

Monaghan Town Green Infrastructure Audit

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What is Green Infrastructure?

“Green Infrastructure can be broadly defined as a strategically planned network of high quality natural and semi-natural areas with other environmental features, which is designed and managed to deliver a wide range of ecosystem services and protect biodiversity in both rural and urban settings. More specifically GI, being a spatial structure providing benefits from nature to people, aims to enhance nature’s ability to deliver multiple valuable ecosystem goods and services, such as clean air or water.”

(EC, 2013)

Green Infrastructure (GI) links nature and society in many ways as it offers benefits to both. GI allows land to become multifunctional. Examples of GI include woodlands, public open green spaces, hedgerows, conservation areas and non-motorised transport routes and (Scott, et al., 2016).

For example, an area of deciduous woodland offers a myriad of benefits to nature and society. Not only does it add recreational value to an area, but it also benefits biodiversity, improves air quality and assists in climate change mitigation and adaptation.



Figure 1.. Peter's Lake Monaghan

Existing Green Infrastructure in Monaghan Town

There is a myriad of existing GI in Monaghan town. Some examples of larger areas of GI include St. Davnet's Hospital, Peter's Lake, the Monaghan Town Greenway and Tom Young's Wood while hedgerows and street trees also play an important role in the GI network.

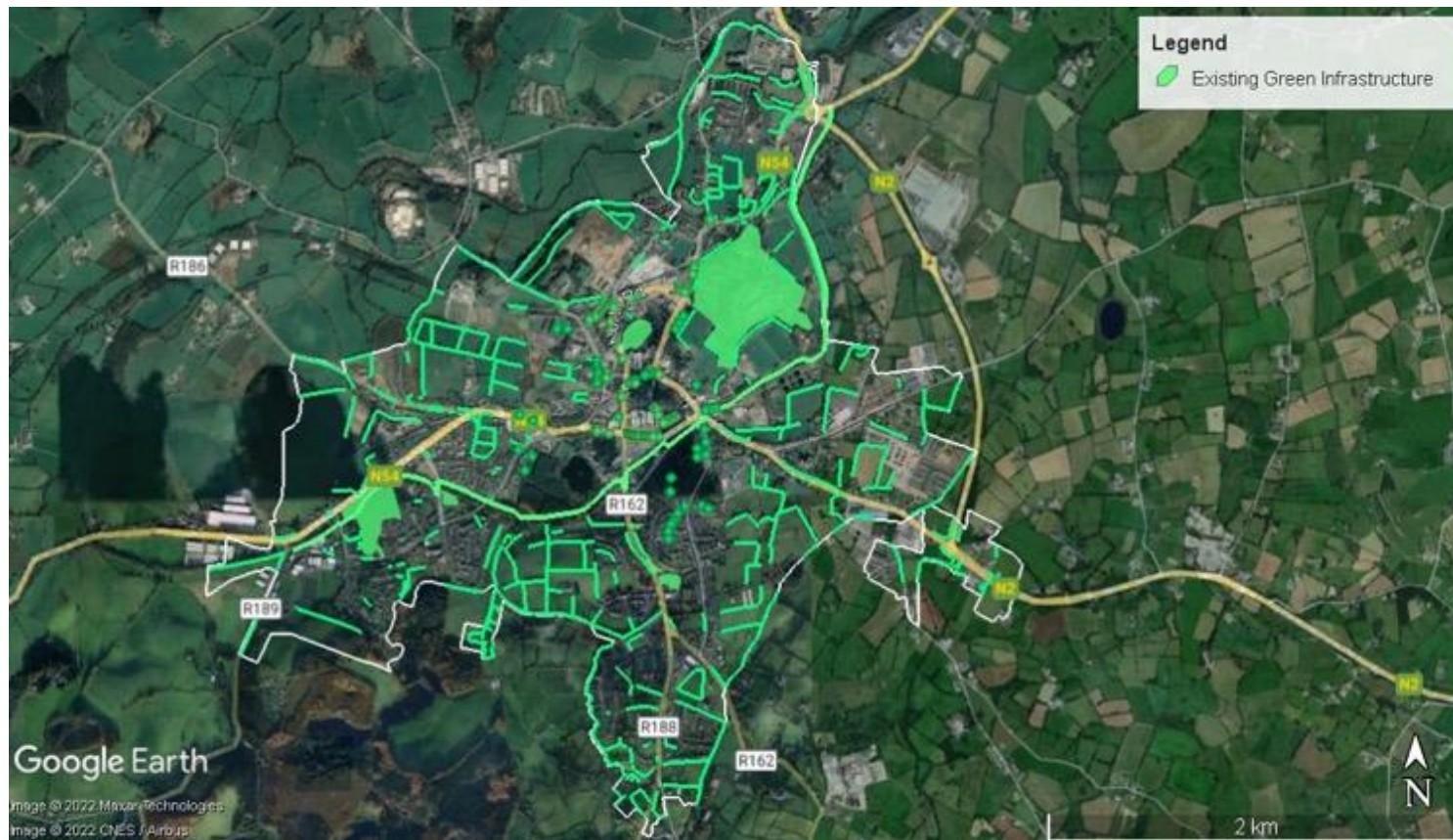


Figure 2. Existing Green Infrastructure Monaghan Town

Community Areas

St. Davnet's Hospital

St. Davnet's Hospital was built in 1869. The hospital focuses on providing care through nature for the community. There are easily accessible pathways around the hospital that can be used for exercise. Benches are also located around the hospital. Information panels displaying tree species are dispersed throughout the area. There are several important habitats at St. Davnet's Hospital which includes a scattered trees and parkland habitat and an amenity grassland habitat.



Figure 3. Habitat map of St. Davnet's Hospital Monaghan town

Scattered trees and parkland

The scattered trees and parkland habitat at St. Davnet's Campus is dominated by sycamore *Acer pseudoplatanus*, Scot's pine *Pinus sylvestris* and beech *Fagus*. Lawson's cypress *Chamaecyparis lawsoniana*, white birch *Betula papyrifera*, horsechestnut *Aesculus hippocastanum*, lime *Tilia platyphyllos* and ash *Fraxinus excelsior* are frequently found in the scattered trees and parkland habitat. Whitebeam *Sorbus hibernica*, wild cherry *Prunus avium*, and common elm *Ulmus* are occasional in the habitat while tree species such as hawthorn *Crataegus monogyna*, monkey puzzler *Araucaria araucana*, alder *Alnus glutinosa*, deodar *Cedrus deodara* and field maple *Acer campestre* are rare.



