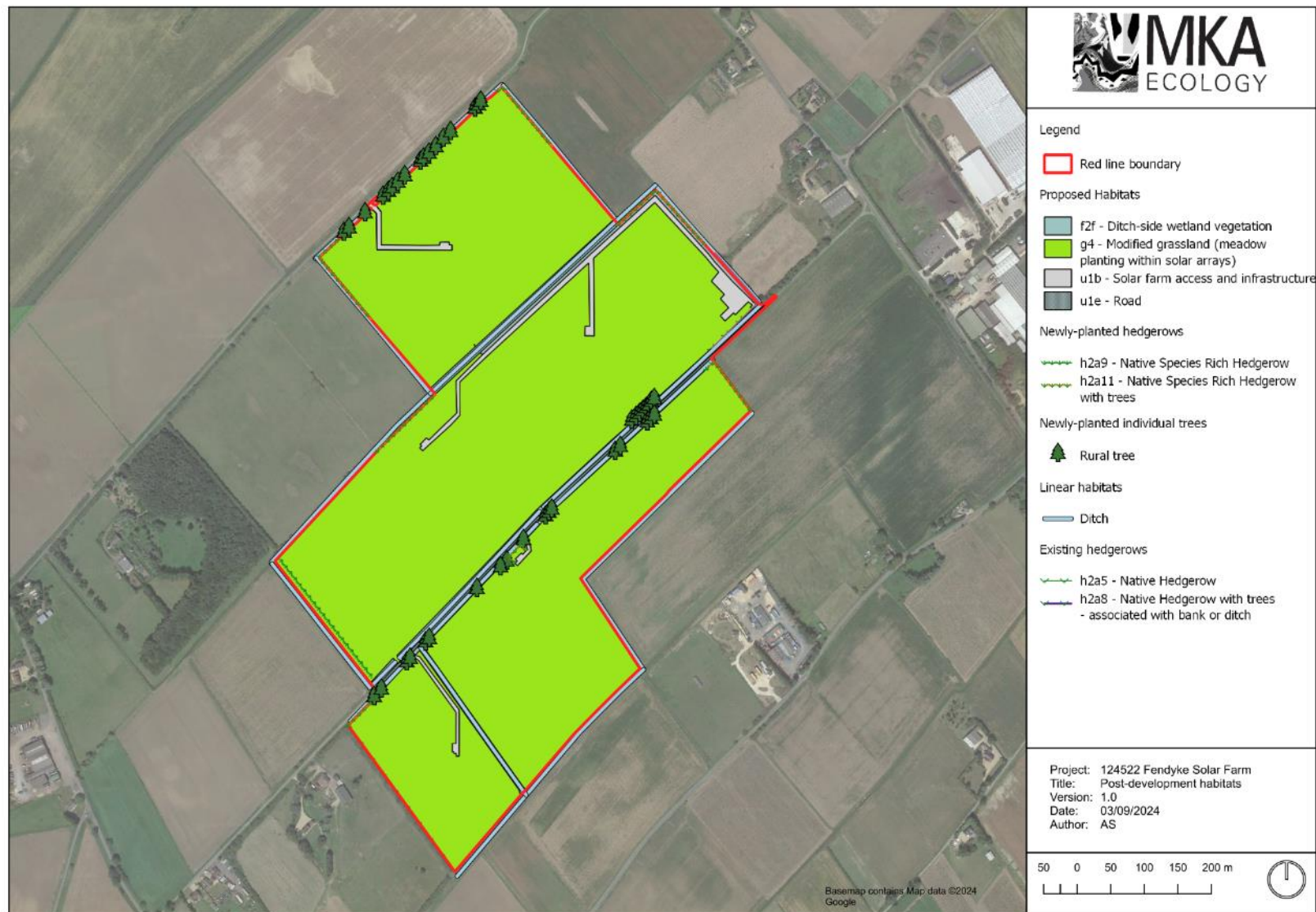


Figure 2: Proposed layout and landscaping for Fendyke Solar Farm, Sutton St James



