Biodiversity Action Plan

Tramore Valley Park

Cork Nature Network

The Community Foundation for Ireland

An Roinn Tithíochta, Rialtais Áitiúil agus Oidhreachta
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Finally, to thank the landowners of the park – Cork City Council for their support of the project

[1] https://www.corkcity.ie/en/kinship/

SUMMARY

This Report sets out the work to create a Biodiversity Action Plan (BAP) for Tramore Valley Park, with the goal of generating informed actions to enhance biodiversity within the area. The report was put together using expert inputs and incorporating the values of the users of the park and other stakeholders. The approach to producing the BAP involved both employing expert surveys and engaging with users both through an online poll and an open discussion meeting.

The survey provided information on river and stream quality, species present, and habitat quality. The park has 10 distinct habitat types covering 67 ha in all, the largest of which was a type known as dry meadows and grassy verges. Surveys identified 333 species across the park, ten (10) of which are specially protected or known to be threatened. The Report notes the park is an urban green space most of which is relatively recent in origin; very significantly modified, and in parts constrained by works & infrastructure associated with the operation of the landfill site.

The online Poll (120 people responded) provided a rich source of opinion. There was overwhelming strong support for increasing biodiversity in the park with a large number of ideas for doing so. An online discussion provided strong feedback that the story of the park should be shared in a positive way that notes the recent history of the area – massively changed from a landfill to new habitats where biodiversity is valued. The online discussion and poll along with the expert reports, were then used to inform the potential actions for the site, which had been laid out in this plan along with indicative time scales. The next step for this project is applying these actions.

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3. INTRODUCTION

This Report sets out the programme of work of Cork Nature Network[2] (CNN) to create a Biodiversity Action Plan for Tramore Valley Park. The aim of the plan is to:

to generate informed actions to enhance biodiversity within the area.

This plan has generated a powerful set of ideas for action based on ecological surveys and dialogue with citizens.

Turning these actions into delivery on the ground will be the next challenge with discussion to identify key actions.

Biodiversity

The term **biodiversity** - short for *biological diversity* – describes the variety of life on Earth. It means the variety of all living things and the living systems of which they are part.

When it comes to biodiversity Ireland is not doing well, and the Irish government officially declared a biodiversity crisis on May 9, 2019[3]. Underlying this crisis is the state of nature across Ireland so according to one recent report[4] 85% of Ireland's habitats assessed are now considered to have "Unfavourable Conservation status".

In another measure of this crisis - of all the species whose conservation status has been assessed here in Ireland, one in every fifth species is threatened with extinction[5]. For instance, 37 species of bird are of high conservation concern[6], including species such as curlew, hen harrier, twite and yellowhammer.

Importantly, loss of biodiversity is not only an environmental issue but also a developmental, economic, security, social and moral issue. Our health and well-being are bound up in the fate of biodiversity.

Many of our connections to biodiversity are downplayed in modern life but during the Covid-19 pandemic, many people and communities have reconnected with nature in their gardens and other outdoor space such as parks.

[2] https://corknaturenetwork.ie/

[3] https://www.askaboutireland.ie/enfo/irelands-environment/biodiversity/spotlight-on-biodiversity/irish-biodiversity-threat/national-biodiversity-eme/

[4] https://www.npws.ie/publications/article-17-reports

[5] https://biodiversityireland.ie/ipbes-irelands-biodiversity-crisis/

[6] https://birdwatchireland.ie/publications/birds-of-conservation-concern-in-ireland-bocci4-2020-2026/

Biodiversity at the national level

In November 2022 - biodiversity has a major profile at the national level with a Citizens Assembly on Biodiversity Loss[7] and with a new National Biodiversity Action Plan[8]. Similarly, at a global level, new goals and an action plan for nature over the next decade will be agreed upon at a UN conference[9] being held in Montreal, on December 2022.

Across Ireland, many communities are considering how they can do more for our biodiversity through the concept of local Biodiversity Action Plans (BAPs).

These come in a variety of forms but usually, they include: (a) preparing an inventory of species and habitats; (b) assessing the status or condition of these; (c) generating ideas for maintaining and improving this biodiversity; and (d) thinking about how the work to do this will be taken forward (including timelines, partnerships, budgets, etc).

The Tramore BAP Project

This BAP project at Tramore Valley Park has been funded by the Community Foundation for Ireland through their Environment and Nature Fund grants scheme[10]. This supports efforts to enhance biodiversity by enabling the blending of the expertise of ecologists with the skills, experience, and enthusiasm of local communities.

Cork Nature Network (CNN) has taken the lead and crafted a package of work to develop this BAP. CNN is a nature conservation NGO devoted to *protecting and promoting Ireland's wildlife through education, conservation, and research, to restore healthy ecosystems for all species and peoples of Ireland.*

[7] https://www.citizensassembly.ie/en/assembly-on-biodiversity-loss/about/
[8] https://www.gov.ie/en/consultation/1566c-public-consultation-on-irelands-4th-national-biodiversity-action-plan/
[9] https://www.canada.ca/en/services/environment/wildlife-plants-species/biodiversity/cop15.html
[10] https://www.communityfoundation.ie/grants/types-of-grants

4. TRAMORE VALLEY PARK

Tramore Valley park lies at the confluence of the Tramore and Trabeg Rivers in a shallow valley draining into the Douglas River and Estuary. It previously supported a complex of wetland habitats before being converted to wet meadows in the early 19th century. The site existed as a diverse wetland and woodland system before being operated as a landfill from 1963 to 2009. An estimated 2.8 million tonnes of material were deposited over that time period, degrading the biodiverse wetland.

The present park encompasses the former landfill cap, which has now been laid to grass with areas of tree planting, as well as surrounding sports pitches, wetland areas and a public waste disposal and recycling centre. The landfill was capped with a geomembrane and following these landfill remediation works the site was repurposed into a parkland amenity with sections opened to the public in 2015 before officially opening in 2019. The site also consists of a stormwater pond and reed beds, a covered leachate lagoon and contaminated stormwater lagoons, as well as a leachate conditioning plant and landfill gas abstraction and flaring/electricity generation infrastructure.

The Park lies in the 'South Central Suburbs'[11] of Cork City. The Cork City Development Plan 2022-28 zones the park as a 'Public Open Space' (Figure 1) setting out the wider context for the park, surrounded on two sides by major roads, sports grounds, light industrial estates and residential areas.

