



THE
ENVIRONMENT
PARTNERSHIP



COWM TOP ROCHDALE SHADOW HABITAT REGULATIONS SCREENING ASSESSMENT

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Executive Summary

1. TEP was initially commissioned by GLP Trows LLP and BDW Manchester in February 2021 to undertake a Habitats Regulations Screening Assessment (HRSA) of land at Cowm Top Lane, Rochdale, Greater Manchester (central grid ref: SD 89183 10288), for the proposed development of up to 495 dwellings and associated open space and infrastructure (Drawing ref: 496-P-PLF-01 Rev 04). This was updated in July 2024 to reflect changes to the proposed layout, which include a reduction in dwelling numbers to 445, and also included additional data regarding updated Drainage Strategy.
2. Due to the proximity of the site to statutory designated sites, as required by the Council's Local Validation Checklist, a project specific Habitats Regulation Assessment (HRA) has been undertaken in relation to Rochdale Canal SAC.
3. One internationally designated site was scoped into the HRA screening to examine potential impacts; Rochdale Canal SAC.
4. Several ecological surveys were undertaken as part of an updated assessment of the site by TEP in 2019. An updated walkover was also undertaken by TEP in 2022.
5. The first part of this assessment took the form of a Test of Likely Significant Effect or "TOLSE". Due to the proposed development type the following potential impact pathway has been identified that could potentially impact the designated site,
 - During the operational phase an increase in vehicular movement and activities will be incurred, which will contribute to potentially increased levels of depositional nitrogen through emissions, alone and in-combination with other plans and projects
 - Degradation of qualifying habitat of the SAC through changes in hydrological processes.
6. This assessment concludes that, the predicted total nitrogen deposition (up to the year 2026) from the proposed development would not result in a significant increase in depositional nitrogen above current levels at the Rochdale Canal SAC. Therefore, the additional contribution is considered unlikely to have a significant adverse effect on the integrity of the conservation interests of the Rochdale Canal SAC.
7. Also, adoption of the site-specific drainage strategy is unlikely to have a significant impact on qualifying habitat and features and conservation interest through changes in hydrological processes of the Rochdale Canal SAC

1.0 Introduction

Background

- 1.1 TEP was commissioned by GLP Trows LLP and BDW Manchester in February 2021 to undertake a Habitats Regulations Screening Assessment (HRSA) of land at Cowm Top Lane, Rochdale, Greater Manchester (central grid ref: SD 89183 10288), for the proposed development of up to 495 dwellings and associated open space and infrastructure (Drawing Reference: 496-P-PLF-01 Rev 4 (Planning layout 1-1000)).
- 1.2 Following comments from Natural England, this was later updated in July 2024 to include additional data regarding updated Drainage Strategy¹ and reflect changes to the proposed layout which include a reduction in dwelling numbers to 445.
- 1.3 Baseline ecological surveys were undertaken as part of the initial application by Leigh Ecology Ltd including Preliminary Ecological Appraisal in 2016 (report reference: GLP/16-001D1). TEP updated the ecological appraisal in January 2019 and carried out the following surveys:
 - Extended Phase 1 Habitats Survey (January 2019);
 - Preliminary Roost Assessment for Bats - Buildings (February 2019);
 - Ground Level Tree Assessment for Roosting Bats (February 2019);
 - Nocturnal Bat Emergence Surveys - Buildings (May - July 2019);
 - Nocturnal Bat Activity Transect & Automated Static Detector Surveys (April - September 2019);
 - Breeding Bird Surveys (April - June 2019); and
 - Reptile Surveys (April - May 2019).
- 1.4 An updated walkover assessment of the site was undertaken by TEP in May 2022.
- 1.5 Due to the proximity of the site to statutory designated sites, as required by the Council's Local Validation Checklist, a project specific Habitats Regulation Assessment (HRA) has been undertaken in relation to Rochdale Canal SAC. The requirements for air quality impacts was removed from policy but has been included within this assessment for completeness.

The Habitat Regulations Procedure

- 1.6 The Habitat Regulations Directive (92/43/EEC) established a network of Natura 2000 sites, within the European Community, with the objective of protecting sites that are considered to be of exceptional importance to rare, containing endangered and vulnerable natural habitats and species. These sites are European designated sites and are known as Special Areas of Conservation (SAC), Special Protection Areas (SPA's) and Offshore Marine Sites (OMS).

¹ Report on Drainage Strategy to Accompany Planning Application (ref 22/01190/FUL), 2023 Barrett Manchester

- 1.7 The Habitats Directive (92/43/EEC) transposed into UK law in 1994 as The Habitats Regulations, which was subsequently amended and is known as the Conservation of Habitats and Species Regulations 2017. A number of changes have been made to this by the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019, referred to as the 2019 Regulations. Under the 2019 Regulations, SACs and SPAs in the UK no longer form part of the EU's Natura 2000 ecological network. The 2019 Regulations have created a National Site Network (NSN) on land and at sea, including both the inshore and offshore marine areas in the UK.
- 1.8 Although Ramsar sites do not form part of the NSN, National planning policy recommends that Ramsar sites should be afforded the same level of consideration as SAC and SPA designated sites.
- 1.9 Under the Habitats Regulations the granting of approval (i.e. planning permissions, licenses and consents) for developments is restricted if they are likely to have a significant effect on an SAC, SPA or Ramsar site.
- 1.10 Guidance (EC, 2001²; IPC, 2011³) on undertaking assessment of plans or projects that may impact upon designated NSN sites recommends a staged approach to the assessment process:
- Screening (Step 1): The process of identifying potentially relevant NSN sites and the likely impacts of a project upon the designated features of a NSN site, either alone or in combination with other plans and projects, and considering whether the impacts are likely to be significant.
 - Appropriate Assessment (Step 2): Assessment of the impacts, taking into account proposed mitigation measures, on the integrity of the NSN site, either alone or in combination with other plans and projects, with regard to the site's structure and function and its conservation objectives. If it cannot be concluded beyond reasonable scientific doubt that the project would not adversely affect site integrity then development consent cannot be issued unless the steps set out in Stages 3 and 4 are successfully concluded.
 - Assessment of Alternative Solutions (Step 3): Examining alternative ways of achieving the objectives of the project, to establish whether there are solutions that would avoid an adverse effect on the integrity of a NSN site(s).
 - Assessment of IROPI (Step 4): If it is shown that there are no alternative solutions then the project can receive development consent only if it can also be demonstrated that it should proceed for imperative reasons of overriding public interest (IROPI). Where IROPI can be shown then compensatory measures required to maintain the overall coherence of the site or integrity of the NSN site network will need to be identified and secured.

² European Commission (2001) Assessment of plans and projects significantly affecting Natura 2000 Sites. Methodological guidance on the provisions of Article 6 (3) and (4) of the Habitats Directive 92/43/EEC

³ The Infrastructure Planning Commission (2011). Habitat Regulations Assessment for nationally significant infrastructure projects

- 1.11 All four stages of the process are referred to cumulatively as the Habitats Regulations Assessment (HRA). Figure 1 taken from the Planning Inspectorate Advice Note 10 (Version 8 – Planning Inspectorate, November 2017), sets out the recommended steps in the process.
- 1.12 Guidance on what constitutes the integrity of a NSN site has been provided by the European Commission (EC, 2000). In this guidance, integrity is defined as “the coherence of the site’s ecological structure and function, across its whole area, which enables it to sustain the habitat, complex of habitats and/or populations of species for which the site has been designated”.
- 1.13 This document contains Stage 1 and Stage 2 of the HRA process. This assessment takes account of the 2017 'People over Wind' ruling which confirmed that mitigation cannot be taken into consideration at the screening stage prior to Appropriate Assessment.
- 1.14 Under the Habitat Regulations Rochdale Borough Council is the competent authority for this development ensuring that development management decisions do not adversely affect the integrity of the NSN sites. As such this document is termed a 'shadow' Habitat Regulations Screening Assessment.