Figure 4. Scattered Trees and Parkland Habitat at St. Davnet's Hospital

The dominant ground flora species of the scattered trees and parkland habitat consists of grass species. Species such as the common daisy *Bellis perennis*, creeping buttercup *Ranunculus repens*, and white clover *Trifolium repens* are frequent throughout the habitat while nettle species *Urticaceae* are frequent in the more shaded areas of the scattered trees and parkland habitat. Other species that can be found occasionally include chickweed *Stellaria media*, germander speedwell *Veronica chamaedrys*, wintercress *Barbarea*, red clover *Trifolium pratense*, ribwort plantain *Plantago lanceolata*, yarrow *Achillea millefolium*, tufted vetch *Vicia cracca* and willow herb *Epilobium*. Fern species *Tracheophyta*, hogweed *Heracleum sphondylium* and groundsel *Senecio vulgaris* are rare in this habitat.



Figure 5. Bee landing on Hawk's beard *Crepis* at St. Davnet's Hospital



Figure 6. Mix of ground flora present in cut section of St. Davnet's Hospital



Figure 7. European rabbit *Oryctolagus cuniculus* at St. Davnet's Hospital

The trees and scattered parkland also includes an orchard of approximately 50 crab apple trees *Malus sylvestris*.



Figure 8. Crab apple *Malus sylvestris* orchard at St. Davnet's Hospital

Amenity grassland

The amenity grassland habitat at St. Davnet's Campus is a mixture of grasses and wildflowers. The most abundant species are dock species *Rumex*. Sweet vernal grass *Anthoxanthum odoratum*, annual meadow grass *Poa annua*, creeping buttercup *Ranunculus repens* and nettle species *Urticaceae* are frequent throughout the habitat while cleaver *Galium aparine* and chickweed *Stellaria media* are only found occasionally.



Figure 9. Amenity grassland St. Davnet's Hospital

Peter's Lake

Peter's Lake is a lake in the centre of Monaghan town. There are benches at Peter's Lake where people have the opportunity to sit and enjoy their surroundings along with walking paths that can be used for exercise. This area is close to the centre of Monaghan town and is easily accessible. There are lampposts at Peter's Lake so that this amenity can be used at any time during the day. There are various important habitats in this area including a scattered tree and parkland habitat along with flower beds and borders. Various sections of Peter's Lake have been left to grow for pollinators.



Figure 10. Habitat map of Peter's Lake Monaghan town

Flower Beds and Borders

The flower beds and borders habitats are a mixture of creeping buttercup *Ranunculus repens*, dandelion *Taraxacum*, borage *Borago officinalis*, common ragwort *Jacobaea vulgaris*, purple leaved willowherb *Epilobium ciliatum*, oxeye daisy *Leucanthemum vulgare*, cleaver *Galium aparine* and common knapweed *Centaurea nigra*.



Figure 11. Flower Beds and Borders Habitat Peter's Lake

Scattered Trees and Parkland

The most dominant trees in the scattered trees and parkland habitat at Peter's Lake are white birch *Betula papyrifera* while lime *Tilia platyphyllos* and weeping willow *Salix babylonica* are abundant. Alder *Alnus glutinosa*, sycamore *Platanus occidentalis*, Lawson cypress *Chamaecyparis lawsoniana* and field maple *Acer campestre* are frequent and white willow *Salix alba*, ash *Fraxinus excelsior* and pedunculate oak *Quercus robur* are occasional. Species such as elder *Sambucus nigra*, hawthorn *Crataegus monogyna*, white willow *Salix alba* and goat willow *Salix caprea* are rare within the habitat.

The ground layer is covered most dominantly by grass species. Dandelion *Taraxacum*, creeping buttercup *Ranunculus repens*, common horsetail *Equisetum arvense* and white clover *Trifolium repens* are frequent. Nettle species *Urticaceae*, willow herb *Epilobium*, yarrow *Achillea millefolium*, red clover *Trifolium pratense*, Yorkshire fog

Holcus lanatus and chickweed *Stellaria media* are occasional in the scattered trees and parkland habitat. Rarer flora includes the common daisy *Bellis perennis*, common rush *Juncus effusus*, herb robert *Geranium robertianum*, common groundsel *Senecio vulgaris*, kidney vetch *Anthyllis vulneraria* and cuckoo flower *Cardamine pratensis*. This flora is present in the mowed section of the parkland however there is a variation in vegetation along the edge of the lake. The lakeside section is left unmowed and butterbur *Petasites* and common reed *Phragmites australis* are abundant in this section. Yarrow *Achillea millefolium*, yellow flag iris *Iris pseudacorus*, cow's parsley *Anthriscus sylvestris* and creeping bent grass *Agrostis stolonifera* are frequent and dandelion *Taraxacum*, pignut *Conopodium majus* and creeping buttercup *Ranunculus repens* are occasional. Rarer flora in this section of the habitat includes the cuckoo flower *Cardamine pratensis*.



Figure 12. Mallards *Anas platyrhynchos* and coot *Fulica* at Peter's Lake



Figure 13. Peter's Lake Monaghan town

Wildflower Patches

There are various wildflower patches dispersed throughout Monaghan town that aim to provide food for pollinators. A number of pollinators can be seen using the wildflower patches in Figure 16. Not only do these wildflower patches help pollinators but they also add colour and character to Monaghan town. The habitats in these wildflower patches include a flower beds and borders habitat.

Flower Beds and Borders at Shopping Centre

Corn flower *Centaurea cyanus*, red clover *Trifolium pratense*, long smooth headed poppy *Papaver dubium*, white clover *Trifolium repens* are abundant in the wildflower patches adjacent to the shopping centre in Monaghan town. Bishop's flower *Ammi majus*, purple viper's bugloss *Echium plantagineum*, common knapweed *Centaurea nigra*, lily species *Lilium* and creeping buttercup *Ranunculus repens* are abundant in the habitat. The remaining present flowers include a mixture of oxeye daisy *Leucanthemum vulgare*, nodding catchfly *Silene nutans*, kidney vetch *Anthyllis vulneraria*, corn marigold *Glebionis segetum*, Californian poppy *Eschscholzia californica*, rose campion *Silene coronaria*, willow herb *Epilobium*, crimson flax *Linum grandiflorum*, annual meadow grass *Poa annua*, rose silene *Silene coronaria*, garden candytuft *Eriophyllum congdonii*, cow cockle *Vaccaria*, field mustard *Brassica rapa*, groundsel *Senecio vulgaris* and Douglas' meadowfoam *Limnanthes douglasii*.