Figure 3. Proposed post-development habitats for Fendyke Solar Farm, Sutton St James



4. METHODOLOGIES

4.1. Biodiversity Net Gain assessor

This Biodiversity Net Gain assessment was conducted by Andy Symes ACIEEM, Senior Ecologist at MKA Ecology Ltd. Andy has over five years' experience conducting Biodiversity Net Gain assessments and is considered a competent assessor under the Statutory Biodiversity Metric requirements (Defra, 2024). The Biodiversity Net Gain Plan was reviewed and authorised by Will O'Connor CEcol MCIEEM, Director and Principal Ecology at MKA Ecology Ltd. Will has over 15 years' experience as a consultant ecologist.

4.2. Assignment of habitats

To establish whether the Proposed Development will contribute positively to biodiversity we use the Defra Statutory Biodiversity Metric (Defra, 2024). This method uses habitat as a proxy for biodiversity and its primary application is to provide planners and developers with a method of establishing how much and what type of habitats should be created or enhanced in order to ensure that the Proposed Development results in a net gain for biodiversity. Habitats are assigned the following scores:

- Distinctiveness: A measure of the type and importance of a habitat.
- Condition: A measure of the present or predicted condition of a habitat type.
- Strategic significance: How a habitat is regarded within Local Planning Policy.

Habitat distinctiveness is automatically assigned in the Statutory Biodiversity Metric. Please see Appendix 1 for further information on how habitat condition and strategic significance was assigned in this assessment.

For proposed habitats, where there is an attempt to predict the habitat type following establishment additional handicaps or risk scores are imposed representing the following factors:

- Difficulty: More difficult habitats incur a greater risk.
- Time to condition: In general, it takes longer for habitats to reach a better condition, plus certain habitats by their very nature take longer to create or restore.
- If the creation or enhancement of habitats is delayed, an additional risk score is applied. This will not apply in the present case.
- If habitats are created off-site, an additional risk score is applied. This will not apply in the present case.

The multipliers used in habitat assignment in the Biodiversity Net Gain Metric are detailed further in Table 3 below.

Table 3: Multipliers used in the calculation of Biodiversity Net Gain

Multiplier	When applied	Description
Distinctiveness	Before and after	A measure of the type of habitat, automatically assigned within the Metric. Habitats with greater value are assigned a higher score.
Condition	Before and after	The condition of the habitat. Uses the Technical Supplement (<i>Panks et al. 2021a</i>); Higher levels of condition give rise to greater values. In some cases, no condition assessment is required and these habitats are automatically allocated a score.
Strategic significance	Before and after	Whether a habitat is important within its local context.
Time to target condition	After	Used to account for the fact that habitat creation as part of a development is rarely instant. A 'handicap' is applied, with habitats that take longer to establish resulting in a greater reduction.
Difficulty of creation/restoration	After	Habitats that are more difficult to create/restore cause a reduction in the biodiversity unit as they are associated with a greater risk of failure.
Spatial risk	After	Habitat that is created at a greater distance away from the development site carries a greater risk of removing other natural habitats.
Advanced and delayed habitat creation	After	Used to account for situations where there is a mismatch between a negative impact on biodiversity and work to create or enhance the 'post-intervention habitats'. This can either be in the form of habitat creation occurring in advance or being delayed beyond the point of baseline losses.

4.3. Trading Summary

The Defra Statutory Biodiversity Metric includes a Trading Summary which must be satisfied to achieve a positive outcome in the Net Gain assessment (see Rule 1, Table 2). The trading rules ensures that habitat losses are compensated for on a "like for like" or "like for better" basis. Newly created or enhanced habitats should achieve a higher distinctiveness and/or condition than those lost.

Further details on how the metric is calculated is provided in the aforementioned publications, with more site-specific detail provided in Appendix 1 and Appendix 2.