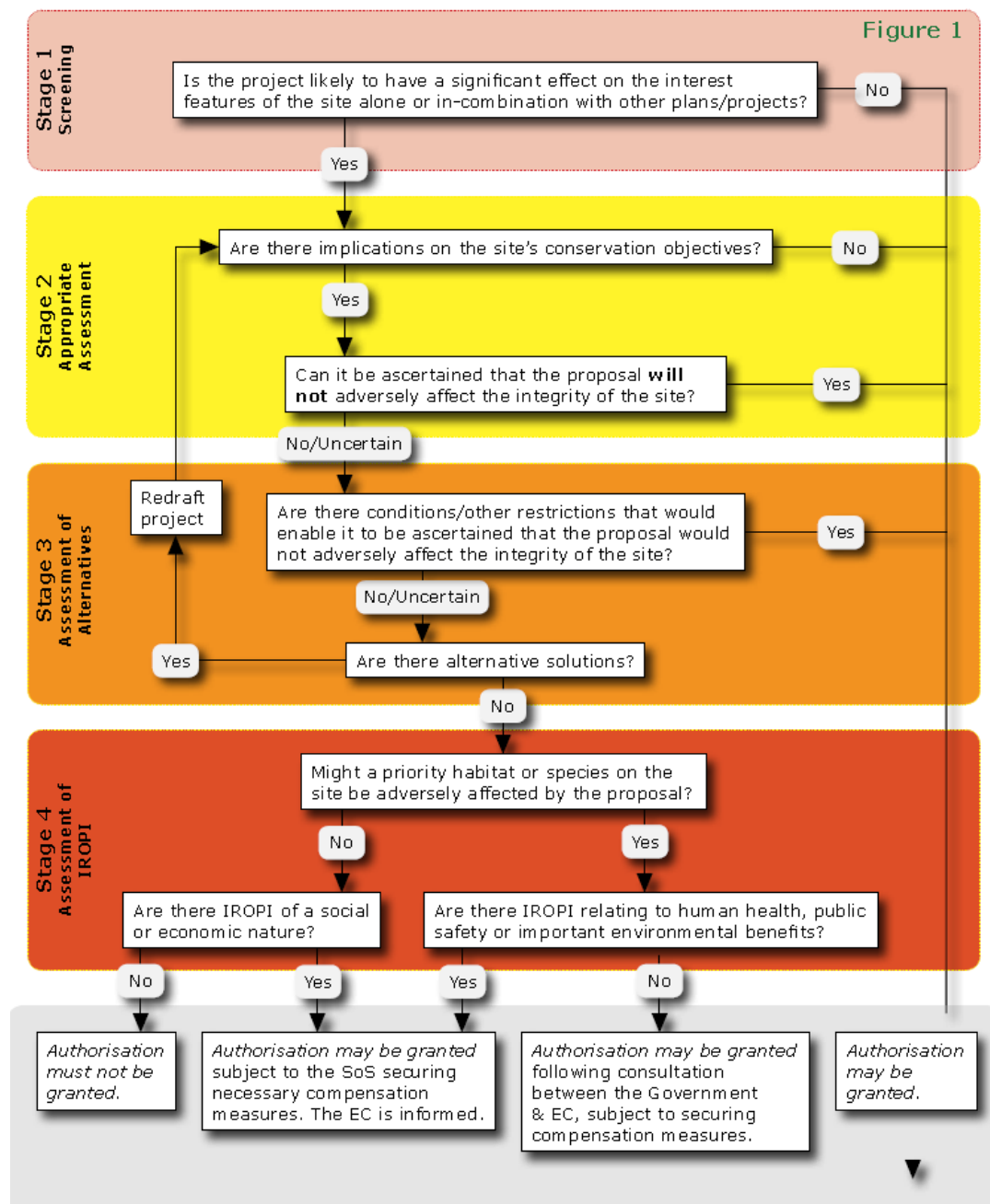


Figure 1. Approach to Determining Whether a Significant Effect is Likely on a NSN Site (Figure 1 from Planning Inspectorate Advice Note 10).

Structure of this Report

- 1.15 Section 2.0 provides details of the Natura 2000 sites within proximity to the proposed development as well as known existing baseline information for the qualifying features of these protected sites. This section also provides details of an Air Quality Assessment (AQA) produced by Smith Grant LLP.

- 1.16 Section 3.0 'Test of Likely Significant Effect (TOLSE)' provides a screening assessment, which comprises Stage 1 of the HRA process, to determine which qualifying species and habitat features associated with Natura 2000 sites included in the assessment will be taken forward to Appropriate Assessment stage.
- 1.17 Section 4.0 'Appropriate Assessment' provides the assessment for effects on the integrity of Natura 2000 sites for the Cowm Top proposed development (Stage 2 of HRA process).
- 1.18 Section 5.0 'In-combination Assessment' assesses those projects or plans that have the potential to result in an adverse effect on the integrity of NSN designated sites 'in-combination' with the proposed Cowm Top development.
- 1.19 Section 6.0 'Conclusions' provides a summary of this Shadow HRA.

2.0 Summary of Baseline Information

Natura 2000 Sites Considered Within Influencing Distances

- 2.1 The Site is located within 10km of the following Natura 2000 sites (distances are measured from the red line boundary):

Table 1 - Natura 2000 Sites within 10k

Site name:	Designation:	Distance (km):
Rochdale Canal	SAC	0.55km (west)
South Pennine Moors	SAC	7km (northeast)
South Pennine Moors Phase 2	SPA	7km (northeast)

Sites Scoped Out

- 2.2 Due to the lack of species and habitat interaction, distance and no direct impact pathway, the following sites have been scoped out of further appraisal and include;

- South Pennine Moors SAC, and
- South Pennine Moors Phase 2 SPA

Sites Scoped In

- 2.3 Therefore, for the purposes of this report the following site has been taken forward for assessment and is listed in Table 2 below;

Table 2 - Natura 2000 Sites for Assessment

Site name:	Designation:	Distance (km):
Rochdale Canal	SAC	0.55km (west)

- 2.4 The location of this Natura 2000 site relative to the proposed development is shown on Drawing G8666.001.
- 2.5 A summary of the Natura 2000 sites scoped in for assessment and potential impact pathways are given below. Full descriptions of the Natura 2000 sites scoped in are given in Appendix A.

Rochdale Canal SAC (UK0030266)

- 2.6 The SAC is located approximately 0.55km north of proposed development at its closest point.

- 2.7 The Rochdale Canal contains important habitats for submerged aquatic plants and emergent vegetation, including extensive colonies of the nationally scarce floating water-plantain *Luronium natans*. The site also supports a diverse assemblage of aquatic flora, in particular nine species of pondweed *Potamogeton spp.* The plant communities found in the Rochdale Canal are characteristic of mesotrophic water bodies.
- 2.8 The site is designated for supporting floating water-plantain (an Annex II species that is a primary reason for selection of the site).
- 2.9 Floating water-plantain occurs in a range of freshwater situations, including nutrient-poor lakes in the uplands, slowly-flowing lowland rivers, pools, ditches and canals that are moderately nutrient-rich. Floating water-plantain is an aquatic plant endemic to Europe. Rochdale Canal supports a significant population of floating water-plantain in a botanically diverse water-plant community. The population of *Luronium* in Rochdale Canal is representative of the formerly more widespread canal populations of north-west England.
- 2.10 The Conservation Objectives for the Rochdale Canal SAC are as follows:
- Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring;*
- *The extent and distribution of the habitats of qualifying species*
 - *The structure and function of the habitats of qualifying species*
 - *The supporting processes on which the habitats of qualifying species rely*
 - *The populations of the qualifying species, and,*
 - *The distribution of the qualifying species within the site*
- 2.11 In relation to Air Quality, the SAC's Conservation Objectives Supplementary Advice on conserving and restoring site features (SACO⁴) references air quality as a restore objective as follows:
- Restore as necessary the concentrations and deposition of air pollutants to at or below the site-relevant Critical Load or Level values given for this feature of the site on the Air Pollution Information System (www.apis.ac.uk).*
- The supporting habitat of this feature is considered sensitive to changes in air quality. Exceedance of these critical values for air pollutants may modify the chemical status of its substrate, accelerating or damaging plant growth, altering its vegetation structure and composition (including food-plants) and reducing supporting habitat quality and population viability of this feature.*

⁴ [European Site Conservation Objectives for Rochdale Canal SAC - UK0030266 \(naturalengland.org.uk\)](https://naturalengland.org.uk/european-site-conservation-objectives-for-rochdale-canal-sac-uk0030266)

Species and Habitat Records

Desk Based Records

- 2.12 Data gathering from a combination of web-based sources and local biological records centres was undertaken as part of the initial Ecological Assessment (2019), this was updated in 2022.
- 2.13 Data was gathered from Greater Manchester Local Records Centre and Magic Map, while ArcMap was utilised to review ordnance and aerial mapping. Consultation with the Canal and River Trust was also undertaken to determine the locations of where floating water-plantain was present along the SAC.
- 2.14 The data will be used to determine potential impacts on species of conservation interest with regards to the identified impact pathways and whether progression of Stage 2 of the HRA (Appropriate Assessment) will be required.

Air Quality Assessment

- 2.15 Concentrations of pollutants in air and deposition of nitrogen can harm vegetation directly or affect plant health and productivity. Deposition of pollutants to the ground and vegetation can alter the characteristics of the soil, affecting the pH and nitrogen availability that can then affect plant health, productivity, and species composition⁵.
- 2.16 The air pollutant of most concern for sensitive vegetation is in relation to excessive road traffic emissions is oxides of nitrogen (NO_x) concentrations. NO_x is composed of nitric oxide (NO) and its oxidation product nitrogen dioxide (NO₂). Concentrations of NO₂ are higher close to roads and so vegetation in these areas is exposed to a larger source of nitrogen (N). As a general rule roadside effects of NO_x and nitrogen deposition will have reduced to background concentrations/rates within 200m of roadside. Potential ecological consequences in response to high levels or prolonged exposure to such emissions can include:
- Changes in species composition especially in nutrient poor ecosystems with a shift towards species associated with higher nitrogen availability (e.g. dominance of tall grasses);
 - Reduction in species richness;
 - Increases in plant production;
 - Decrease or loss of sensitive lichens and bryophytes
- 2.17 The quality of the water that feeds NSN Sites is an important determinant of the nature of their habitats and the species they support. Rivers, streams and aquatic environments supported by these sites can be affected by a number of factors, including increases in nitrogen deposition from adverse high levels of road traffic in close proximity to watercourses.

⁵ Bobbink, R., Hicks, K., Galloway, J., Spranger, T., Alkemade, R., Ashmore, M., Bustamante, M., Cinderby, S., Davidson, E., Dentener, F. and Emmett, B., 2010. Global assessment of nitrogen deposition effects on terrestrial plant diversity: a synthesis. *Ecological applications*, 20(1), pp.30-59.

- 2.18 Eutrophication from increased levels of nitrogen deposition within water courses can increase plant growth and, in some cases, can alter the species composition of a habitat. Eutrophication can also contribute to algal blooms, especially in areas of still water, which can increase turbidity and decrease light penetration.
- 2.19 The revised plans include building up to 445 dwellings on land off Cowm Top Lane with associated access.
- 2.20 Due to the potential future traffic increases on the M62 motorway as a result of the proposals, where the local road network connecting to the M62 passes very close to the Rochdale Canal SAC, an assessment of air quality was undertaken by Smith Grant LLP (Report Reference: R2392B-R01 August 2021 (provided as part of the application submission)) and subsequent addendums (R2392C-R01-v2 August 2022 and R2392C-R02-v2 July 2024) to determine potential impacts both alone and in combination with other projects and plans.

