Ecological Constraints Walkover Survey

Project title: Troqueer Waste Water Treatment Works Bank Erosion	
Location: Dumfries, Dumfries and Galloway	**Grid Reference:** NX 97144 74461
Survey Type: Ecological walkover	**Ecologist:** Gus Keys
Survey Date: 15/01/2025	**Phone Number:** [Redacted]
Weather Conditions: Sunny intervals, c.9 degrees C.	

1. Background

A project is planned to reinstate a section of eroding banking near Troqueer Waste Water Treatment Works (WWTW). The River Nith embankment and public footpath adjacent to the WWTW and outfall has partially collapsed. JK Ecology undertook an ecology survey in February 2024 which identified several ecological constraints. A repeat ecological walkover survey is now required at Troqueer, as the previous survey will be more than 12 months old when works commence, and also to include additional areas of embankment, laydown areas, borehole locations and access routes.

Scottish Water have recently produced a draft design to reinstate the banking, path, and handrail, and have extended the embankment works downstream into Dumfries and Galloway Council land ownership. Approximately 300m of embankment is now likely to be included in the works to help prevent future undercutting. The current design is still being finalised, but the preferred option is likely to use a combination of erosion control matting, rock bags, and vegetated rock rolls to help stabilise the re-profiled embankment. A Marine Construction Licence is required for the works, and the license application and construction works will be undertaken jointly between Scottish Water and Dumfries and Galloway Council.

Access to the banking will be taken through the WWTW fence line, and a construction compound will be located within the existing WWTW footprint. An additional laydown area is proposed outside the WWTW landholding. Some site clearance is required to install a temporary access road both within and outside the WWTW, which will involve the removal of trees and scrub. Site Investigation (SI) works were undertaken within the WWTW landholding in 2024 which included scrub clearance to enable the drilling of several boreholes. Laydown areas and additional borehole locations have been identified south of the WWTW landholding and are scheduled for early 2025. It is proposed that a public footpath southwest of the WWTW is used for drilling rig access. The works will be carried out by Mackenzie Construction on behalf of Scottish Water.

Nith District Salmon Fisheries Board (NDSFB) previously confirmed that a summer working window (June to September) is required to avoid the fish-sensitive period, and that fish rescues will be required.

The purpose of this walkover was to identify any new ecological constraints at the WWTW, along the River Nith embankment, access routes, additional SI locations, site compound and laydown areas, and to recommend any further checks and surveys required prior to works commencing. This report includes relevant information from the 2024 report map and target notes. Target notes and photo numbering has been retained from the 2024 survey report, so that locations can be easily cross-referenced.

2. Methodology

The walkover survey of all accessible areas in and around the WWTW was undertaken by Ecologist Gus Keys (MCIEEM) of JK Ecology Ltd., on behalf of Scottish Water on 15th January 2025. The area was assessed for signs of ecological constraints, such as nesting bird habitat, Invasive Non-Native Species (INNS), high value trees, potential bat roost features, and protected species. Binoculars were used to view inaccessible areas.

A desk study was also carried out using freely available maps and data sources, including the following:

- National Biodiversity Network (NBN) Atlas freely available species data was examined for protected and notable species records.
- NatureScot's SiteLink online mapping portal was used to search for nature conservation sites in the area.
- Dumfries and Galloway Council's website was checked for a register or interactive map of Tree Preservation Orders (TPO).
- The Ancient Woodland Inventory Scotland was checked for the presence of designated Ancient Woodland in the area.
- The Woodland Trust's Ancient Tree Inventory was checked for any Ancient, Veteran or Notable trees.
- The Improvement Service's Local Nature Conservation Site online map was consulted.

3. Limitations

Ecological surveys are limited by a variety of factors which affect the presence of fauna such as season, climate, migration patterns and species behaviour. Even though evidence of a species is not always discovered during the walkover, this does not mean that such a species is not present.

