Monkmoor Meadows

Masterplan and Final Proposals (RIBA Stage 3)

February 2018

Shropshire Wildlife Trust

The Marches Local Enterprise Partnership
Herefordshire - Shropshire - Telford & Wrekin

Shrewsbury Town Council

Contents

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Introduction

Red Kite Network Limited, a Shropshire-based landscape architecture, ecology and greenspace consultancy, were appointed by Shropshire Wildlife Trust to carry out a feasibility study and site design of Monkmoor Meadows, Shrewsbury (the Site). The proposals contained within this report will support grant funding applications, and it is anticipated that further detailed design will be necessary if funding is secured.

The River Projects forms part of Shropshire Wildlife Trust's Wild Water Programme, which seeks to improve water quality, reduce flooding, enhance ecological value and promote access and awareness at landscape scale river catchments. Monkmoor Meadows has been identified as a potential area of 4 hectares that would benefit from ecological enhancement and improved access provision.

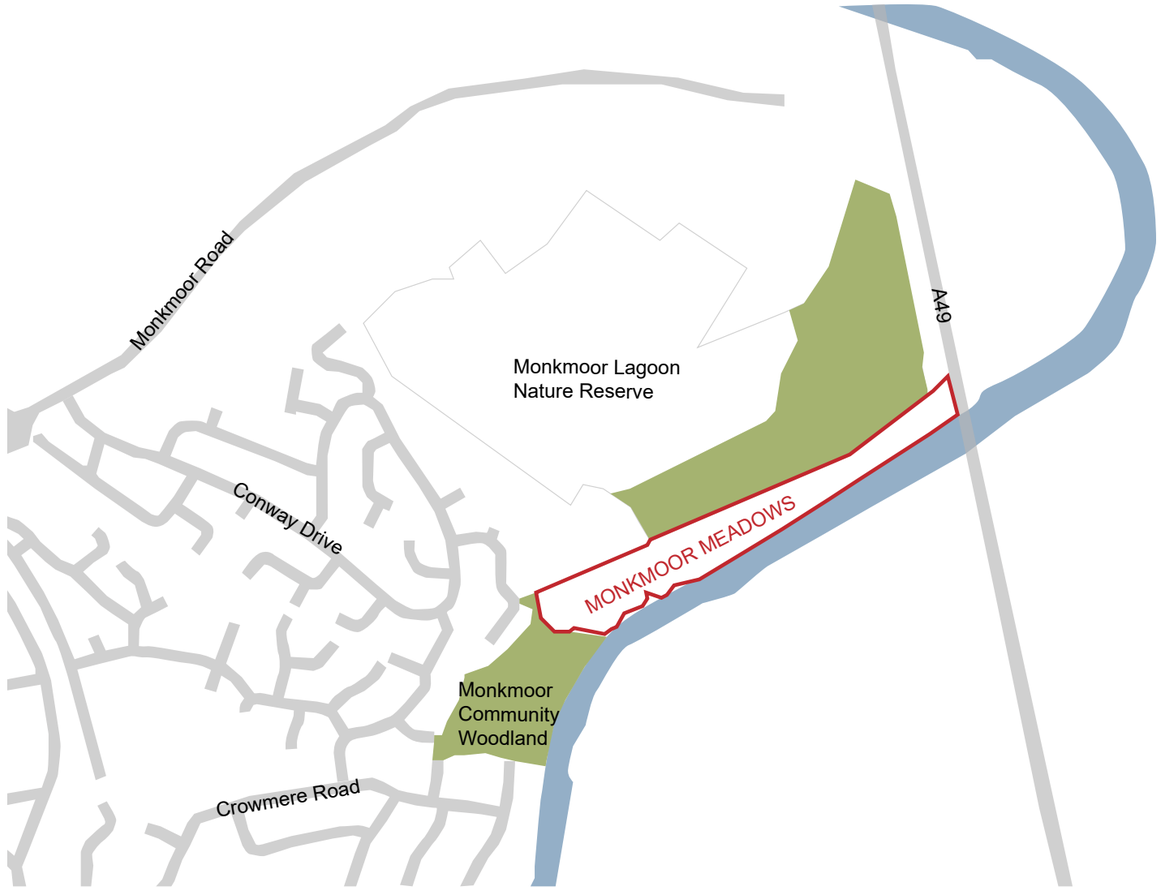
The Site is located on the banks of the River Severn, in the residential area of Monkmoor in Shrewsbury. To the south-west of the Site is the Monkmoor Community Woodland, a small area of native woodland with an easy access circular walking route running through it. The Monkmoor Lagoon Nature Reserve, a wildlife-rich area of private land owned by Severn Trent Water, forms the northern boundary. The eastern boundary of the Site is the A49 underpass. The River Severn flows along the southern edge of the Site, and the Severn Way long distance public right of way passes through it. The Site is accessed via Coseley Avenue in the south-western corner of the Site, and by an access track in the north-eastern corner.

The Site is popular with dog-walkers and anglers, and offers impressive views of Haughmond Hill. The Site currently lacks features and has low biodiversity value; mainly consisting of improved grassland. The Site forms part of the floodplain for the River Severn, and periodically floods.

Shropshire Wildlife Trust together with their partner, Shrewsbury Town Council, are seeking to improve the overall ecological value and public access of Monkmoor Meadows. Potential opportunities which were identified in the brief by the client team included: improvements to general floodplain grassland, wetland creation, tree and shrub planting, and general access improvements.

This report presents Red Kite's analysis and proposals for Monkmoor Meadows. The report is set out in the following structure:

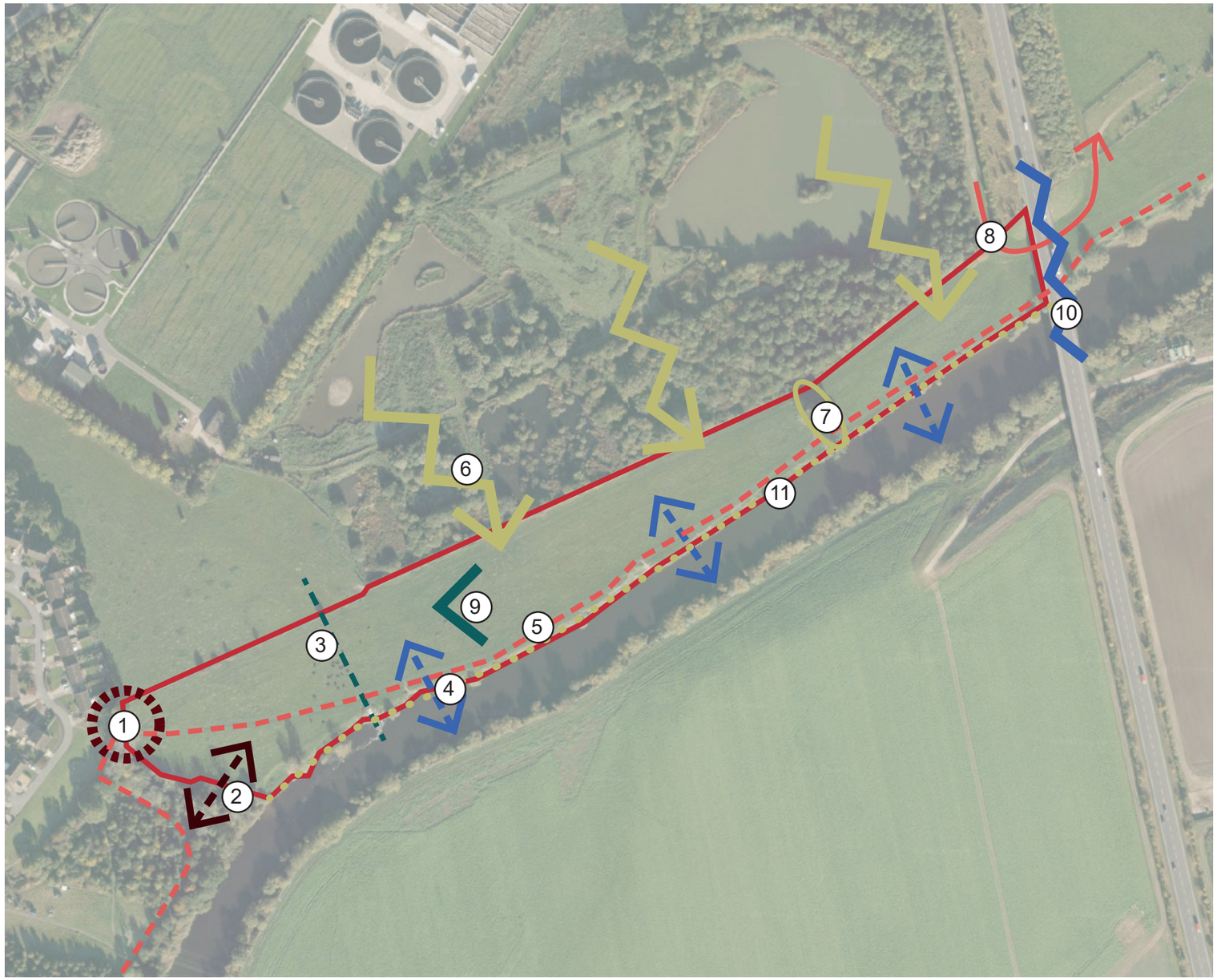
1. Site Analysis - Assessment of the Site's opportunities and constraints
2. Community Engagement - Results and analysis of the public consultation
3. Concept Design - Design inspiration and initial concept plan
4. Final Design - Final proposals, including masterplan
5. Implementation - Outline action plan for the implementation and ongoing maintenance of proposals



Location Map

1 / Site Analysis

Site Assessment



As part of the initial review and appraisal for Monkmoor Meadows, the following constraints and opportunities were identified:

1 - There is potential to enhance and make more visible the existing entrance to the Site off Coseley Avenue.

2 - There is an opportunity to form a connection between Monkmoor Community Woodland and the Site via a bridge over the stream, in order to form a more continuous link with the Severn Way Public Right of Way.

3 - The outfall sewer forms a distinct ridge in the landscape, which has the potential to act as a natural defintion to different zones in the Site, as well as providing visual and natural play interest.

4 - The Site's visual relationship with and access to the River Severn could be enhanced to improve the amenity value and recreational enjoyment of visitors and anglers.

5 - There are opportunities to provide infrastructure, including seating, signage and bins, along the long distance Severn Way Public Right of Way which passes through the Site.

6 - There is an opportunity to form connections with the pre-existing mature habitats at the Monkmoor Lagoon Nature Reserve.

7 - The existing row of mature trees should be retained and enhanced, as they provide visual interest and habitat connectivity.