Flood Risk Assessment and Drainage Report

- 2.21 An updated Flood Risk Assessment (FRA) and Drainage Report was undertaken by RSK (Report Reference: 881680 R1(07) FRA August 2022 (provided as part of the application submission)) to establish the flood risk associated with the proposed development and to propose suitable mitigation, if required, to reduce the risk to a more acceptable level. The report also reviewed site surface water drainage based on the proposed layout and, where necessary, determined the extent of infrastructure required.
- 2.22 Following comments received from Natural England and the Lead Local Flood Authority, the Drainage Strategy was updated in 2024 (Barrett Manchester) to assist in the designer's preparations and mitigation strategy.
- 2.23 Due to potential hydrological linkages to Rochdale Canal SAC this assessment was reviewed to determine potential impacts of the proposals, both alone and in combination with other projects and plans.

3.0 Test of Likely Significant Effect (TOLSE)

- 3.1 The following table (Table 3) provides Stage 1 of the Habitats Regulations Assessment - the Test of Likely Significant Effects (TOLSE) for each of the Natura 2000 sites to be assessed.
- 3.2 Due to the proposed development type, the following potential, impact pathways have been identified that could potentially affect the conservation status of the identified Natura 2000 sites, which will be further assessed:
- Degradation of qualifying habitat of the SAC through changes in hydrological processes.
 - Critical increases in airborne pollution and depositional nitrogen through increase in vehicular movement and activities, depositional nitrogen through emissions in-combination with other plans and projects.
- 3.3 With regard to potential risks from road traffic emissions, Natural England and Highways England agree that only protected sites falling within 200 metres of the edge of a road affected by a plan or project need to be considered further. This is based on evidence presented in ENRR580 (Signal et al. 20046) and is consistent with more current literature (Ricardo-AEA, 20167).

⁶ Bignal, K., Ashmore, M. & Power, S. 2004. The ecological effects of diffuse air pollution from road transport. English Nature Research Report No. 580, Peterborough

⁷ Ricardo-AEA, 2016. The ecological effects of air pollution from road transport: an updated review. Natural England Commissioned Report no.199.

Table 3 - Test of Likely Significant Effect

Designated Site (inc distance)	Impact & Pathway	Assessment	Include in HRA?
Rochdale Canal SAC (0.55km west)	<u>Operational</u> Degradation of qualifying habitat of the SAC through changes in hydrological processes. Potential pollution from surface water discharges	There are existing issues with pollution entering the canal from a discharge location at Gorrels Way and discharge from a brook connected to ponds to the south of the site. Discharge from the development could contribute to this, however the suggested strategy is to manage surface water on-site (in order to limit the discharge of surface water off-site to pre-development greenfield Qbar rates), to provide sufficient on-site attenuation (up to the 1 in 100-year climate change rainfall event) and to provide improvements to water quality through appropriate source treatment.	YES (alone and in-combination) Surface water will eventually be discharged into one of the fishing ponds south of the site (that is connected to the brook that discharges into the canal), which could without mitigation, have negative impact on the qualifying feature of the canal and is taken forward for appropriate assessment.
Rochdale Canal SAC (0.55km west)	<u>Operational</u> Critical increases in airborne pollution and depositional nitrogen through increase in vehicular movement and activities, depositional nitrogen through emissions in-combination with other plans and projects.	An increase in vehicular movement and activities will be incurred in the vicinity of the M62 (due to the size of the development and relative proximity to the motorway) this could contribute to increased levels of depositional nitrogen through emissions.	YES (alone and in-combination) Floating water plantain, the primary qualifying feature of the SAC's selection, is known to be sensitive to excessive nutrient nitrogen impacts (APIS ⁸⁹). Without mitigation, increases in depositional nitrogen could have negative impact on the qualifying feature and is taken forward for appropriate assessment.

⁸ <http://www.apis.ac.uk/select-feature?site=UK0030266&SiteType=SAC&submit=Next>

⁹ [Species- Pollutant Results | Air Pollution Information System \(apis.ac.uk\)](#)

3.4 The following table summarises the features and potential impact pathways that will be taken through to appropriate assessment.

Table 4. Features and potential impact pathways that will be taken through to appropriate assessment

Feature	Associated Protected Site(s) to be assessed	Impact Pathways
Floating water-plantain	Rochdale Canal SAC	Air Quality - Nitrogen Deposition
Degradation of qualifying habitat	Rochdale Canal SAC	Degradation of water quality due to changes in hydrological processes.

4.0 Appropriate Assessment

Impact Pathways to be Included in Assessment

- 4.1 The following impact pathways have been identified for the proposed development to be considered at Appropriate Assessment stage:
- Critical increases in airborne pollution and depositional nitrogen through increase in vehicular movement and activities, depositional nitrogen through emissions in-combination with other plans and projects.
 - Degradation of qualifying habitat of the SAC through changes in hydrological processes.
- 4.2 It is now acceptable to take account of mitigation measures when determining if the proposed development will have any effect on the integrity of Natura 2000 sites. This approach is consistent with the People over Wind ruling.

Air Quality - Nitrogen Deposition

Rochdale Canal SAC Overview

- 4.3 The recent Habitats Regulations Assessment of the Places for Everyone Joint Development¹⁰ identified a number of potential sites on the road network where nitrate pollution could increase to a level which could potentially cause harm to the special nature conservation interest of the Rochdale Canal SAC as a result of the operation of the Plan, however, in the final adopted version of Places for Everyone, the site specific requirement for this site to be subject to a HRA was removed from policy.
- 4.4 Nitrogen Critical Loads presented by APIS (which gives a maximum of 24 kg N/ha/yr and a critical load of between 3-10 kg N/ha/yr) are not based on any species-specific studies but are rather based on generic nitrogen loads for the habitat type. There are no studies available which have assessed the impacts of increased nitrate deposition from air pollution specifically on *Luronium natans*. However, the average existing critical load is currently estimated at 19.3 kg/N/ha/yr, so already well above the critical load for the habitat type, although the total nitrogen deposition in the area has shown significant falls in recent years (source – APIS).
- 4.5 *Luronium natans* is known to be susceptible to nutrient enrichment from water-borne pollution. It seems likely that the Canal waters are phosphate-limited rather than nitrogen-limited. This means that to control eutrophication it is more important to control phosphate inputs from agriculture of which there is no control.
- 4.6 When the ecology of *Luronium natans* and freshwater plant communities in general, and the available evidence of the stability of the *Luronium* population in the Canal, are considered it seems likely that increased traffic movements in the vicinity of the Canal will not have a harmful effect on the special interest of the Canal – that is, no likely significant effects will arise.

¹⁰ Habitats Regulations Assessment of the Places for Everyone Joint Development Plan - February 2022 Greater Manchester Combined Authority

- 4.7 But this conclusion is uncertain because the response of *Luronium natans* to air pollution levels has not been studied and is therefore not well understood. A precautionary approach to this potential impact is therefore recommended.

Impact Characterisation

- 4.8 The assessment identified that development of the site would likely result in increased vehicular movements at junctions associated with access to the M62. These junctions lie in close proximity to Rochdale Canal SAC which is designated for supporting floating water-plantain, a species sensitive to nutrient nitrogen impacts. An excess of depositional nitrogen and nutrient enrichment of habitats associated with Rochdale Canal SAC could adversely affect the population of floating water-plantain present in the canal.
- 4.9 The AQA produced by Smith Grant LLP carried out nitrogen deposition modelling at 18 locations (E1 - E18) at sensitive areas relevant to road junctions associated with potential use from the development along the Rochdale Canal SAC. The AQA concluded that the small additional increase in predicted total nitrogen deposition (up to the year 2026) from the proposed development is unlikely to result in a significant impact upon the Rochdale Canal SAC.
- 4.10 The small increase is related to modelled receptor points E4-E9 (concerning the stretch near Queensway/A627(M) junction) and represents a change of +0.02 kg N/ha/yr. This change is an increase of 1% of the minimum Critical Load (CL_{min}) level of 3 kg N/ha/yr, which is at the screening threshold. No increase is predicted for the maximum Critical Load (CL_{max}) level of 10 kg N/ha/yr. Other modelled points close to the Queensway/A627(M) junction (E1-E3) fall below 1% (i.e. 0%).
- 4.11 The background nitrogen deposition (based on an average for 2017-2019) is reported to be 26.12 kg N/ha/yr (E8) and 25.80 kg N/ha/yr (E10). These levels already substantially exceed the minimum and maximum Critical Loads assigned for Rochdale Canal SAC which are 3-10 kg N/ha/yr.
- 4.12 According to the source attribution data, the most significant local contributions of nitrogen pollution include Livestock (33.3%) and Non-agricultural Non-abatable (14.1%). Road Transport is the 3rd highest source of local nitrogen-based pollution contributing 12.4% per year, a relatively small contribution compared with the two other more significant sources (Figure 2).