Flower Beds and Borders at Traffic Lights

The flower beds and borders habitat at the traffic lights includes a mixture of cape rain daisy *Dimorphotheca pluvialis*, docks species *Rumex*, meadow crane's bill *Geranium pratense*, garden lady's mantle *Alchemilla mollis*, yarrow *Achillea millefolium*, purple leaved willow herb *Epilobium ciliatum*, Japanese anemone *Anemone hupehensis*, snap dragon *Antirrhinum*, barren brome *Bromus sterilis*, dandelion *Taraxacum*, common bistort *Bistorta*, cushion spurge *Euphorbia epithymoides* and blue cupidone *Catananche caerulea*.



Figure 14. Wildflowers at Monaghan shopping centre



Figure 15. Wildflowers Monaghan town



Figure 16. Variety of bees on wildflowers in Monaghan town



Figure 17. Two spot ladybird *Adalia bipunctata*



Figure 18. Wildflowers in Monaghan town

SAGE Garden

The Sensory Awareness Garden for Everyone (SAGE) is a community garden that is located close to the Crocus Cancer Support Centre. An information panel is visible on entry, displaying when the garden was opened and its aim for the community. The garden itself is part of a biodiversity garden trail in county Monaghan, along with gardens in Doohamlet and Donaghmoyme. There are a variety of pollinator friendly species within the garden. It is open to be enjoyed by everyone in the community. There are small pathways around the main garden and a small garden to the side where flowers, fruit and vegetables are grown.



Flower Beds and Borders

These include Persian catmint *Nepeta racemosa*, coral bells *Heuchera*, rugosa rose *Rosa rugosa*. Common tansy *Tanacetum vulgare*, St. john's wort *Hypericum perforatum*, topped lavender *Lavandula stoechas*, cornflower *Centaurea cyanus*, Mediterranean marigold *Coleostephus myconis*, dandelion *Taraxacum*, creeping buttercup *Ranunculus repens*, butterfly bush *Buddleja*, London pride *Saxifraga urbium*, ivy colchis *Hedera colchica*, meadow flower *Filipendula ulmaria*, French crane's bill *Geranium endressii*, laurel *Laurus nobilis*, woodland sage *Salvia nemorosa*, foxglove *Digitalis purpurea*, Mexican orange blossom *Choisya ternata*, hydrangea, balsam *Impatiens*, blue angel hosta *Hosta sieboldiana*, large yellow loosestrife *Lysimachia punctata*, Japanese barberry *Berberis thunbergii*, meadow crane's bill *Geranium pratense*, nettle species *Urticaceae*, Siberian dogwood *Cornus alba*, red clover *Trifolium pratense*, blue grass *Poa pratensis*, oxeye daisy *Leucanthemum vulgare*, bindweed *Convolvulus*, spear thistle *Cirsium vulgare*, blue daisy *Felicia amelloides*, blood lily *Haemanthus* and purple rain *Salvia verticillata*.



Figure 19. Flower Beds and Borders Habitat SAGE Garden

Scattered Trees and Parkland

There are also various tree species in the garden which support blackbirds, starlings and thrushes among other birds. Tree species include white cedar *Thuja occidentalis*,

common birch *Betula*, hawthorn *Crataegus monogyna*, European hornbeam *Carpinus betulus*, elm *Ulmus*, red cedar *Thuja plicata*, japanese maple *Acer palmatum*, smoketree *Cotinus*, ash *Fraxinus excelsior*, willow *Salix*, juneberry *Amelanchier*, rowan *Sorbus subg. Sorbus* and azarole *Crataegus azarolus*. White cedar *Thuja occidentalis*, birch *Betula* and hawthorn *Crataegus monogena* the most common species in the garden. There are also three crab apple trees *Malus sylvestris* in the garden.



Figure 20. SAGE Garden

Horticultural Land

A small garden patch consists of potatoes, brussel sprouts, peas, cabbage, lettuce, onion, chives, beans, cress, mullein, strawberries, raspberries and seven more crab apple trees *Malus sylvestris*.

Tom Young's Wood

Tom Young's Wood, a mixed broadleaved woodland is located along the Monaghan Town Greenway. There are various pathways around the wood that can be used for exercise. The wood is very clearly sign posted and there are various information panels explaining the various species that inhabit the woodland.



Figure 21. Tom Young's Wood

Frequently found tree species include wych elm *Ulmus glabra*, field maple *Acer campestre*, sycamore *Acer pseudoplatanus*, white ash *Fraxinus americana* and alder *Alnus glutinosa*. Hawthorn *Crataegus monogyna*, bird cherry *Prunus padus*, horsechestnut *Aesculus hippocastanum* are occasional while fir *Abies* is rare. Frequently found ground flora species include herb robert *Geranium robertianum*, broadleaf nightshade *Circaea lutetiana*, ivy *Hedera*, round leaved saxifrage *Salvia leucophylla*, Germander speedwell *Veronica chamaedrys*. Occasionally found are dandelion *Taraxacum*, male fern *Dryopteris filix-mas*, wood sedge *Carex depauperata*, meadow buttercup *Ranunculus acris*, moss species *Bryophyta* and grass species *Poaceae*. Hart's tongue fern *Asplenium scolopendrium* is rare.



Figure 22. Flora in Tom Young's Wood

Rotary Club Garden

The Rotary Club Garden is located next to Coolshannagh roundabout. There are pathways around the garden with benches along the way. The garden consists of three habitats including amenity grassland, flower beds and borders and scattered trees and parkland. Although the garden is not located close to the centre of the town, it is located close to the beginning of the Monaghan Town Greenway and can be used as part of a walking route by the surrounding community.



Figure 23. Rotary Club Garden habitat map

Amenity Grassland

The amenity grassland habitat consists mainly of grass species such as Yorkshire fog *Holcus lanatus* and annual meadow grass *Poa annua*, red clover *Trifolium pratense*, white clover *Trifolium repens*, Germander speedwell *Veronica chamaedrys* occasionally along with dandelions *Taraxacum*, hawksbeard *Crepis* and creeping buttercups *Ranunculus repens*.



Scattered Trees and Parkland

The scattered trees and parkland habitat consists of various grassland species along with a variety of tree species. Ground flora in this habitat is comprised of a mixture of grasses including sweet vernal grass *Anthoxanthum odoratum*, annual meadow grass *Poa annua* and perennial rye grass *Lolium perenne*. White clover *Trifolium repens* and meadow buttercup *Ranunculus acris* are abundant. Nettle *Urticaceae* and thistle *Cirsium* species, herb robert *Geranium robertianum*, tufted vetch *Vicia cracca*, bush vetch *Vicia sepium*, bramble *Rubus* species, dock *Rumex* species are all found frequently throughout the habitat. Species such as dandelion *Taraxacum* and common comfrey *Symphytum officinale* are less commonly found here.