8 - Existing vehicular entrance used by anglers to access the off-site car park to be reviewed in consultation with stakeholders.

9 - Views of Haughmond Hill are available along the entire length of the Site, and are an attractive and defining feature of Monkmoor Meadows.

10 - Explore options to mitigate the negative landscape visual impact and noise from the A49 road.

11 - Opportunities to enhance the habitat value of the river bank by native tree planting, such as black poplar, willow and alder.

Ecology

Launched in 2002, the Shropshire Biodiversity Action Plan (SBAP) provided a detailed outline of the work necessary for the conservation of 34 species and 15 habitats. Four of these Species and Habitats of Principal Importance have been identified as being particularly relevant to the Monkmoor Meadows, and will therefore act as our ‘ecological targets’ for the project.

Floodplain Grazing Marsh

Floodplain grazing marsh is grassland that is periodically inundated and therefore act as water storage areas during times of flood. They also provide excellent habitat for wintering wildfowl and waders, such as lapwing, snipe and redshank. Traditionally the grasslands are grazed, and some areas are cut in late summer for hay.

Black Poplar

Native black poplars are only found in Britain, northern France, western Germany and parts of Asia. Their preferred habitat is lowland river floodplains. For a fertilised seed of a female black poplar tree to grow, it must fall on damp mud in June and stay damp and uncovered until October. The systematic removal of female black poplar trees has led to a decline in reproductive success of this species.

Reedbeds

Reedbeds are wetlands dominated by stands of the common reed Phragmites australis, where the water table is at or above ground level for most of the year. Reedbeds frequently include areas of open water, ditches and small areas of wet grassland. They are breeding sites for many nationally rare species and used as winter roost sites for several birds of prey. They also support a number of rare invertebrates.

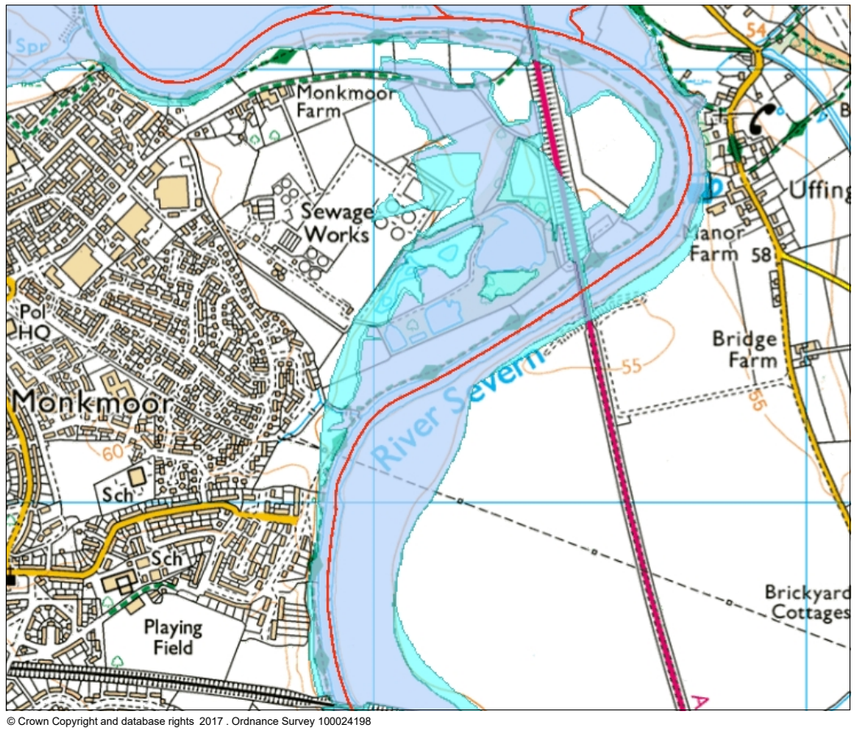
Great Crested Newt

The great crested newt is the largest British newt, and has dark, often warty, speckled skin, with a bright orange or yellow belly. Great crested newts require several different types of habitat, including: ponds, slow moving canals or ditches for breeding; and large areas of land, such as tussocky pasture, open woodland or derelict industrial sites for foraging and shelter.

Flood Risk

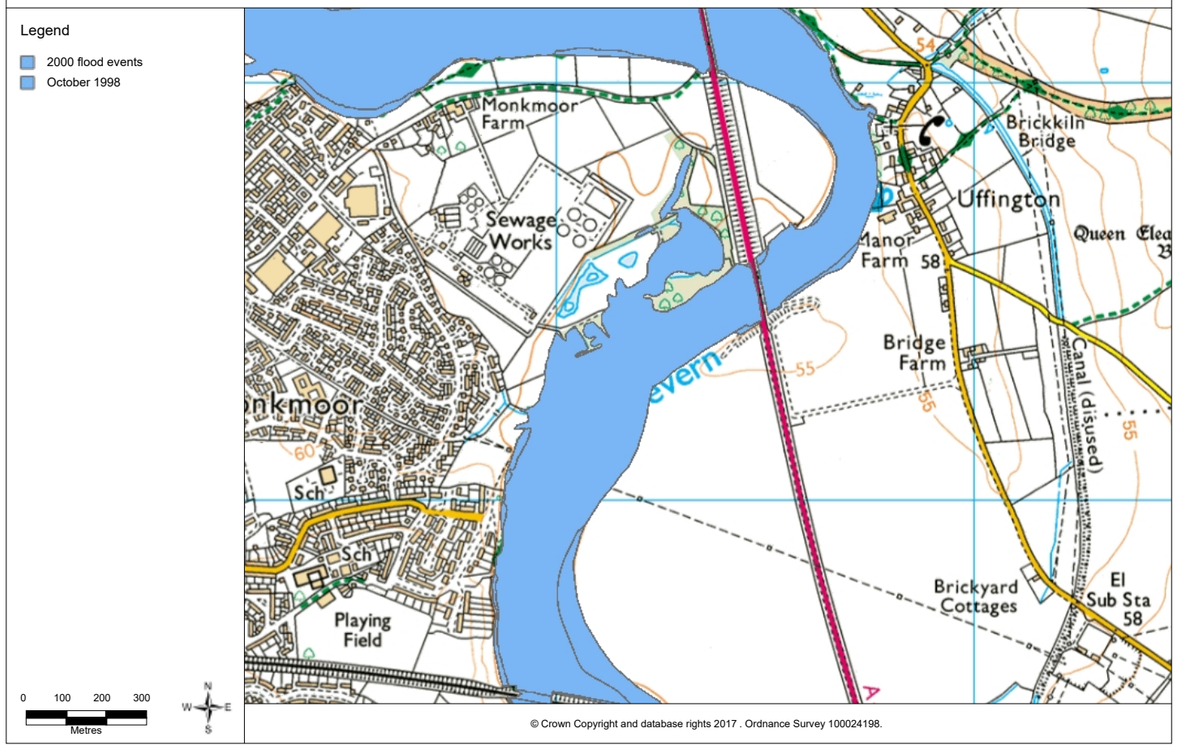
Monkmoor Meadows forms part of the floodplain of the River Severn and provide important functions for the natural storage and conveyance of flood waters. The two Environment Agency below illustrates the Site's role as a floodplain. Our proposals will seek to enhance these natural functions, in order to provide flood management, water quality and ecology benefits.

Flood Map for Planning (Rivers and Sea) centred on Monkmoor Meadows - created 07/12/17 [68490]



This map indicates the area at risk of flooding. It shows that the majority of the Site is in Flood Zone 3 (land assessed as having a 1 in 100 or greater annual probability of river flooding). The north western corner of the Site is within Flood Zone 2 (land assesssed as having between a 1 in 100 and 1 in 1,000 annual probability of river flooding).

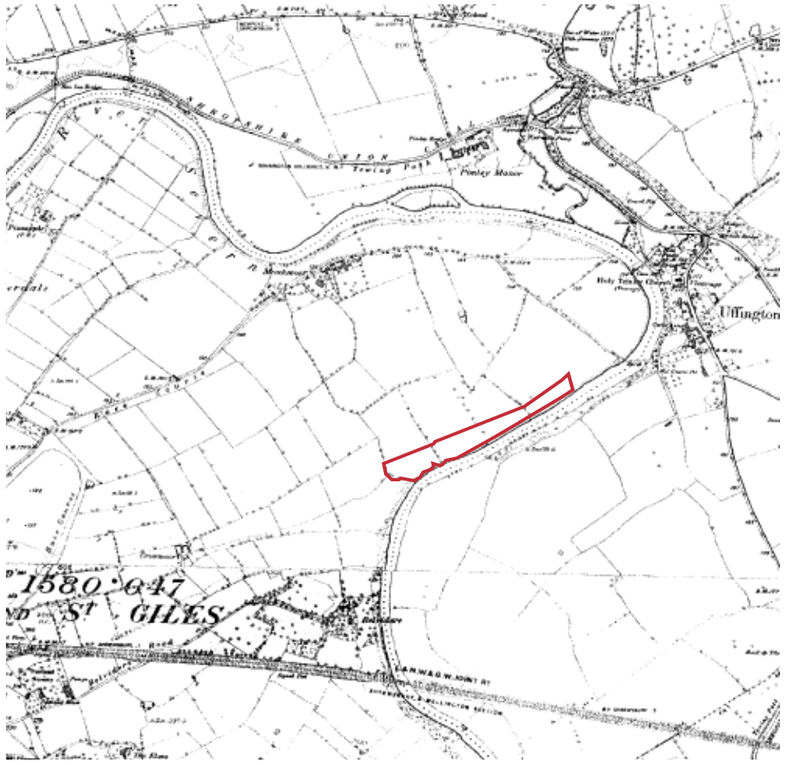
Flood Event Map centred on Monkmoor Meadows - created 07/12/17 [68490]



This map shows the extent of previously recorded flooding in the area (in October 1998 and 2000). The map indicates that the whole of the Site was flooded during these events.