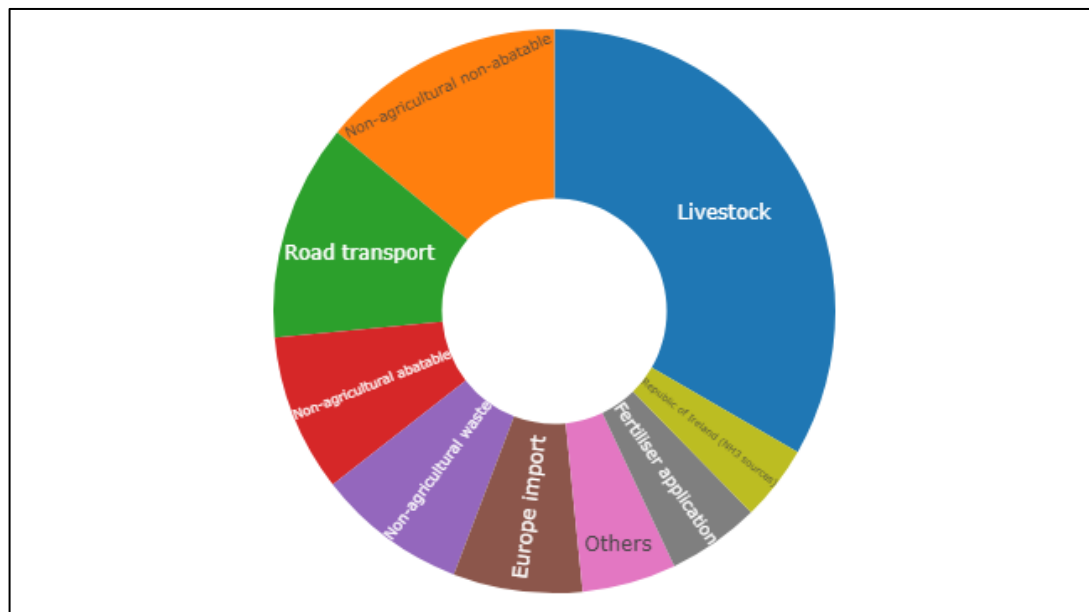


Figure 2 Local contributions to Nitrogen deposition (KgN/ha/yr) from sources (UK) taken from APIS

- 4.13 The small predicted additional contribution is rounded up to a 1% increase at the lower range of the CL_{min} . The contribution from the additional road traffic would therefore result in a small additional increase in nitrogen deposition along the canal in the short-term.
- 4.14 The assessment assumes background nitrogen deposition remains at the 2017-2019 levels whereas future trends predict that by 2026 a reduction would be expected. National and local initiatives (such as the Greater Manchester Clean Air Plan) encourage cleaner car technology and therefore it can be expected that predicted future trends would result in further reductions in nitrogen deposition in the long-term.
- 4.15 Considering the nature of the designated site, which is a waterbody (canal) that is moderately nutrient-rich (mesotrophic), there is highly likely to be a significant dilution and settling of nutrient nitrogen. Freshwater habitats are also typically phosphorus limited rather than nitrogen limited.
- 4.16 Based on the small predicted increase being rounded up to 1%, and that future trends are likely to result in a reduction in Road Transport nitrogen contributions in the long-term, as well as the fact that the designation is a canal, the small predicted additional contribution is considered unlikely to have a significant adverse effect on the integrity of the conservation interests of the Rochdale Canal SAC, as a result of excessive nitrogen deposition critical loading from additional traffic associated with the development.

Flood Risk Assessment from Drainage

Summary of Drainage Design

- 4.17 The drainage has been designed in accordance with the site-specific FRA produced by RSK dated August 2022.
- 4.18 The drainage has also been designed to comply with DEFRA's Non-statutory technical standards for sustainable drainage systems dated March 2015. Compliance to such is demonstrated in Section 15.
- 4.19 Surface water is to drain to the adjacent fishery ponds named Trub Brook. Discharge rates have been limited to existing Greenfield run off rates/Qbar.
- 4.20 A full assessment to monitor the onsite flows was undertaken, two valley features orientated to the north-east and to the south-west are found within the eastern and western half of the site. The flow data collected from these locations are considered very low and it is anticipated that the flows from these springs are negligible (RSK 881680 R1 FRA).
- 4.21 To match the on-site flow routes the proposed surface water drainage will be split via three outfalls limited to the pre-development Greenfield runoff rates from the developable area.
- 4.22 The Western parcel will be via a new surface water outfall adjacent to an existing drainage pipe into a watercourse at 47.39l/s.
- 4.23 The eastern parcel will be via a new surface water outfall into the existing onsite watercourse in the southeastern area of the site discharging to a fishing lodge at 55.64l/s.
- 4.24 Attenuation storage for the western outfall is provided in the form of SuDS in public open spaces. The attenuation storage is sized to provide attenuation for all flows up to and including 1in100yr plus central allowance climate change. A nominal low-lying AIMP area of roadway/emergency access will be stored within oversized pipes for the western outfall.
- 4.25 Attenuation storage for the eastern outfall is provided in the form of SuDS in public open spaces. The attenuation storage is sized to provide attenuation for all flows up to and including 1in100yr plus central allowance climate change.
- 4.26 To improve water quality management, guidance has been followed by using a point scoring system based on pollution hazard indices for different land use classifications from CIRIA SuDS manual C753
- 4.27 The site falls into the low pollution hazard level; in order to provide adequate treatment, the selected detention basin SuDS component will have a total mitigation index (for each contaminant type) that equals or exceeds the pollution hazard index from the CIRA SuDS manual C753.

- 4.28 Additional pre-treatment will be provided in the form of catch-pit manholes upstream of the detention basin which is an additional design requirement presented in the S104 SuDs guidance document by the adopting water and wastewater undertaker (United Utilities).
- 4.29 The use of petrol interceptors as a type of pre-treatment was discussed via email (Barrett Manchester 2023) with the adopting water and wastewater undertaker (United Utilities) which states that they will not adopt petrol interceptors into their network.
- 4.30 For storm events exceeding 1 in 30-year events, long term storage is provided in above ground storage areas to ensure no flooding to properties occurs for all storm events up to and including 1 in 100-year 6 hour storm event plus an Upper end allowance for climate change.
- 4.31 Some minor flooding to highways is accepted for the 1 in 100-year 6-hour event. Flooding is only permitted where it can be demonstrated that minor flooded is contained wholly within the adopted highway and will not flood properties. The location and flood extent are shown on the Flood Routing and Overland Flow drawing of the updated drainage strategy document.

Foul Drainage Strategy

- 4.32 The drainage strategy and detailed design for the foul drainage on site is via two pumped systems northwards to the existing foul water manhole in Cowm Top Lane.

Design for Exceedance

- 4.33 All surface water drainage models have been modelled for storm events greater than the 1 in 100 Year event to determine the impact of flooding. The Flood locations are shown on the attached Flood Routing and over land flow drawing within the updated Drainage Strategy Report Rev D (Barrett Manchester 2023).
- 4.34 Any exceedance flooding has been demonstrated to be managed within the site, where reasonably practicable. This demonstrates that properties are unlikely to flood during extreme flood events.
- 4.35 As per DEFRA guidance, all surface water drainage models have been modelled for storm events greater than the 1 in 100 Year plus Central Allowance climate change event to determine the impact of flooding. DEFRA climate change allowances are provided on <https://environment.data.gov.uk> website. As of June 2024, using the 2070s epoch, Rochdale Borough Councils requirement for uplift for climate change is given as 30%. This has been duly used as the basis for the above modelling and forms the general design criteria, to which Basin top water levels, freeboard and Ciria guidance on is applied.
- 4.36 In addition to ensuring that the SUDs features are designed to meet the above criteria, consideration must also be given by the designer to demonstrate the impact on the system and development for rainfall events that exceed those above and beyond the design criteria (Exceedance).

- 4.37 The DEFRA website therefore provides further uplifted percentage in climate change figures for the 'Upper End Allowance'. For Rochdale MBC, this is provided as 45% Upper End Climate Change. For this exceedance event, the designer is to demonstrate how the exceedance flows will be via controlled flooding and/or directed. i.e an acceptable example of this would be by demonstrating that these additional exceedance volumes may be partially or fully contained within the free-board of any SUDs basins/ponds/swales, or by demonstrating that exceedance flood routing safely passes overland without flooding existing or proposed property thresholds.
- 4.38 The Flood locations for this site are shown on the attached Flood Routing and over land flow drawing. Any exceedance flooding has been demonstrated to be managed within the site where reasonably practicable.
- 4.39 This demonstrates that existing or proposed properties are unlikely to flood during extreme flood events.
- 4.40 whilst the nominal additional surface water attenuation required for the lower-lying roadway/emergency access will be accommodated within oversized pipes. For western system

Water Quality Treatment

- 4.41 The following is based upon CIRIA SuDS C753 Manual Chapter 26 Table 4.3.
- 4.42 Land use is the primary influencing factor in the quality of urban surface water run-off. Determining the hazard posed by the different land use activities, and the extent to which underlying soils and/or proposed treatment components reduce the associated risk, can be done using a variety of methods.
- 4.43 Table 4.3 sets out which of these methods are required, for different generic land use types and receiving waters. For residential sites from Table 4.3, the pollution hazard level is Low, and the preferred design method is the Simple Index Approach.
- 4.44 The Simple Index Approach is summarised in CIRA SuDs manual C753 Box 26.2 and was applied to this development.

