



EVOLUTION ECOLOGY LTD

“Providing Common Sense Solutions for Sustainable Development”

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Vulcan Refractories Ltd, Cheadle, Staffordshire

Biodiversity Net Gain Assessment – Updated October 2024



Evolution Ecology Ltd

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1. INTRODUCTION

1. Further to the request of the Staffordshire Moorlands District Council (SMDC) and Staffordshire Wildlife Trust (SWT), Evolution Ecology Ltd was commissioned to undertake a Biodiversity Impact Assessment (BIA) in relation to the Biodiversity Net Gain (BNG) assessment for the proposed new industrial unit at Vulcan Refractories Ltd, Draycott Cross Road, Brook Houses, Cheadle, Staffordshire, ST10 1PN (Planning Reference: SMD/2022/0350).
2. Using the DEFRA 4.0 Biodiversity Impact Calculation Tool, this BNG report aims to ascertain if a net loss to biodiversity is incurred as a result of the proposed redevelopment and to outline the need for any additional enhancement and management of habitat through on-site habitat creation or off-site habitat creation.
3. Assessment and impact calculations have been made using ecological baseline information from the initial Phase 1 Preliminary Ecological Appraisal (Evolution Ecology Ltd, May 2022), and revised assessment by Evolution Ecology (February 2023); in conjunction with Ordnance Survey maps and technical CAD drawings (pre- and post-development drawings, supplied by Hewitt and Carr Architects).
- o **Proposed development.**
4. The proposed redevelopment comprises demolishing an existing storage building currently occupied by Vulcan to be replaced with a new storage and production building to facilitate the relocation of the sister company (Zampell) from Burntwood, around 30 miles from the site.
5. The proposed building will then be used by both Zampell for production/storage and Vulcan for storage. Current deliveries are to the front of Vulcan; following the proposal, all deliveries will be via the new entrance off Keates Way.
6. The site (warehouse building, trees, and a pond) is located within Cheadle's Brookhouses Industrial estate, Cheadle, Staffordshire. The site is surrounded by hard-standing ground (yard), commercial units, and River Tean (woodland corridor).
7. Into the broader landscape, evidence of additional commercial units, dwellings, agricultural land, scattered trees/woodland, hedgerows, and residential/commercial units are evident (photographs of the site are presented in Appendix Three).

Figure 1. An aerial map showing the location of the site (red dotted outline) and the River Tean in relation to some of the local landscape.