[11] Map 7, Page 12 of https://www.corkcity.ie/en/cork-city-development-plan/

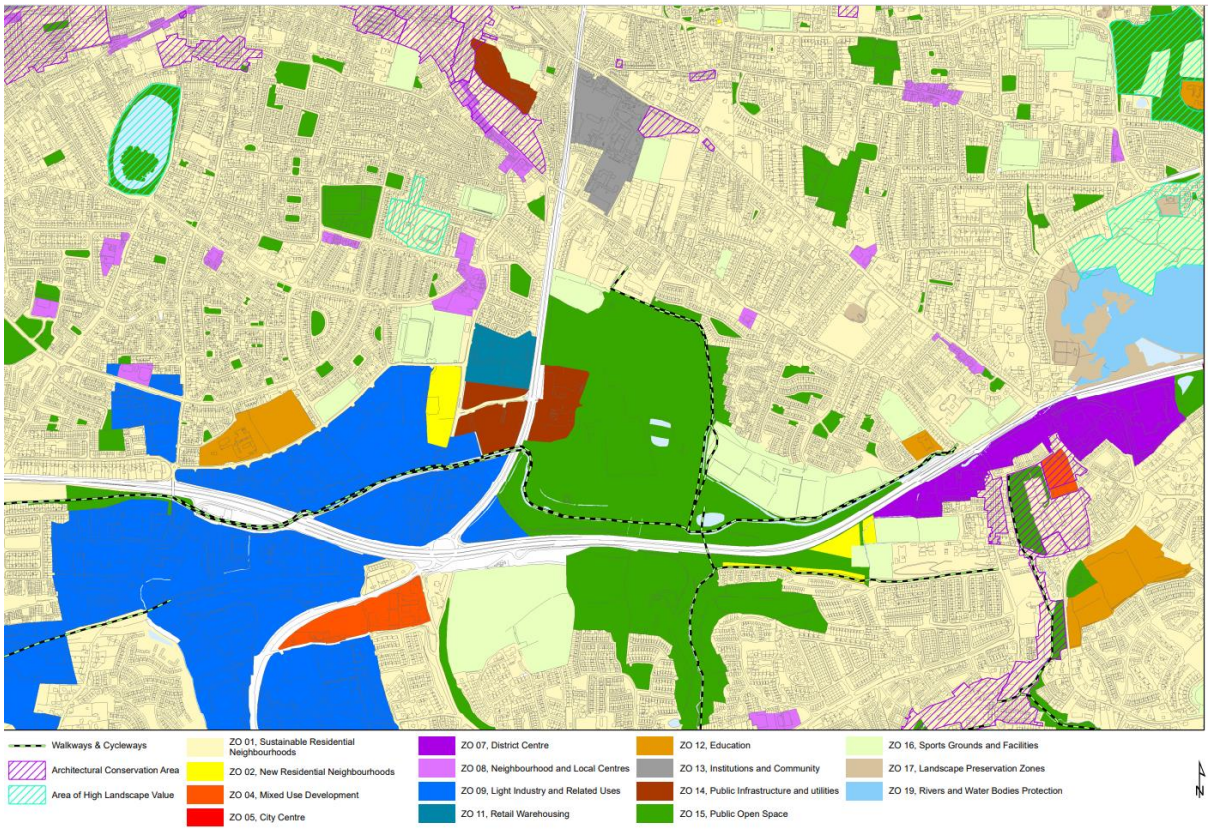

Figure 1: Location of Tramore Valley Park – centre of Figure shaded dark green – extract of Cork City Council Development Plan 2022-28[12].

Regarding 'Green and Blue Infrastructure, Open Space and Biodiversity' the Development Plan is explicit in its Objective SO5 that it will seek to: Manage and enhance green and blue infrastructure, to protect and promote biodiversity, ecology and habitat connectivity, protect natural areas, enhance landscape character and maritime heritage, and manage access to green and blue spaces that provide recreation, amenity and natural areas. In terms of development policy then there is a clear 'protect and promote' position on biodiversity from the City Council.

There is no specific biodiversity protection for Tramore Valley Park in terms of national legislation or guidance. It's worth noting though that within 10km there is both a Special Protection Area (SPA) - Cork Harbour SPA (Site code 004030) which includes a section of the Douglas River and a Special Area of Conservation (SAC) - Great Island Channel SAC (Site code 001058). Cork Harbour and its surrounds are rich in habitats of biodiversity importance.

[12] Map 7, Page 12 of https://www.corkcity.ie/en/cork-city-development-plan/

Geology and hydrology

The majority of the site is shown to be underlain by human made ground (landfill). The site area is also known to have been located within an area of bogland which lay on the floodplain of the Tramore River. From site investigations in 1997 and 2003[13] , the geology of the site can be summarised as approximately 20m of municipal solid waste, up to 6m of peat, up to 11m of silty clay and up to 3m of gravel, limestone or sandstone/slate bedrock.

The rock type underlying Tramore Valley park is primarily carboniferous limestone. Given the presence of the former Kinsale Road Landfill, the EPA had designated a separate groundwater body which encompasses the park named Waste Facility (W0012-03) within the Ballincollig and Ballinhassig east groundwater bodies. This waste facility groundwater body is currently at Poor WFD Status and failing WFD objectives (2018- 2021 WFD Status)[14], in this report the significant pressure on the groundwater body was classed as other. Contamination of this water body is likely due to leachate migration. Leachate is treated on-site at the leachate conditioning plant, the 2009[15] hydrological assessment of the site determined that the leachate management infrastructure onsite is performing with sufficient capacity to treat collected leachate.

Water Quality

The two watercourses flowing along the boundary of the park are the Tramore river and a smaller tributary the Trabeg stream. A third unnamed stream, referred to as the Vernon Mount Stream, flows briefly (22m) through the park before entering the Tramore river along the southern boundary. A freshwater ecological survey of the rivers within Tramore Valley park was carried out by Mayfly Ecology on behalf of CNN in June 2022[16]. Four sites in total were investigated, sites 1 and 2 were located within the Tramore river area, site 3 was located within the Trabeg stream and site 4 was located at the confluence of the Vernon Mount stream and the Tramore river, see Figure 3. Figure 3 also indicates the previous location of the Tramore River which was moved south during the creation of the landfill site.

Biological quality surveys of macroinvertebrate kick samples were carried out at sites 1, 2 and 3. In addition, hand-held probes were used to record physicochemical parameters in situ including DO (dissolved oxygen), pH, temperature and conductivity at all 4 sites.

In general, the Tramore River has few natural characteristics as it flows through the park. This part of the river was artificially created when the old channel was moved. At sample site 1 from the 2022 report[17], Tramore river had low DO levels at 3.85 mg/l indicating high microbial activity utilising available oxygen, most likely as a result of organic inputs[18]. Dense

[13] Hydrological assessment of Kinsale road Landfill. Fehily Timoney and company for Cork City Council 2009.
[14]Environmental Protection Agency, WFD Groundwater Waterbody Status 2016 - 2021
[15] Hydrological assessment of Kinsale road Landfill. Fehily Timoney and company for Cork City Council 2009.

[16] Tramore Valley Park Freshwater Ecology Survey. Mayfly Ecology Report to CNN 2022
[17] Tramore Valley Park Freshwater Ecology Survey. Mayfly Ecology Report to CNN 2022
[18] Tramore Valley Park Freshwater Ecology Survey. Mayfly Ecology Report to CNN 2022

filamentous green algae and diatom growth confirm organic inputs at this part of the river leading to nutrient enrichment issues. The kick sample at this site consisted of pollution-tolerant species, all of these characteristics again indicating a high organic load in this river and water quality pollution issues as a result of organic inputs (either domestic, animal and/or industry waste) potentially from point sources.

At sample site 2, the Tramore and Trabeg river confluence, the Douglas estuary influences the lower reaches of the Tramore river. 90% of the substrate is covered by filamentous green algae, again indicating nutrient enrichment at this site.