Step 1 - Allocate Suitable Pollution Hazard Indices for Proposed Land Use

- 4.45 Following this approach the development consists of the following land use:
- Residential Roofs
 - Individual Property Driveways
 - Low Traffic Roads
- 4.46 The Pollution Hazard Indices are shown in figures 5-6:

Pollution Hazard Indices – Residential Roofs	
Pollution Hazard Level	Very Low
Total Suspended Solids	0.2
Metals	0.2
Hydrocarbons	0.05

Figure 3: Residential Roofs

Pollution Hazard Indices – Driveways & Low Traffic Roads	
Pollution Hazard Level	Low
Total Suspended Solids	0.5
Metals	0.4
Hydrocarbons	0.4

Figure 4: Driveways and Low Traffic Roads

Step 2 - Select SuDS

- 4.47 Firstly, SuDS are selected with total pollution mitigation indices which equal or exceed the maximum pollution hazard index identified in Step 1 (driveways and low traffic roads). As this site discharges to a watercourse CIRA SuDS manual C753 Table 26.3 is referred to.
- Total SuDS Mitigation Index $\geq$ Pollution Hazard Index (for each contaminant type)
- 4.48 Where the mitigation index of an individual component is insufficient, two components (or more) in series will be required, known as a SuDS Management Train.
- Total SuDS Mitigation Index $\geq$ Mitigation Index₁ + 0.5 x Mitigation Index₂ + 0.5 x Mitigation Index₃
- 4.49 A factor of 0.5 is used to account for the reduced performance of the secondary or tertiary components associated with already reduced inflow concentrations.
- 4.50 The FRA suggest that one level of treatment is required for residential roof, driveways and low traffic roads. The drainage strategy has all water drainage draining via adopted sewers to an adopted detention basin. The following simple index approach demonstrates whether the detention basin alone is considered suitable for water quality treatment (figure 7).

Residential Roofs		
Pollution Hazard Indices		SuDS Mitigation Indices from Table 26.3
		Detention Basin
Total Suspended Solids	0.2	0.5
Metals	0.2	0.5
Hydrocarbons	0.05	0.6

Driveways & Low Traffic Roads		
Pollution Hazard Indices		SuDS Mitigation Indices from Table 26.3
		Detention Basin
Total Suspended Solids	0.5	0.5
Metals	0.4	0.5
Hydrocarbons	0.4	0.6

Figure 5: SuDS Mitigation Requirement

- 4.51 The Total SuDS Mitigation Index (shown in Green) are $\geq$ Pollution Hazard Index [for each contaminant type) and therefore deemed to comply with the requirements of the simple index approach of the SuDS manual.
- 4.52 To further improve water quality management, two mitigation components will be added in the form of a sediment forebay set at the 1 in 30 yr level; greater than 10 m² will be formed by building a rock-filled gabion after the inlet (see chapter 23.8.1. CIRIA C753) and a small permanent Wetland at a shallow depth of 0.8m at the outlet (see chapter 23.1. CIRIA C753).

- 4.53 Keeping the permanent water shallow allows oxygen to reach the bottom of the pond, enabling the biodegradation of oils by natural organisms (see chapter 23.2 of CIRIA C753). This is subject to approval by United Utilities.
- 4.54 Table 26.2 of the CIRIA SuDs manual C753 shows that one type of SuD provides enough mitigation to fulfil the LOW pollution hazard index for different land use classifications.
- 4.55 Multiple SuD components have been introduced after the initial SuD, in a series known as a Management Train, before the outfall to the fisheries. This will minimise pollution hazards by more than twice the required values stated in table 26.2 from the CIRIA SuDs manual C753.
- 4.56 Therefore, the SuDs management train specified above provides more than enough treatment to remove pollution hazards and contaminants upstream of the fisheries.

Maintenance

- 4.57 All Surface Water will be put forward for adoption under a S104 agreement with United Utilities. An adopting water body (e.g. United Utilities) Prior to issue of the Vesting Declaration by United Utilities An adopting water body (e.g. United Utilities), the drainage shown on the included plan will be maintainable by Barratt Manchester.
- 4.58 All areas of public open space will be transferred to the management company for adoption and maintenance. This includes the Overflow areas/Ponds. The management and maintenance will be funded by the purchasers/owners of the development by way of an annual fee levied on the owner. In order to ensure the long term operation of the swales, the maintenance contract will stipulate regular maintenance of the SUDS network, in accordance with this management plan.
- 4.59 All highway gullies and highway drains will be put forward for adoption under a S38 agreement with Rochdale Borough Council. After issue of the highway final certificate, the highway and Highway Drains, Gullies, and gully pipes, will be maintained by the Local Highway Authority at public expense. Prior to issue of the final Certificate by Rochdale Borough Council, the highway drains will be maintained by Barratt Manchester and at the expense of Barratt Manchester.
- 4.60 All Foul drainage will be put forward for adoption under a S104 agreement with United Utilities. An adopting water body (e.g. United Utilities) Prior to issue of the Vesting Declaration by United Utilities An adopting water body (e.g. United Utilities), all drainage will be maintainable by Barratt Manchester
- 4.61 A draft inspection & maintenance schedule for elements of the SUDS/Drainage infrastructure is shown in Figure 8-9.

Drainage Element	Maintenance Requirement	Frequency
Surface Water Pipes and Manholes (prior to adoption)	Inspect. Remove excess silt & debris, Clear Blockage	Inspect Annually. CCTV if required. Silt & debris removed as necessary.
Catchpits	Inspect. Remove excess silt & debris, Clear Blockage	Inspected every 3 months. Silt & debris removed as necessary.
Ditches/Swales	Inspect. Remove excess vegetation. Clear blockages, silt & debris.	Inspected every 1 Month. Blockages, silt & debris removed as necessary.
Flow Controls	Inspect. Remove excess silt & debris, clear blockage. Test functionality of Bypass doors.	Inspect Annually Silt & debris removed as necessary. Flow control repaired, maintained as necessary.
Overflow Ponds (and POS)	Inspect. Remove excess vegetation. Clear blockages, silt & debris.	Inspected monthly, or after significant storm events. Blockages, silt & debris removed as necessary.

Figure 6: Inspection and Maintenance for SuDS/Drainage infrastructure

Responsible Organisation	Basin	Frequency
Private Management Company	Remove litter and debris	Monthly or as required
	Cut the grass	
	Inspect the bankside vegetation and remove nuisance plants	
United Utilities (after adoption)	Inspect and clear blockages	Monthly or as required
	Inspection water for signs of reduced water quality	
United Utilities (after adoption)	Inspect silt accumulation rates. Undertake contamination testing	Half yearly
	Check flow controls	
Private Management Company	Remove excess vegetation	Annually
	Tidy all dead growth prior to growing season	
United Utilities (after adoption)	Remove sediment from one quadrant of the main body of basin	Every 1-5 years or as required

Figure 7: Maintenance of Detention Basin

- 4.62 With the full adoption of the drainage strategy and mitigation it is considered unlikely to have a significant adverse effect on the integrity of the conservation interests of the Rochdale Canal SAC, as a result of degradation of habitat from hydrological changes associated with the development.

5.0 In-Combination Assessment

- 5.1 Regulation 102 of the Habitats Regulations 2018 requires an Appropriate Assessment where “a land use plan is likely to have a significant effect on a NSN site (either alone or in combination with other plans or projects) and is not directly connected with or necessary to the management of the site”. Therefore, as well as considering the likely effects alone on NSN sites, it will also be necessary to consider whether there may be significant effects in combination with other plans or projects.
- 5.2 Following correspondence with the Local Council they have advised that no developments, in-combination should be taken into consideration as part of the AQA and Traffic Assessment.
- 5.3 This is in relation to Natural England and Highways England agreement that only protected sites falling within 200 metres of the edge of a road affected by a plan or project need to be considered further. This is based on evidence presented in ENRR580 (Bignal et al. 2004¹¹) and is consistent with more current literature (Ricardo-AEA, 2016¹²).
- 5.4 This assessment has taken the same approach and therefore has not considered any additional projects that may require review.

¹¹ Bignal, K., Ashmore, M. & Power, S. 2004. The ecological effects of diffuse air pollution from road transport. English Nature Research Report No. 580, Peterborough

¹² Ricardo-AEA, 2016. The ecological effects of air pollution from road transport: an updated review. Natural England Commissioned Report no.199.

6.0 Conclusions

- 6.1 This HRA screening assessed the proposed development where potential impact pathways to Natura 2000 protected sites have been identified.
- 6.2 Two Natura 2000 sites identified within 10km of the proposed development have been scoped out due to lack of species and habitat functionality with no direct impact pathway. However one International designated site, the Rochdale Canal SAC, was scoped in to the HRA screening to examine potential impacts.
- 6.3 This assessment was informed by several ecological surveys and reports undertaken by TEP, and pre-application advisory information and policy in the PfE.
- 6.4 The first part of this assessment took the form of a Test of Likely Significant Effect or "TOLSE". Due to the proposed development type, the following potential impact pathway has been identified that could potentially impact the identified Natura 2000 sites,
 - During the operational phase an increase in vehicular movement and activities will be incurred, which will contribute to potentially increased levels of depositional nitrogen through emissions, alone and in-combination with other plans and projects
 - Degradation of qualifying habitat of the SAC through changes in hydrological processes.
- 6.5 This assessment concludes that, the predicted total nitrogen deposition (up to the year 2026) from the proposed development would not result in a significant increase in depositional nitrogen above current levels at the Rochdale Canal SAC. Therefore, the additional contribution is considered unlikely to have a significant adverse effect on the integrity of the conservation interests of the Rochdale Canal SAC.
- 6.6 Also, adoption of the site-specific drainage strategy is unlikely to have a significant impact on qualifying habitat and features and conservation interest through changes in hydrological processes of the Rochdale Canal SAC.