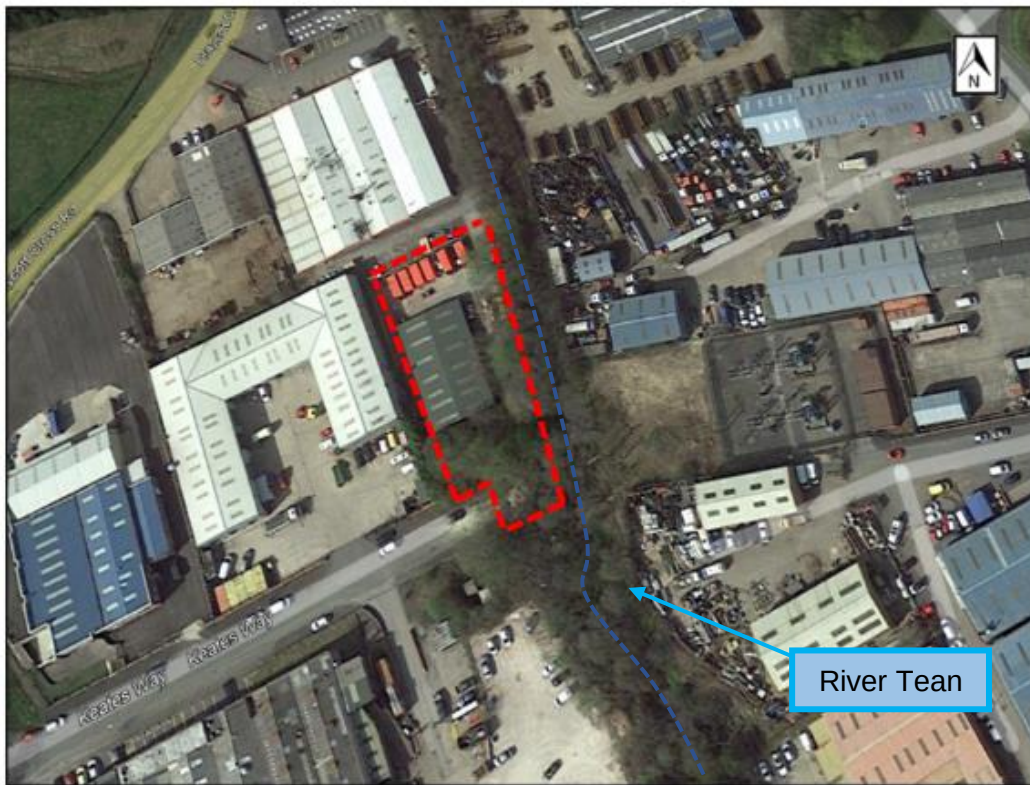
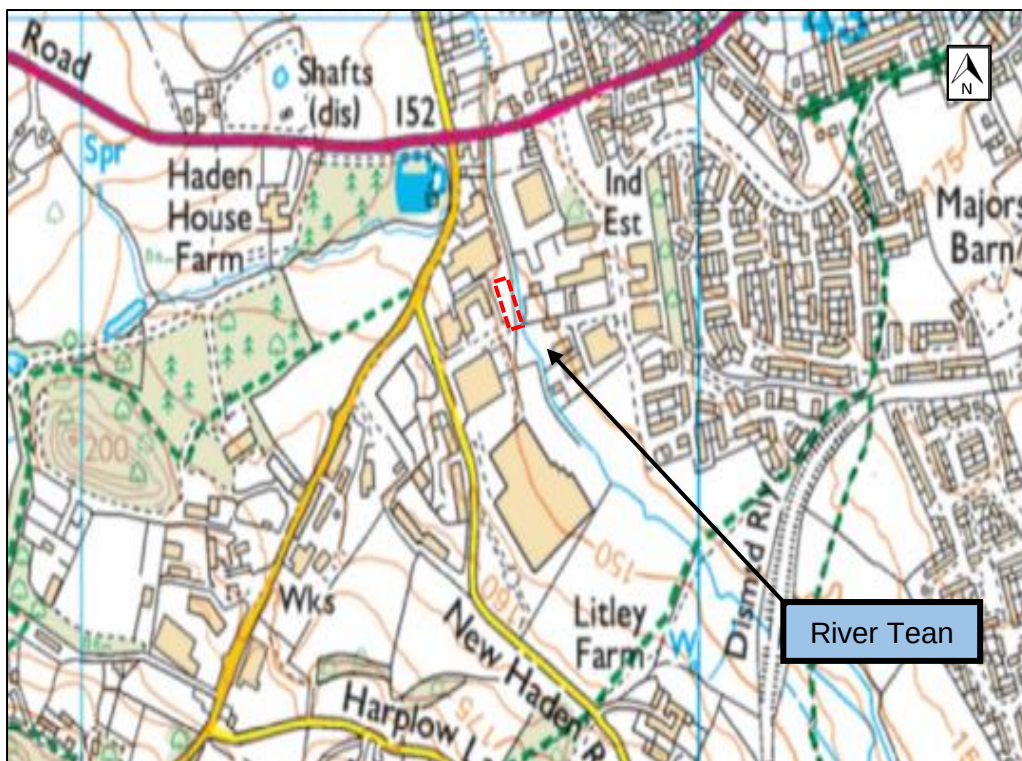


Figure 2. An ordnance survey map showing the location of the site (red dotted outline) and the River Tean in relation to some of the local landscape.



2. METHODOLOGY

8. In order to assess the overall net impact on biodiversity through the redevelopment, an updated site survey was carried out during February 2022 and undertaken by Paul Keeling BSc (Hons), MCIEEM.
9. Policy NE1 in the Staffordshire Moorlands Local Plan Adopted in September 2020 expects that all development, where possible, seeks to deliver a net gain in biodiversity proportionate to the size and scale of the re/development. In circumstances where adverse impacts are demonstrated to be unavoidable, developers will be required to ensure that impacts are appropriately mitigated, with suitable compensation measures towards loss of habitat used only as a last resort where there is no alternative'.
10. Should a BNG determine a residual net loss to biodiversity after the 'mitigation hierarchy' has been followed, and if the development is in accordance with all other local and national planning policies and wildlife laws, a biodiversity off-setting scheme may be necessary, and to be managed in the long term.
11. Biodiversity Impact Assessment used the DEFRA metric calculator (v.4.0) to measure and quantify the site's biodiversity units before and after any proposed re/development. This reveals if the re/development is likely to cause no net loss, net loss or net gain to biodiversity using the following criteria:

○ Obtain adequate pre-development baseline data of the types and conditions of habitats present;
○ Map the habitat type(s), and assess the baseline value of the site in terms of biodiversity units;
○ Assess the need for the creation or restoration of habitat(s) to deliver units of biodiversity on-site, and if necessary off-setting off-site (where applicable);
○ Assess timescales required to achieve biodiversity net gain through habitat creation/ restoration and management techniques, including avoiding and minimising ecological harm and creating a landscape rich in biodiversity and green infrastructure.
○ Develop an outline masterplan, and test design by calculating preliminary post-development biodiversity units. Where necessary, revise masterplan in response to the initial calculation and test subsequent iterations of the masterplan;
○ Subject to the approval of BIA/BNG, prepare an Ecology Construction and Enhancement Plan or similar, to address requirements to achieve projected BNG for ongoing management
○ Carry out compliance checks during and on completion of construction;
○ Ensure clear handover of responsibility for maintenance from developer to management company;
○ Implement and monitor habitat management;
○ Revise the management plan, if necessary, to ensure BNG is sustained.

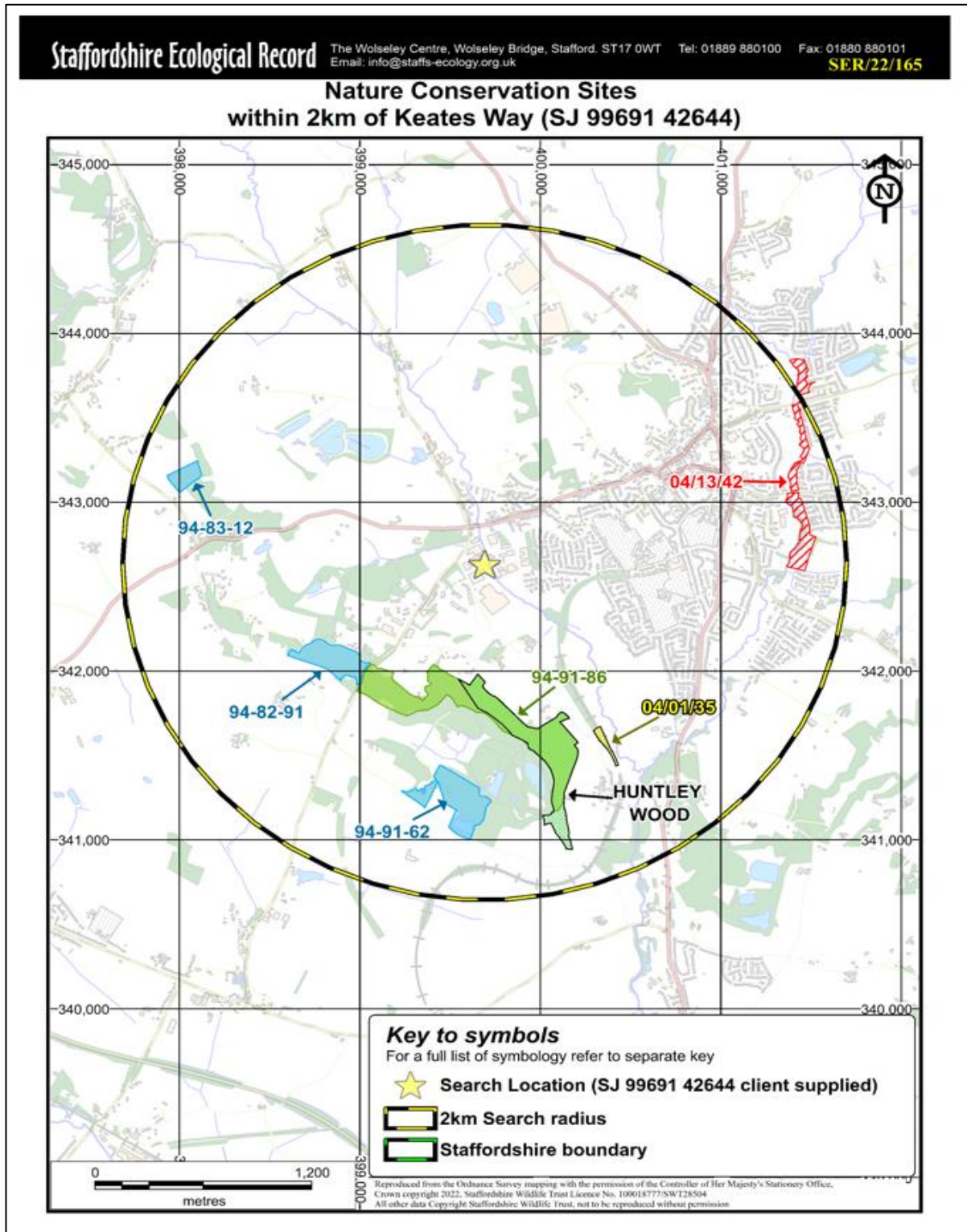
- ***Baseline biodiversity unit calculation***