History

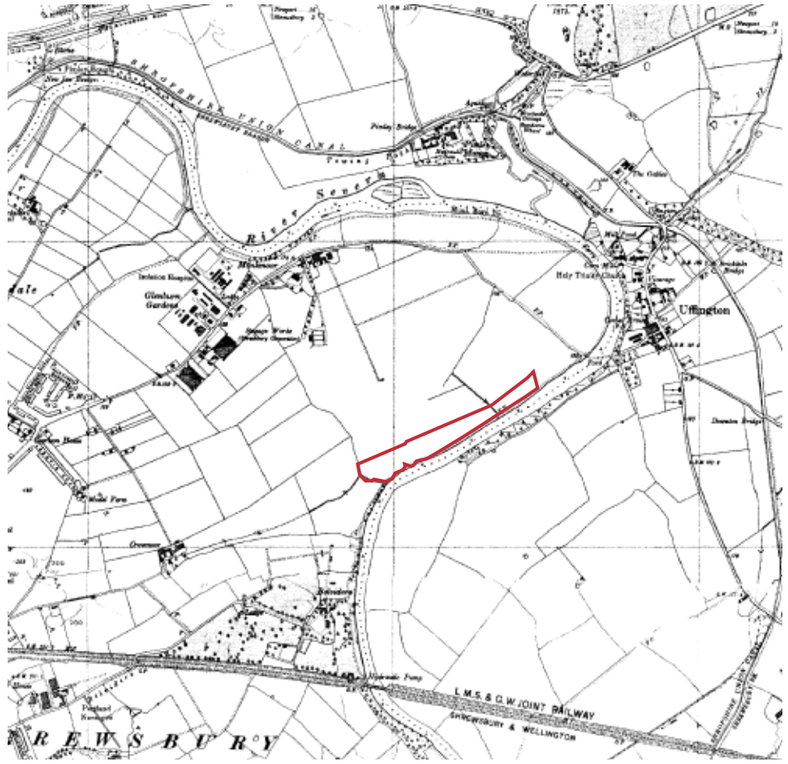
The historic area of Monkmoor was granted to Shrewsbury Abbey soon after its foundation in 1087 by Helgot, Lord of the Manor of Uffington. Much of the area was wooded or agricultural until the late 20th century, when it became a large residential suburb of Shrewsbury. A review of historical mapping of the area is provided below.



1887-1888

OS County Series: SHROPSHIRE 1:10,560

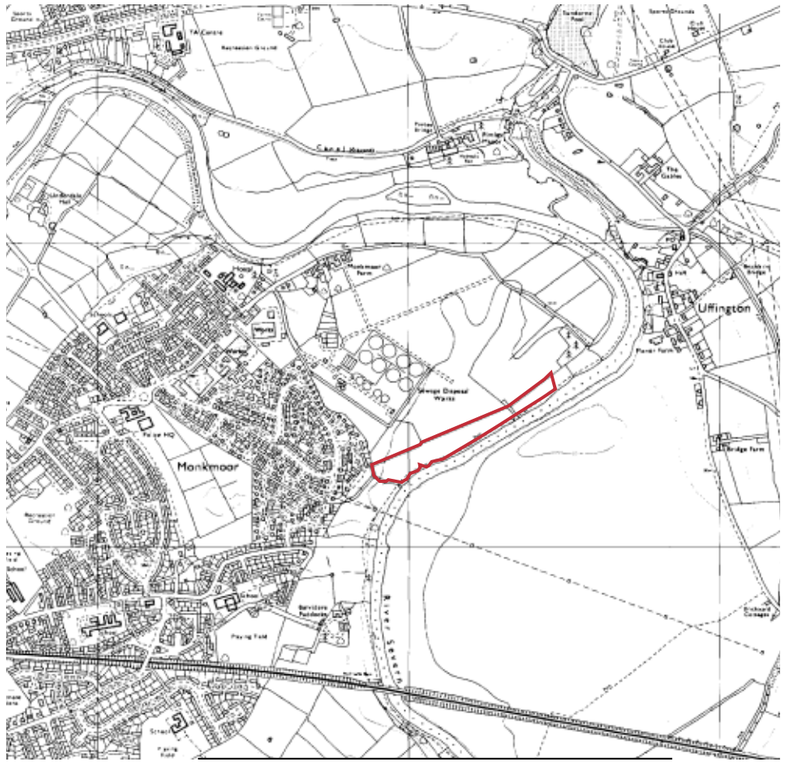
The OS County Series Map shows the Site in a largely agricultural area. Field boundaries cut across the Site, perpendicular to the River Severn. Monkmoor is depicted as a small village to the north of the Site, which connects to Uffington on the other side of the river by a ferry, which operated into the 20th century. The racecourse, which opened in 1832, is depicted on the eastern side of Monkmoor Road.



1938

OS County Series: SHROPSHIRE 1:10,560

By 1938, new houses along Monkmoor Road begins to extend the residential area of Cherry Orchard north towards the river. A new sewage works has been built, along with the Monkmoor Isolation Hospital. The field boundaries which previously dissected the Site, have been lost.



1976

OS Plan 1:10,000

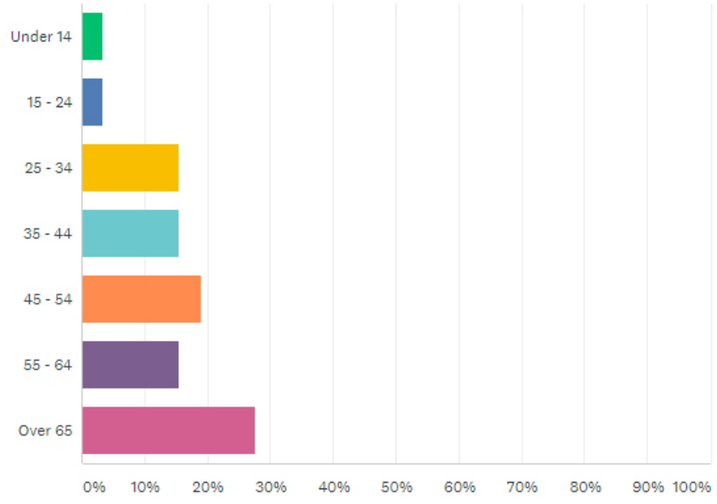
This map of 1976 shows the extensive development of the residential area of Monkmoor. The sewage works have been extended towards the Site and roughly occupies the same footprint as it does today. The A49 has yet to be built.

2 / Community and Stakeholder Engagement

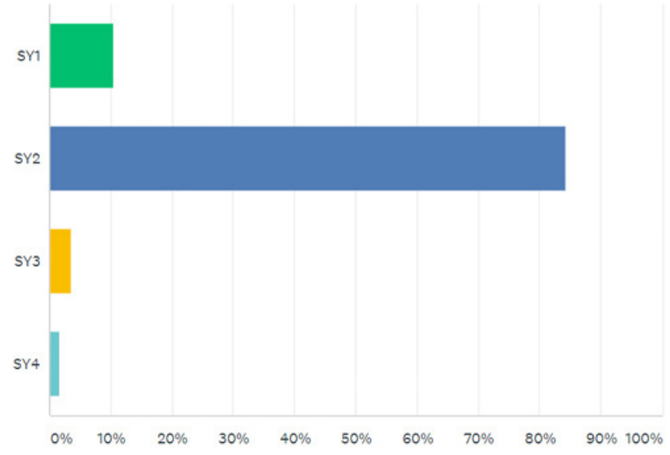
Online Survey

An online survey was launched on 22nd November 2017, asking local residents to share how they currently use Monkmoor Meadows, what they think of the site generally, and how they would like it to be improved in the future. The survey was publicised via Red Kite, Shrewsbury Town Council and Shropshire Wildlife Trust social media and webpages, a press release, and leafleting. 58 people had responded by the time the survey was closed on 19th December 2017. A summary of the results are provided below.

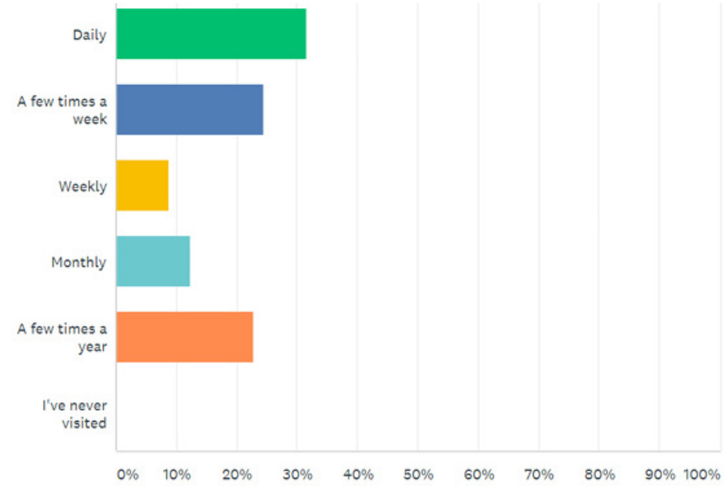
Question 1: How old are you?



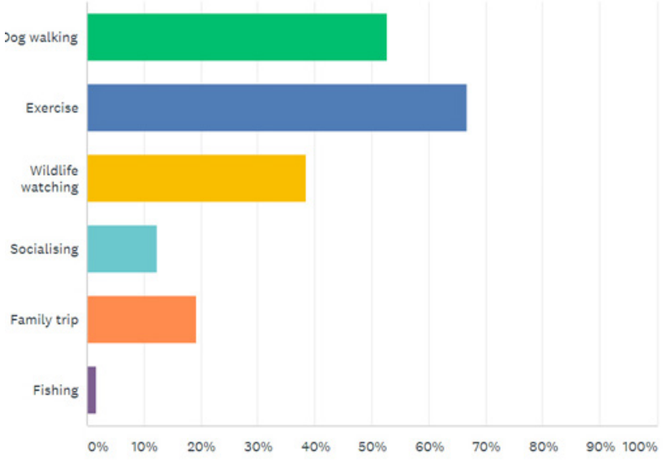
Question 2: Where do you live (based on the first three characters of your postcode)?



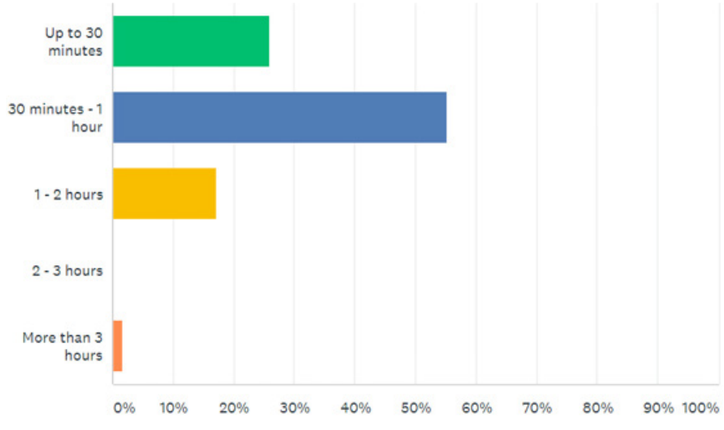
Question 3: How often do you visit Monkmoor Meadows?