APPENDIX A: Attributes of NSN Sites

EC Directive 92/43 on the Conservation of Natural Habitats and of Wild Fauna and Flora

Citation for Special Area of Conservation (SAC)

Name: Rochdale Canal
Unitary Authority/County: Manchester, Oldham, Rochdale
SAC status: Designated on 1 April 2005
Grid reference: SD893038
SAC EU code: UK0030266
Area (ha): 25.55
Component SSSI: Rochdale Canal SSSI

Site description:

The Rochdale Canal contains important habitats for submerged aquatic plants and emergent vegetation, including extensive colonies of the nationally scarce floating water-plantain *Luronium natans*. The site also supports a diverse assemblage of aquatic flora, in particular nine species of pondweed *Potamogeton* spp. The plant communities found in the Rochdale Canal are characteristic of mesotrophic water bodies, i.e. those which are moderately nutrient-rich.

Qualifying species: The site is designated under **article 4(4)** of the Directive (92/43/EEC) as it hosts the following species listed in Annex II:

- Floating water-plantain *Luronium natans*

This citation relates to a site entered in the Register of European Sites for Great Britain.
Register reference number: UK0030266
Date of registration: 14 June 2005

Signed: *Trevor Salmon*

On behalf of the Secretary of State for Environment,
Food and Rural Affairs

European Site Conservation Objectives for Rochdale Canal Special Area of Conservation

Site code: UK0030266



With regard to the SAC and the natural habitats and/or species for which the site has been designated (the 'Qualifying Features' listed below), and subject to natural change;

Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring;

- The extent and distribution of the habitats of qualifying species
- The structure and function of the habitats of qualifying species
- The supporting processes on which the habitats of qualifying species rely
- The populations of the qualifying species, and,
- The distribution of the qualifying species within the site.

This document should be read in conjunction with the accompanying *Supplementary Advice* document, which provides more detailed advice and information to enable the application and achievement of the Objectives set out above.

Qualifying Features:

S1831. *Luronium natans*; Floating water-plantain

Explanatory Notes: European Site Conservation Objectives

These Conservation Objectives are those referred to in the Conservation of Habitats and Species Regulations 2017 as amended from time to time (the “Habitats Regulations”). They must be considered when a competent authority is required to make a ‘Habitats Regulations Assessment’, including an Appropriate Assessment, under the relevant parts of this legislation.

These Conservation Objectives and the accompanying Supplementary Advice (where available) will also provide a framework to inform the measures needed to conserve or restore the European Site and the prevention of deterioration or significant disturbance of its qualifying features.

These Conservation Objectives are set for each habitat or species of a [Special Area of Conservation \(SAC\)](#). Where the objectives are met, the site will be considered to exhibit a high degree of integrity and to be contributing to achieving Favourable Conservation Status for that species or habitat type at a UK level. The term ‘favourable conservation status’ is defined in regulation 3 of the Habitats Regulations.

Publication date: 27 November 2018 (version 3). This document updates and replaces an earlier version dated 30 June 2014 to reflect the consolidation of the Habitats Regulations in 2017.



European Site Conservation Objectives: Supplementary advice on conserving and restoring site features

**Rochdale Canal Special Area of Conservation (SAC)
UK0030266**



Image taken from Canal and Rivers Trust

Date of Publication: 25 January 2019

About this document

This document provides Natural England's supplementary advice about the European Site Conservation Objectives relating to Rochdale Canal SAC. This advice should therefore be read together with the SAC Conservation Objectives available [here](#).

You should use the Conservation Objectives, this Supplementary Advice and any case-specific advice given by Natural England when developing, proposing or assessing an activity, plan or project that may affect this site'

This Supplementary Advice to the Conservation Objectives presents attributes which are ecological characteristics of the designated species and habitats within a site. The listed attributes are considered to be those that best describe the site's ecological integrity and which, if safeguarded, will enable achievement of the Conservation Objectives. Each attribute has a target which is either quantified or qualitative depending on the available evidence. The target identifies as far as possible the desired state to be achieved for the attribute.

The tables provided below bring together the findings of the best available scientific evidence relating to the site's qualifying features, which may be updated or supplemented in further publications from Natural England and other sources. The local evidence used in preparing this supplementary advice has been cited. The references to the national evidence used are available on request. Where evidence and references have not been indicated, Natural England has applied ecological knowledge and expert judgement. You may decide to use other additional sources of information.

In many cases, the attribute targets shown in the tables indicate whether the current objective is to 'maintain' or 'restore' the attribute. This is based on the best available information, including that gathered during monitoring of the feature's current condition. As new information on feature condition becomes available, this will be added so that the advice remains up to date.

The targets given for each attribute do not represent thresholds to assess the significance of any given impact in Habitats Regulations Assessments. You will need to assess this on a case-by-case basis using the most current information available.

Some, but not all, of these attributes can also be used for regular monitoring of the actual condition of the designated features. The attributes selected for monitoring the features, and the standards used to assess their condition, are listed in separate monitoring documents, which will be available from Natural England.

These tables do not give advice about SSSI features or other legally protected species which may also be present within the European Site.

If you have any comments or queries about this Supplementary Advice document please contact your local Natural England adviser or email

HDIRConservationObjectivesNE@naturalengland.org.uk

About this site

European Site information

Name of European Site	Rochdale Canal Special Area of Conservation (SAC)
Location	Greater Manchester
Site Map	The designated boundary of this site can be viewed here on the MAGIC website
Designation Date	1 st April 2005
Qualifying Features	See section below
Designation Area	25.55ha
Designation Changes	N/A
Feature Condition Status	Details of the feature condition assessments made at this site can be found using Natural England's Designated Sites System
Names of component Sites of Special Scientific Interest (SSSIs)	<i>Rochdale Canal SSSI</i>
Relationship with other European or International Site designations	N/A

Site background and geography

Situated within the Greater Manchester area, the Rochdale Canal contains important habitats for submerged aquatic plants and emergent vegetation, including extensive colonies of the nationally scarce floating water-plantain *Luronium natans*. The site also supports a diverse assemblage of aquatic flora, in particular nine species of pondweed *Potamogeton* spp. The plant communities found in the Rochdale Canal are characteristic of mesotrophic water bodies, i.e. those which are moderately nutrient-rich.

Opened in 1804, the Rochdale Canal became the first of Manchester's three trans-Pennine canals and principal cargoes included coal, agricultural produce and materials for the textiles industry (Canal & River Trust, ND).

The canal is situated within the Manchester conurbation National Character Area (NCA) which is a predominantly urban area, bringing together a number of large settlements. The Manchester Pennine Fringe NCA wraps around the conurbation to the east and to the north. The Mersey Valley NCA lies to the west of the area, while the Shropshire, Cheshire and Staffordshire Plain NCA extends to the south. The high-rise buildings of Manchester city centre serve as a visual orientation point within the surrounding urban context, and can be seen from many viewpoints in the conurbation and in surrounding NCAs. Further information on this NCA can be found [here](#)

About the qualifying features of the SAC

The following section gives you additional, site-specific information about this SAC's qualifying features. These are the natural habitats and/or species for which this SAC has been designated.

Qualifying Species:

- **S1831 Floating water-plantain *Luronium natans***

Floating water-plantain *Luronium natans* occurs in a range of freshwater situations, including nutrient-poor lakes in the uplands, slowly-flowing lowland rivers, pools, ditches and canals that are moderately nutrient-rich. The floating water-plantain is an aquatic plant endemic to Europe. It has a complex life history and ecology and is notoriously difficult to identify. Rochdale Canal supports a significant population of floating water-plantain *Luronium natans* in a botanically diverse water-plant community. This population of *Luronium* is representative of the formerly more widespread canal populations of north-west England.

Luronium natans occurs as two forms: in shallow water with floating oval leaves, and in deep water with submerged rosettes of narrow leaves. The plant thrives best in open situations with a moderate degree of disturbance, where the growth of emergent vegetation is held in check. Populations fluctuate greatly in size, often increasing when water levels drop to expose the bottom of the water body. Populations fluctuate from year to year, and at many sites records of *L. natans* have been infrequent, suggesting that only small populations occur, in some cases possibly as transitory colonists of the habitat. Populations tend to be more stable at natural sites than artificial ones, but approximately half of recent (post-1980) records are from canals and similar artificial habitats. Its habitat in rivers has been greatly reduced by channel-straightening, dredging and pollution, especially in lowland situations.

Table 1: Supplementary Advice for Qualifying Features: S1831. *Luronium natans*; Floating water-plantain

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
Population (of the feature)	Population abundance	Maintain the abundance of the population where there is no decline >50 % in cover of <i>Luronium natans</i> within an occupied habitat area and within occupied habitat areas >2/3 of site open water cover provided by <i>Luronium natans</i> , whilst avoiding deterioration from its current level as indicated by the latest mean peak count or equivalent.	This will ensure there is a viable population of the feature which is being maintained at or increased to a level that contributes as appropriate to its Favourable Conservation Status across its natural range in the UK. Due to the dynamic nature of population change, the target-value given for the population size or presence of this feature is considered to be the minimum standard for conservation/restoration measures to achieve. This minimum-value may be revised where there is evidence to show that a population's size or presence has significantly changed as a result of natural factors or management measures and has been stable at or above a new level over a considerable period (generally at least 10 years). The values given here may also be updated in future to reflect any strategic objectives which may be set at a national level for this feature. Given the likely fluctuations in numbers over time, any impact-assessments should focus on the current size of the site's population, as derived from the latest known or estimated level established using the best available data. This advice accords with the obligation to avoid deterioration of the site or significant disturbance of the species for which the site is designated, and seeks to avoid plans or projects that may affect the site giving rise to the risk of deterioration. Similarly, where there is evidence to show that a feature has historically been more abundant than the stated minimum target and its current level, the ongoing capacity of the site to accommodate the feature at such higher levels in future should also be taken into account in any assessment. Unless otherwise stated, the population size or presence will be that measured using standard methods, such as peak mean counts or breeding surveys. This value is also provided recognising there will be inherent variability as a result of natural fluctuations and margins of error during data collection. Whilst we will endeavour to keep these values as up to date as possible, local Natural England staff can advise that the figures	Natural England (2012) Definition of Favourable Condition – Rochdale Canal SSSI (Available on request from Natural England)