The walkover met the following constraints:

- Some areas of riverbank were inaccessible due to the steep incline of the banks, as well as tree and scrub cover.
- The River Nith is tidal at Troqueer, so some signs of protected species such as otter may have been washed away by the changing water level.
- The visit was undertaken outside the optimal period for vegetation surveys. Much of the ground vegetation had died back and, therefore, some plants (including INNS) may not have been visible or easily identifiable. An INNS specialist should always be consulted in areas where INNS are suspected.
- The interior of a small building which may have the potential to be used by roosting bats was not accessible.

4. Survey Findings

Photos and target notes referenced below can be found in Sections 5 and 7 respectively.

Constraints summary

- A previously identified stand of Japanese knotweed is still present along a 30m section of riverbank proposed for reinstatement (TN9 and TN10).
- Several other plants of Japanese knotweed were identified near one of the additional borehole locations (TN13 and TN14).
- Several non-native *Buddleia* plants are growing along the eastern boundary (TN4).
- An area of Ancient Woodland (of semi-natural origin) is situated immediately south of the SI access route near Mavis Grove (TN18).
- Nesting bird habitat is present within trees, scrub and tall vegetation along the eastern boundary of the WWTW, the riverbank, the area surrounding the additional borehole locations, and new access route via Mavis Grove.
- Oystercatcher is reported to nest on areas of gravel within the site (TN7).
- Fresh otter spraints were found on the edge of the River Nith approximately 150m north of the WWTW site boundary at the same location as in 2024 (TN12).
- A small building adjacent to the works is considered sub-optimal for roosting bats and is therefore unlikely to be a constraint to works (TN6).
- Mature trees are present on the edge of the public footpath near Mavis Grove which will be used for SI access, but none of the trees within 10m of the access route contained any visible bat PRFs.

Desk study

The Dumfries and Galloway Council website contains a register of TPO trees within the region, none of which appear to fall within the Troqueer area. There is a strip of designated Ancient Woodland (of semi-natural origin) immediately south of the proposed SI access route via Mavis Grove. A second block of Ancient Woodland (Long-established of plantation origin) sits over 200m northwest at its closest point. Both areas appear to be easily avoided during works. The closest notable trees are located approximately 400m east of the works.

There are no designated sites overlapping the WWTW or the area immediately surrounding it, however there are several important sites nearby. Nith Estuary National Scenic Area (NSA) sits approximately 1km to the south. Approximately 1.5km south of the WWTW lies the northern boundary of a number of overlapping nationally and internationally designated sites.

Solway Firth Special Area for Conservation (SAC) is designated for its habitats and lamprey populations, Solway Firth Special Protection Area (SPA) is designated for its internationally important bird populations; Upper Solway Flats and Marshes Ramsar site is designated for its birdlife and natterjack toad, and Upper Solway Flats and Marshes Site and Site of Special Scientific Interest (SSSI) is designated for its habitats, birdlife and natterjack toad.

The closest Local Nature Conservation Site (LNCS) is situated more than 3.5km to the northwest and has no connectivity to the works.

Protected mammals otter, badger and red squirrel are known to be present in this part of Dumfries and Galloway, along with INNS mink and grey squirrel. A wide variety of birdlife is present in this area, and the INNS plants Japanese knotweed, giant hogweed and Himalayan balsam are known to be present around Troqueer.

Site walkover

Troqueer sits on the southern edge of the town of Dumfries. The WWTW sits on the west bank of the River Nith, surrounding by agricultural land, scattered trees and suburban areas.

The WWTW contains numerous tanks, buildings and other infrastructure. The walkover was undertaken within the WWTW land holding, outside it along the River Nith walkway, and surrounding ground north and south of the site boundary. The proposed access route along Mavis Grove southwest of the WWTW was also surveyed for constraints.

Land within Troqueer WWTW

Tussocky grassland with knapweed, thistles, bramble and rosebay willowherb is present along the eastern edge of the WWTW, where the site compound is proposed at NX 97163 74530 between an existing gravel road and the boundary fence (Photo 1, TN1). Elder scrub is abundant both here and along the eastern boundary of the site, offering nesting bird opportunities. Drilling was undertaken nearby at Borehole 1 (BH01) in 2024 at approximately NX 97158 74509, within an area of grassland (Photo 2, TN2).