4.4. Mapping habitats

Current habitats were mapped and areas calculated using QGIS during a field visit undertaken on 25 April 2024 (see Section 3.1 for details of habitat types). The proposed habitats were calculated in QGIS using a digitised and geo-referenced version of the Landscape Masterplan provided in Figures 2 and 3 (see Section 3.2 for details of habitat types). Details of the condition assessment survey are shown in Table 4 below.

Table 4: Date, time, surveyor and weather conditions for condition assessment survey

Date	Time	Surveyor	Weather
25 April 2024	08:30	Andy Symes	Wind: 2; Cloud: 3 Start temp: 9°C; Rain: Light

4.5. Hedgerows

Hedgerows, given their unique linear characteristic and their position as ‘edge habitats’ are treated as linear features in the Statutory Biodiversity Metric calculator and are calculated as ‘biodiversity metres’. The metrics calculated for hedgerows have therefore been calculated and presented separately. Current and proposed hedgerows were mapped, and their lengths calculated, using QGIS.

4.6. Watercourses

Rivers, streams, and other watercourses, given their linear form and important role in habitat connectivity, are treated as linear features in the Statutory Biodiversity Metric calculator and are calculated as ‘biodiversity metres’. The metrics calculated for ditches (the only watercourses present onsite) have therefore been calculated and presented separately. Unlike for rivers and streams, ditches do not require a MoRPh Survey in order to undertake a condition assessment.

4.7. Habitat degradation

It is confirmed that the baseline habitats have not been significantly altered or modified since 30 January 2020 and, as such, it is appropriate to assess the baseline habitats in their current condition.

4.8. Sharing data

Relevant ecological data collected during baseline habitat and protected species surveys at the Site will be shared with Greater Lincolnshire Nature Partnership following acceptance of this Biodiversity Net Gain Plan.

4.9. Assumptions and constraints

Several assumptions are made to enable this Biodiversity Net Gain assessment. The primary assumptions are listed below:

- The net gains in biodiversity that are estimated are reliant on the successful restoration and/or creation of habitats and their maintenance for the foreseeable future; this is particularly true of the meadow grassland.
- It is assumed that there will be no time delay in establishing the habitats.

- Neutral meadow grassland habitat being created within the areas of solar arrays is precautionarily classified as the Low distinctiveness Modified grassland (g4) rather than the Moderate distinctiveness Other neutral grassland (g3c), as advised by Lincolnshire Wildlife Trust due to a current lack of evidence that the higher-distinctiveness grassland can be created and maintained long-term within solar developments (due to shading from solar panels etc).
- It is estimated that approximately 2% of the land area allocated to solar arrays will be taken up by the base of the solar panels, and the rest will be converted to wildflower meadow. This equated to approximately 0.82 ha assigned to the base of solar panels, in addition to the mapped area of 1.03ha of access tracks, compounds and other solar infrastructure.
- Drains require ongoing management, including periodic dredging and vegetation cutting, to retain their function and condition. Management is currently undertaken by the farmers/landowner. Although additional management of drains is not proposed as part of BNG delivery due to potential conflict with Internal Drainage Board (IDB) requirements as well as difficulty maintaining water levels, it is understood that management will be maintained comparable to that which already takes place. Although the majority of drains are already in poor condition, one which is in moderate condition would become poor without appropriate ongoing management, with the result that the overall net gain result would be negatively affected.
- The UK Habitats classification for f2d Aquatic marginal vegetation and f2f. Other wetlands are not available options within the Statutory Metric Calculation Tool. Marginal vegetation alongside the drains has therefore been classified as the nearest available option, f2e Reedbeds, even though in some sections reed *Phragmites australis* is not the dominant species. Use of the classification f2e does not imply that these areas should be considered Priority habitats.