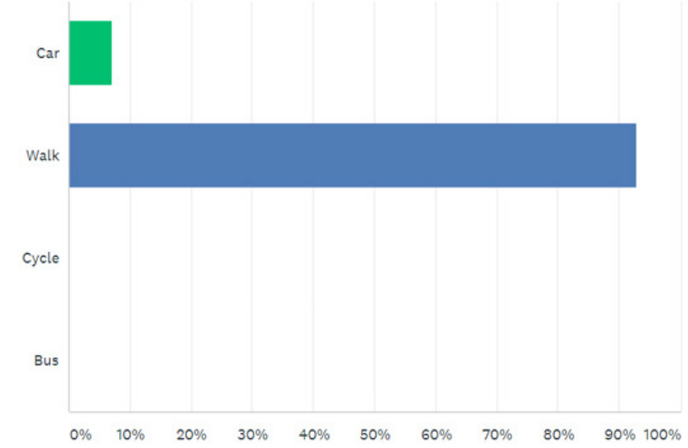
Question 4: What is your usual reason for visiting Monkmoor Meadows? Please tick all that apply.



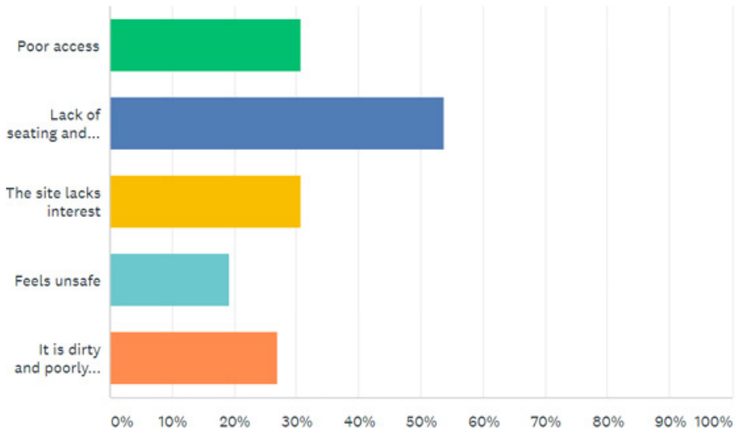
Question 5: On average, how long do you spend at Monkmoor Meadows?



Question 6: How do you usually travel to Monkmoor Meadows?



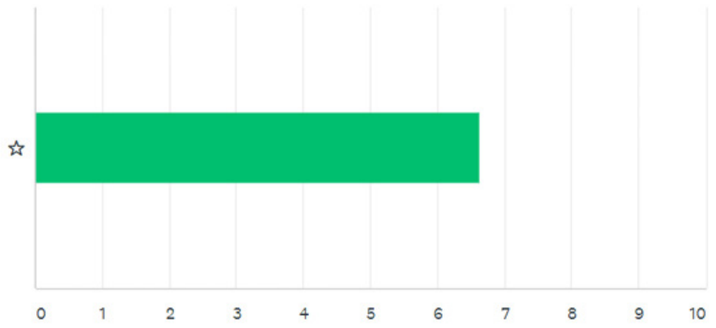
Question 7: What factors prevent you from visiting Monkmoor Meadows or using the site for your preferred activity? Please tick all that apply.



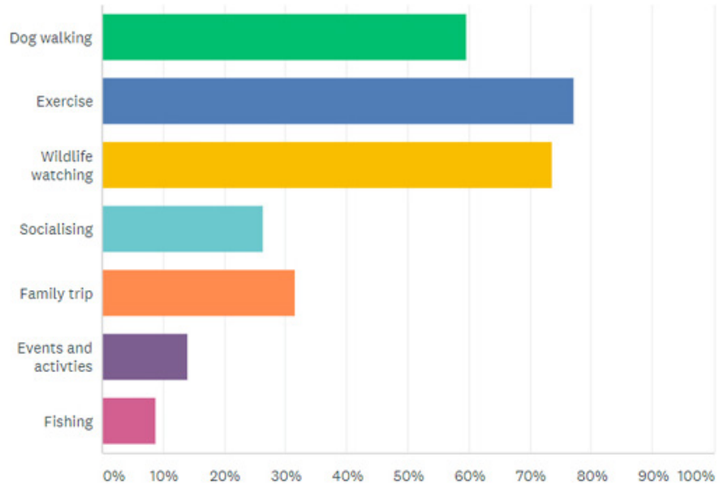
A summary of comments provided:

- Several stated that nothing prevents them from visiting the Site or using it for their preferred activity;
- A few respondents stated that flooding and mud was a barrier to visiting the Site;
- Lack of time;
- Suggested conflicts between anglers and dog walkers;
- Grazing cattle;
- Lack of lighting;
- The smell from the water treatment plant.

Question 8: How would you rate the overall quality of Monkmoor Meadows on a scale of 1 to 10 (with 1 being poor and 10 being exceptional)?



Question 9: What would you like to use Monkmoor Meadows for? Please tick all that apply.



A summary of comments provided:

- ‘Please leave exactly as it is. It floods anyway’;
- ‘Walking’;
- ‘A natural path (stones? woodchips?) could be beneficial for rainy days and older users. A few picnic tables with bins could also be added’;
- ‘As it is now, natural and unspoilt’.

Drop-in Sessions

Two public consultation drop-in sessions were held in December 2017, one at a local secondary school, and the other at a church. Twenty five people in total attended the drop-in sessions, all of whom were local to the Monkmoor area and used the Site regularly, mainly for dogwalking and exercise. The vast majority of the attendees were aged 60 or over. Attendees were asked the following questions:

- What do you like about the site?
- What do you not like about the site?
- What do you like about our proposals?
- What do you not like about our proposals?
- Any other comments?

The responses to these questions were either written down by the respondent or captured on a post-it noted by the consultation team. The key themes and issues raised are summarised below.

What do you like about the site?

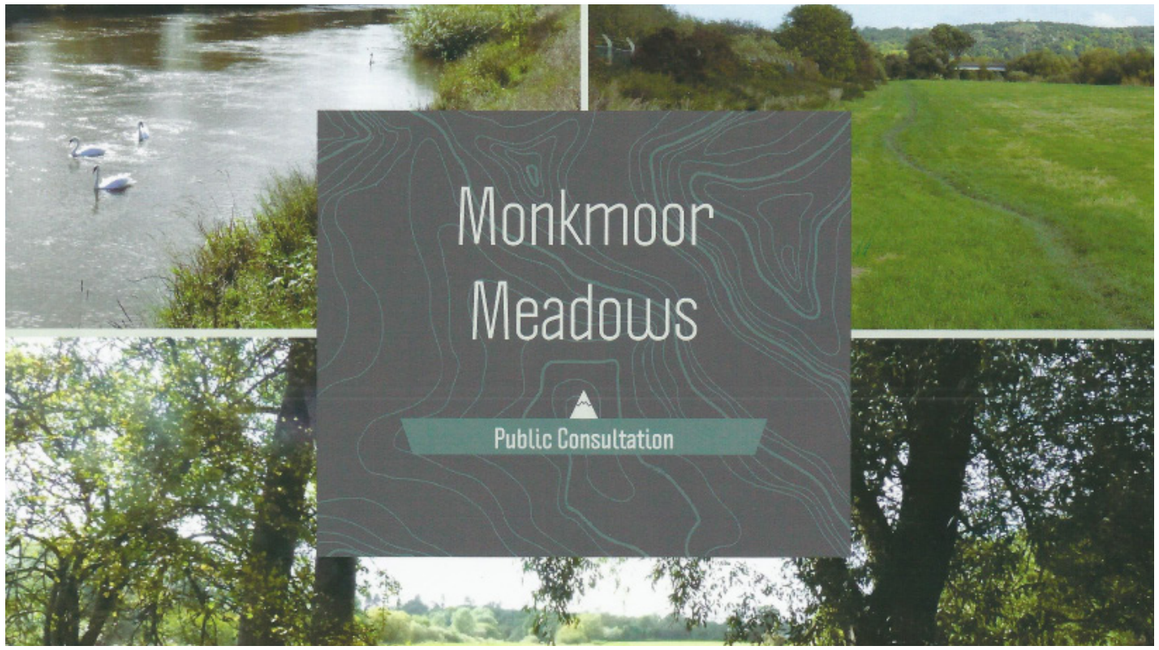
All of the respondents said that they liked the ‘natural feel’ of the Site, with one respondent saying that it provided them with a ‘natural and unspoiled walk along the river’. Several respondents remarked on wildlife they had seen at the Site, and noted the special ecological value of the adjacent Monkmoor Lagoon Nature Reserve.

What do you not like about the site?

Several respondents commented that the grass is often very tall, making it difficult to walk through. Views on the success of the previous grazing regime were mixed, with some praising it for keeping the grass short, but with others saying that they found the cattle intimidating and that it restricted their ability to exercise their dogs.

Several respondents remarked on the vandalism and anti-social behaviour that takes place in the Monkmoor Community Woodland. Anecdotes about newly planted trees being ripped up, litter being left and former bridges being destroyed were provided, and used as a case against investing in any infrastructural improvements at the Site. A couple of respondents also reported that motorbikes occasionally used the field.

One respondent, who lived on Coseley Avenue, said that her major issue with the Site was the lack of dedicated car parking. She regularly sees 4-5 cars of visitors using the site parked on Coseley Avenue, and they can sometimes block access to drives. She expressed concern that the project would attract yet more cars to Coseley Avenue.



Public consultation postcard, which were distributed to local households

What do you like about our proposals?

Whilst a few people were resistant to anything happening at the Site, most were enthusiastic about making low-key interventions at the Site provided they did not make it ‘too manicured’. The following aspects of our proposals received mainly positive feedback:

- Seating of a ‘rustic and naturalistic’ design;
- Wetland habitat creation;
- Improvements to the entrances;
- Additional dog waste bin(s).

The following aspects of our proposals received positive feedback from some but not all respondents:

- Connection between the woodland and the Site via a bridge;
- Surfaced footpaths and boardwalks;
- Signage.

What do you not like about our proposals?

The main point of contention with the proposals was the bridge and boardwalk due to maintenance and vandalism concerns. Several suggested that a boardwalk would be a 'waste of time and money' and that 'it wouldn't last long due to vandalism'. With regards to the bridge, several commented that the bridge which was previously installed over the culvert between the Monkmoor Community Woodland and the Site did not last long due to river bank erosion. Some suggested that any new bridge would be unsafe due to the large drop, and that it may also attract anti-social behaviour. One respondent said that they 'Don't see the point of it. May as well continue to go out of the woodland and into the field by the existing entrance'.

Similarly, one respondent who previously fished on the Monkmoor stretch of the River Severn, did not see the value of installing fishing pegs due to the river bank erosion.