An access road / crane pad will be constructed along the length of the riverbank within the WWTW site boundary running parallel with the footpath, and within the area of land south of the treatment works. This will require scrub and vegetation removal.

Hawthorn and elder scrub is present along the eastern site boundary south of several buildings, as well as some young trees in plastic tubes (Photo 3, TN3). Several young *Buddleia* identified in 2024 are growing within this area at NX 97110 74410, close to where drilling at Borehole 3 (BH03) was undertaken (Photo 4, TN4).

Scrub clearance was noted in the southeast corner of the WWTW around NX 97090 74388 to facilitate SI works in 2024. The area mostly contained elder scrub (Photo 5, TN5).

The gravel road within the WWTW ends close to three small buildings, located within 10m of the works. These were previously considered as unsuitable for roosting bats in 2024 with only the smallest, most northerly building at NX 97119 74473 containing cavities which could potentially support roosting bats (Photo 6). However, their large size and openness to birds makes them unlikely roost sites. An additional cavity in the building appears to show a metal clad ceiling in the interior which also makes it an unlikely roost site.

Site operatives previously reported that areas of gravel surrounding settlement tanks at approximately NX 97061 74451, west of the main working areas, are regularly used by oystercatcher for nesting, as is the roof of the main building within the site.

River Nith Walkway and surrounding area

The River Nith flows along the eastern side of the WWTW, separated by a tarmacked footpath between the boundary fence and the riverbank. The bank is grassy and steep with scrub growing in places (Photo 7). In 2024 part of the bank had collapsed into the river at NX 97114 74402, taking some of the footpath with it, and a section of the handrail had been realigned to allow pedestrians to continue using the footpath safely (Photo 8, TN8). There does not appear to be any further significant erosion of the riverbank in the last 12 months.

The Japanese knotweed stand identified in 2024 appears to have remained unchanged in its extent, being present along approximately 30m of riverbank between NX 97129 74424 and NX 97115 74397 at its northern

and southern extents respectively (TNs 9 and 10). The knotweed stand remains more than 7m from the WWTW boundary fence.

North of the site boundary the banks of the River Nith are generally grassy, with an area of amenity grassland present between the river and the WWTW access road. Two fresh otter spraints were noted on top of the riverbank approximately 150m from the north-eastern site boundary at NX 97277 74630, in the same location as in 2024 (Photo 9, TN12).

A laydown area is proposed north of the WWTW site boundary on a flat area of amenity grassland at approximately NX 97186 74548 (Photo 10, TN13). Hawthorn, elder, ivy and bramble scrub is present between the WWTW fence and proposed laydown area (Photo 11). A mature, ivy-covered holly tree is growing at NX 97174 74525, between the footpath and the WWTW fence and appears to be on the route of a new access road which links to the laydown area and WWTW (Photo 12, TN14). None of the trees appear to contain any potential bat roost features (PRFs), but ivy obscured much of their trunks and canopy.

Riverbank south of WWTW, laydown area, boreholes and access route

The works will encompass an additional section of riverbank south of the WWTW approximately 120m in length. The riverbank contains mature and semi-mature broadleaved trees and scrub including sycamore, oak, hawthorn, elder and dogrose. The riverbank is mostly steeply sided, and some parts were inaccessible. No signs of protected mammals such as otter were found along the riverbank (Photo 13).

A large, open area of tussocky grassland and scrub is present to the south of the WWTW and immediately west of the River Nith footpath, where a laydown area extending into the WWTW landholding is proposed (Photo 14). Two new borehole locations (BH05 and BH06) are also proposed within this area. A small stand of Japanese knotweed is present at the base of willow scrub at NX 97066 74329, within the laydown area and appears to be growing close to BH05 drilling location (Photo 15, TN15). Several other Japanese knotweed plants are growing approximately 10m away at NX 97069 74318, within the same area of scrub (Photo 16, TN16).