At site 3, located in the Trabeg stream, The DO levels were even lower at 2.56mg/l indicating high microbial activity utilising the available oxygen. The high microbial activity is usually a result of organic inputs. The low oxygen levels are further exacerbated as the sluggish flow means little re-aeration of the water and filamentous green algae growth also confirms that there are organic inputs to this river leading to the nutrient enrichment issues such as the low DO observed[19]. Macroinvertebrate species tolerant to pollution, DO, watercolour, and filamentous algae suggest organic loading and that the river is suffering from water quality pollution issues.

Sample site 4 was located at the Vernon Mount and Tramore confluence. The Vernon Mount Stream is diverted under the N40 via two concrete pipe culverts and then enters the park. Here there is a steep drop followed by another drop as a result of a collapsed pipe culvert. The water is shallow (5cm) and clear. The excessive algae/diatom growth observed within the Tramore River was not evident within the Vernon Mount Stream. The water colour was very clear and DO conditions were satisfactory (9.02mg/l).

[19] Tramore Valley Park Freshwater Ecology Survey. Mayfly Ecology Report to CNN 2022

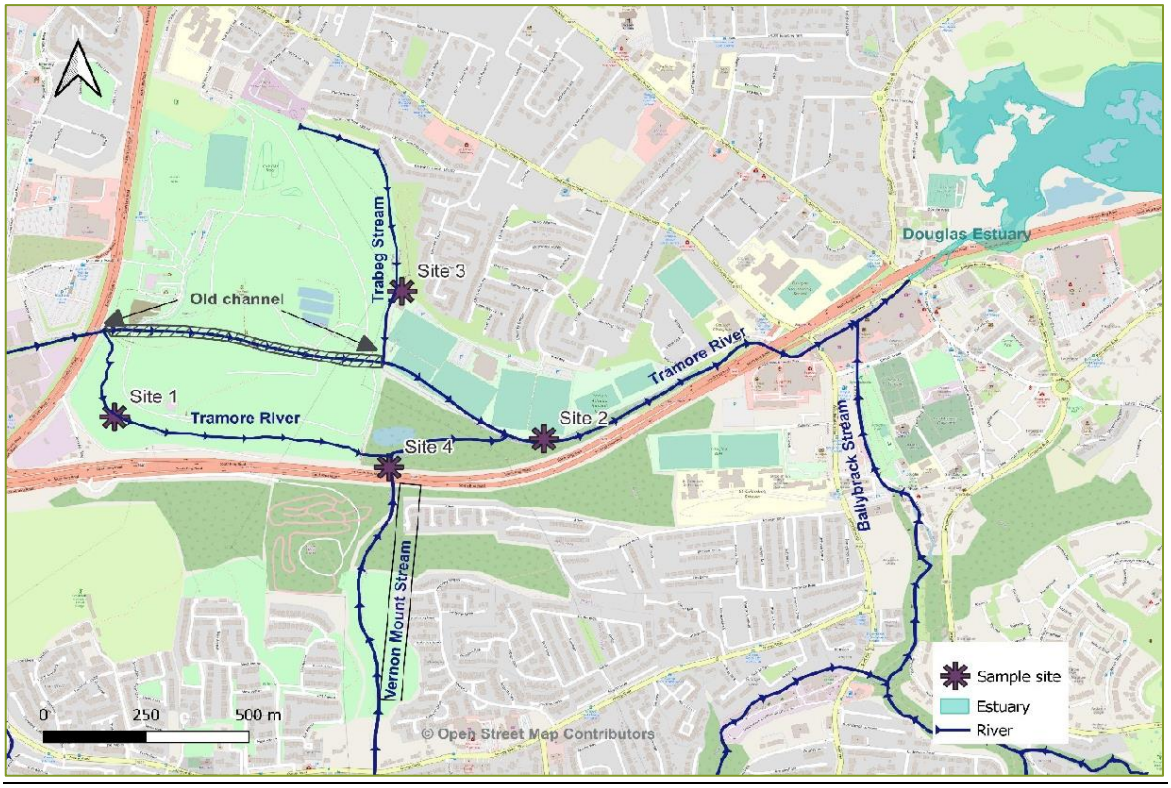

Figure 2: Map showing rivers within the Tramore Valley Park and the location of sampling points. (Copied from Figure 2-1 in expert report to CNN[20]).

5. HOW THE PLAN WAS DEVELOPED

CNN developed this plan through three main activities:

1. Commissioning expert surveys of Tramore Valley Park – to establish the existing biodiversity of the area.
2. An online Poll to engage with Tramore Valley Park users – to establish their views on how they value biodiversity in the park and to begin to explore their thoughts on action for biodiversity there.
3. Holding an online meeting (8th November 2022) with users – to share preliminary findings and especially to further explore their thoughts on action for biodiversity there.

CNN also held a number of awareness-raising events in partnership with the KinShip project on the importance of biodiversity in the park.

[20] Tramore Valley Park Freshwater Ecology Survey. Mayfly Ecology Report to CNN 2022

Expert surveys of the biodiversity of the site.

During the spring and summer of 2022 CNN commissioned a series of surveys: Table 1. The full versions of the reports of these surveys are archived in a separate document[21] and available on request.

Table 1: Expert surveys at Tramore Valley Park Spring/Summer 2022.

Target	Outputs	Author
Rivers & steams (including water quality)	Assessment of the ecological quality of the Tramore River & Trabeg Stream.	Mayfly Ecology - Letizia Cocchiglia
Birds	Breeding territories plus other records	Harry Hussey
Plants*	Records from two visits across the flowering season	David Daly
Bats (& other mammals)	Bat activity survey	David Daly
Insects	Walkover survey	John O'Sullivan
Invasive Plants	Locations of invasive alien plant species	David Daly

Note: James O'Mahony and Jo Goodyear provided further information on the mapping of habitats.

6. HABITATS

Habitats were mapped incorporating information gained from expert surveys (see above) and aerial photos (sourced from Google Earth open access) using QGIS open software. The map (Figure 2 below) uses the standard habitat type classification for Ireland according to Fossitt (2000).

[21] Cork Nature Network 2022. Supplementary Report to Biodiversity Action Plan Tramore Valley Park. Expert Reports & species data.