Ash *Fraxinus excelsior* is the most commonly found tree species in the habitat, followed by field maple *Acer campestre*. Wild cherry *Prunus avium*, Italian alder *Alnus cordata*, hawthorn *Crataegus monogyna*, and common birch *Betula pendula* are also frequent. Rowan *Sorbus aucuparia*, white beam *Sorbus subg. Aria / Sorbus hibernica*,

hornbeam *Carpinus betulus*, goat willow *Salix caprea*, pedunculate oak *Quercus robur*, beech *Fagus* and katsura *Cercidiphyllum* are less common.



Figure 24. Trees at Rotary Club Garden

Flower Beds and Borders

The flower beds and borders habitat type consists of Garden Lady's mantle *Alchemilla mollis*, Meadow Crane's Bill *Geranium pratense*, Sweet William *Dianthus barbatus* and cornflower *Centaurea cyanus*. There is also another flowerbed consisting completely of sunflowers *Helianthus*. The flower beds and borders habitat had species such as dandelions *Taraxacum*, herb robert *Geranium robertianum*, white clover *Trifolium repens* and creeping buttercup *Ranunculus repens* along with some grass species distributed less frequently throughout.



Figure 25. Sweet William *Dianthus barbatus*

Play Park

Play Park One is located along R162 and Glenview Dr. The amenities that this location provides are a play park that can be enjoyed by children along with a green space that can be used for sports activities. The area includes a scattered trees and parkland habitat along with an amenity grassland habitat. Much of the border of this area has been left uncut to provide food for pollinators and to improve biodiversity.



Figure 26. Play Park One habitat map

Amenity Grassland

The mowed portion of the amenity grassland habitat consists mostly of grass species and clover *Trifolium* along with speedwell *Veronica* species occasionally. Although grass species are also abundant in the un-mowed portion of the amenity grassland, the un-mowed section consists of a larger diversity of ground flora. Most frequent includes annual meadow grass *Poa annua*, creeping buttercup *Ranunculus repens*, sweet vernal grass *Anthoxanthum odoratum*, perennial rye grass *Lolium perenne*, white clover *Trifolium repens*, red clover *Trifolium pratense*, dandelion *Taraxacum* and willow herb *Epilobium*. Common sorrel *Rumex acetosa*, silverweed *Potentilla anserina*, common comfrey *Symphytum officinale* and greater bird's foot trefoil *Lotus pedunculatus*. Common spotted orchid *Dactylorhiza fuchsii* is rare in this habitat.



Figure 27. Species from Amenity Grassland habitat

Play Park Two

Play park two is located adjacent to the Ulster Canal Greenway on the Oriel Way. The park provides a recreational amenity with swings, slides, a basketball court and a skatepark.



Figure 28. Play Park Two habitat map

Flower Beds and Borders

The flower beds and borders habitat in play park two consists of a mixture of large flowered tickseed *Coreopsis grandiflora*, blue fescue *Festuca glauca*, purple coneflower *Echinacea purpurea*, yarrow *Achillea millefolium*, hart's tongue fern *Asplenium scolopendrium*, yellow day lily *Hemerocallis lilioasphodelus*, meadow cranes bill *Geranium pratense* and purple catmint *Nepeta cataria*.



Figure 29. Flower Beds and Borders habitat

Scattered Trees and Parkland

Play Park Two also has a scattered trees and parkland habitat. The most frequent trees found in this scattered trees and parkland habitat include pedunculate oak *Quercus robur*, goat willow *Salix caprea*, crab apple *Malus sylvestris*, and birchbark cherry *Prunus serrula*. Copper beech *Fagus sylvatica f. purpurea* and white willow *Salix alba* are occasional. Creeping buttercup *Ranunculus repens*, perennial rye grass *Lolium perenne*, Yorkshire fog *Holcus lanatus* and white clover *Trifolium repens* are the most frequent ground flora in this habitat type. Dock *Rumex* species, hawk's beard *Crepis*, chickweed *Stellaria media*, wintercress *Barbarea vulgaris*, red clover *Trifolium pratense* and field speedwell *Veronica persica* are occasional.

Monaghan Town Greenway

Monaghan Town Greenway was opened in 2013 and provides a walking and cycle path that stretches from Coolshannagh roundabout to R189/N54 junction. The greenway is approximately 4.2km and runs along the Ulster Canal. The Monaghan Town Greenway acts as a wildlife corridor that is expected to one day link Lough Neagh to the Shannon (MTT, 2020). The Greenway includes an outdoor classroom along with QR codes that are distributed along the trail. A variety of wetland, woodland and hedgerow habitats can be found along the track.