5. RESULTS AND RECOMMENDATIONS

5.1. Results

The overall comparison of biodiversity units is presented in Table 5 below. The calculator used to derive these figures is provided as a separate appendix (Appendix 2) to this report. With the current layout, there will be a net gain of 53.67% in area biodiversity (56.69 units), a net gain of 195.03% in hedgerow biodiversity (9.48 units) and a net gain of 16.75% in watercourse biodiversity (3.14 units). The overall score is taken from the lowest of these measures and is therefore a net gain of 16.75%.

Table 5: Results of biodiversity metric calculations

Habitat	Biodiversity units (current)*	Biodiversity units (proposed)*	Biodiversity net-change*	Net percentage change
Habitats	105.63	162.32	56.69	<u>53.67%</u>
Hedgerows	4.86	14.34	9.48	<u>195.03%</u>
Watercourses	18.74	21.88	3.14	<u>16.75%</u>

* Habitat areas are calculated as biodiversity hectares, hedgerows as biodiversity metres

The largest number of habitat units (138.64 units, almost the entire net-change) is generated by the creation of moderate condition modified grassland within the solar arrays.

The large net gain in hedgerow units is driven by the creation of seven new species-rich native hedgerows with trees and one species-rich native hedgerow, all of which are expected to attain good condition.

The net gain for watercourses is driven by the implementation of increased buffers around the ditches leading to a reduction in encroachment in their riparian zones (3.09 units). Buffers will be 9m around IDB drains and 5m around non-IDB drains, meaning that there will no riparian encroachment on the onsite sides of all drains.

The final Biodiversity Net Gain score is taken as the lowest of the scores for Habitat, Hedgerow and Watercourse net percentage change. Therefore, the final Net Gain score for Fendyke Solar Farm is 17.30%. Overall, across all metrics the proposed development will deliver significant biodiversity net gain.

5.2. Recommendations

The overall net gain in biodiversity units predicted in this assessment is reliant on the successful restoration and/or creation of habitats and their maintenance for the foreseeable future. It is critical that habitats and hedgerows on site reach the target condition estimated in this assessment, and this will require careful consideration during both the planning and construction phase. It is particularly important that the meadow grassland and newly-planted hedgerows achieve moderate condition, and that riparian encroachment of the watercourses is effectively reduced through the implementation of the agreed buffers.

It is recommended that a Habitat Management and Monitoring Plan (HMMP) is produced for the Site. This will outline measures for the successful creation and management of habitats for a minimum of 30 years to ensure the target conditions for each habitat type is reached as outlined in this assessment.

Recommendation 1

Produce a Habitat Management and Monitoring Plan for the Site covering 30 years post-operation of the solar farm.

6. CONCLUSIONS

The Proposed Development at Fendyke Solar Farm is for the construction of a solar farm on arable cropland, with meadow grassland habitat being created within the solar arrays.

The use of the Defra Statutory Biodiversity Metric to calculate measures of biodiversity for the existing and proposed habitats confirm that the Proposed Development is likely to lead to net gains of:

- **53.67% in area biodiversity;**
- **195.03% in hedgerow biodiversity; and**
- **16.75% in watercourse biodiversity.**

Creation and ongoing management of the meadow grassland, species-rich native hedgerows, and riparian buffer areas will be most crucial to delivering the predicted net-gain.

The predicted net-gain in biodiversity is reliant on the successful restoration and/or creation of habitats and their maintenance for the foreseeable future. It will be critical to ensure that appropriate management activities are put in place in order to achieve the desired condition of the proposed habitats. It is recommended that measures to ensure the successful creation and long-term management of proposed habitats are outlined in a Habitat Management and Monitoring Plan for the Site.

7. REFERENCES

Baker, J., Hoskin, R. & Butterworth., T. (2019) *Biodiversity net gain: Good practice principles for development. Part A. A practical guide*. CIRIA, UK

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Lincolnshire Biodiversity Partnership (2011). *Lincolnshire Biodiversity Action Plan 2011-2020*. Lincolnshire Biodiversity Partnership, Horncastle, Lincolnshire. Available at: <https://www.nelincs.gov.uk/wp-content/uploads/2016/02/201110-LincolnshireBAP-3rd-edition.pdf>

MKA Ecology Ltd (2023) *Fendyke Solar Farm, Sutton St James - Preliminary Ecological Appraisal*. MKA Ecology Ltd: Cambridge.