Any other comments?

The following points and ideas were raised in response to this question:

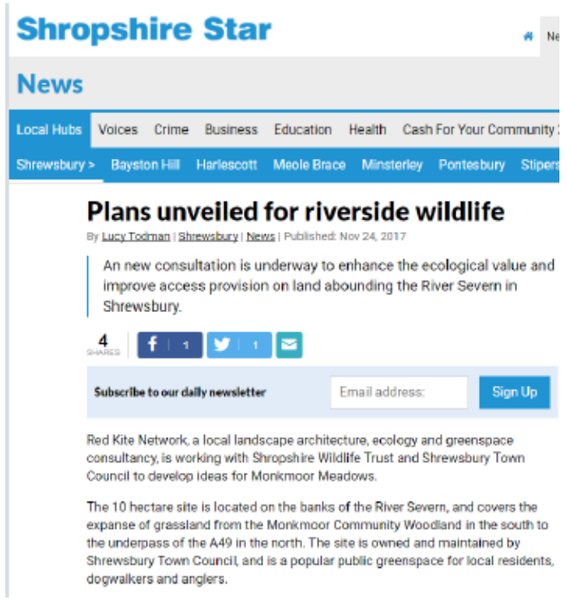
- Re-purpose fallen oak trees in woodland for on-site furniture;
- Install a bridge or boardwalk over the dip where the line of trees is, as it gets very muddy and wet and can prevent access to the rest of the site;
- Screen views of the car park;
- A couple of respondents expressed interest in setting up a Friends Group for the project;
- The area around the line of trees/dip is apparently used as an otter run. There were suggestions that it could be enhanced to provide further habitat connectivity between the Monkmoor Lagoon Nature Reserve and the river;
- Platform to provide views into the Monkmoor Lagoon Nature Reserve;
- Plant up extreme southern corner of site with trees;
- Release or divert the culvert down the western edge of the Severn Trent land;
- Comment about the need to consider post-flooding sediment deposition on surfaced paths.

Conclusion

The public consultation drop-in sessions attracted mainly dog-walkers and residents who live very near or overlook the site. Consequently, these results do not include the ideas or opinions of several other user groups, including families, young people and anglers. Some of these groups are better represented in the online survey results.

In general, the feedback we received was positive but cautious. Every person we spoke to said they liked the 'natural and untouched' feeling of the site, and expressed preference for low-key interventions which were sensitive to the landscape setting. Concerns about vandalism and anti-social behaviour should be taken into consideration in the design and material choice of any infrastructure installed. The comments about river bank erosion should also be noted, and further site investigations and discussions with specialists should help clarify what is feasible.

The relatively high response rate to the online survey and drop-in sessions suggests a high level of engagement from local residents with the site. Many asked to be kept updated with the project, so efforts should be made to maintain communication via email, social media and the website. As well as providing project updates, the communication could also include an initiation of a Friends Group, if this is deemed a desired aim of the project.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News

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Plans unveiled for riverside wildlife

By Lucy Todman | Shrewsbury | News | Published: Nov 24, 2017

An new consultation is underway to enhance the ecological value and improve access provision on land abounding the River Severn in Shrewsbury.

4 SHARES

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Red Kite Network, a local landscape architecture, ecology and greenspace consultancy, is working with Shropshire Wildlife Trust and Shrewsbury Town Council to develop ideas for Monkmoor Meadows.

The 10 hectare site is located on the banks of the River Severn, and covers the expanse of grassland from the Monkmoor Community Woodland in the south to the underpass of the A49 in the north. The site is owned and maintained by Shrewsbury Town Council, and is a popular public greenspace for local residents, dogwalkers and anglers.


Monkmoor Meadows Consultation Plan

Monday 20th November 2017

An exciting new project is underway to enhance the ecological value and improve access provision at Monkmoor Meadows in Shrewsbury.

Red Kite Network, a local landscape architecture, ecology and greenspace consultancy are working with Shropshire Wildlife Trust and Shrewsbury Town Council to develop ideas for Monkmoor Meadows in Shrewsbury. The 10ha site is located on the banks of the River Severn, and covers the expanse of grassland from the Monkmoor Community Woodland in the south to the underpass of the A49 in the north. The site is owned and maintained by Shrewsbury Town Council, and is a popular public greenspace for local residents, dogwalkers and anglers.

The project:

Coalport-based landscape architecture and ecology consultants, Red Kite Network Limited have been appointed by Shropshire Wildlife Trust to prepare a feasibility study and masterplan for the site. The project will aim to enhance the biodiversity value and natural flood management of Monkmoor Meadows.

Pete Lambert, River Projects Manager at Shropshire Wildlife Trust, says 'The greenspaces along the Severn in Shrewsbury offer some of the best opportunities to directly encounter wildlife whether feather, fin or paw. We feel that the Monkmoor Meadows might be able to offer more for people and wildlife than it does now and we are very keen to hear local views on the future care of this popular riverside space.'

(*Top left*) Drop-in session at Crowmere Baptist Church, December 2017
(*Above Left*) News item on Monkmoor Meadows project in Shropshire Star newspaper
(*Above Right*) Dedicated project webpage, with information about public consultation activties, on Shropshire Wildlife Trust's website

Stakeholder Engagement

As part of our site analysis and information gathering, we consulted with various stakeholders. The opportunities and issues discussed with each of the stakeholders are summarised below.

Shropshire Anglers Federation

Shropshire Anglers Federation currently holds the angling rights to many stretches of water within Shrewsbury, including along Monkmoor Meadows. We discussed current angling activity which takes place at the Site, and opportunities for enhancing provision. Fishing platforms were suggested as a robust alternative to fishing pegs. Car parking issues were also raised.

Abbots Wood Day Centre

Abbots Wood is a local day centre for adults with learning disabilities. They have previously used the Monkmoor Community Woodland for outdoor activities and walking, and expressed enthusiasm for using Monkmoor Meadows for similar activties. Opportunities for improving the accessibility of the Site were discussed, including surfaced paths, a less steep path down from Coseley Avenue, and a wheelchair-accessible gate entrance.

Environment Agency

A site visit was held with representatives from the Environment Agency's Fisheries, Biodiversity and Geomorphology team and the Operations Delivery team. Opportunities for enhancing the Site's biodiversity, fish habitats, and natural flood management were discussed.

Shropshire Council

A number of representatives from Shropshire Council were consulted, including the local Councillor, Pam Moseley; Countryside Maintenance and Public Rights of Way team; and the Local Lead Flood Authority team. The Site's opportunities and constraints were discussed, including how the project can help achieve the Council's policy aims and objectives.

Severn Trent

A site visit to the Monkmoor Lagoon Nature Reserve, which is located adjacent to the Site, was held with the landowners, Severn Trent. The site is private land, and forms part of the treatment process for the sewage works, but is largely managed for wildlife. Opportunities for enhancing the habitat connectivity between Monkmoor Meadows and the Nature Reserve were discussed.

Wetland habitats at Monkmoor Lagoon Nature Reserve

Bird hide at Monkmoor Lagoon Nature Reserve

Woodland at Monkmoor Lagoon Nature Reserve

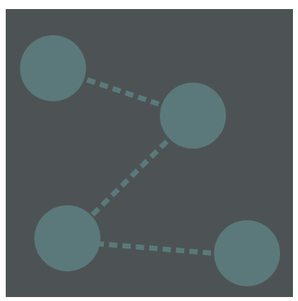
3 / Concept Design

Design concept

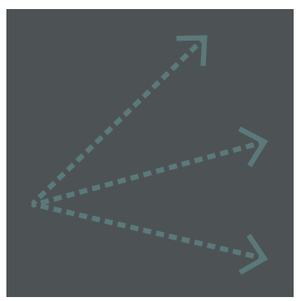
Following the site appraisal, design principles were developed in response to the Site's opportunities and challenges. Case studies were researched to demonstrate possible interventions and design features which could be incorporated in the proposed design.