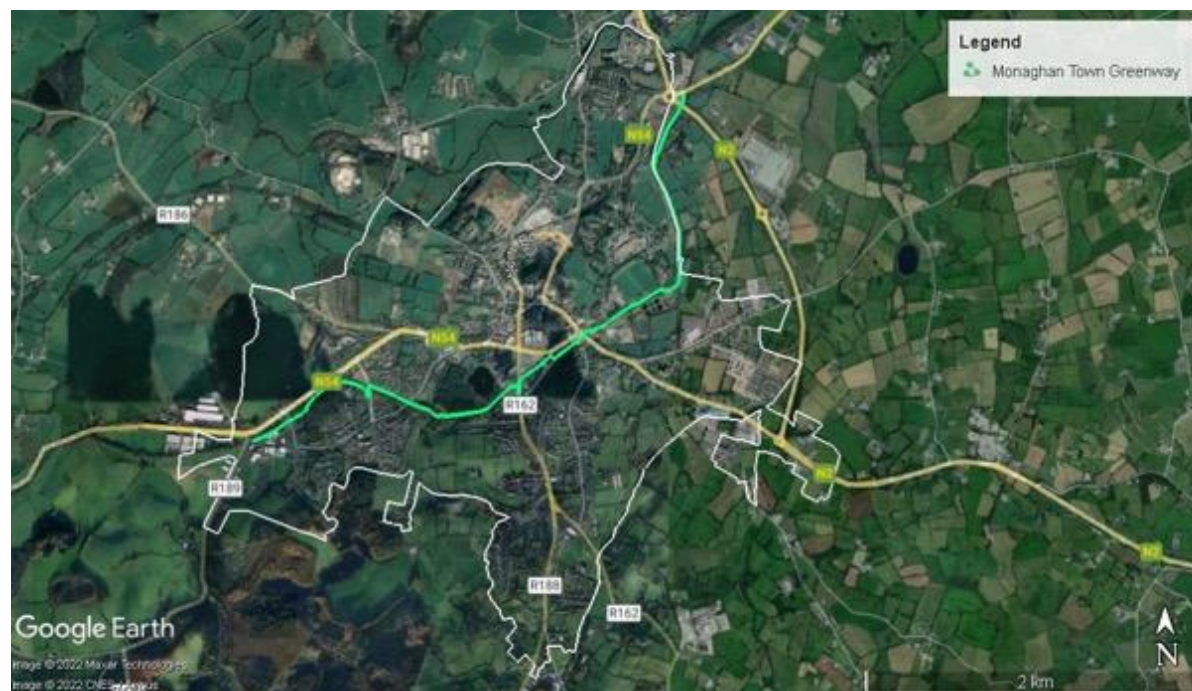


Figure 30. Monaghan Town Greenway

Frequently found trees along the Monaghan Town Greenway include sycamore *Acer pseudoplatanus*, alder *Alder glutinosa*, ash *Fraxinus excelsior*, hawthorn *Crataegus monogyna*, beech *Fagus sylvatica* L. and white willow *Salix alba*. Occasional trees are bird cherry *Prunus padus*, wild cherry *Prunus avium*, goat willow *Salix Caprea*, rowan *Sorbus aucuparia*, field maple *Acer campestre*, horsechestnut *Aesculus hippocastanum* and lime *Tilia platyphyllos* while rarer trees include elder *Sambucus nigra*, whitebeam *Sorbus hibernica*, blackthorn *Prunus spinosa*, spindle *Euonymus europaeus* and June berry *Amelanchier glenform*.



Figure 31. Trees on Monaghan Town Greenway

Creeping buttercup *Ranunculus repens*, dandelion *Taraxacum*, Yorkshire fog *Holcus lanatus*, nettle species *Urticaceae*, thistle species *Cirsium*, red clover *Trifolium pratense* and white clover *Trifolium repens* are abundant along the greenway. Frequently found ground flora in the Monaghan Town Greenway includes bindweed *Convolvulus*, dock species *Rumex*, herb robert *Geranium robertianum*, common knapweed *Centaurea nigra*, cow's parsley *Anthriscus sylvestris*, cleaver *Galium aparine*, horsetail *Equisetum arvense*, silver weed *Potentilla anserina*, tufted vetch *Vicia cracca*, bush vetch *Vicia sepium* and hogweed *Heracleum sphondylium*. Occasionally found species includes bramble *Rubus*, holly *Ilex aquifolium*, butterfly bush *Buddleja*, hedge woundwort *Stachys sylvatica*, cock's foot *Dactylis glomerata*, thale cress *Arabidopsis thaliana*, snowberry *Symphoricarpos*, common reed

Phragmites australis, hawk's beard *Crepis*, lords and ladies *Arum alpinum*, broadleaf enchanters nightshade *Circaea lutetiana*, ribwort plantain *Plantago lanceolata*, meadow vetchling *Lathyrus pratensis*, field mustard *Brassica rapa*, meadowsweet *Filipendula ulmaria*, butterbur *Petasites*, groundsel species *Senecio vulgaris*, yellow flag iris *Iris pseudacorus*, meadow foxtail *Alopecurus pratensis*.



Figure 32. Ground flora on Monaghan Town Greenway

Killygoan

An area at Killygoan is being managed for biodiversity. There are clearly visible signs that state this which makes it easy for a passer-by to understand the intention behind this area. This area in Killygoan includes a scattered trees and parkland habitat.



Figure 33. Killygoan habitat map

Scattered Trees and Parkland

This habitat is comprised of a grassland that is left to grow along with scattered trees including wild cherry *Prunus avium*, crab apple *Malus sylvestris* and other shrubs. Ground flora that are frequent in this habitat include annual meadow grass *Poa annua*, perennial rye grass *Lolium perenne*, red clover *Trifolium pratense*, meadow buttercup *Ranunculus acris*, creeping buttercup *Ranunculus repens* and common comfrey *Symphytum officinale*. Less frequent species include ribwort plantain *Plantago lanceolata*, common rush *Juncus effusus*, silverweed *Potentilla anserina*, lesser stitchwort *Stellaria graminea*, horsetail *Equisetum*, bird's foot trefoil *Lotus corniculatus* and dandelion *Taraxacum*.



Figure 34. Scattered Trees and Parkland habitat

Green Infrastructure Linkages

Hedgerows

Not only do hedgerows provide an important habitat but they also acts as biodiversity corridors. The hedgerows in Monaghan town which can be seen below in Figure 35, create GI linkages by closing gaps between the larger areas of GI. The hedgerows in Monaghan town have been categorised into four categories. This includes mostly native (where approximately 75% of hedgerow is native species), mixed (where there is 50% native and 50% non-native species), mostly non-native (where there is 75% non-native species) and entirely non-native (where 100% of the hedgerow is non-native).

Of all hedgerows surveyed 58% are mostly native hedgerow, 21.2% are mixed, 12%are entirely non-native and 8.8% are mostly non-native. The majority of the mostly native hedgerows are located in parts of Monaghan town that are used for agriculture. These hedgerows often have higher biodiversity value due to being a greater height than hedgerows found in residential or commercial areas. The percentage of mostly native hedgerows could be increased by planting native species in any new developments, where possible.