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			stated are the best available. Many annual species undergo significant population fluctuations, unless there are fewer than 100 individuals (when an individual count is generally possible) counting is not going to be simple, partly as it is difficult to define functional individuals with a stoloniferous plant producing many plantlets. Discrete populations of <i>L. natans</i> must be greater than 50 m apart. Many habitats where <i>L. natans</i> is present may be subject to periodic major disturbance events and these may be important in enabling populations to persist at a site. Thus, there may naturally be considerable fluctuations in population size at a given site between monitoring visits and so only major fluctuations should be noted.	
Supporting habitat: extent and distribution	Distribution of supporting habitat	Maintain the distribution and continuity of the feature and its supporting habitat, including where applicable its component vegetation types and associated transitional vegetation types, across the site	A contraction in the range, or geographic spread, of the feature (and its component vegetation) across the site will reduce its overall area, the local diversity and variations in its structure and composition, and may undermine its resilience to adapt to future environmental changes. Contraction may also reduce and break up the continuity of a habitat within a site and how well the species feature is able to occupy and use habitat within the site. Such fragmentation may have a greater amount of open edge habitat which will differ in the amount of light, temperature, wind, and even noise that it receives compared to its interior. These conditions may not be suitable for this feature and this may affect its viability.	
Supporting habitat: extent and distribution	Extent of supporting habitat	Maintain] the total extent of the habitats which support the feature to: 25.7ha of canal	In order to contribute towards the objective of achieving an overall favourable conservation status of the feature at a UK level, it is important to maintain or if appropriate restore the extent of supporting habitats and their range within this SAC. The information available on the extent and distribution of supporting habitat used by the feature may be approximate depending on the nature, age and accuracy of data collection, and may be subject to periodic review in light of improvements in data.	Natural England (2012) Definition of Favourable Condition – Rochdale Canal SSSI (Available on request from Natural England)
Supporting habitat: structure/	Habitat structure	Ensure the supporting water bodies are sufficiently free of other competing vegetation to	Luronium is intolerant of competition and occurs in a range of freshwater habitats – oligotrophic and mesotrophic lakes, slow flowing rivers and associated floodplain pools and small pools	

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
function		allow space for this early successional species to thrive.	in heathland. There are also large populations in a number of disused or recently restored canals.	
Supporting habitat: structure/ function	Substrate	Maintain a habitat substrate characterised by cohesive sediments which are not too coarse In areas of <i>L. natans</i>: Sediments cohesive and not coarser than 50/50 silt/sand.	Fine unconsolidated sediments are an unsuitable rooting medium and plants may be subject to uprooting. Conversely, where sediment is too coarse and mineral there may be scouring and poor root anchorage. Soft mineral sediments may support diverse vegetation provided boat traffic is low or absent. When boat traffic increases, fine unconsolidated sediments are an unsuitable rooting medium and plants may be subject to uprooting. Furthermore, under high boat traffic levels fine sediments are readily re-suspended leading to high turbidity levels and smothering of plant surfaces. Large quantities of leaf litter may lead to highly anoxic conditions unsuitable for plants and other organisms. Actual sediments are dependent on input of suspended solids in canal water supply, erosion within the canal and navigational requirements.	Natural England (2012) Definition of Favourable Condition – Rochdale Canal SSSI (Available on request from Natural England)
Supporting habitat: structure/ function	Vegetation composition: invasive non-native species	Ensure the following invasive non-native species are absent from the site or being contained at a level which does not significantly affect the feature; <i>Crassula helmsii</i> , <i>Hydrocotyle ranunculoides</i> , <i>Myriophyllum aquaticum</i> , <i>Azolla filiculoides</i> ,	These alien plant species are highly competitive and will impact negatively on <i>Luronium</i>, which is not competitive. Other introduced species may have effects on ecosystem functioning through the food web or via direct effects on the plant community, e.g. artificially large waterfowl populations or non-native crayfish species. <i>Luronium natans</i> is particularly sensitive to competition from other species. Whilst competitive interactions are very difficult to measure, a simple judgement on the height of associated vegetation can give an indication of the likelihood of competitive exclusion. Other introduced species may have effects on ecosystem functioning through the food web or via direct effects on the plant community, e.g. large waterfowl populations or non-native crayfish species. Further negative indicators which should cause concern if present are bottom-feeding fish.	Natural England (2012), Rochdale Canal Favourable Condition Table. Data may be available from Natural England upon request Lansdown & Wade (2003)

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
Supporting habitat: structure/ function	Vegetation structure	Ensure supporting habitat is free of shade or competitive vegetation; taller species associated with <i>Luronium</i> patches should be no more than occasional.	Excessive overhanging vegetation both results in shading of aquatic vegetation and large inputs of organic matter in the form of leaf litter. Over-shading and leaf drop from developing bank-side trees denies opportunity for Floating water plantain to establish on large and growing sections of the canal. Bankside tree removal is often required to reduce shading effects and leaf litter input.	Natural England (2014), Site Improvement Plan
Supporting habitat: structure/ function	Water clarity	Maintain a high degree of water clarity, typically the canal bed should be clearly visible in water 1m deep in summer (where depth of canal allows).	Elevated turbidity levels as a result of, for example, high boat traffic densities, high phytoplankton densities, or the presence of benthic-feeding fish will have adverse impacts on submerged plant communities. Although <i>Luronium</i> may occur in naturally dystrophic waters with humic staining, this may be exacerbated by acidification, reducing water clarity further.	Natural England (2012) Definition of Favourable Condition – Rochdale Canal SSSI (Available on request from Natural England)
Supporting habitat: structure/ function	Water levels/ hydrology	Maintain water levels which are sufficient to maintain or restore populations; in shallow pools natural fluctuations in water level should be allowed to occur. There should be no drop in overall depth of more than 10% throughout the canal and water level fluctuations minimised during April to October	In shallow pools and similar sites plants often flower and fruit on draw-down zones as summer water levels recede. These processes should not be artificially interrupted, but will vary greatly from year to year depending on weather. Canals have small flows of water due to leakage and boat movements through locks. These flows can be essential elements in maintaining good water quality. Consistently low water levels may stress emergent and aquatic vegetation. High levels of lock usage on navigated canals can result in large fluctuations in water levels and associated scouring of bed sediments and aquatic vegetation.	Natural England (2012) Definition of Favourable Condition – Rochdale Canal SSSI (Available on request from Natural England)
Supporting habitat: structure/ function	Water quality/ quantity	Maintain water quality and quantity to a standard which provides the necessary conditions to support the feature	For many SAC features which are dependent on wetland habitats supported by surface and/or ground water, maintaining the quality and quantity of water supply will be critical, especially at certain times of year during key stages of their life cycle. Poor water quality and inadequate quantities of water can adversely affect the availability and suitability of breeding, rearing and feeding habitats. Typically, meeting the surface water and groundwater environmental standards set out by the Water Framework	

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			Directive (WFD 2000/60/EC) will also be sufficient to support the SAC Conservation Objectives but in some cases more stringent standards may be needed to support the SAC feature. Further site-specific investigations may be required to establish appropriate standards for the SAC. L.uronium populations are present across a wide range of habitats with a corresponding range of water chemistry. This suggests that its tolerances to most water chemistry parameters are not especially demanding although links between presence/persistence and water quality are not yet understood. As such the water quality targets set out for freshwater habitats should be sufficient to protect populations from adverse impacts.	
Supporting processes (on which the feature and/or its supporting habitat relies)	Adaptation and resilience	Restore the feature's ability, and that of its supporting habitat, to adapt or evolve to wider environmental change, either within or external to the site	The overall vulnerability of this SAC to climate change has been assessed by Natural England (2015) as being high, taking into account the sensitivity, fragmentation, topography and management of this habitat. This means that this site is considered to be the most vulnerable sites overall and are likely to require the most adaptation action, most urgently. A site based assessment should be carried out as a priority. This means that action to address specific issues is likely. Individual species may be more or less vulnerable than their habitat itself. In many cases, change will be inevitable so appropriate monitoring would be advisable.	NATURAL ENGLAND, 2015. Climate Change Theme Plan and supporting National Biodiversity Climate Change Vulnerability assessments ('NBCCVAs') for SACs and SPAs in England [Available at http://publications.naturalengland.org.uk/publication/4954594591375360].
Supporting processes (on which the feature and/or its supporting habitat relies)	Air quality	Restore as necessary the concentrations and deposition of air pollutants to at or below the site-relevant Critical Load or Level values given for this feature of the site on the Air Pollution Information System (www.apis.ac.uk).	The supporting habitat of this feature is considered sensitive to changes in air quality. Exceedance of these critical values for air pollutants may modify the chemical status of its substrate, accelerating or damaging plant growth, altering its vegetation structure and composition (including food-plants) and reducing supporting habitat quality and population viability of this feature. Critical Loads and Levels are recognised thresholds below which such harmful effects on sensitive UK habitats will not occur to a significant level, according to current levels of scientific understanding. There are critical levels for ammonia (NH3), oxides of nitrogen (NOx) and sulphur dioxide (SO2), and critical loads for nutrient nitrogen deposition and acid deposition. There are currently no critical loads or levels for other pollutants such as Halogens, Heavy Metals, POPs, VOCs or Dusts. These should be considered as appropriate on a	More information about site-relevant Critical Loads and Levels for this SAC is available by using the 'search by site' tool on the Air Pollution Information System (www.apis.ac.uk). Natural England (2014), Site Improvement Plan