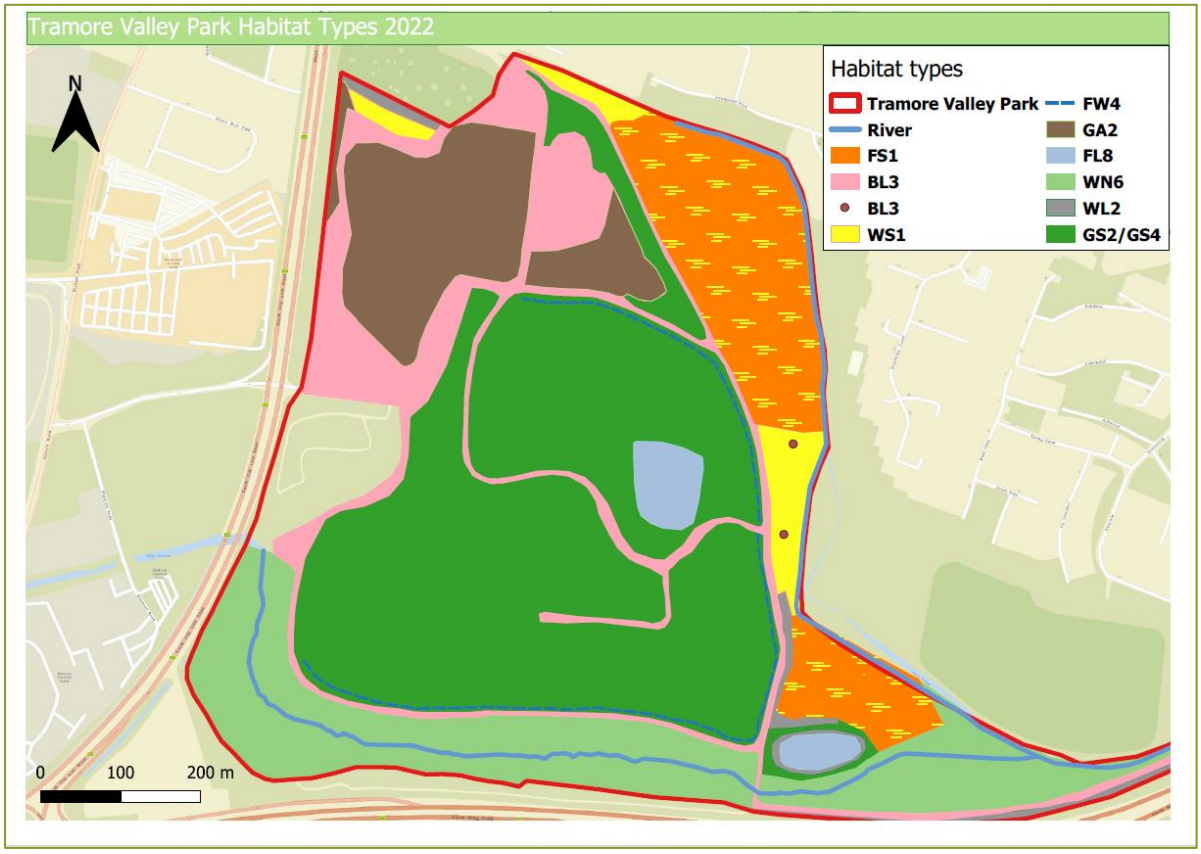

Figure 3. Habitat Map of Tramore Valley Park. Utilizing the approach of Fossitt, J.A. (2000) A Guide to Habitats in Ireland. The Heritage Council, Kilkenny[22].

Codes: BL3 Buildings and artificial surfaces; FL8 Other artificial lakes & ponds; FW4 Drainage ditches (Not shown above); GA2 Amenity grassland; Wetland; GS2 Dry meadows and grassy verges; WL2 Treelines; WN6 Wet willow-alder-ash woodland; WS1 Scrub; GS4 Wet grassland; FW2 Depositing/lowland rivers and FS1 Reed and large sedge swamps. GS2 and GS4 is a mosaic and classified as one habitat.

The area is dominated by semi-natural grasslands, classified by Fossitt as *dry meadows and grassy verges.* These cover almost 40% of the total area. Wet areas: woodland, wetland & artificial ponds cover almost a third (30%). The surveys identified 10 distinct habitat types.

22 https://www.npws.ie/sites/default/files/publications/pdf/A%20Guide%20to%20Habitats%20in%20Ireland%20-%20Fossitt.pdf

Figure 4: Dry meadows and grassy verges GS4– 28th May (Photo: David Daly)

Figure 5: Dry meadows and grassy verges GS2 – 1st July (Photo: David Daly)

Figure 6: Dry meadows and grassy verges GS2 – 28th May (Photo: David Daly)

Figure 7. Wet willow- ash woodland. WN6 28th May (Photo: David Daly)

Understanding the habitats - to inform actions to enhance biodiversity.

Expert surveyors provided feedback on the current condition of the habitats at Tramore, and these are captured below in Table 2.

Table 2. Headline comments on biodiversity in the broad habitat types in Tramore Valley Park.

Habitat type	Broad comment on quality for biodiversity
Buildings and artificial surfaces BL3	Lack of roosting/nest site features for bats & birds.
Wet willow-alder-ash woodland WN6	A well-developed and wide riparian (river & floodplain) woodland. Excellent wildlife corridor.
Reed and large sedge swamp FS1	Remnants of a previously much larger system. Now largely disconnected from the Trabeg stream.
Amenity grassland (improved) GA2	Biodiversity-poor but providing some feeding habitat e.g., for non-breeding birds.
Scrub WS1	Early-stage development. Isolated patches reducing value.
Tree line WL2	Surprisingly very small lengths of these potentially valuable features.
Other artificial lakes & ponds FL8	No assessment. Essentially excluded from CNN surveys in 2022.
Dry meadows and wet grassland GS2/GS4	Managed well for biodiversity but improvements could include late-summer mows. Areas of wet grassland offer additional habitats. This is a mosaic habitat (classified as one habitat). Some areas could be left unmown over the winter.
Depositing/lowland rivers FW2	Trabeg Stream is channelised and the Tramore River is quite uniform, also sluggish, straight, and deep & often densely shaded with overhanging vegetation. Both suffer from water quality issues (high organic loading).
Drainage ditches FW4	Almost all dry, lacking wetland species, and supporting Juncus, Typha, Lythrum, Salix all typical wetland species. Designed to channel surface flow during wet weather (e.g., winter) and to have variable flow rates. Provide valuable shallow wet pools for wildlife.

7. SPECIES

The surveys completed by this project are an important step in building a well-informed approach to the choices ahead. These initial surveys provide a baseline for future work - for developing more knowledge of the park's biodiversity.

Two areas where more knowledge would aid decision-making include:

- Information on trends, how species (or habitats) are changing in the park. Most obviously scrub is developing and will in time, without management become woodland. If the grassland areas are relatively recent, created once the landfill site was closed just over a decade ago (2009), how are they changing?
- Information on species groups not yet surveyed. There is little current information for instance about fungi, most invertebrate animals, and even wintering birds.

The surveys undertaken in 2022 identified 333 species (Table 3). Which gives an invaluable snapshot of the biodiversity of the park. All species data generated has been submitted to the National Biodiversity Database via www.biodiversityireland.ie. A datasheet of all the records is also stored by CNN and is available on request.

Table 3: Species numbers recorded in Tramore Valley Park in spring/summer 2022.

	No species recorded		**No species recorded**
Vascular plants (e.g., including trees)	138	Sawflies, wasps, bees, and ants (Hymenopterans)	8
Birds - breeding	36	Dragonflies (Odonata)	3
Birds – non-breeding	42	Flies (Dipterans)	13
Fungi	1	Grasshoppers, crickets (Orthopterans)	1
Bats	3	Dragonflies (Odonata)	3
Other mammals	3	Flies (Dipterans)	13
Fish	2	Grasshoppers, crickets	1
Ladybirds	7	Earwigs	1
Beetles	12	Mayflies	2
Shield bugs	7	Leeches	2
Other Bugs, aphids	7	Molluscs	2
Butterflies	23	Moths	20
TOTAL	333		

Protected or threatened species and habitats.

Species or habitats that are specially protected or known to be threatened demand particular care in managing a site where they are present. The Tramore Valley Park records (datasheet[23]) were compared against a national consolidated list[24] that the State agency for biodiversity NPWS produces. Species found requiring special notice included: Birds - Goldcrest, Linnet, Starling, Swallow, Willow Warbler; all 3 species of Bats present at Tramore: Leisler's, Soprano & Common Pipistrelle, the Otter, and the Common Eel. No habitats in Tramore River Valley Park are afforded protection but Tramore valley park is hydrologically connected to the SPA Cork Harbour.