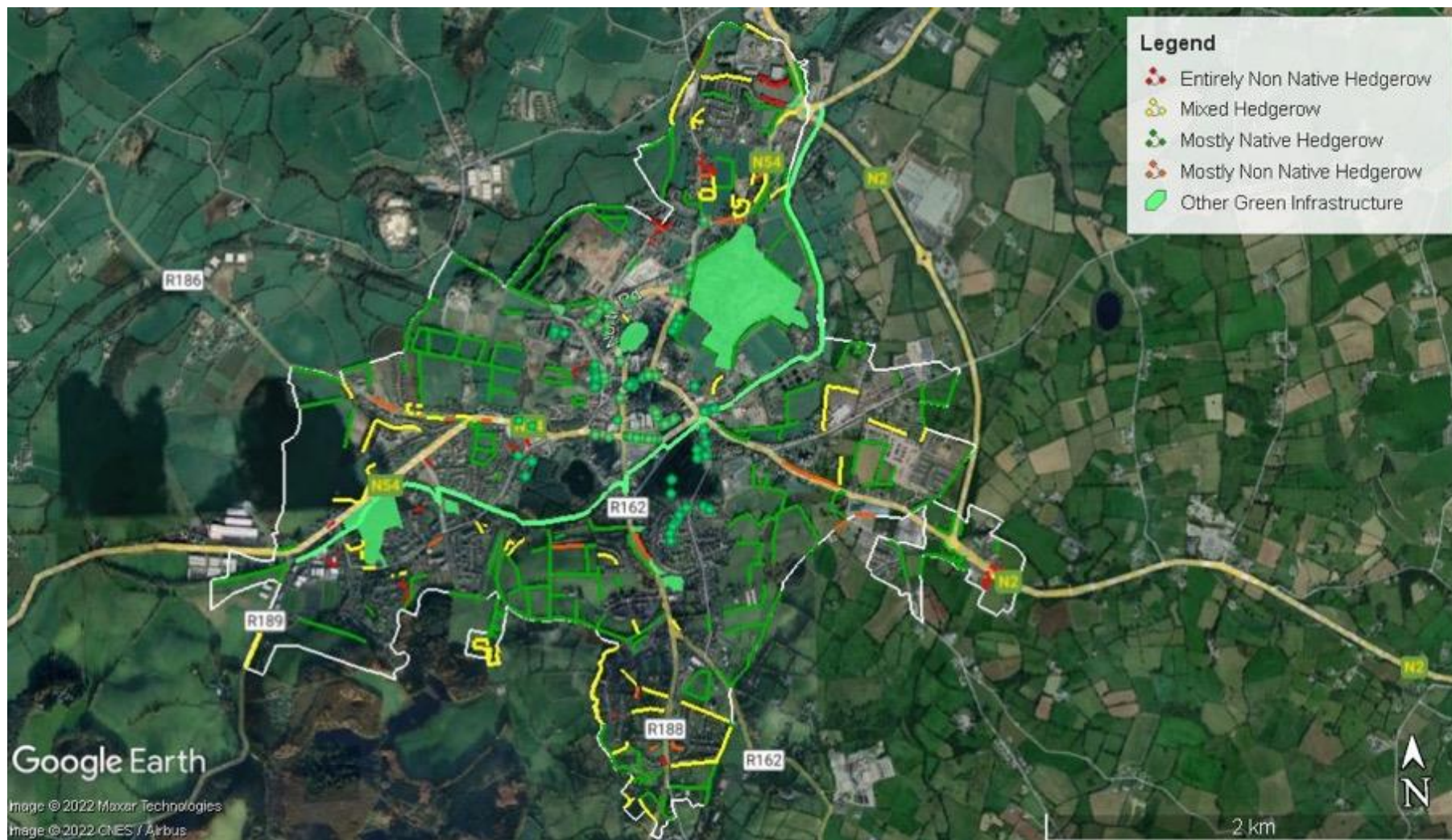


Figure 35. Hedgerows in Monaghan town

Roundabouts

Roundabouts are also fantastic GI linkages. Although they usually only cover a small area, they can be managed with biodiversity in mind and can be an important part of ecological corridors.

Margaret's Skinnider's Roundabout



Figure 36. Margaret Skinnider's Roundabout habitat map

Flower Beds and Borders

Margaret Skinnider's Roundabout consists of one June berry tree, along with a mixture of woodland sage *Salvia nemorosa*, butterfly stonecrop *Hylotelephium spectabil*, wood spurge *Euphorbia amygdaloides*, purple vervain *Verbena bonariensis*, willowherb *Epilobium* and blackcurrant *Ribes nigrum*.



Figure 37. Flower Beds and Borders Habitat

Coolshannagh Roundabout



Figure 38. Coolshannagh Roundabout habitat map

Flower Beds and Borders

The flower beds and borders habitat at Coolshannagh roundabout consists of a mixture of yellow day lily *Hemerocallis lilioasphodelus*, bloody crane's bill *Geranium sanguineum*, green stem forsythia *Forsythia viridissima*, snow heath *Erica carnea* and dog rose *Rosa canina* with willow herb *Epilobium*, dandelion *Taraxacum* and horsetail *Equisetum* less frequently.



Figure 39. Flower Beds and Borders habitat

Corlat Roundabout

Corlat roundabout includes an amenity grassland habitat and a scattered trees and parkland habitats.