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8. APPENDICES

8.1. Appendix 1: Assignment of biodiversity metric multipliers

Strategic significance

'Rivers, canals and drains' and 'hedgerows' were listed as Priority habitats within the previous Lincolnshire Biodiversity Action Plan 2011-2020 (Lincolnshire Biodiversity Partnership, 2011). A new Greater Lincolnshire Local Recovery Strategy is currently in production, but its priority species, sites and habitats have not yet been finalised (<https://www.glinclnrs.org.uk/>). The strategic significance for ditches and all native hedgerows has therefore been set as 'Location ecologically desirable but not in local strategy' to reflect their previous inclusion within a local action plan, although they are not currently formally listed. Strategic significance was set to 'low' for all other baseline habitats and newly created habitats.

Condition

The below tables detail the rationale for the condition assessments made for each habitat type.

Current habitats

Habitat	Condition score	Rationale for condition assessment
Cropland – cereal crops (42.07 ha)	NA – Agriculture	No condition assessment required – allocated a score of 1
Wetland – reedbeds (1.79 ha)	Moderate	A – water table at or near surface throughout the year - Fail B – good example of specific habitat type - Fail C – good water quality, no obvious signs of pollution - Fail D – cover of scrub and scattered trees <10% - Pass E – cover of bare ground <5% - Pass F – invasive species absent, suboptimal species <5% cover – Pass The drain-side wetland vegetation passes three of six core criteria and is therefore in moderate condition. Additional habitat-specific criteria are not applied as these are not available for the habitat types f2d/f2f.
Urban – developed land; sealed surface (0.33 ha)	N/A – other	No condition assessment required – allocated a score of 0
Urban – Bare ground (0.02 ha)	Poor	A – varied vegetation structure - Fail B – different plant species that are beneficial for wildlife - Fail C – Invasive species absent and undesirable species <5% - Pass Passes one of three criteria and is therefore in poor condition.

Current hedgerows

Habitat	Condition score	Rationale for condition assessment
Hedgerow 1 – Native hedgerow (0.099 km)	Good	A1 - height >1.5m average - Pass A2 - width >1.5m average - Pass B1 - gaps between ground and base <0.5m - Pass B2 - gaps make up <10% total length - Pass C1 - >1m width of undisturbed ground - Fail C2 - plant species indicative of nutrient enrichment of soils dominates <20% cover - Pass D1 - >90% hedgerow is free of invasive non-native species - Pass D2 - >90% hedgerow/undisturbed ground is free of damage caused by human activities - Pass This hedgerow passes all but one criterion and therefore is in good condition.
Hedgerow 2 – Native hedgerow (0.097 km)	Good	A1 - height >1.5m average - Pass A2 - width >1.5m average - Pass B1 - gaps between ground and base <0.5m - Pass B2 - gaps make up <10% total length - Pass C1 - >1m width of undisturbed ground - Fail C2 - plant species indicative of nutrient enrichment of soils dominates <20% cover - Pass D1 - >90% hedgerow is free of invasive non-native species - Pass D2 - >90% hedgerow/undisturbed ground is free of damage caused by human activities - Pass This hedgerow passes all but one criterion and therefore is in good condition.
Hedgerow 3 – Native hedgerow with trees (0.27 km)	Good	A1 - height >1.5m average - Pass A2 - width >1.5m average - Pass B1 - gaps between ground and base <0.5m - Pass B2 - gaps make up <10% total length - Pass C1 - >1m width of undisturbed ground - Fail C2 - plant species indicative of nutrient enrichment of soils dominates <20% cover - Pass D1 - >90% hedgerow is free of invasive non-native species - Pass D2 - >90% hedgerow/undisturbed ground is free of damage caused by human activities - Pass E1 - There is more than one age-class (or morphology) of tree present per 20 - 50m of hedgerow - Fail E2 - At least 95% of hedgerow trees are in a healthy condition (excluding veteran features valuable for wildlife). There is little or no evidence of an adverse impact on tree health by damage from livestock or wild animals, pests or diseases, or human activity - Pass This hedgerow passes all but two criteria, with no two failures in one functional group, and is therefore in good condition.