This BAP for Tramore should then ensure the above species above are monitored and habitats are managed to ensure their continual presence.

Invasive species

These are 'non-native species that have been introduced by human activities, outside their natural range and that have the ability to threaten our native wildlife and cause damage to the environment, economy and/or human health[25]. These are species, which can impact the biodiversity in the park. Wherever it is possible they should be managed to ensure minimal damage to native species.

The surveys identified four (4) invasive species: Japanese knotweed and Himalayan Balsam (both listed as high-impact invasive species) and Winter heliotrope which spreads quickly and is also a high-priority species requiring removal. The fourth species is Buddleia. Figure 8 identifies some of the known locations of these species.

[23] Cork Nature Network 2022. Supplementary Report to Biodiversity Action Plan Tramore Valley Park. Expert Reports & species data.
[24] Irish Wildlife Manuals No. 116, Checklists of Protected and Threatened Species in Ireland [Version 3.0].
[25] https://invasives.ie/

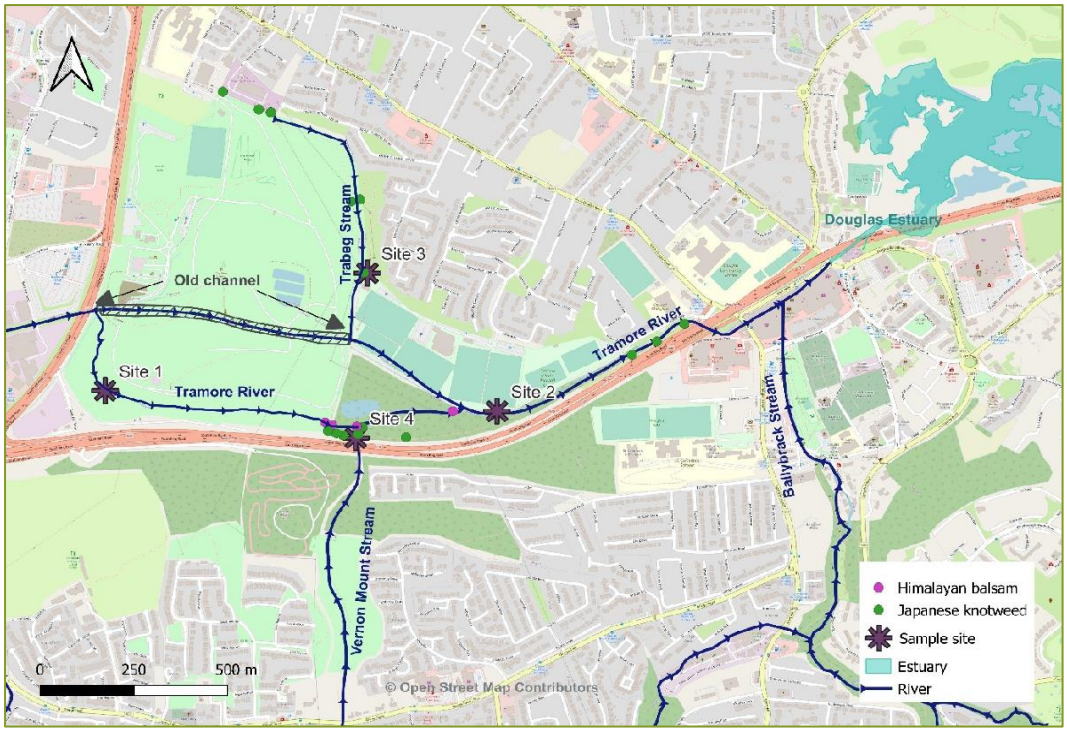

Figure 8: Location of two of the invasive species observed during the freshwater ecology survey.

8. HOW DO USERS OF THE PARK VALUE BIODIVERSITY? (Online survey)

For two weeks in October 2022, an online Opinion Poll canvassed a wide range of views on the biodiversity of the park. The Poll was marketed via social media and email campaigns targeting the areas of Cork around the park. The Poll was promoted as *Biodiversity in Tramore Valley Park* and members of the public were invited to participate in the survey.

With 120 responses the Poll succeeded in providing a rich source of opinion. The full outputs can be found in the supplementary document[26] to this Report. Results include:

- A large majority (68%) of responses were in the age group: 31-50
- A large majority were women (79%)
- All responders had visited Tramore Valley Park
- Almost half (48%) were infrequent visitors to the Tramore Valley Park (once or less a month) whereas 12% were very frequent visitors (more than 10 times a month).
- More than a quarter (29%) could name 31 or more species of wild Irish birds/trees/flowers/insects. Whereas 22% could name less than 10 species.

[26] Cork Nature Network 2022. Supplementary Report to Biodiversity Action Plan Tramore Valley Park. Expert Reports & species data.

- While 10% said they noticed biodiversity in Tramore Valley Park, 16% said *It is the main thing I notice.*
- 106 people responded to the question: *When you visit Tramore Valley Park what part of it is most important to you in terms of biodiversity?* The most popular answers fell into the following groups (in descending order): wildflowers (including pollinator flowers); trees/shrubs; grasslands; variety/ more diversity/seeing/hearing biodiversity/ native species; birds; overgrown areas/ areas that are rewilding (all nominated at least 10 times).
- An overwhelming majority (86%) said they would very strongly support increasing biodiversity in Tramore Valley Park. Nobody suggested that they would not really want to support the proposition.

More than one hundred (107) people supplied ideas for *What would you like to see in a plan for more biodiversity in Tramore Valley Park?* These are summarised in Table 4. Of the ideas in Table 4 the most popular were (in descending order): Engagement activities; more trees/shrubs; a wider range of native plants; new or restored wetlands & ponds, and management of the grassland areas for better biodiversity. Nineteen (19) other types of action were suggested.

Table 4: Ideas for *more biodiversity* supplied by Poll responders.

Broad response group	**No.**
Engagement/a building for biodiversity/ /events info/signage/children's activities	38
More (native) trees/shrubs	38
Wider range of (native) flowering plants (including pollinators)	35
New/restored wetlands/ponds	18
Grassland management for biodiversity (incl. Solitary bees)	11
Bird/bat boxes	9
Refuges/no go areas/rewilded areas	8
Hedges	5
Native forage plants/trees	5
Beehives/apiary	4
Allotments/community garden	4
Green corridors to other areas of city	3
Improved water quality in streams/river	3
Better access (inc. By river)	1
More variety of habitats (e.g., in the grassland areas)	1
Noise reduction	1
Improved bat corridors	1
Compost bins	1
More accessibility to nature rich areas	1
Opportunity to volunteer for biodiversity	1
Less improved/recreational grass	1
Dog control improved	1
Aviary	1
Red squirrels	1

9. HOW DO USERS OF THE PARK VALUE BIODIVERSITY? (On line discussion)

Cork Nature Network promoted an online discussion (08 11 22) to give further opportunities for the local community to have a voice. The event was organised as a zoom seminar and 13 people participated. In this discussion the headline findings of the BAP were presented, and the audience asked for a) general feedback b) their views on the range of actions proposed in this Plan C) their thoughts on taking the Plan forward.