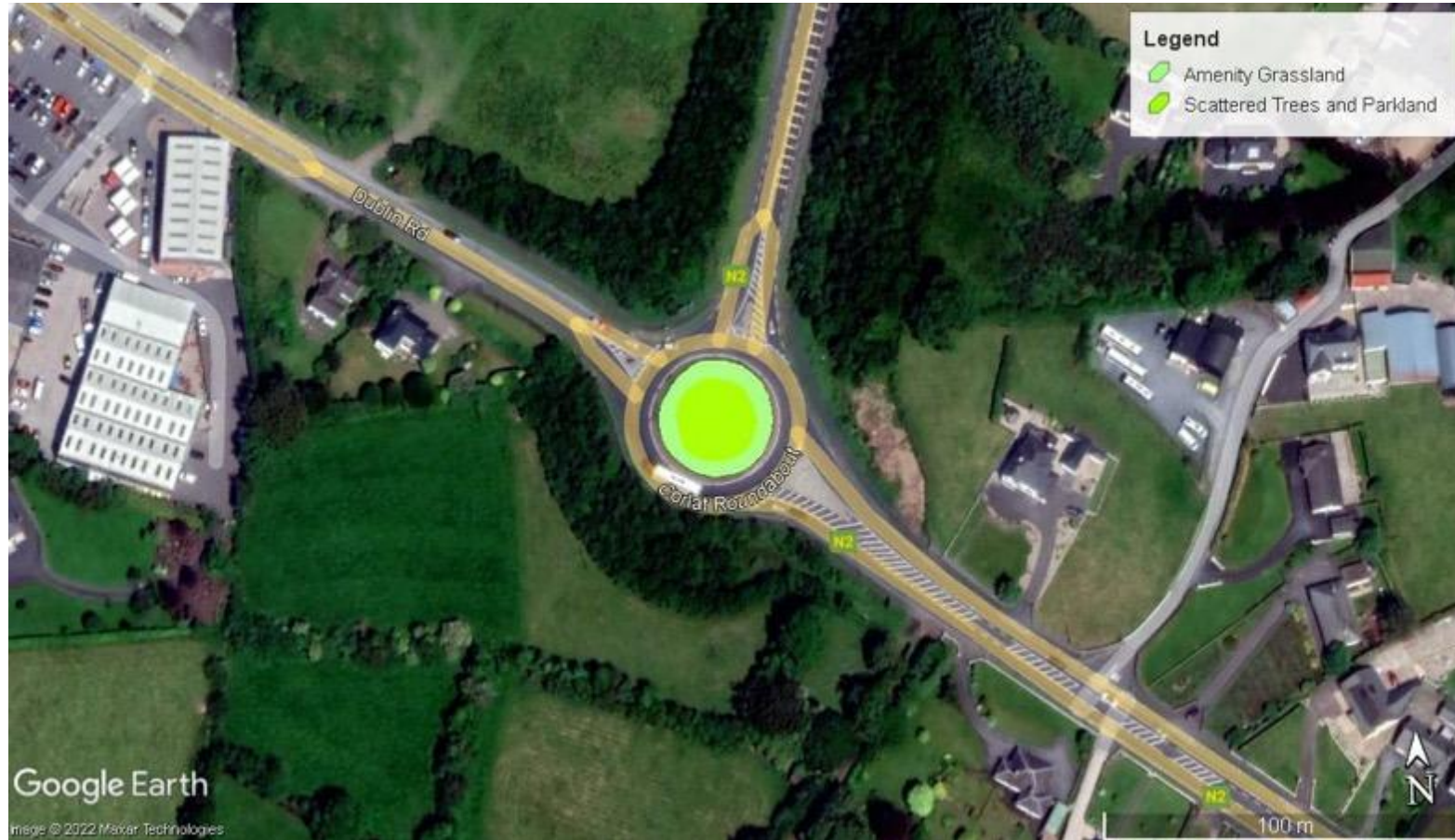


Figure 40. Corlat Roundabout habitat map

Amenity grassland

Grass species are most abundant in the amenity grassland habitat on the Corlat roundabout. Other species present include sticky chickweed *Cerastium glomeratum*, red clover *Trifolium pratense*, meadow buttercup *Ranunculus acris*, tufted vetch *Vicia cracca*, horsetail *Equisetum* and dandelion *Taraxacum*.

Scattered Trees and Parkland

The trees in the centre of the roundabout include Wilson's honeysuckle *Lonicera nitida*, field maple *Acer campestre* and black poplar *Populus nigra*.



Figure 41. Corlat Roundabout

DUO

The Dispersed Urban Orchard (DUO) was created in 2016 after a habitats survey was completed that identified the top ten important habitats in Monaghan Town. The aim of the DUO was to create a link between important habitats in the town. The main type of infrastructure located between important habitats is residential therefore fruit trees were planted in gardens to create ecological corridors. The locations of the fruit trees can be seen in the image below.

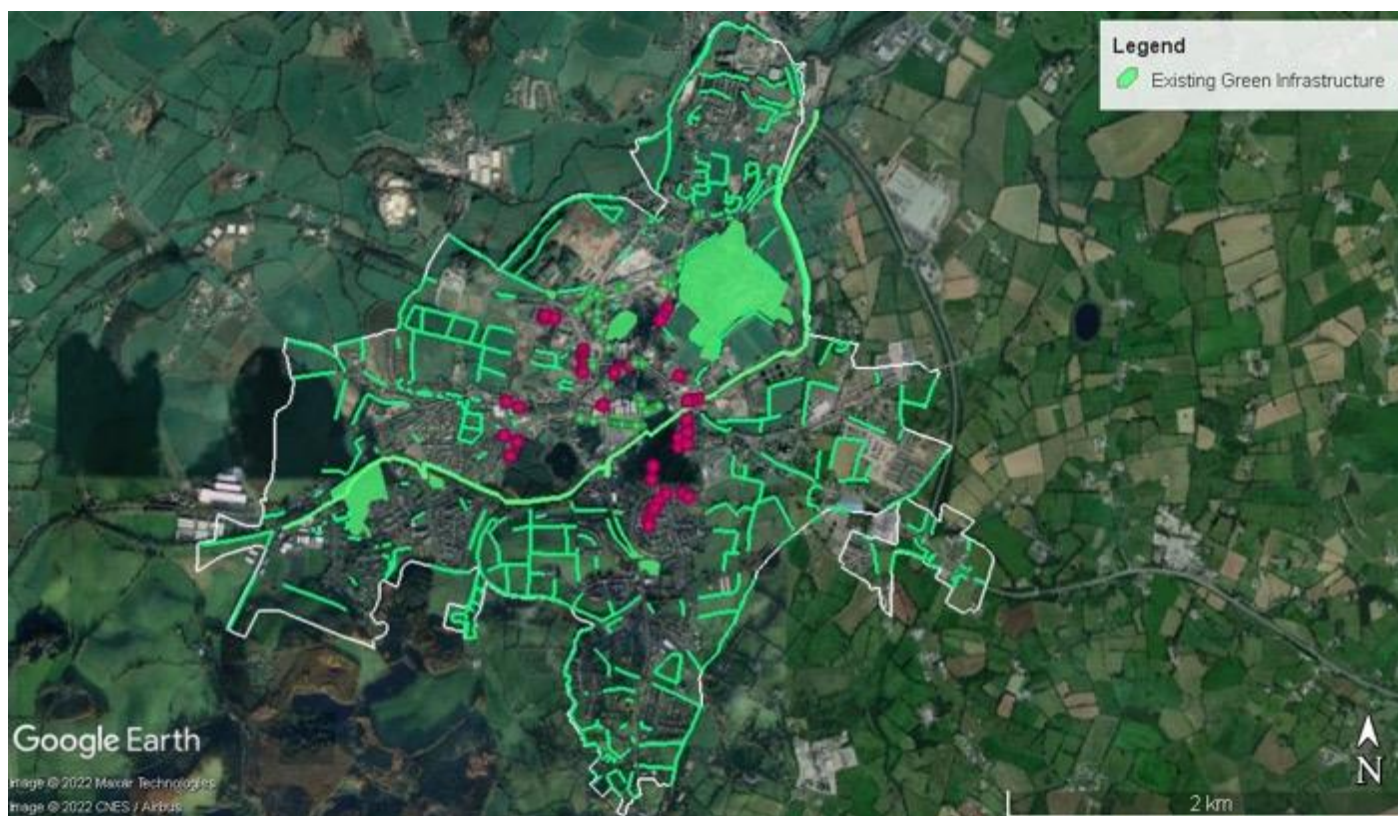


Figure 42. Fruit trees planted as part of DUO (pink)

Street Trees

Street trees are another important GI linkage. Similarly to hedgerows and the DUO, street trees provide a corridor between other GI in the urban centre of Monaghan town. The street trees in Monaghan town are highlighted in pink in the image below and create a link between GI in the more built up areas of Monaghan town.