Current watercourses

Habitat	Condition score	Rationale for condition assessment
Drain 2 – ditch (sections 0.266 km, 0.105 km)	Poor	A – good water quality and no obvious signs of pollution - Fail B – range of emergent, submerged and floating leaved plants (as a guide, >10 species in a 20m length) - Fail C - <10% cover of filamentous algae and/or duckweed - Pass D – fringe of aquatic marginal vegetation present along >75% of length - Pass E – physical damage evident along <5% of the ditch - Pass F – sufficient water levels are maintained (as a guide, min summer depth of c50cm in minor drains – Fail G - <10% of ditch is heavily shaded – Fail H – absence of non-native plant and animal species - Pass Passes four of eight criteria and therefore in poor condition.
Drain 3 – ditch (0.262 km)	Poor	A – good water quality and no obvious signs of pollution - Fail B – range of emergent, submerged and floating leaved plants (as a guide, >10 species in a 20m length) - Fail C - <10% cover of filamentous algae and/or duckweed - Pass D – fringe of aquatic marginal vegetation present along >75% of length - Fail E – physical damage evident along <5% of the ditch - Pass F – sufficient water levels are maintained (as a guide, min summer depth of c50cm in minor drains – Fail G - <10% of ditch is heavily shaded – Fail H – absence of non-native plant and animal species - Pass Passes three of eight criteria and therefore in poor condition.
Drain 4 – ditch (sections 0.457 km, 0.351 km)	Poor	A – good water quality and no obvious signs of pollution - Fail B – range of emergent, submerged and floating leaved plants (as a guide, >10 species in a 20m length) - Fail C - <10% cover of filamentous algae and/or duckweed - Fail D – fringe of aquatic marginal vegetation present along >75% of length - Fail E – physical damage evident along <5% of the ditch - Pass F – sufficient water levels are maintained (as a guide, min summer depth of c50cm in minor drains – Fail G - <10% of ditch is heavily shaded – Pass H – absence of non-native plant and animal species - Pass Passes three of eight criteria and therefore in poor condition.
Drain 5 – ditch (0.264 km)	Poor	A – good water quality and no obvious signs of pollution - Fail B – range of emergent, submerged and floating leaved plants (as a guide, >10 species in a 20m length) - Fail C - <10% cover of filamentous algae and/or duckweed - Fail D – fringe of aquatic marginal vegetation present along >75% of length - Fail E – physical damage evident along <5% of the ditch - Pass