12. Baseline data was used to calculate the habitat units, measuring the biodiversity within the re/development footprint. The distinctiveness of the habitat and condition are given numerical "scores", which are multiplied alongside the area (ha) or length (km) to provide the number of baseline habitat and hedgerow units.
 - o DEFRA Biodiversity Metric (V4.0) calculator can be accessed at the following link:
<https://nepubprod.appspot.com/publication/6049804846366720>
13. Calculations have been determined as precisely as possible from architectural drawing scale bars and dividing the areas into regular shapes – subsequently, calculations are +/- m² within tolerance.

3. RESULTS

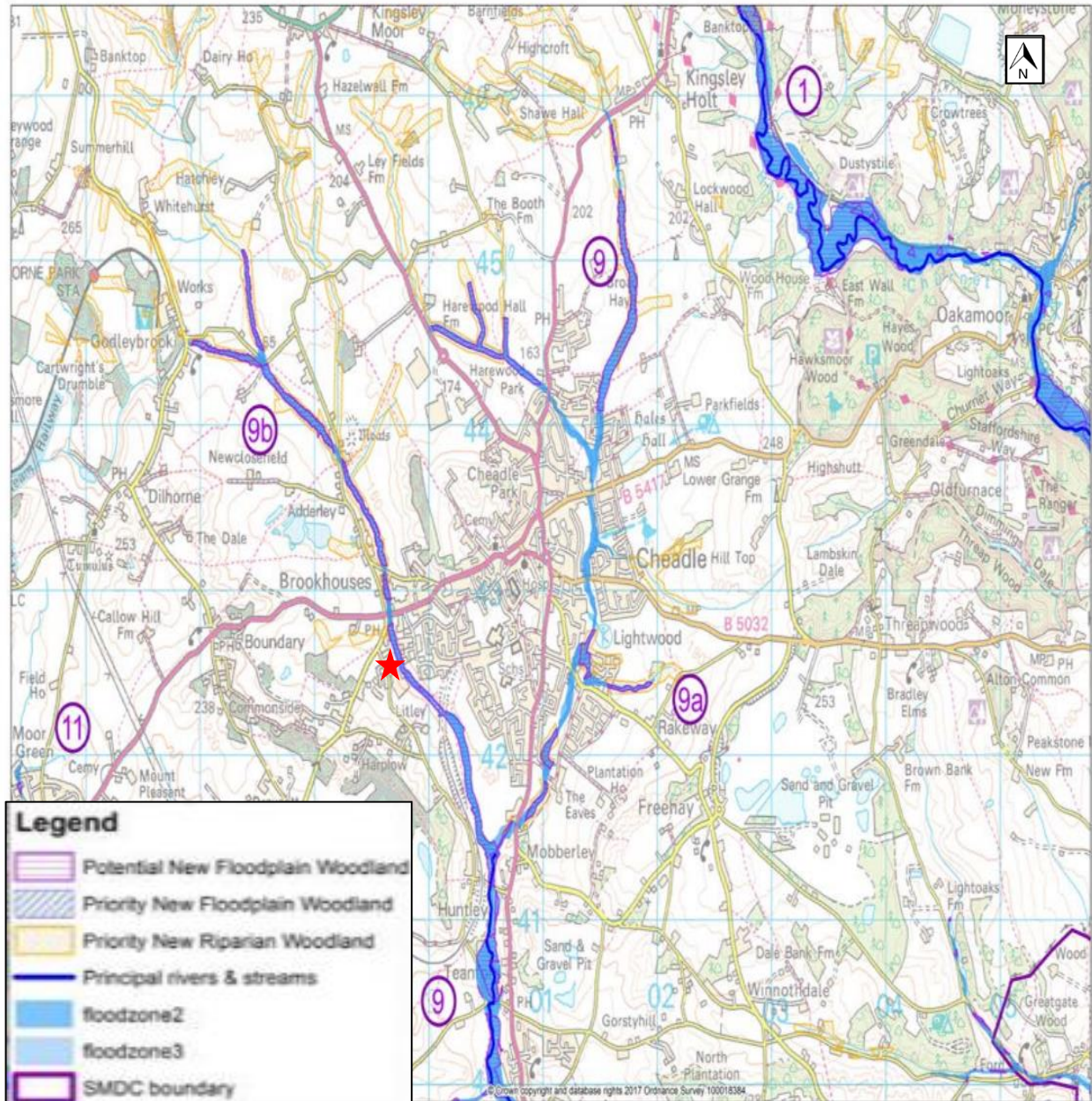
- **Designated sites**

Figure 3. Designated conservation sites within a 2km radius of the proposed application area (yellow star).