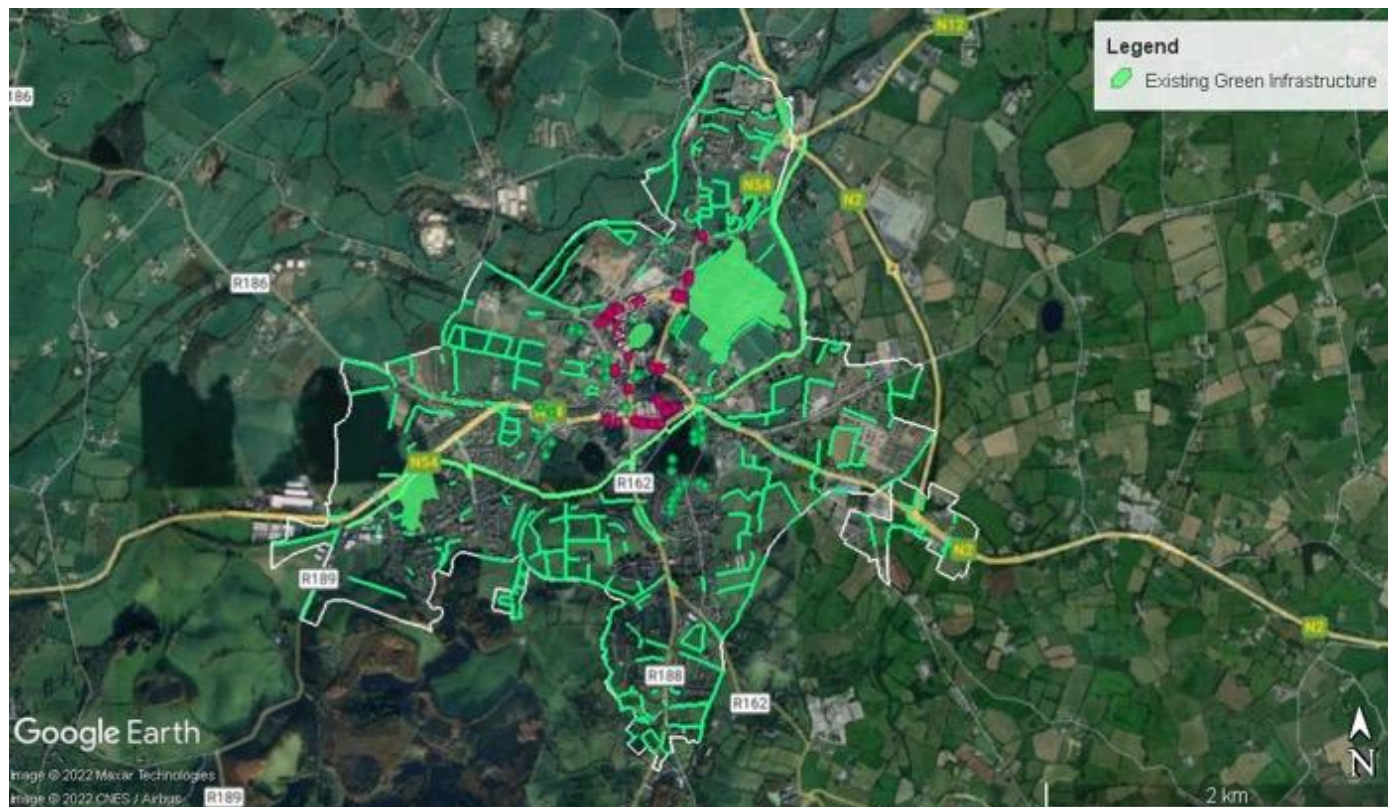


Figure 43. Street trees in Monaghan town (pink)

Although there are various street trees dispersed through Monaghan town centre, there is street tree potential on High street, Glaslough street, Dublin street and Park street which could create further links between existing GI. Medium size trees would be most suitable for these areas.



Figure 44. Street tree potential (purple)

Guidelines for Planting Street Trees

There are various tree planting guidelines outlined in the South Dublin Co Co Tree Management Policy 2021 – 2026 in relation to the planting of street trees.

The guidelines include:

- Ensuring that tree growth does not obstruct public lighting columns by planting at least 3m but most preferably 5m away from lighting columns
- Ensuring that the planting of new trees does not compromise a minimum pavement width of 1.2m
- Ensuring that there is adequate soil volume to sustain the health of new trees

The South Dublin Co Co Tree Management Policy 2021 – 2026 also highlights that new trees should be at least 12-16cm in diameter and a height of between 3 and 5 meters. A post planting maintenance programme should also be adapted so that the health of the trees is maintained. The post planting maintenance programme should include details on watering, pruning and other general maintenance. South Dublin CoCo also advises that the new trees should be watered during dry and windy periods in the first year of being planted.

Other Green Infrastructure

There is plenty of other GI in Monaghan town. Some others include waste bring centres and murals.



Figure 45. Waste drop off point



Figure 46. Mural about respecting the dandelion



Figure 47. Variety of wildlife paintings and murals in Monaghan Town



Figure 48. Wildflower mural

Ecosystem Services

According to the Millennium Ecosystem Assessment, there are four main categories of ecosystem services.

Provisional Services

Provisional ecosystem services include:

- Provision of food
- Provision of water
- Provision of timber and wood fuel

Regulating Services

Examples of regulating ecosystem services include:

- Cleaning of air and filtering of water by plants
- Decomposition of waste by bacteria
- Pollination of flowers by bees
- Carbon sequestration by trees
- Carbon storage and flood mitigation by peatlands

Cultural Services

Cultural ecosystem services include:

- Positive mental health and physical health benefits
- Social development
- Social cohesion and sense of community
- Recreational opportunities

Supporting Services

Supporting ecosystem services include:

- Photosynthesis
- Water cycle
- Nutrient cycling
- Soil creation

Ecosystem Services in Monaghan Town

Provisional Services

There are various provisional ecosystem services in Monaghan town. Examples of provisional services in Monaghan town can be found in the orchard at St. Davnet's, the garden at Crocus Cancer Care Garden, at Killygoan and also through the Dispersed Urban Orchard (DOP). All of these areas provide a food source for people and also for animals. There are also wild cherry trees dispersed throughout Monaghan town that can also be eaten.



Regulating Services

There are various regulating ecosystem services in Monaghan town. Examples of regulating services in Monaghan town can be found with street trees, wooded areas and hedgerows where the air is filtered by the trees.



Cultural Services

Green Infrastructure in Monaghan town offers various cultural ecosystem services. GI in Monaghan town provides physical health benefits through walking paths in Peter's Lake, St. Davnet's Hospital, Rotary Club Garden and Monaghan Town Greenway. It

also provides mental health benefits by providing people who live in an urban area or are visiting the area a chance to experience nature. The Crocus Garden also provides an opportunity for cancer patients to spend time in nature during their treatment. All of these areas also provide an opportunity for the community to work together and achieve a sense of community and belonging.



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