Elder, willow, blackthorn and hawthorn scrub will require removal to establish the laydown area, and in the breeding season the scrub and tussocky grassland is likely to provide suitable nesting habitats for a number of common bird species.

SI works within the proposed laydown area will require a drilling rig to track down a residential road, Mavis Grove, and along the public footpath. Mavis Grove is a private road leading to residential properties with mature beech trees growing along the edge of an arable field (Photo 17). At the end of Mavis Grove, the public footpath passes between mature ash and alder growing at the path's edge and is narrow in places (Photo 18). None of the trees within 10m of the access route along Mavis Grove or the public footpath contained any visible bat PRFs.

The footpath crosses a culvert on a tidal channel which reaches inland from the River Nith at NX 97020 74226 (Photo 19, TN17). No otter signs were identified upstream or downstream of the culvert, where accessible.

A narrow strip of designated Ancient Woodland (of semi-natural origin) lies immediately south of the footpath at approximately NX 97025 74186, but this is outside the SI access route (TN18).

No other signs of otter or other protected species were found during the remainder of the walkover, and no further INNS were found (though caution is noted given the time of year the walkover was carried out).

5. Photos

Photo numbering has been retained from the 2024 survey report, so that locations can be easily cross-referenced.

Photo 1: Area proposed for site compound, with elder scrub growing along site boundary (TN1).

Photo 2: Location of BH01, undertaken in 2024 (TN2).

Photo 3: Hawthorn and elder scrub to be cleared for access road / crane pad (TN3).

Photo 4: Buddleia is present within long vegetation and scrub adjacent to BH03 location (TN4).

Photo 5: Area where elder scrub cleared in 2024 for SI works (TN5).

Photo 6: Buildings considered sub-optimal for roosting bats (TN6).

Photo 7: Steep embankment along River Nith Walkway.

Photo 8: Realinged handrail and footpath erosion remains the same in 2025 (TN8).

Photo 9: Fresh otter spraints found in same location as in 2024 survey (TN12).

Photo 10: Location of proposed laydown area north of WWTW site boundary (TN13).

Photo 11: Hawthorn, elder, ivy and bramble scrub between laydown area and WWTW site boundary.

Photo 12: Mature holly on route of proposed access road (TN14).

Photo 13: Mature and semi-mature trees growing along additional section of riverbank to be encompassed by works.

Photo 14: Area of scrub and tussocky grassland to be used for laydown area south of WWTW.

Photo 15: Stand of Japanese knotweed in scrub within proposed laydown area (TN15).

Photo 16: Several other Japanese knotweed plants within scrub (TN16).

Photo 17: Site investigation (SI) access to be taken via Mavis Grove.

Photo 18: SI access along public footpath at end of Mavis Grove – note mature trees growing close to path.

Photo 19: Culvert on tidal channel which SI access crosses – no otter signs found (TN17).

6. Conclusions and recommendations

There are several ecological constraints to be taken into consideration in relation to the proposed works:

Protected areas

- Given the proximity to Solway Firth SAC, SPA, Upper Solway Flats and Marshes Ramsar site, and Upper Solway Flats and Marshes SSSI, consultation with NatureScot over the proposed works is recommended.
- Designated Ancient Woodland (of semi-natural origin) lies immediately south of a public footpath leading from Mavis Grove which SI access will be taken along. It is unlikely that access works will impact the designated woodland, however its presence should be noted during works (TN18).

INNS

- INNS Japanese knotweed is still present on the bank of the River Nith (TNs 9 and 10 identified in 2024) outside the WWTW site boundary but within the proposed bank reinstatement area covering approximately 30m of the riverbank, north of the collapsed area. Japanese Knotweed is also growing at two new locations within the proposed laydown area / borehole locations south of the WWTW (TN15 and TN16). Consultation with an INNS specialist is recommended over how to proceed with the works in relation to the presence of this highly invasive plant.
- Other than Buddleia within the WWTW (TN4 found in 2024), no further INNS were recorded during the walkover, however, given that this was undertaken outside the optimal period for vegetation surveys, the site team should remain vigilant for possible INNS such as Himalayan balsam and giant hogweed, which are present in the Dumfries area / River Nith catchment.