Habitat	Condition score	Rationale for condition assessment
		F – sufficient water levels are maintained (as a guide, min summer depth of c50cm in minor drains – Fail G - <10% of ditch is heavily shaded – Fail H – absence of non-native plant and animal species - Pass Passes two of eight criteria and therefore in poor condition.
Drain 6 – ditch (sections 0.304 km, 0.443 km, 0.054 km)	Poor	A – good water quality and no obvious signs of pollution - Pass B – range of emergent, submerged and floating leaved plants (as a guide, >10 species in a 20m length) - Fail C - <10% cover of filamentous algae and/or duckweed - Fail D – fringe of aquatic marginal vegetation present along >75% of length - Pass E – physical damage evident along <5% of the ditch - Pass F – sufficient water levels are maintained (as a guide, min summer depth of c50cm in minor drains – Fail G - <10% of ditch is heavily shaded – Pass H – absence of non-native plant and animal species - Pass Passes five of eight criteria and therefore in poor condition.
Drain 7 – ditch (sections 0.464 km, 0.227 km)	Moderate	A – good water quality and no obvious signs of pollution - Pass B – range of emergent, submerged and floating leaved plants (as a guide, >10 species in a 20m length) - Fail C - <10% cover of filamentous algae and/or duckweed - Pass D – fringe of aquatic marginal vegetation present along >75% of length - Pass E – physical damage evident along <5% of the ditch - Pass F – sufficient water levels are maintained (as a guide, min summer depth of c50cm in minor drains – Pass G - <10% of ditch is heavily shaded – Pass H – absence of non-native plant and animal species - Pass Passes seven of eight criteria and therefore in moderate condition.
Drain 8 – ditch (0.515 km)	Poor	A – good water quality and no obvious signs of pollution - Fail B – range of emergent, submerged and floating leaved plants (as a guide, >10 species in a 20m length) - Fail C - <10% cover of filamentous algae and/or duckweed - Pass D – fringe of aquatic marginal vegetation present along >75% of length - Pass E – physical damage evident along <5% of the ditch - Pass F – sufficient water levels are maintained (as a guide, min summer depth of c50cm in minor drains – Fail G - <10% of ditch is heavily shaded – Pass H – absence of non-native plant and animal species - Pass Passes five of eight criteria and therefore in poor condition.
Drain 9 – ditch (0.415 km)	Poor	A – good water quality and no obvious signs of pollution - Fail B – range of emergent, submerged and floating leaved plants (as a guide, >10 species in a 20m length) - Fail

Habitat	Condition score	Rationale for condition assessment
		C - <10% cover of filamentous algae and/or duckweed - Fail D – fringe of aquatic marginal vegetation present along >75% of length - Pass E – physical damage evident along <5% of the ditch - Pass F – sufficient water levels are maintained (as a guide, min summer depth of c50cm in minor drains – Fail G - <10% of ditch is heavily shaded – Pass H – absence of non-native plant and animal species - Pass Passes four of eight criteria and therefore in poor condition.
Drain 10 – ditch (0.272 km)	Poor	A – good water quality and no obvious signs of pollution - Fail B – range of emergent, submerged and floating leaved plants (as a guide, >10 species in a 20m length) - Fail C - <10% cover of filamentous algae and/or duckweed - Pass D – fringe of aquatic marginal vegetation present along >75% of length - Pass E – physical damage evident along <5% of the ditch - Pass F – sufficient water levels are maintained (as a guide, min summer depth of c50cm in minor drains – Fail G - <10% of ditch is heavily shaded – Pass H – absence of non-native plant and animal species - Pass Passes five of eight criteria and therefore in poor condition.
Drain 11 – ditch (0.235 km)	Poor	A – good water quality and no obvious signs of pollution - Fail B – range of emergent, submerged and floating leaved plants (as a guide, >10 species in a 20m length) - Fail C - <10% cover of filamentous algae and/or duckweed - Pass D – fringe of aquatic marginal vegetation present along >75% of length - Pass E – physical damage evident along <5% of the ditch - Pass F – sufficient water levels are maintained (as a guide, min summer depth of c50cm in minor drains – Fail G - <10% of ditch is heavily shaded – Pass H – absence of non-native plant and animal species - Pass Passes five of eight criteria and therefore in poor condition.
Drain 12 – ditch (0.232 km)	Poor	A – good water quality and no obvious signs of pollution - Fail B – range of emergent, submerged and floating leaved plants (as a guide, >10 species in a 20m length) - Fail C - <10% cover of filamentous algae and/or duckweed - Fail D – fringe of aquatic marginal vegetation present along >75% of length - Pass E – physical damage evident along <5% of the ditch - Pass F – sufficient water levels are maintained (as a guide, min summer depth of c50cm in minor drains – Fail G - <10% of ditch is heavily shaded – Fail H – absence of non-native plant and animal species - Pass