Design Principles

Habitat mosaic



Interlocking spaces



Expansive

Design components

Scrapes

Foot drains

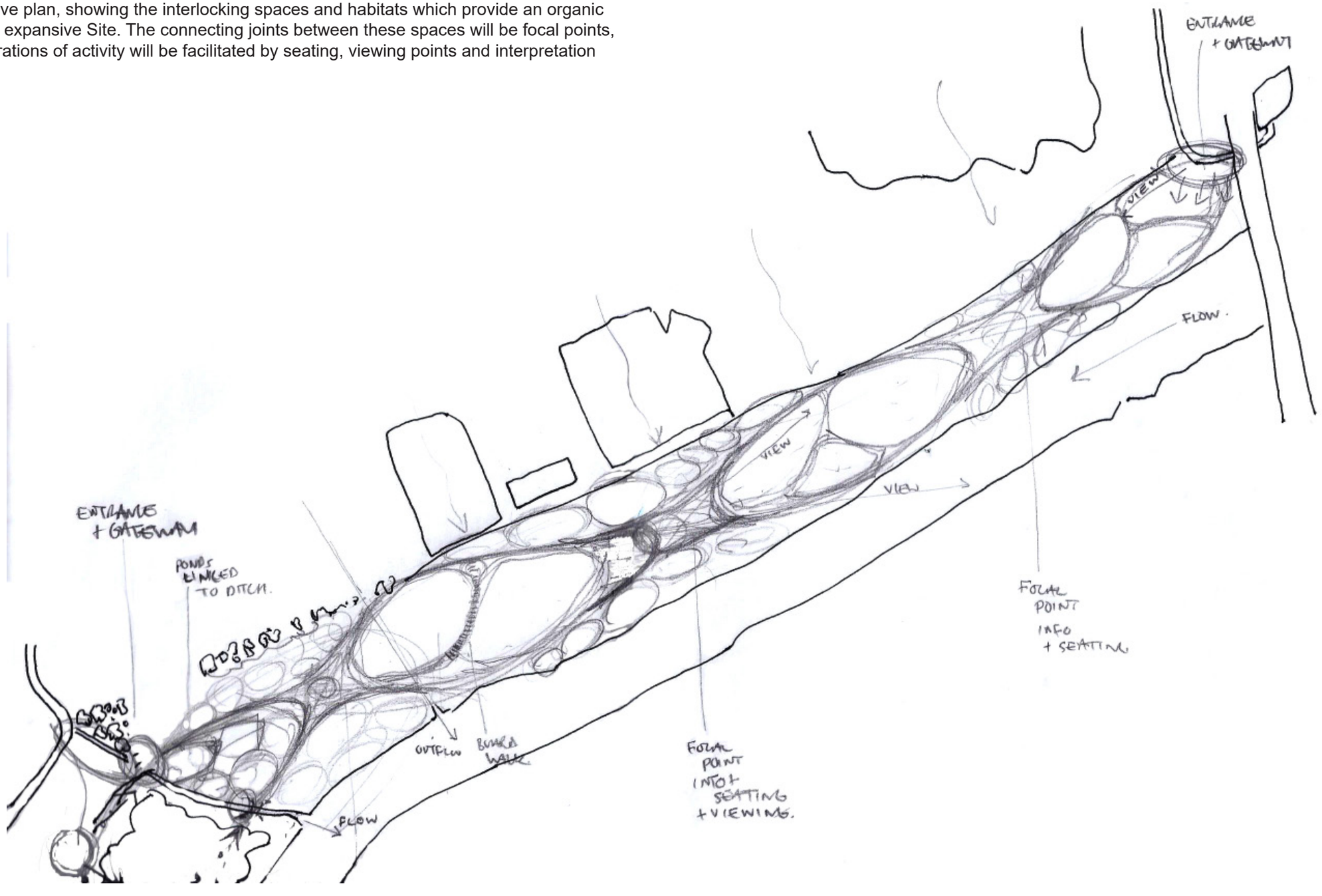
Attenuation basins

Boardwalk

Signage

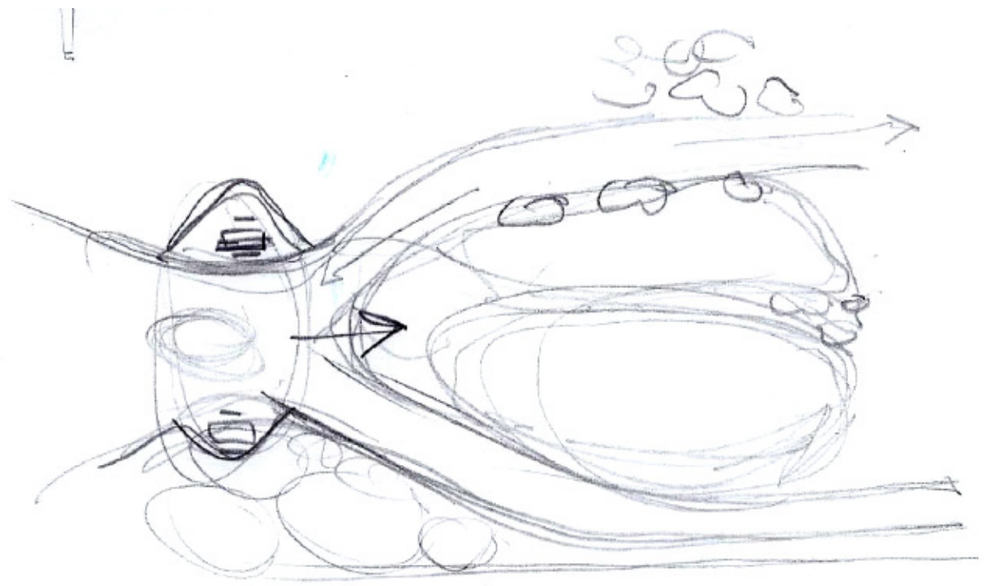
Sketch Plan

Sketch illustrative plan, showing the interlocking spaces and habitats which provide an organic structure to the expansive Site. The connecting joints between these spaces will be focal points, where concentrations of activity will be facilitated by seating, viewing points and interpretation boards.

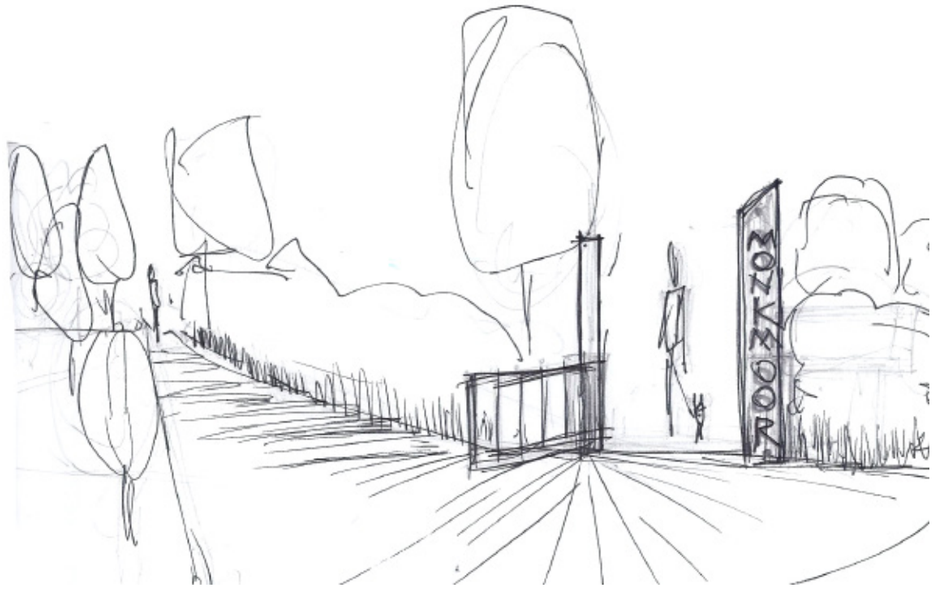


Sketch views

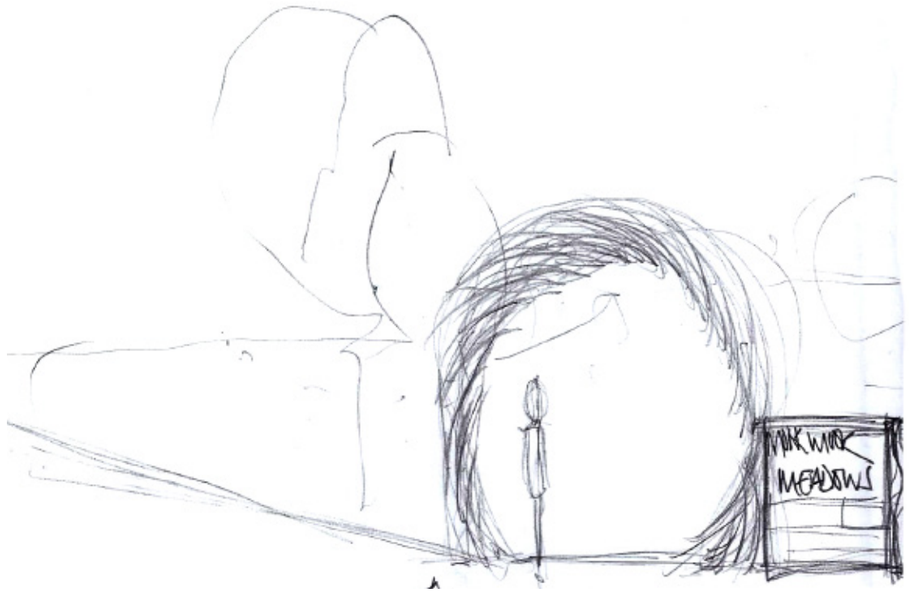
Sketch perspective view illustrating cross-section of Site, including walkway, reedbed and scrape.



Sketch plan view depicting focal points within interlocking habitats and path network.



Sketch perspective view depicting entrance to the Site, with improved signage and surfacing.



Sketch perspective view showing potential for willow sculptures to mark key gateways and nodes of the Site.

Case Study

Crown Meadow, Stone

Crown Meadow is a well-known and well-used wildlife site at the heart of Stone in Staffordshire. Stafford Borough Council, in partnership with Stone Town Council, have made a number of enhancements to the meadow in recent years to increase its wildlife value. These include:

- New signage and interpretation;
- Seating and path network;
- Wildflower seed sowing to restore the flora of a traditional flood plain meadow;
- Riverbank re-profiling, in partnership with the Environment Agency; and
- Native black poplar saplings planting.

Pedestrian entrance to site with bespoke footbridge

Seating and path network of materials which are sensitive to landscape context

Traditional floodplain meadow flora

Viewing points and seating areas distributed throughout site

4 / Final Design

Masterplan

Legend

1- Ramp access from Coseley Avenue
2- 1 no. wheelchair friendly timber kissing gate entrance
3- Diversion of surface water from culvert to feed ponds
4- Bridge to span culvert and connect with existing path network through woodland
5- 2 no. interpretation panel
6- Woodland margin planting
7- 3 no. lined ponds with aquatic planting
8- Existing grassland enhanced with wildflower seeding. 3 no. hibernaculums located throughout.
9- 2m wide raised resin bound surfaced path
10- 3 no. all-access picnic table
11- Tree planting
12- 1.5m wide mown grass path
13- Scrapes
14- 2 no. bat boxes
15- 4 no. fishing platform
16- 3 no. backwater habitats
17 - 1 no. galvanised steel kissing gate entrance
18 - 2 no. benches

N

Notes
1. Do not scale from this drawing.
2. All dimensions and setting out are subject to detailed design. Any discrepancies to be reported to Red Kite Network Limited immediately.
3. If in any doubt, ask.
4. This drawing and the works depicted are copyrighted and no duplication may be made without prior consent from Red Kite Network Limited.
5. Not to be used for construction.