Protected species

- Two fresh otter spraints were identified on the edge of the River Nith approximately 150m north of the site boundary, in the same location as those found in 2024 (TN12). However, no further otter fields signs such as spraints or resting sites were recorded within the remainder of the survey area. Best practice regarding this species should be followed during works, such as covering any excavations left overnight or, where deep excavations occur, installing a mammal ladder to allow any trapped animal a means of

escape. Any open pipes should be capped at the end of each shift to prevent possible entry by otter and works around dawn and dusk should be avoided.

- None of the buildings adjacent to the works within the WWTW were considered optimal for roosting bats despite the presence of cavities in one of the buildings (TN6). The cavities are large and open to birds which could potentially predate bats. However, as a precautionary measure it is recommended that no generators, storage areas or similar are located within 10m of the building.
- None of the trees within 10m of the works, laydown areas or access routes contain any visible bat PRFs.

Nesting birds

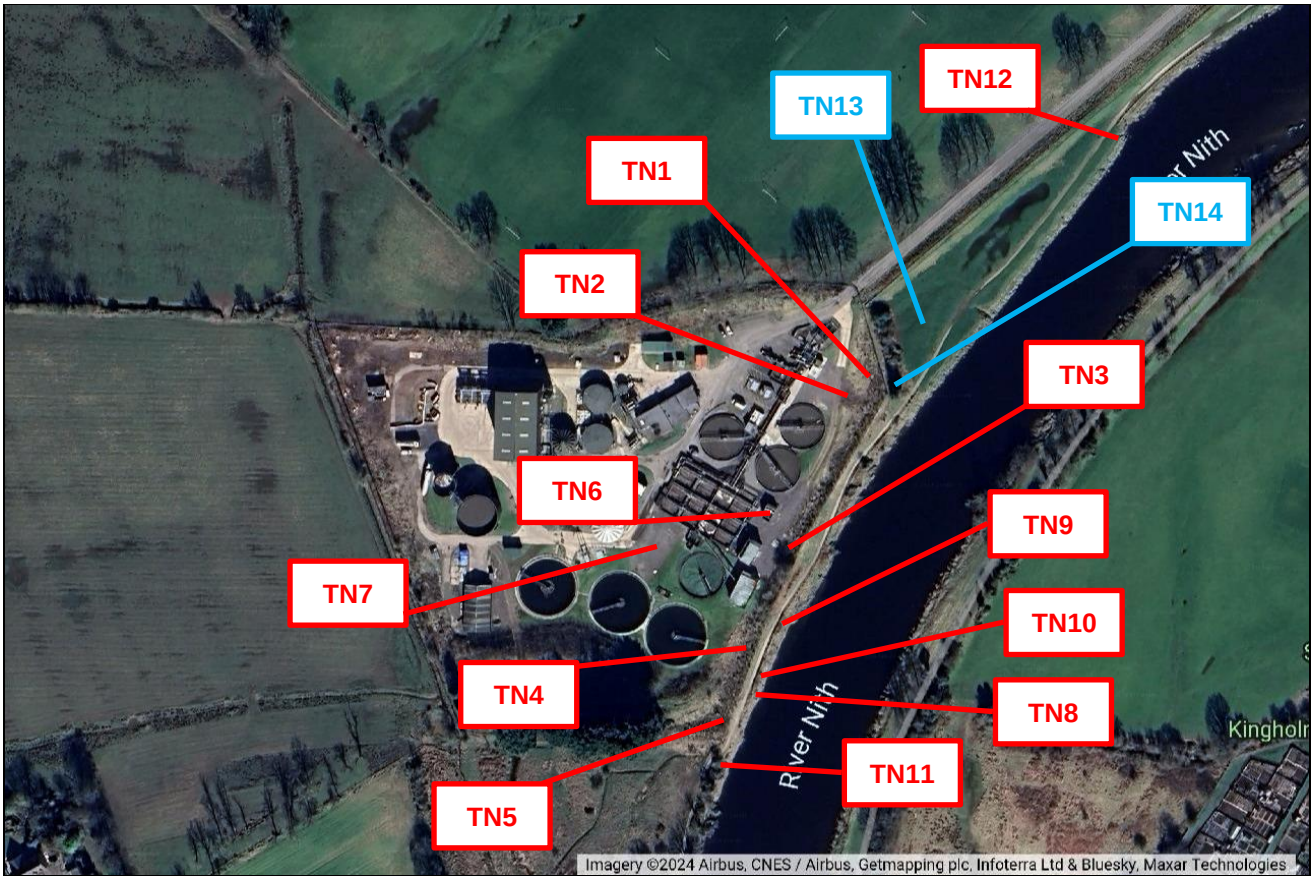
- Trees, scrub and tall vegetation within the WWTW, along the River Nith embankment, laydown areas and access routes offer suitable nesting opportunities for a range of common bird species. Any vegetation removal, tree felling, or scrub clearance should be undertaken outside bird nesting season. If clearance works are required during bird nesting season (March to September inclusive), a pre-start check should be carried out no more than 48 hours beforehand. It should be noted that nest checks may be problematic in some densely vegetated areas.
- Oystercatcher is known to nest on gravel areas and roofs within the WWTW, most of which are outside of the bank erosion project works footprint (TN7). It is possible that this species could be attracted to new areas of hardstanding or temporary roads, and pre-start checks may therefore be necessary during works.
- Schedule 1 species kingfisher is known to be present on the River Nith. Although this species was not observed during the walkovers in 2024 or 2025 and the riverbanks surrounding the WWTW appear to be sub-optimal for this species, kingfisher is known to be present in the wider area and the site team should remain vigilant given its conservation status.