14. **River Tean** - The River Tean flows adjacent to the east boundary of the Vulcan site. River Tean forms part of the 'Habitat Connectivity Opportunity Area on the Nature Recovery Network map for the Staffordshire Moorlands District.

Figure 4. Water Management Corridors in and around Cheadle River Tean, and the proposed application area (red star).



Link – (page 81) https://www.staffs Moorlands.gov.uk/media/3355/Green-Infrastructure-Strategy/pdf/22.10_SMDC_Green_Infrastructure_Strategy_May_2018.pdf

4. IMPACT ASSESSMENT

Existing Habitats at the Site

Figure 5: Baseline Map Pre-development (illustration purposes only – contact simon.goldstraw@hcarchitects.co.uk for a clearer/scaled image).

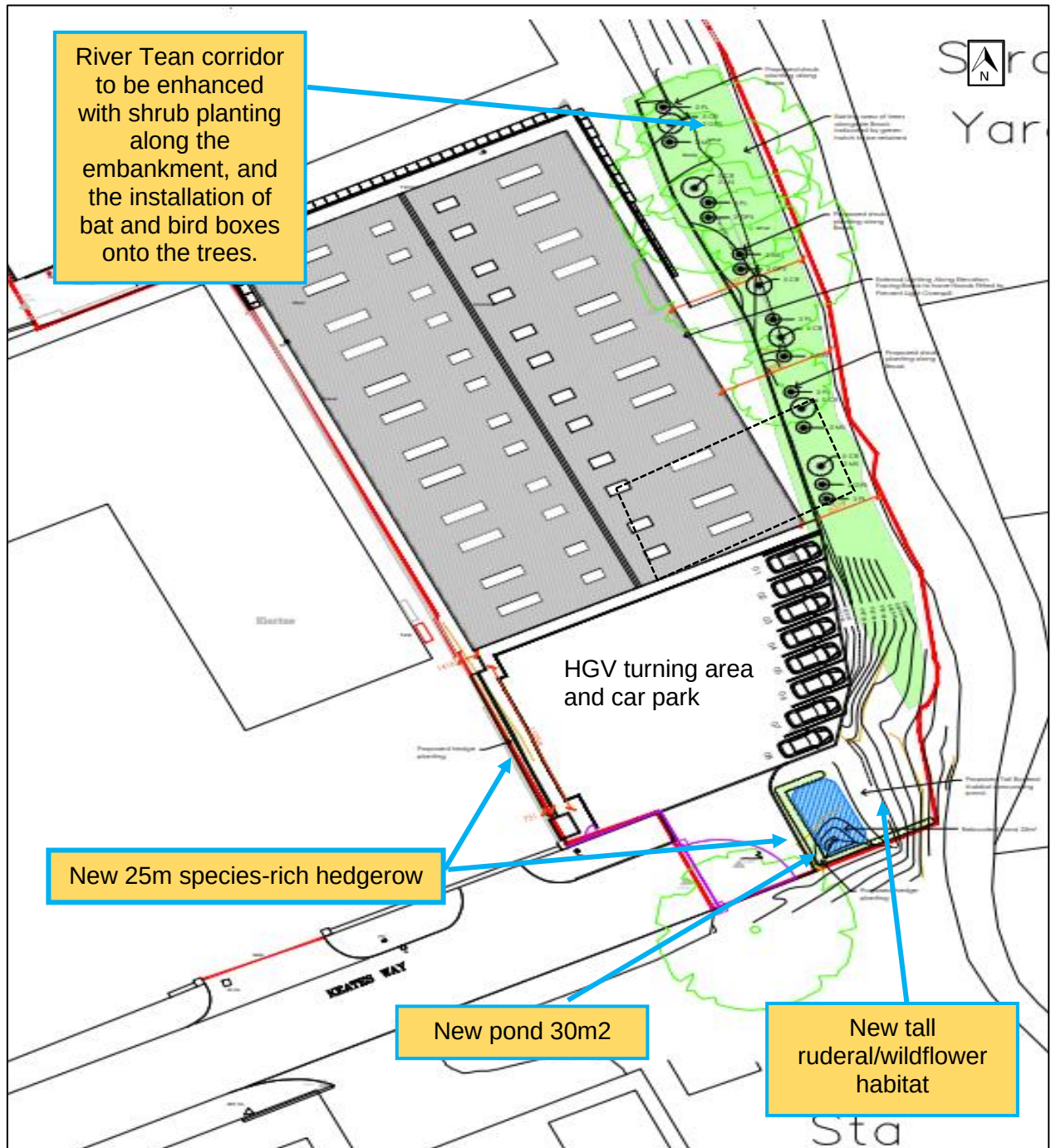


ON-SITE BASELINE				Ecological Importance of habitats in isolation					
Habitat	Total ha	Units	Distinctiveness	I	N	R	D	L	S
Existing woodland (priority habitat)	0.0392	0.78	High					X	X
Tall herb/ruderal (sparsely vegetated land)	0.13188	0.61	Low						X
Existing Pond (priority habitat)	0.00235	0.03	High					X	X
Urban (developed land/sealed surface)	0.52877	0.0	Very Low						X
Total Units		1.41							
I=International, N=National, R=Regional, D=District, L=Local, S=Site									

15. The redevelopment area comprises a commercial building, hard-standing ground, woodland, pond and sparsely vegetated land (tall ruderal habitat), with the River Tean corridor flowing along the east boundary of the site. The site equates to ca. 0.7ha in total in coverage between boundaries. The heterogeneity of habitats on site reflects how the site is used by the commercial business, with most of the site consisting of a warehouse/commercial prefabricated building and hard-standing ground (Urban ca 0.5ha).
- **Other habitats**
16. The remainder of the site's habitats within the redevelopment zone comprises a mixed deciduous woodland, pond, and sparsely vegetated land (ca. 0.2).
17. River Tean - Individually, the habitats on site are considered as having low to high ecological value, being of relatively low, moderate to high distinctiveness, and connect to the River Tean, which flows adjacent to the east boundary of the Vulcan site (Habitat Connectivity Opportunity Area on the Nature Recovery Network map for the Staffordshire Moorlands District).
- **Baseline unit's summary**
18. Should the re/development proceed without additional measures to enhance/ retain or create, then ca. 316.5m² (0.03165ha) of existing woodland/pond habitats coverage will be lost under the proposed scheme.

Proposed Habitats at the Site

Figure 6: Baseline Map Post-development (illustration purposes only – contact simon.goldstraw@hccarchitects.co.uk for a more precise/scaled image).