There was strong feedback that the story of the park should be shared in a positive way that notes the recent history of the area – massively changed – from landfill to new habitats where biodiversity counts. That further change can deliver big enhancements for biodiversity with the discussion acknowledging the real potential for a major expansion of hedgerows and actions to improve the Tramore River.

Finally, here, the significance of collaboration and partnership/networking came through strongly – both with *formal* bodies like the City Council and the regulators (e.g., regards the river) and the *informal* such as a citizens group working to address challenges to water quality in the river.

10. ENHANCING BIODIVERSITY IN THE PARK.

This BAP and its purpose to generate informed actions to enhance biodiversity within the area is the starting point from which implementation must follow. Turning it into real impact for bettering for biodiversity will be reflected in generating an implementation approach that includes:

- A focus on shared goals e.g., between the biodiversity experts and the users of the park.
- Ensuring that the actions are well informed by the knowledge and practical experience from biodiversity delivery activity elsewhere.
- Knowing that some of the routes to enhancing the biodiversity of the park might lie outside the site itself (e.g., regards water quality).
- That there may be some very real constraints – the park is ex-landfill site that has to be managed properly in terms of the operations there.

11. POTENTIAL ACTIONS.

Identifying the choices to enhance biodiversity will be reflected in generating an implementation approach that includes:

- A focus on shared goals e.g., between the biodiversity experts and the users of the park.
- Ensuring that the actions are well informed by the knowledge and practical experience from biodiversity delivery activity elsewhere.
- Being aware that some of the measures to enhance the biodiversity of the park may lie outside the site itself (e.g., water quality).

The aim of this plan is to identify the biodiversity of Tramore Valley Park. This will be achieved by setting out specific actions to improve the current conditions in the park for wildlife and engage in a meaningful way with the local community. The potential actions are divided under 10 broad categories:

1. Wetland habitats
2. Water management of the site
3. Semi-natural habitats
4. Management of the habitat for insects
5. Managing the site for birds
6. Managing the site for mammals
7. Connections
8. Raising awareness
9. Partnerships with the community
10. Site Management Practices

The action plan should be seen as a living plan that will be amended, adapted, and include further input from the landowners and the community.

Indicative scales of effort were added to the actions. These are deliberately set as a starting point, some may turn out to take more effort, others less.

On the science or technical front there will be a good number of issues to be further explored from best practices in implementing these actions, to understanding conflicts between choices, to constraints say in terms of how the landfill site has to be safely operated.

On the 'people' side of the delivery, finding support can be as much an emotional journey as a practical one. Some actions will have much more appeal to users of the park who themselves can be key to delivery say for instance if volunteers can make a difference. The KinShip Project[27] is currently working in the park to empower people to make real changes in how they interact with the environment.

[27] https://www.corkcity.ie/en/kinship/

Future actions for this plan will include the establishment of a steering group with Cork City Council, Cork Nature Network and other stakeholder groups to manage the plan.

Table 5: Aims, potential future actions and direct measures.

Aims	Action	Direct Measures	Short team 1 year	Mediu m term 2-3 years	Long term 4-5 years
1. Wetland habitats	**1.1 Identify and protect wetland habitats and species**	FS1 area often referred to as Carroll's Bog. Remove existing litter. Reduce disturbance by dogs and humans through signage and promotional work. Undertake an ecological survey to gain an increased understanding of the wetland ecology.			
		WN6.area. Remove existing litter. Investigate the mitigation of noise disturbance from road. Review of the species found in the Tramore River e.g., Fish, Otter. Removal or cutting of vegetation that shades the rivers as per the Invertebrate assessment.			
2.Water management of the site	**2.1. Site water quality and fish management**	Review of management and potential actions to improve the water quality of the wetland of the Tramore River. Set up a working group to address these issues.			
3. Semi-natural habitats	**3.1. Identify and protect existing semi-natural habitats**	Undertake an annual survey of species present.			
	3.2. Manage and enhance open grassland areas	Develop a plan showing the management of open grassland sites using a range of approaches e.g., leave, and mow once a year. Annual survey of these areas to identify the success of the above management practices. Pathway verges to be managed for grassland species.			
4. Management of the habitat for insects	**4.1 Develop practices for the management of habitats for insects**	Plant pollinator-friendly flowerbeds and developing areas for early flowering plants and bulbs. -			

		Plant pollinator-friendly bulbs and flowers that will give a good seasonal cover.			
		Create/maintain bare earth/sand banks for bees and insects.			
		Encourage the leaving of areas to assist and support invertebrates e.g., bramble, nettles. Investigate the potential for planting scabious for the Marsh Fritillary butterfly and Juniper for the Juniper Shield Bug.			
		Install earth banks and bug hotels for insects.			
5. Managing the site for birds	**5.1 Provide bird nesting habitat:**	Identify potential sites for planting more native trees and hedgerows for nesting birds. Thicken boundaries with hedgerows/shrubs. Install bird and bat boxes in appropriate places.			
	5.2. Bird cover	Ensure areas of shrubs and cover are kept around the wetland area. Review based on the wetland survey.			
	5.3. Provide areas of food for birds	Review meadows for plant species to benefit birds. Review of wetland plant species and their connectivity to insect availability and food.			
6. Managing the site for mammals	**6.1. Providing food for bats**	Review on the site practices to provide food for bats. To review the artificial lighting in the park to assess if it can be improved for bats.			
	6.2 Providing cover for other mammals	To undertake a survey of herbivores e.g., rabbits on the site to determine level of grazing. To put in place bat and squirrel boxes.			
7. Connections	**7.1 Connect existing semi-natural habitats to their wider environment**	Develop a map of habitat connections to help inform management of the site			

8.Raising awareness on the site	**8.1 Promote the Tramore Valley Park to raise nature awareness of wildlife within the local area**	Promote and distribute the Tramore Valley Park BAP online. Develop an online education resource Develop a website page for the park. Develop a program of activities. Produce information on the history of the park and its cultural importance.			
	8.2. Signage	Create Tramore Valley Park BAP trail to encourage the community to explore the site. Install a sign about the wetland, one on the park, and the biodiversity action plan.			
9. Partnerships with the community	**9.1. Developing partnerships**	Develop links with academic bodies to encourage further learning on the site. Further, develop links and programmes with Kinship and Ecolab. Further, develop links and programmes with the community to encourage the use of the site for learning and well-being.			
		Link in with national projects such as the national monitoring schemes: Bumblebees, Butterflies, Plants, Dragonflies, etc.			
10. Site Management Practices	**10.1 Overall site management** **Reduce or eliminate the use of pesticides (herbicides, insecticides, and fungicides) across Tramore Valley Park**	Develop a charter of good environmental management on the site. Include the elimination of the use of chemicals on site. To work with The Glen Resource Centre on the area around the sports pitch to encourage other management practices. Develop a priority action plan for the removal of Invasive Species and Noxious Weeds.			
	10.2. Site protection and recognition as an area for biodiversity	Build Tramore Valley Park BAP actions into existing local authority frameworks and initiatives			
	10.3. Develop steering committee	Develop a steering committee to oversee the action plan. Annual review of progress Identify funding opportunities.			

12. APPENDIX

Species recorded at Tramore valley park.

Birds

Recorded in 2022 by James O' Mahoney, Mark Robins and Harry Hussey.