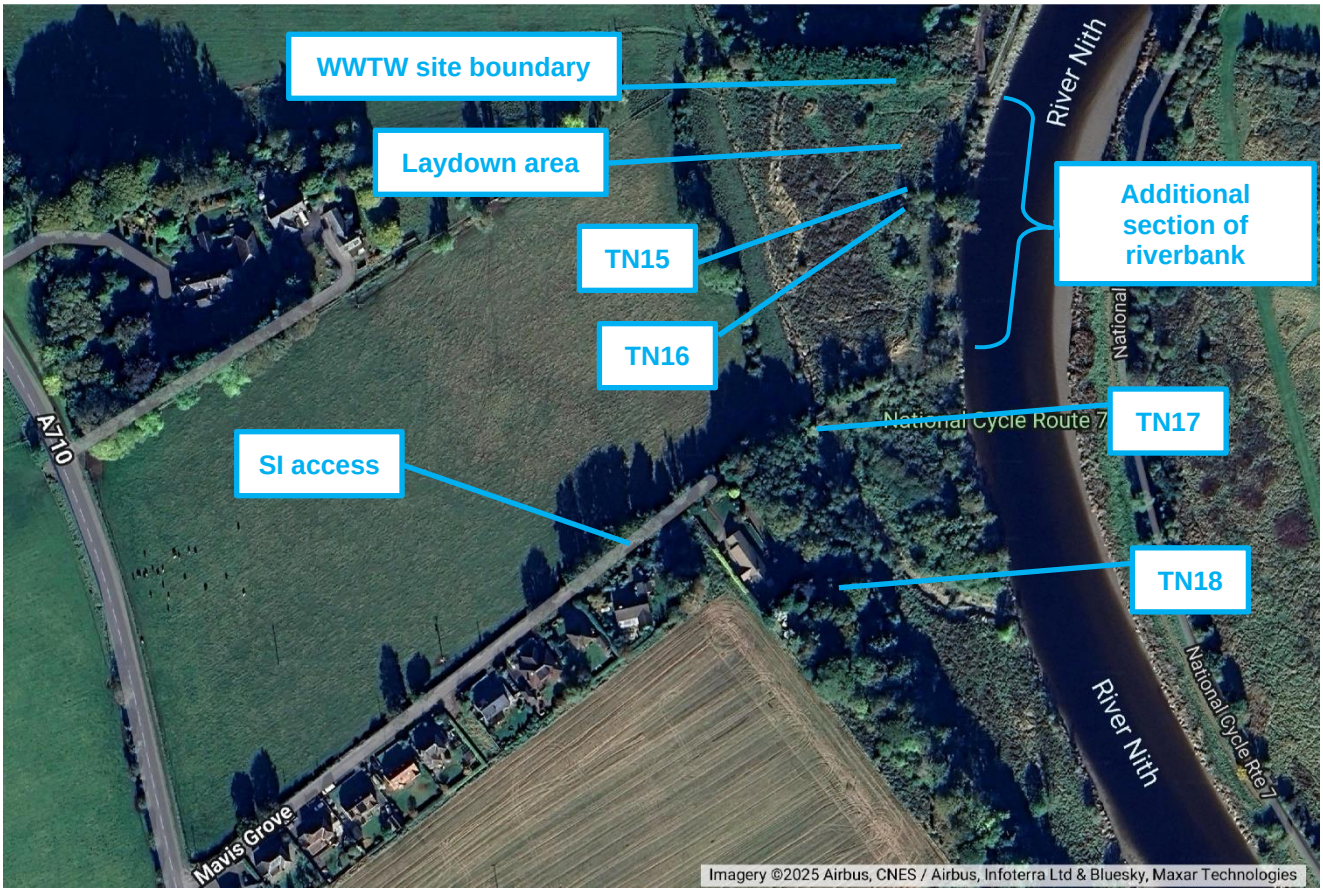
Reinstatement

- Compensatory tree planting is recommended to mitigate any tree felling carried out, and Scottish Water have consulted with NDSFB, who have expertise on suitable species for ‘greening up’ the bank protection. They have suggested that a mix of hawthorn, blackthorn and dog rose (which all currently grow at this location) are used to help stabilise the banking upon completion of construction works.

7. Target notes

The table and map below indicate the location of target notes referenced throughout the report.





2024 target notes in red, 2025 target notes in blue.

TN	Grid Reference	Description
	Site compound, access road and laydown areas	Clear trees, scrub and tall vegetation prior to bird nesting season.
1	NX 97163 74530	2024 and 2025 - Area to be cleared for site compound.
2	NX 97158 74509	2024 and 2025 - Drilling at BH01 completed in 2024.
3	NX 97124 74444	2024 and 2025 - Semi-mature hawthorn and elder scrub to be cleared.
4	NX 97110 74410	2024 and 2025 - *Buddleia* plants on eastern edge of site.
5	NX 97090 74388	2024 and 2025 - scrub clearance undertaken in southeast of WWTW.