• ON-SITE POST INTERVENTION

• Site habitat creation

19. Given the small-scale size of the site (ca. 0.7h) and the client's limitations to make the building "fit for purpose" has restricted the on-site habitat creation options available for the proposed redevelopment at the site.
20. Detailed below in the 'On-site habitat creation' table lists the habitats which will be created at the site.

ON-SITE HABITAT CREATION			
Habitat	Total ha	Units delivered	Estimated time to target improved condition
Tall herb/ruderal (sparsely vegetated land)	0.01455	0.06	5yrs
Pond	0.00245	0.03	5yrs
Hedgerows with trees	0.025	0.25	20yrs
Woodland	0	0	0
Total Units		0.34	

• Site habitat retention

21. Given the small-scale size of the site (ca. 0.7h) and the client's limitations to make the building "fit for purpose" has restricted the on-site habitat retention options available for the proposed redevelopment at the site. Meaning that a clear fell of the on-site woodland will occur.

• On-site hedge creation

22. It is proposed to create 25m species-rich hedgerow* (with trees) along the south and west boundaries of the site, comprising Holly, hawthorn, blackthorn, dog rose, honeysuckle, crab apple, field maple, gorse, and hazel (please see Figure 6, above for the location of the hedgerows).

**As defined in the Hedgerow Survey Handbook (DEFRA 2007), species-rich Hedgerows should comprise of >30m section of at least four native woody species.*

Summary of On-site Post Intervention

23. Should the redevelopment proceed without additional off-site intervention to further increase BNG, the redevelopment would result in a biodiversity net loss of –1.32 habitat unit (-93.28%) and -0.99 watercourse unit change (-100%).

Vulcan Refractories

Headline Results

Scroll down for final results ⚠

Return to results menu

On-site baseline	Habitat units	1.41	
	Hedgerow units	0.00	
	Watercourse units	0.99	
On-site post-intervention (Including habitat retention, creation & enhancement)	Habitat units	0.09	
	Hedgerow units	0.25	
	Watercourse units	0.00	
On-site net change (units & percentage)	Habitat units	-1.32	-93.28%
	Hedgerow units	0.25	N/A
	Watercourse units	-0.99	-100.00%

OFF-SITE POST INTERVENTION

Off-site Post Intervention - Habitat Creation

24. There is an option to create a new habitat at 'The Green', located approximately 180m northeast from the Vulcan site (please see Figure 6 below). The Green belongs to Staffordshire Moorlands District Council (SMDC), which currently consists of amenity grassland that the council mow regularly during the summer (ecologically poor habitat).
25. The new habitats to be created will be in the form of a new wildflower meadow (2500m²), a hedgerow (50m), and a scattering of trees (8 trees).