Table 6: Birds recorded in Tramore Valley Park. Compiled from 2022 surveys by Harry Hussey, James O'Mahony, Mark Robins, and David Daly.

Common Name	Latin Name	Common Name	Latin Name
Black-headed Gull	*Larus ridibundus*	Long-eared Owl	*Asio otus*
Blackbird	*Turdus merula*	Long-tailed Tit	*Aegithalus caudatus*
Blackcap	*Sylvia atricapilla*	Magpie	*Pica*
Blue Tit	*Cyanistes caeruleus*	Mallard	*Anas platyrhynchos*
Bullfinch	*Pyrrhula*	Meadow Pipit	*Anthus pratensis*
Chaffinch	*Fringilla coelebs*	Moorhen	*Gallinula chloropus*
Coal tit	*Periparus ater*	Pied Wagtail	*Motacilla alba yarrellii*
Common Buzzard	*Buteo*	Reed Bunting	*Emberiza schoeniclus*
Common Chiffchaff	*Phylloscopus collybita*	Reed Warbler	*Acrocephalus scirpaceus*
Common Pheasant	*Phasianus colchicus*	Robin	*Erithacus rubecula*
Common Whitethroat	*Sylvia communis*	Rook	*Corvus frugilegus*
Coot	*Fulica atra*	Sand Martin	*Riparia*
Dunnock	*Prunella modularis*	Sedge Warbler	*Acrocephalus schoenobaenus*
Goldcrest	*Regulus*	Shelduck	*Tadorna*
Goldfinch	*Carduelis*	Snipe	*Gallinago*
Great Tit	*Parus major*	Song Thrush	*Turdus philomelos*
Grey Heron	*Ardea cinarea*	Starling	*Sturnus vulgaris*
Herring Gull	*Larus argentatus*	Stock Dove	*Columba oenas*
Hooded Crow	*Corvus cornix*	Stonechat	*Saxicola rubicola*
House Sparrow	*Passer domesticus*	Swallow	*Hirundo rustica*
Jackdaw	*Corvus monedula*	Tufted Duck	*Aythya fuligula*
Kestrel	*Falco tinnunculus*	Willow Warbler	*Phylloscopus trochilus*
Lesser Black-backed Gull	*Larus fuscus*	Woodpigeon	*Columba palumbus*
Linnet	*Carduelis cannabina*	Wren	*Troglodytes*
Little Egret	*Egretta garzetta*		

Insects

Recorded in September 2022 by John O Sullivan.

Table 7: List of insects surveyed on 9th September by John O'Sullivan (list supplemented with records from previous visits).

Common Name	Latin Name	Common Name	Latin Name
Coleopterans		**Butterflies**	
Harlequin Ladybird	*Harmonia axyridis*	Small Copper	*Lycaena phlaeas*
7 spot Ladybird	*Coccinella septempunctata*	Small Tortoiseshell	*Aglais urticae*
2 spot Ladybird	*Adalia bipunctata*	Red Admiral	*Vanessa atalanta*
22 spot Ladybird	*Psyllobora vigintiduopunctata*	Peacock	*Aglais io*
10 spot Ladybird	*Adalia decempunctata*	Speckled Wood	*Pararge aegeria*
14 spot Ladybird	*Propylea quatuordecimpunctata*	Large White	*Pieris brassicae*
Kidney Spot Ladybird	*Chilocorus renipustulatus*	Small white	*Pieris rapae*
Orange Ladybird	*Halyzia sedecimguttata*	Green veined white	*Pieris napi*
Common red soldier beetle	*Rhagonycha fulva*	Comma	*Pylognia c-album*
N/A	*Rhagonycha limbata*	Common Blue	*Polyommatus icarus*
N/A	*Chrysolina bankii*	Meadow Brown	*Maniola jurtina*
N/A	*Lagria hirta*	Orange tip	*Anthocharis cardamines*
N/A	*Sphaeridium scarabaeoides*	**Moths**	
Striped turnip flea beetle	*Phyllotreta nemorum*	Large yellow underwing	*Noctua pronuba*
Thick legged flower beetle	*Oedemera nobilis*	White ermine	*Spilosoma lubricipeda*
N/A	*Glischrochilus hortensis*	Cinnabar moth	*Tyria jacobaeae*
N/A	*Aphodius fimetarius*	Brimstone moth	*Opisthograptis luteolata*
N/A	*Malthodes spp.*	Six spot burnet	*Zygaena filipendulae*
Green dock beetle	*Gastrophysa viridula*	Square spot rustic	*Xestia xanthoprapha*
Green tortoise beetle	*Cassida veridis*	Dark arches	*Apamea monoglypha*
Lined click beetle	*Agriotes lineatus*	Angle shades	*Phlogophora meticulosa*
Hemipterans		Silver Y	*Autographa gamma*
Common froghopper	*Philaenus spumarius*	Heart and dart	*Agrotis exclamationis*
N/A	*Grypocoris stysi*	Grey dagger	*Acronicta psi*

Green leafhopper	*Cicadella viridis*	N/A	*Ancylis badiana*
N/A	*Stenodema spp.*	Cherry bark moth	*Enarmonia formosana*
N/A	*Eupteryx urticae*	Garden carpet	*Xanthorhoe fluctuata*
Meadow plant bug	*Leptopterna dolabrata*	Small magpie	*Eurrhypara hortulata*
Gorse lacebug	*Dictyonota strichnocera*	Pale tussock	*Calliteara pudibunda*
N/A	*Cixius spp.*	Common plume	*Emmelina monodactyla*
Shieldbugs		Bramble shoot moth	*Notocelia uddmanniana*
Hairy shieldbug	*Dolycoris baccarum*	Garden grass-veneer	*Chrysoteuchia culmella*
Green shieldbug	*Palomena prasina*	Dark strawberry tortrix	*Celypha lacunana* / *Syricoris lacunana*
Forest shieldbug	*Pentatoma rufipes*	**Odonates**	
Dock bug	*Coreus marginatus*	Common darter	*Sympetrum striolatum*
Gorse Shieldbug	*Piezodorus lituratus*	Emperor dragonfly	*Anax imperator*
Hawthorn shieldbug	*Acanthosoma haemorrhoidale*	Emerald damselfly	*Somatochlora hineana*
Birch shieldbug	*Elasmostethus interstinctus*	**Dipterans**	
Bronze shieldbug	*Troilus luridus*	N/A	*Tipula maxima*
Hymnopterans		Marmalade hoverfly	*Episyrphus balteatus*
Common Wasp	*Vespula vulgaris*	Common snout hoverfly	*Rhingia campestris*
German Wasp	*Vespula germanica*	N/A	*Volucella pellucens*
Garden bumblebee	*Bombus hortorum*	N/A	*Helophilus pendulus*
Buff-tailed bumblebee	*Bombus terrestris*	N/A	*Sphaerophoria scripta*
Red tailed bumblebee	*Bombus lapidarius*	N/A	*Syrphus ribesii*
Common carder bee	*Bombus pascuorum*	Common drone fly	*Eristalis tenax*
Tawny mining bee	*Andrena fulva*	Tapered drone fly	*Eristalis pertinax*
Ashy mining bee	*Adrena cineraria*	Pied hoverfly	*Scaeva pyrastri*
Honey bee	*Apis mellifera*	Broad centurion	*Chloromyia formosa*
Orthopterans		N/A	*Urophora spp.*
Field grasshopper	*Chorthippus brunneus*	Yellow dung fly	*Scathophaga stercoraria*
Earwigs		Common green bottle fly	*Lucilia sericata*
Common earwig	*Forficula*		

Botanical species

Table 8

Recorded by David Daly and Jo Goodyear.