6	NX 97119 74473	2024 and 2025 - Small building deemed unsuitable for roosting bats.
7	NX 97061 74451	2024 - Areas of gravel surrounding settlement tanks within WWTW where oystercatcher is reported to nest (approximate).
8	NX 97114 74402	2024 and 2025 - Collapsed area of riverbank.
9	NX 97129 74424	2024 and 2025 - Northern extent of Japanese knotweed.
10	NX 97115 74397	2024 and 2025 - Southern extent of Japanese knotweed.
11	NX 97096 74364	2024 - Hawthorn and ivy scrub on edge of riverbank to be cleared.
12	NX 97277 74630	2024 and 2025 - Otter spraints on edge of River Nith.
13	NX 97186 74548	2025 - Proposed laydown area north of WWTW site boundary.
14	NX 97174 74525	2025 - Mature ivy-covered holly on route of new access road.
15	NX 97066 74329	2025 - Small stand of Japanese knotweed in scrub within laydown area.
16	NX 97069 74318	2025 - Japanese knotweed plants growing in scrub.
17	NX 97020 74226	2025 - Culvert on tidal channel which SI access crosses – no otter signs found.
18	NX 97025 74186	2025 - Ancient woodland south of public footpath.

Report Issued by: Gus Keys	**Date:** 30/01/2025