Figure 7: The location of 'The Green' and the area for the new off-site habitat creation



Key –

- The red dotted outline indicates the Vulcan redevelopment site,
- The yellow dotted outline shows the location of the new wildflower meadows,
- The green line indicates the location of the new hedgerow,
- The red dots indicate the locations of the new 'cherry trees'.

Figure 8: The location of 'The Green' (amenity grassland) - Google Earth Street view (low ecological value).



26. The proposed off-site habitat creation area at 'The Green' belongs to Staffordshire Moorlands District Council. Discussions with the landowner have been undertaken to confirm the area of the new wildflower meadow, hedgerow, and trees to confirm the BNG units that can be achieved.

Email from Cllr Joe Porter (28/03/23) - Cabinet Member for Climate Change & Biodiversity

Morning All,

I'm happy with this document and the proposals outlined.

Thanks for submitting, Paul, and thanks for sending me, Chris.

Best wishes,

Joe

Cllr Joe Porter

Cabinet Member for Climate Change & Biodiversity

District Councillor for Brown Edge & Endon

Parish Councillor for Brown Edge & Endon

Off-Site **Baseline** Habitats

OFF-SITE BASELINE				Ecological Importance of habitats in isolation					
Habitat	Total ha	Total units	Distinctiveness	I	N	R	D	L	S
Grassland (amenity grassland)	0.266	0.61	Low					X	X
Total units		0.61							
I=International, N=National, R=Regional, D=District, L=Local, S=Site									

Off-Site **Habitat** Creation

OFF-SITE Habitat Creation				Ecological Importance of habitats in isolation					
Habitat	Total ha	Total units	Distinctiveness	I	N	R	D	L	S
Grassland (lowland meadows)	0.25	1.33	Very High					X	X
Trees (x8)	0.0016	0.01	High					X	X
Species-rich hedgerow with trees	0.005	0.45	Medium					X	X
Total units		1.79							
I=International, N=National, R=Regional, D=District, L=Local, S=Site									

○ **Landscaping, management and Implementation**

27. In order to deliver the proposed (combined) Biodiversity Net Gain metric unit target (through on-site and off-site retention, creation and enhancement), a detailed Ecology Construction and Enhancement Plan (ECEP) will need to be submitted and approved by the Local Planning Authority (LPA) within six months of the redevelopment commencing.
28. In order to achieve BNG through enhancement, a 30-year Ecology Construction and Enhancement Plan will need to detail ongoing habitat management and monitoring of key species, with a mid-term review at the 5-year point.

PRELIMINARY CREATION & ENHANCEMENT CONSIDERATIONS	
• On-site • Plan showing areas to be cleared and type of clearance- removal, coppicing, pollarding, thinning. • Deadwood material features – specify the construction of log piles. • Hedge planting - Holly, hawthorn, blackthorn, dog rose, honeysuckle, crab apple, field maple, gorse, hazel. • Installing bat and bird boxes onto the trees along the River Tean. • Creation of a new pond at the site. • Tall ruderal habitat to be created.	
• Off-site • Creation of a new wildflower meadow. • Creation of new hedgerows with trees. • Planting of trees.	

29. Final Results – post development of the on-site and off-site habitat creation measures will result in a 1.60% habitat increase.

FINAL RESULTS		
Total net unit change (Including all on-site & off-site habitat retention, creation & enhancement)	<i>Habitat units</i>	0.02
	<i>Hedgerow units</i>	0.61
	<i>Watercourse units</i>	1.00
Total net % change (Including all on-site & off-site habitat retention, creation & enhancement)	<i>Habitat units</i>	1.60%
	<i>Hedgerow units</i>	N/A
	<i>Watercourse units</i>	100.34%

5. REFERENCES

Biodiversity Impact Assessment / Metric links

- <http://publications.naturalengland.org.uk/publication/5850908674228224>
- https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/839610/net-gain-ia.pdf
- https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/819823/net-gain-consult-sum-resp.pdf

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6. APPENDIX

Site Photographs

Plate 1: This image shows the hard-standing area (yard) at the site.



Plate 2: This image shows the mature Crack Willow tree and the Tall Ruderal Habitat (nettles, brambles, etc.).