red kite

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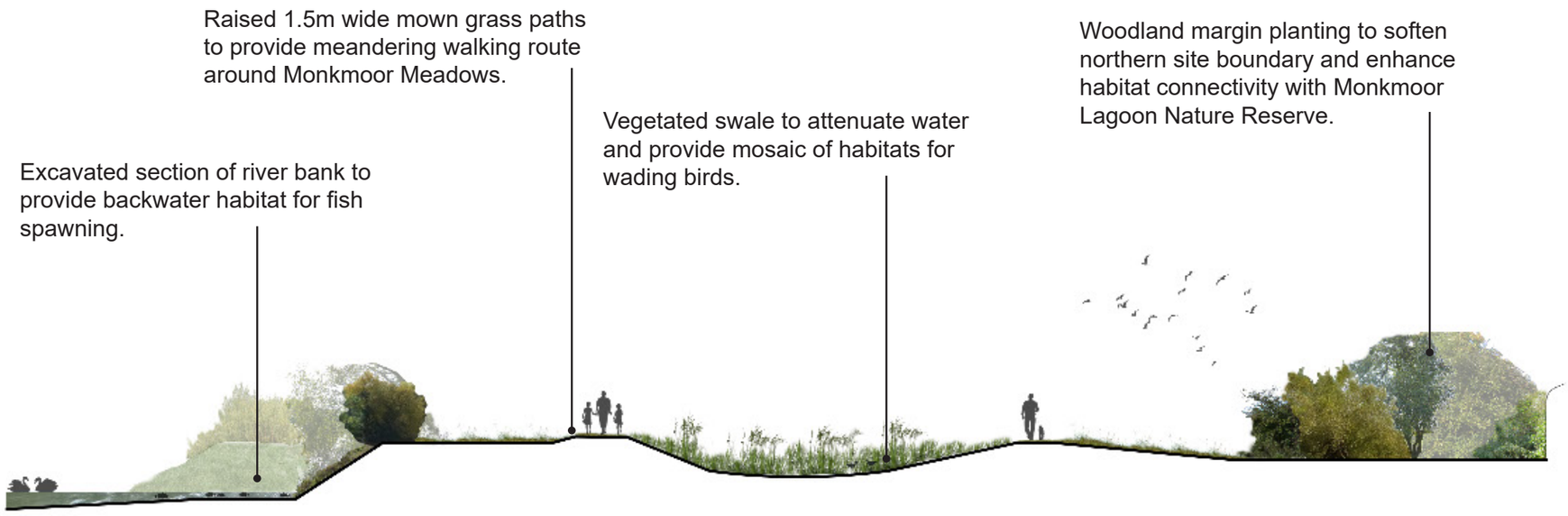
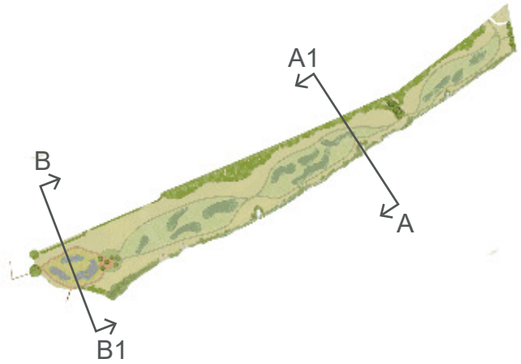
Registered in England & Wales No. 8160285

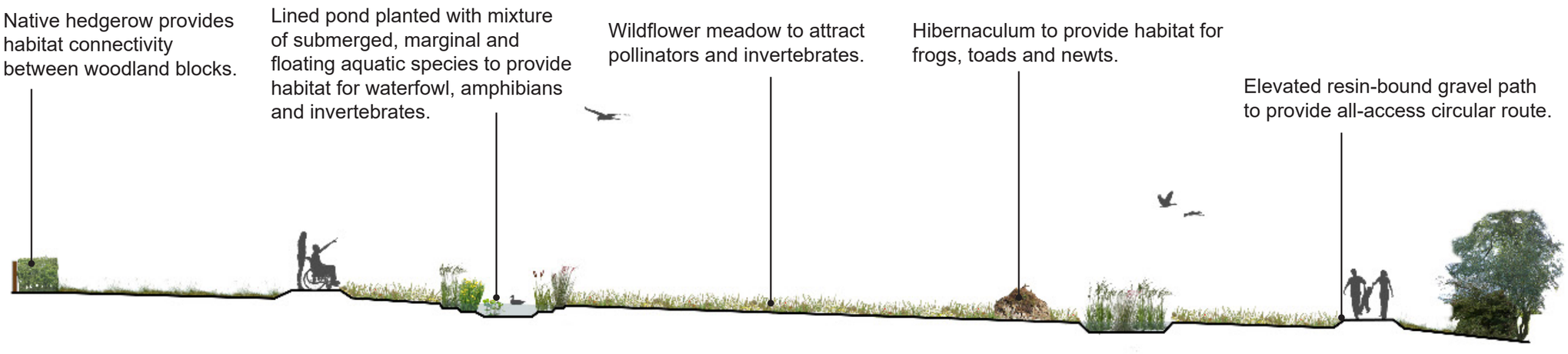
Project:	MONKMOOR MEADOWS		
Drawing:	Masterplan	Drawn: DH	Checked By: NH
Scale: 1:2000		Project No. 278.17	Drawing No. 4 Rev:
Date: 19.02.2018			
FINAL			

Sections





Section A-A1
1:200 @ A3



Section B-B1
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Views

View depicting entrance to Monkmoor Meadows from Coseley Avenue

A bespoke interpretation board provides a welcoming entrance and a sense of identity to the Site. A surfaced path enables local residents of all ages and phsyical abilities to access the Site, and a seating area provides a place to rest and gather. A mosaic of wildlife ponds, hibernaculums and wildflowers provide a rich haven for wildlife.

Views

View depicting riverside seating, path and fishing platform

Permanent fishing platforms provide improved fishing oppportunities for anglers. Local residents are able to rest and enjoy the view of the River Severn from benches distributed along this stretch of the Severn Way. A mosaic of swales dispersed through the central axis of the Site provides natural flood management and valuable habitat for wildlife.

Material Palette

Hard Materials

Seating

Broxap Hatton Rustic 4-Slat Seat

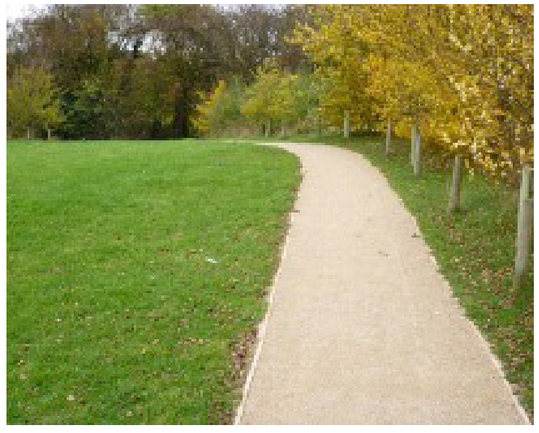
Heseltine Design Fann picnic table

Signage

Forestry Commission bespoke wood and Corten sign

Bespoke engraved wood interpretation panel

Surfacing



Breedon Wayfarer Self-Binding Aggregate.

Fishing Platform

Fishing platform installed with timber steps

Access

Jacksons' Timber Mobility Kissing Gate

Jacksons' Steel Kissing Gate

Material Palette

Soft Materials

Woodland

Species:
- Alder (*Alnus glutinosa*);
- Black Poplar (*Populus nigra*);
- Osier Willow (*Salix viminalis*);
- White Willow (*Salix alba*);
- Aspen (*Populus tremula*).

Black Poplar

Osier Willow

Aquatic

Aquatic planting will consist of a mixture of bog, marginal, deep water, oxygenating and floating species.

Submerged or floating leaved:
- Yellow water lily (*Nuphar lutea*);
- Spiked water-milfoil (*Myriophyllum spicatum*);
- Rigid hornwort (*Ceratophyllum demersum*).

Plants for shallow water:
- Yellow iris (*Iris pseudacorus*);
- Great pond sedge (*Carex riparia*);
- Marsh woundwort (*Stachys palustris*);
- Reed sweet grass (*Glyceria maxima*);
- Bulrush (*Typha latifolia*).

Herbs and grasses for pond margins:
- Marsh marigold (*Caltha palustris*);
- Water mint (*Mentha aquatica*);
- Water forget-me-not (*Myosotis scorpiodes*).

Wildlife pond planting

Wildflower

Emorsgate Seeds EM8 - Meadow Mixture for Wetlands (or similar to be approved).

Wildflowers (20%):
- Yarrow (*Achillea millefolium*), 0.5%
- Sneezewort (*Achillea ptarmica*), 0.2%
- Betony (*Betonica officinalis*), 1%
- Common Knapweed (*Centaurea nigra*), 2.5%
- Meadowsweet (*Filipendula ulmaria*), 2%
- Lady's Bedstraw (*Galium verum*),1.5 %
- *Water Avens* (Geum rivale), 0.4%
- Oxeye Daisy (*Leucanthemum vulgare*), 0.5%
- Greater Birdsfoot Trefoil (*Lotus pedunculatus*), 0.6%
- Ribwort Plantain (*Plantago lanceolata*), 1%
- Cowslip (*Primula veris*), 1%
- Selfheal (*Prunella vulgaris*), 1%
- Meadow Buttercup (*Ranunculus acris*), 2%
- Yellow Rattle (*Rhinanthus minor*), 1.5%
- Common Sorrel (*Rumex acetosa*), 1%
- Great Burnet (*Sanguisorba officinalis*), 2%
- Pepper Saxifrage (*Silaum silaus*), 0.5%
- Ragged Robin (*Silene flos-cuculi*), 0.2%
- Devil's-bit Scabious (*Succisa pratensis*), 0.6%

Grasses (80%)
- Common Bent (*Agrostis capillaris*), 10%
- Meadow Foxtail (*Alopecurus pratensis*), 2%
- Sweet Vernal-grass (*Anthoxanthum odoratum*), 2%
- Quaking Grass (*Briza media*), 2%
- Crested Dogstail (*Cynosurus cristatus*), 32%
- Tufted Hair-grass (*Deschampsia cespitosa*), 1%
- Slender-creeping Red-fescue (*Festuca rubra*), 24%
- Meadow Barley (*Hordeum secalinum*), 1%
- Meadow Fescue (*Schedonorus pratensis*), 6%

Yarrow

Devil's-bit Scabious

Quaking grass

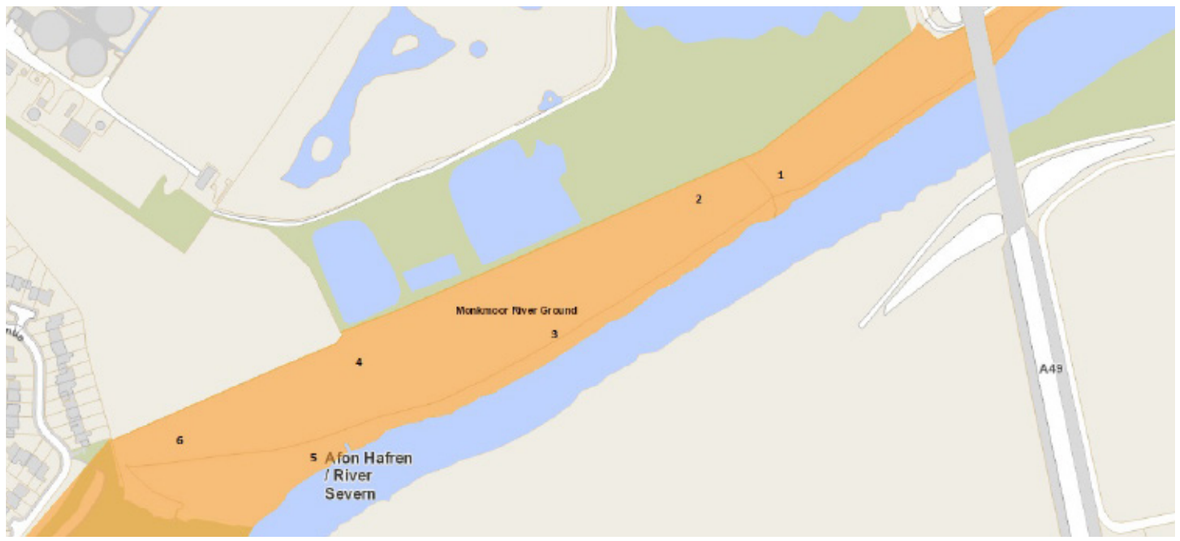
5 / Implementation

Habitat Creation

Soil Test Holes

As part of our site assessment and feasibility work, Shrewsbury Town Council conducted a soil analysis of the Site. This helped us to understand the soil type and average infiltration rates, which together determine the ability of swales and footdrains to hold water. Six test holes were dug (measuring 30 x 30 x 60cm) on 4th January 2018. Water was filled up to 30cm, and then the water level was measured again half an hour later to determine soil permeability. The results show that the soil across the Site has a relatively high clay content and slow infiltration rates. We can therefore expect the swales to retain water temporarily, which will provide aesthetic and ecological diversity to the site during times of high rainfall and flood.