Common Name	Latin Name	Common Name	Latin Name
Alder	*Alnus glutinosa*	Great Willow Herb	*Epilobium hirsutum*
Amphibious Bistort	*Persicaia amphibia*	Greater Plantain	*Plantago major*
Angelica	*Angelica sylvsetris*	Groundsel	*Senecio vulgaris*
Annual Meadow Grass	*Poa annua*	Hawksbeard	*Crepis sp.*
Ash	*Fraxinus excelsior*	Hawthorn	*Crataegus monogyna*
Bindweed	*Calystegia sepium*	Herb Robert	*Geranium robertianum*
Birds foot trefoil	*Lotus corniculatus*	Horsetail	*Equisetum arvense*
Bramble	*Rubus fructicosus*	Japanese Knotweed	*Reynoutria japonica*
Broad leafed Dock	*Rumex obtusifolius*	Lesser Trefoil	*Trifolium dubium*
Broad leaved plantain	*Plantago major*	Leylandii	*Chaemocupressus x lelandii*
Broad leaved Willowherb	*Epilobium montanum*	Lime	*Tilia cordata*
Buddleja	*Buddleja davidii*	Meadow Buttercup	*Ranunculus acris*
Bull Rush	*Typha latifolia*	Meadow Fescue	*Festuca pratensis*
Bush Vetch	*Vicia sepium*	Meadow Sweet	*Filipendula ulmaria*
Caucasian Fir	*Abies nordmanniana*	Meadow Sweet	*Filipendula ulmaria*
Chickweed	*Stellaria media*	Montbretia	*Crocosmia x crocosmiiflora*
Cleavers	*Galium aparine*	Nettle	*Urtica dioiceae*
Climbing Nightshade	*Solanum dulcamara*	Old Mans Beard	*Clematis vitalba*
Cocksfoot	*Dactylus glomerata*	Oxeye Daisy	*Leucanthemum vulgare*
Common Bent	*Agrostis capillaris*	Pedunculate Oak	*Quercus robur*
Common Knapweed	*Centaurea nigra*	Perennial Rye Grass	*Lolium perenne*
Common Reed	*Phragmites australis*	Purple Loosestrife	*Lythrum salicaria*
Cow Parsley	*Anthriscus sylvestris*	Ragged Robin	*Silene flos cuculi*
Creeping Buttercup	*Ranunculus repens*	Ragwort	*Jacobea vulgaris*
Crested Dogs Tail	*Cynosurus cristatus*	Red Bartsia	*Odonites vernus*
Cuckoo Flower	*Cardamine pratensis*	Red Clover	*Trifolium pratense*
Curly Dock	*Rumex crispus*	Ribwort Plantain	*Plantago lanceolata*
Cut-leaved Cranesbill	*Geranium dissectum*	Scarlet Pimpernel	*Anagallis arvensis*
Daisy	*Bellis perennis*	Selfheal	*Prunella vulgaris*
Dandelion	*Taraxacum sp.*	Silver Poplar	*Populus alba*
Dog Rose	*Rosa canina*	Silverweed	*Potentilla anserina*
Dogwood	*Cornus sanguinea*	Spear Thistle	*Cirsium vulgare*
Downy Birch	*Betula pubescens*	Sweet Vernal Grass	*Anthoxanthum odoratum*
Duckweed	*Lemna minor*	Tall Fescue	*Fesruca arundinacea*
Eastern Balsam Poplar	*Populus balsamifera*	Teasel	*Dipsacus fullonum*

Elder	*Sambucus nigra*	Water Figworth	*Scrophularia auriculata*
Field Maple	*Acer campestre*	Watercress	*Nasturtium officinale*
Field Mustard	*N/A*	Weeping Willow	*Salix sp.*
Field Speedwell	*Veronica persica*	White Clover	*Trifolium repens*
Flag Iris	*Irish pseudocorus*	Willow	*Salix sp.*
Germander Speedwell	*Veronica Chamaedrys*	Winter Heliotrope	*Petasites pyrenaicus*
Giant Sedge	*Carex pendula*	Yorkshire Fog	*Holcus lanatus*
Gorse	*Ulex europaeus*		
Great Willow Herb	*Epilobium hirsutum*		
Greater Plantain	*Plantago major*		
Groundsel	*Senecio vulgaris*		

Mammal species

Recorded by David Daly on 28th and 30th May, and 9th July for the Tramore Valley Park: Botanical and Mammals surveys 2022.

Table 9: Mammals recorded in the Tramore Valley Park: Botanical and Mammals surveys 2022.

Common Name	Latin Name
Leisler's bat	*Nyctalus leisleri*
Soprano pipistrelle	*Pipistrellus pygmaeus*
Common pipistrelle	*Pipistrellus*
Fox (Scat found)	*Vulpes*
Rabbit (Droppings found)	*Oryctolagus cuniculus*

Macroinvertebrates

Recorded by Mayfly Ecology, Letizia Cocchiglia.

APPENDIX A MACROINVERTEBRATE SPECIES LIST

Table A-1: List of macroinvertebrates identified at Site 1 -Tramore River within the park.

Site name	Macroinvertebrate	Group	Abundance	Q-value
Site 1 – Tramore River within the park	*Asellus aquaticus*	D	Numerous	Q2-3
	Chironomidae	C	Numerous	
	Hydracarina	C	Common	
	Tubificids	E	Few	
	Plantyhelminthes	C	Few	
	Serratella ignita	C	Few	
	Dipertan larva	C	Few	
	Baetis rhodani/atlanticus	C	Few	
	Glossiphonia complanata	D	Few	
	Bithynia spp.	C	Few	

Table A-2: List of macroinvertebrates identified at Site 2 -Tramore River d/s Trabeg confluence.

Site name	Macroinvertebrate	Group	Abundance	Q-value
Site 2 – Tramore River d/s Trabeg confluence	*Asellus aquaticus*	D	Numerous	N/A – Influenced by estuarine water
	Chironomidae	C	Common	
	Potamopygrus antipodarum	C	Common	
	Radix balthica	D	Few	
	Dytiscidae	C	Few	
	Hydracarina	C	Few	
	Amphipods (marine)	C	Few	

Table A-3: List of macroinvertebrates identified at Site 3 -Trabeg Stream.

Site name	Macroinvertebrate	Group	Abundance	Q-value
Site 3 – Trabeg Stream	*Asellus aquaticus*	D	Common	N/A – silted channelised stream not suited for Q-value assessment
	Chironomidae	C	Common	
	Chironomus sp.	E	Few	
	Tubificids	E	Few	
	Helobdella stagnalis	D	Few	
	Haliplidae	C	Few	
	Plantyhelminthes	C	Few	
	Dytiscidae	C	Few	
	Dipertan larva	C	Few	

Figure 9: Screenshot of Appendix A, Tramore Valley Park Freshwater Ecology Survey. Mayfly Ecology Report to CNN 2022.