Habitat	Condition score	Rationale for condition assessment
		Passes three of eight criteria and therefore in poor condition.
Drain 13 – ditch (0.121 km)	Poor	A – good water quality and no obvious signs of pollution - Fail B – range of emergent, submerged and floating leaved plants (as a guide, >10 species in a 20m length) - Fail C - <10% cover of filamentous algae and/or duckweed - Pass D – fringe of aquatic marginal vegetation present along >75% of length - Pass E – physical damage evident along <5% of the ditch - Pass F – sufficient water levels are maintained (as a guide, min summer depth of c50cm in minor drains – Fail G - <10% of ditch is heavily shaded – Pass H – absence of non-native plant and animal species - Pass Passes five of eight criteria and therefore in poor condition.

Proposed habitats

Habitat	Condition score	Rationale for condition assessment
Grassland – modified grassland (40.007 ha)	Moderate	A - 6-8 vascular plant species per m², including at least 2 forbs – Pass B – varied sward height (at least 20% <7cm and at least 20% >7cm) – Pass C – scrub <20% of total area – Pass D – physical damage in <5% of total area – Fail E - bare ground cover is between 1-10% - Fail F – cover of bracken <20% - Pass G – invasive species are absent – Pass The meadow grassland habitat is anticipated to pass five out of seven criteria and to therefore attain moderate condition. It is precautionarily predicted to fail criteria D and E since its location within the solar arrays means that there is an increased likelihood of physical damage (through operation and maintenance of the solar panels) and of excessive bare ground (through shading)
Individual trees – rural trees (0.175 ha)	Moderate	A – native species (0r at least 70% within block native) – Pass B – canopy continuous (individual trees automatically pass – Pass C – tree is mature (or >50% within block are mature) – Fail D – little adverse impact by human activities – Pass E – natural ecological niches are present - Fail F - >30% of canopy area is oversailing vegetation beneath – Pass The newly-planted individual trees are anticipated to pass four out of six criteria and therefore attain moderate condition.
Urban – developed land; sealed surface (1.008 ha)	NA – other	No condition assessment required – allocated a score of 0
Urban – developed land; sealed surface (0.811 ha)	NA – other	No condition assessment required – allocated a score of 0

Proposed hedgerows

Habitat	Condition score	Rationale for condition assessment
Species-rich native hedgerows with trees (0.787 km)	Good	A1 - height >1.5m average - Pass A2 - width >1.5m average - Pass B1 - gaps between ground and base <0.5m - Pass B2 - gaps make up <10% total length - Pass C1 - >1m width of undisturbed ground - Pass C2 - plant species indicative of nutrient enrichment of soils dominates <20% cover - Pass D1 - >90% hedgerow is free of invasive non-native species - Pass D2 - >90% hedgerow/undisturbed ground is free of damage caused by human activities - Pass E1 - There is more than one age-class (or morphology) of tree present per 20 - 50m of hedgerow - Fail E2 - At least 95% of hedgerow trees are in a healthy condition (excluding veteran features valuable for wildlife). There is little or no evidence of an adverse impact on tree health by damage from livestock or wild animals, pests or diseases, or human activity - Pass With appropriate management all newly-planted species-rich native hedgerows with trees are anticipated to pass all but one criterion and to therefore attain good condition.
Species-rich native hedgerow (0.217)	Good	A1 - height >1.5m average - Pass A2 - width >1.5m average - Pass B1 - gaps between ground and base <0.5m - Pass B2 - gaps make up <10% total length - Pass C1 - >1m width of undisturbed ground - Pass C2 - plant species indicative of nutrient enrichment of soils dominates <20% cover - Pass D1 - >90% hedgerow is free of invasive non-native species - Pass D2 - >90% hedgerow/undisturbed ground is free of damage caused by human activities - Pass With appropriate management the newly-planted species-rich native hedgerow is anticipated to pass all criteria and to therefore attain good condition.

8.2. Appendix 2: Biodiversity net gain calculator

As attachment.



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