Test hole	Soil type	Depth after 30 mins
1	Silt and clay mix	26cm
2	Silt and clay mix	19cm
3	Silt and clay mix	21cm
4	High clay content in bottom half	28cm
5	Silt and clay mix	28cm
6	High clay content in bottom half	19cm



Map showing location of test holes

Footdrains and Swales

The mosaic of footdrains and swales will be created by a rotary ditcher. For more information, see The Rotary Ditcher Technical Guidance and Information Pack (RSPB and RC Baker, May 2017).

Rotary ditcher dispersing spoil

Foot drain creation with rotary ditcher

Backwaters

The backwaters will be created with an excavator. The orientation of the backwater will be upstream in order to provide juvenile fish with refuge from the high flows of the main rivercourse, and to prevent silt build-up.

Excavating the backwater

Backwater habitat

Outline Bill of Quantities

Estimated Capital Costs

Item	Description	Quantity	Estimated cost per unit (£)	Estimated total cost (£)
Preliminaries	Preliminary clauses, including health and safety precautions, temporary fencing, project signboard etc.	Item		3,000.00
Ramp access from Coseley Avenue	0.9m wide ramp, not to exceed 1:12 gradient. Breedon Wayfarer aggregate surfacing. Timber handrails.	Item		8,000.00
Timber kissing gate entrance	Wheelchair friendly timber kissing gate.	1 no.	500.00	320.00
Galvanised steel kissing gate	Remove existing gate, and replace with galavanised steel kissing gate. Post and rail fencing (of same style and material as existing) to connect with site boundary.	Item	600.00	350.00
Interpretation panels	Bespoke engraved wooden A1 interpretation panel.	2 no.	2,500.00	5,000.00
Woodland margin planting	Bare root whips, native mix, planted at 2m centres (0.3 no. plants/m2). Bare root light standard trees, native mix, to be interspersed amongst whips (1 no. plants/25m2)	4459m2	£5 per whip, £20 per light standard	10,060.00
Lined ponds	Excavated 3 no. ponds (estimated 1 day machine hire) and lined with 0.75mm butyl on geotextile underlay. Spoil to form raised paths and mounds.	677m2	10.19	6,900.00
Aquatic planting for ponds	Mixture of bog, marginal, deep water, oxygenating and floating aquatic plants, in prepared growing medium. Approximately 4 no. plants per m2.	2,700 no.	2.50	6,750.00
Existing meadow enhanced with wildflower seeding	Scarify 1/3 of area and sow on bare soil meadow mixture for wet soils (4g/m2).	543m2	1.01	548.00
2m wide surfaced path	Breedon Wayfarer self-binding aggregate rolled on Type 1 sub-base (150mm deep).	628m2	20.00	12,560.00
All access picnic table	Wheelchair accessible, six-seater treated softwood picnic table.	3 no.	600.00	1,800.00
Tree planting	Bare root standard trees, native mix. Mulched and staked, with tree guard.	12 no.	30.00	360.00
Scrapes	Hire of rotary ditcher for one day (to include transportation costs) to create mosaic of scrapes/footdrains.	3281m2	2,600.00 per day	2,600.00
Fishing platforms	Steel fishing platform with timber steps.	4 no.	700.00	2,800.00
Backwater habitats	Hire of excavator for estimated two days. Spoil to form raised paths and mounds. Surrounding area of backwater to be left to naturally regenerate.	3 no.		500.00
Bat boxes	Timber bat box to be installed on tree trunks as per Bat Conservation Trust guidance.	2 no.	25.00	50.00
Benches	Treated softwood bench, rustic appearance.	2 no.	400.00	800.00
Bridge (Provisional Sum)	Softwood timber, 15m length, 1.2m width.	1 no.		5,000.00
Diversion of surface water (Provisional Sum)	Diversion of surface water from land drain to feed ponds.	Item		3,000.00
			SUB TOTAL	**£70,398.00**
			Contingency @ 5%	**£3,519.90**

Outline Bill of Quantities

Estimated Professional Fees and Total Estimated Cost

Item	Description	Estimated no. of days	Estimated day rate (£)	Estimated total cost (£)
Water civil engineer	Feasibility study and technical design of diversion of surface water from culvert to feed ponds.	4	£400.00	£1,600.00
Structural engineer	Feasibility study and technical design of bridge to span culvert and connect with existing path network through woodland.	3	£400.00	£1,200.00
Landscape architect	Detailed design (RIBA Stage 4-6). Coordinate procurement and on-site works.	15	£400.00	£6,000.00
Environment Agency consent	Flood defence consent	Item		£500.00
Land drainage consent	Consent required to construct or alter culvert or flow control structure.	Item		£500.00
Planning application fee	Planning application for excavation of ponds.	Item		£200.00
			SUB TOTAL	**£10,000.00**
			TOTAL	**£83,917.90**

Notes and Assumptions

- All expenditure is estimated based on the previous experience of Red Kite Network Limited.
- Exact cost provision is subject to further detailed design and specification.
- All expenditure excludes VAT.
- No provision for inflation has been made for in cost proposals.

Management and Maintenance

Maintenance Implications

The following maintenance issues will need to be considered:

- Long grass - Shrewsbury Town Council have agreed to mow the field for the first two years in order to eliminate the need for stock fencing to protect the new planting. After this time period, a maintenance decision will need to be made as to whether the field is mown or grazed.
- Grass path - Grass path shall be mown 3-5 times per year.
- Fishing platforms - An agreement needs to be formed with Shropshire Anglers Federation regarding vegetation maintenance radii around fishing platforms.
- Surfaced path - The path should be inspected once per month and weeded and repaired as required.
- Infrastructure - The benches and interpretation boards should be inspected once per month, and cleaned and repaired as required.
- Woodland margin and tree planting - During establishment period, trees will be watered during dry periods; tree pits shall be kept clear of weeds; stakes and guards replaced or removed as necessary; and damaged, diseased or dead wood shall be pruned.
- Riverbank vegetation - Riverbank vegetation, including around the backwater habitats, should be allowed to naturally regenerate. Any seedlings encroaching onto the mown grass paths should be removed.
- Ponds - Acquatic planting shall be kept free of weeds and debris will be removed from ponds.

Governance and Management

Shropshire Wildlife Trust will be responsible for implementing and managing the proposals set out in this document. It is assumed that Shrewsbury Town Council will continue to maintain the Site, and that there will be no on-site personnel.

Consideration will also need to be given to wider community involvement. Volunteers often play a key role in the management of habitats. In addition, formally constituted ‘friends’ groups are able to access grants and external funding.

Risk Management

Although not an exhaustive list, the following elements need to be considered and resolved during the implementation of the project.

Risk	Likelihood	Impact	Mitigation
External funding unavailable	Low	Medium	The proposal allows for an incremental approach to implementation as and when funding becomes available.
Inappropriate design	Low	Medium	Public consultation and stakeholder engagement have been carried out to ensure the design responds to the site’s opportunities and constraints, and user needs and preferences.
Costs overrun	Low	Medium	Detailed design and specifications to be developed prior to works commencing. Contract administrator to oversee works and budget.
Lack of community interest or support	Low	Medium	Local community informed and kept updated about project through public consultation activities and publicity. Potential Friends Group could help garner community interest.
Anti-social behaviour and vandalism	Medium	High	Design incorporates preventative infrastructure, and greater on site-presence of visitors will deter continued anti-social behaviour.
Flooding during construction and operation	Medium	Medium	Environment Agency consent to be gained prior to commencement of works. Water engineer to provide detailed specification of surface water diversion. Contingency plans to be put in place with contractor if flooding occurs.
Conservation of protect species	Low	High	The proposal has the potential to impact on protected species. Further presence/absence survey work could be carried out if deemed necessary before instigating works.
Planning permission requirements	Low	Medium	Pre-planning application advice will be sought to determine if planning is required for any on-site works, including the excavation of ponds and backwaters.

The Site will have a risk management framework to ensure a safe and healthy environment during construction and operation. This will include:

- Annual site-based risk assessment;
- Tree survey every three years; and
- Monthly site monitoring of grounds maintenance/landscape operations.

All site-based issues will be recorded and logged and corrective action taken accordingly dependent on potential risks.

Action Plan

Next Steps and Actions

As a guide to taking these proposals forward, the following next steps, although not exhaustive, are suggested:

- Surveys - Commission surveys for detailed design work, e.g. utilities and tree root protection areas.
- Design (structural engineer) - Engage structural engineer to carry out detailed design of bridge to span culvert between the woodland and site.
- Design (water civil engineer) - Engage water civil engineer to carry out detailed design of surface water diversion.
- Design (landscape architect) - Engage landscape architect to carry out detailed design of landscape works and contract administration.
- Consents - Consult with statutory bodies and apply for Environment Agency consent and land drainage consent.
- Planning - Seek pre-planning advice and apply for any required planning permission.
- Procurement - Send out prepared tender documents and appoint contractor.
- Construction - Implement works. Landscape architect to oversee works.
- Local community - Continue to update local community with progress of project, and potentially establish a Friends Group.
- Local community groups - engage local community groups, such as Abbots Day Centre, to carry out volunteer work parties and educational workshops.

Work Programme

The work programme below indicates a rough timeline for the actions identified above.

Item	**Timeline (weeks)**															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Surveys																
Design (structural engineer)																
Design (water civil engineer)																
Design (landscape architect)																
Consents																
Planning																
Procurement																
Construction																
Local community																
Local community groups																