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			case-by-case basis. Ground level ozone is regionally important as a toxic air pollutant but flux-based critical levels for the protection of semi-natural habitats are still under development. It is recognised that achieving this target may be subject to the development, availability and effectiveness of abatement technology and measures to tackle diffuse air pollution, within realistic timescales.	
Supporting processes (on which the feature and/or its supporting habitat relies)	Conservation measures	Maintain the management measures (either within and/or outside the site boundary as appropriate) which are necessary to maintain the structure, functions and supporting processes associated with the feature and/or its supporting habitats.	Active and ongoing conservation management is needed to protect, maintain or restore this feature at this site. Further details about the necessary conservation measures for this site can be provided by contacting Natural England. This information will typically be found within, where applicable, supporting documents such as Natura 2000 Site Improvement Plan, site management strategies or plans, the Views about Management Statement for the underpinning SSSI and/or management agreements.	English Nature (2004), Views About Management Natural England (2014), Site Improvement Plan
Supporting processes (on which the feature and/or its supporting habitat relies)	Disturbance from human activity	The duration, intensity and/or frequency of disturbance events should not affect the environmental conditions necessary to support the feature	The loss or reduction in the disturbance regime (for example, grazing, water-level fluctuations, flood scouring, dredging and boat traffic) that would normally arrest succession is particularly significant.	
Supporting processes (on which the feature and/or its supporting habitat relies)	Regeneration	Maintain the regenerative ability of the population, indicated by a range of different plant sizes being present.	This implies effective ageing and recruitment of plants.	
Supporting processes (on which the feature and/or its supporting habitat relies)	Regeneration (sexual)	Ensure that, in shallow pools, there is a sufficient number of flowering and seeding plants each year	An increase in the presence of perennial vegetative plants may be associated with prolonged wetness or site permanence. In the case of populations of annual plants in shallow pools it is important to obtain evidence of sexual reproduction. The mere presence of plants only confirms the quality of seed set from previous generations. However, the degree of seed dormancy in <i>L. natans</i> is unknown and repeated recruitment from the seedbank without effective replenishment will reduce the long-term stability of the population.	

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
Supporting processes (on which the feature and/or its supporting habitat relies)	Regeneration (vegetative)	Maintain sufficient areas of shallow and still water for the development of ascending stolons bearing chains of plantlets, and for the production of floating leaves.	Canal populations are sterile clones that only reproduce vegetatively. Floating water-plantain has a number of apparently discrete reproductive strategies, annual flowering, perennial flowering, and perennial vegetative. It also occurs in dynamic metapopulations that contain different populations with different reproductive strategies. Any monitoring or conservation programme that does not take account of the dynamics of metapopulations and the requirements of the different reproductive strategies will not adequately represent the requirements of the species. Monitoring will provide a means by which data can be fed back into the system to refine conservation action. Further research is needed to explain the ecological requirements of some populations.	Lansdown & Wade (2003)
Supporting processes (on which the feature and/or its supporting habitat relies)	Water quantity/ quality	Where the feature or its supporting habitat is dependent on surface water and/or groundwater, maintain water quality and quantity to a standard which provides the necessary conditions to support the feature	For many SAC features which are dependent on wetland habitats supported by surface and/or ground water, maintaining the quality and quantity of water supply will be critical, especially at certain times of year. Poor water quality and inadequate quantities of water can adversely affect the structure and function of this habitat type. Typically, meeting the surface water and groundwater environmental standards set out by the Water Framework Directive (WFD 2000/60/EC) will also be sufficient to support the achievement of SAC Conservation Objectives but in some cases more stringent standards may be needed to reflect the ecological needs of the species feature. Further site-specific investigations may be required to establish appropriate water quality standards for the SAC.	
Version Control Advice last updated: N/A				
Variations from national feature-framework of integrity-guidance: Attribute relating to soils and nutrients have been removed as not considered relative to this feature.				

References

Canal and River Trust (ND), Rochdale Canal. Available From: https://canalrivertrust.org.uk/enjoy-the-waterways/canal-and-river-network/rochdale-canal?gclid=CjwKCAjworfdBRA7EiwAKX9HeKffxQ0s03NVxRSMdljia5urptR1jgk4UNUNgPDGs1H6Mqlh7epThoCadYQAvD_BwE

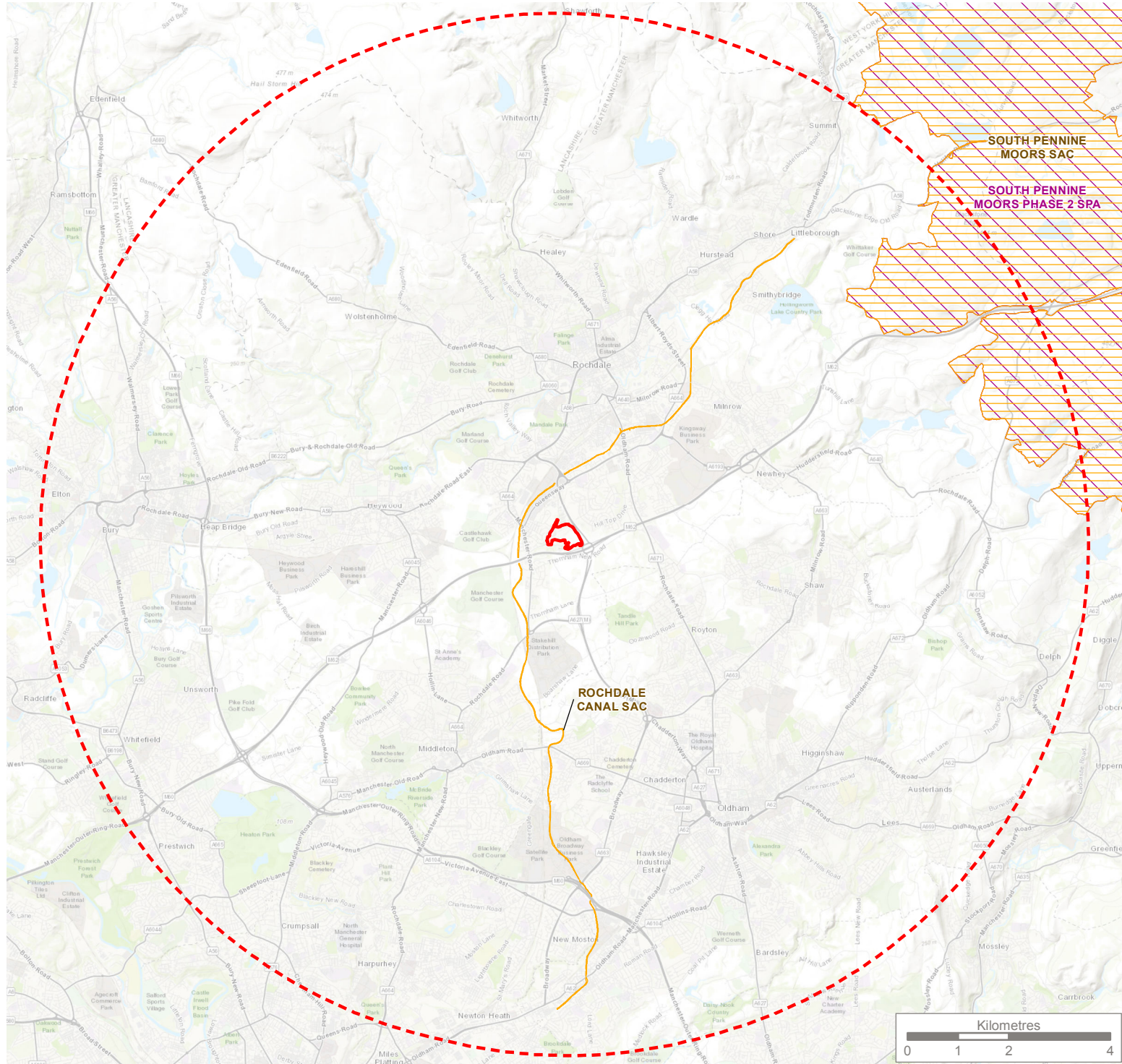
English Nature (2004), Views About Management, Rochdale Canal SSSI. Available from: <https://designatedsites.naturalengland.org.uk/PDFsForWeb/VAM/2000430.pdf>

Lansdown RV & Wade PM (2003) Ecology of the Floating Water-plantain, Conserving Natura 2000 Rivers Ecology Series No. 9. Available from: <http://www.google.co.uk/url?sa=t&rct=j&q=&esrc=s&source=web&cd=8&cad=rja&uact=8&ved=2ahUKEwih7M-MsefdAhXJC8AKHU6wCdsQFjAHegQIAxAC&url=http%3A%2F%2Fpublications.naturalengland.org.uk%2Ffile%2F111042&usg=AOvVaw3MVUAgiMRMAuZMaKA6jWkq>

Natural England (2014), Site Improvement Plan, Rochdale Canal SAC. Available from: <http://publications.naturalengland.org.uk/publication/6227629417955328>

DRAWINGS

G8666.001 International Designations (10km)



- Key**
- Site boundary
 - Site boundary - 10km buffer
 - Special Areas of Conservation (SAC)
 - Special Protection Areas (SPA)

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Project
Cowm Top, Rochdale

Title
Internationally Designated Sites Within 10km Buffer

Drawing Number
G8666.001

Scale 1:108,000 @ A4	Date 23/08/2021
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Drawn KG	Checked PB	Approved PB
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Sites searched for were as follows:

- Ramsar
- Special Protection Areas (SPA)
- Special Areas of Conservation (SAC)





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