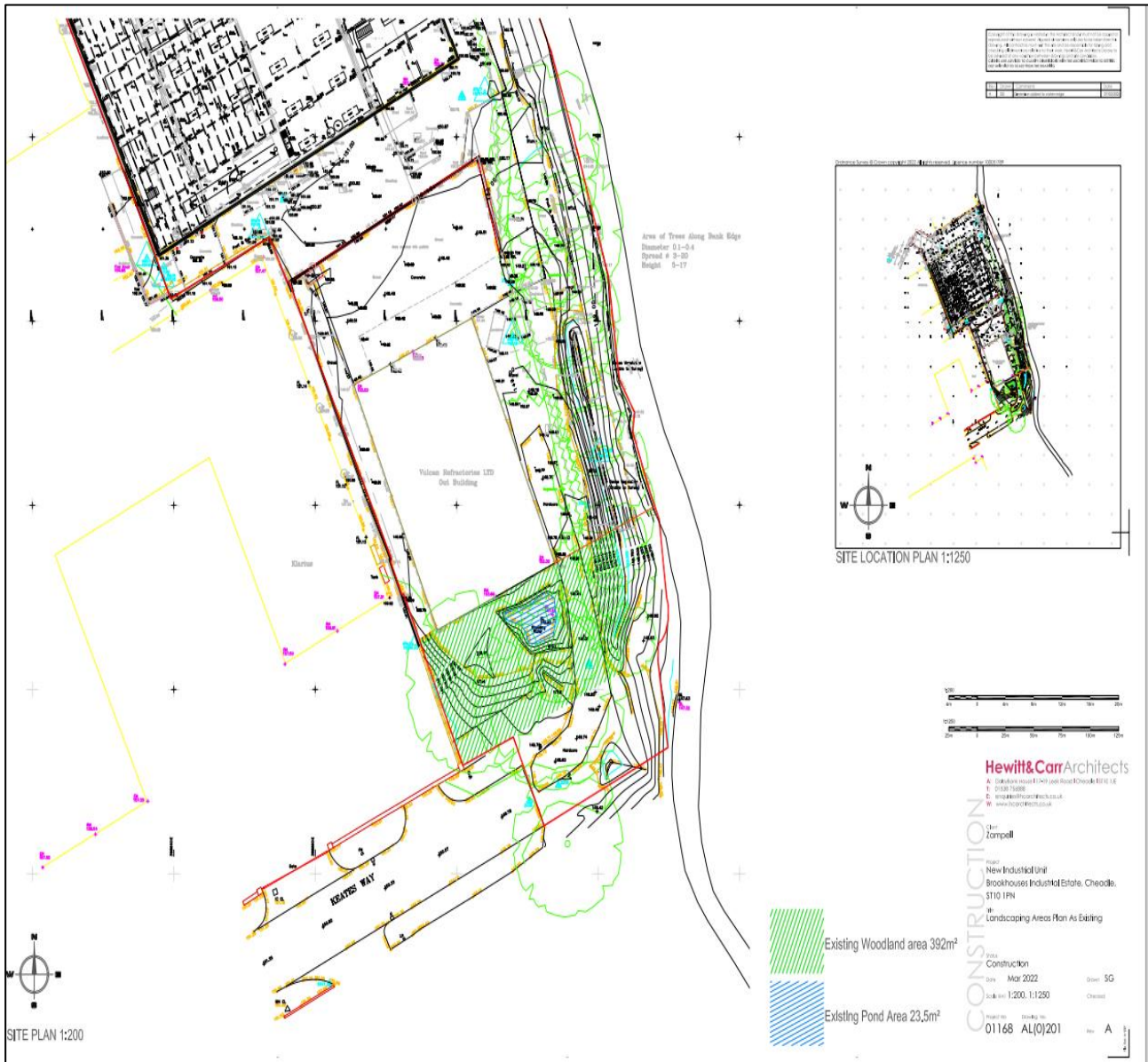
Plate 3: This image shows the pond at the site's south end and the prefabricated building.



Plate 4: This image shows River Tean along the east boundary of the Vulcan site.



Existing Site Plan - please contact simon.goldstraw@hcarchitects.co.uk for a more precise/scaled image).



Proposed Site Plan – please contact simon.goldstraw@hcarchitects.co.uk for a more precise/scaled image).



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2.2 If the client(s) fails to pay within the time specified in 2.1 then Evolution Ecology Ltd shall charge the client(s) interest on the outstanding fee, both before and after any judgment, at the rate of 4% per annum above the HSBC Bank base rate, until payment is made in full (A part of a month being treated as a full month for the purposes of calculating interest).

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