The Leven
Growing with the Flow

RIVER LEVEN PARK / CONNECTIVITY PROJECT
CONCEPT DESIGN MASTERPLAN REPORT

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Structure of the report

This report has distilled the process of developing the Stage 2 - Concept Design Masterplan into four distinct sections. Each section includes chapters which reveal the key issues and complexities that underpin the masterplan proposals.

[1. Setting the Scene] - p5
provides a broad background and overview of existing relevant information to the project

[2. Telling the Story] - p23
describes the narrative process of shaping the proposals including historical analysis and community engagement

[3. Illustrating the Proposals] - p33
reveals the concept design masterplan for the River Leven Park and more detailed site studies at the garden scale

[4. Looking Forward]
outlines additional threads to be considered and further developed during Stage 3 - Detailed Design

Structure of the report

The Concept Design Masterplan is divided into four distinct sections.

- **Setting the Scene**, provides a broad background and overview of existing relevant information to the project *(chapters 1-5)*.
- **Telling the Story**, describes the narrative process of shaping the proposals including historical analysis and community engagement *(chapters 6-7)*.
- **Illustrating the Proposals**, reveals the concept design masterplan for the River Leven Park and more detailed site studies at the garden scale *(chapters 8-10)*.
- **Looking Forward**, outlines additional threads to be considered and further developed during Stage 3 - Detailed Design *(chapters 11-14)*.

Setting the scene

This section begins with a broad introduction to the context, aims and principles of the Connectivity Project which were foregrounded through the masterplanning process. It continues with an outline of the project brief which Iglu Studio have worked towards as set by GAT. A brief overview of the Stage 1 - Visioning and Integrated Masterplan Report provides a background to the wider catchment context. The chapter concludes with a series of surveys which have informed the masterplan design development.

Telling the story

This section starts with a detailed analysis of the historic context of the surrounding area, outlining how the landscape and urban environment developed and grew over the centuries. A series of historic maps and photos portray the changes as the area evolved from a sparsely inhabited rural landscape to a heavily industrialised group of settlements. The section closes with an executive summary of the engagement process which informed the design development of the masterplan. The separate Engagement Report provides a more detailed overview.

Illustrating the proposals

This section lays out the design narrative of the concept design proposals at all three scales. At the **Levenmouth scale**, suggested wider ecological connections create a consistent and effective green infrastructure throughout the surrounding area while an improved path and cycle network will link up with existing routes and create greater opportunities for active travel.

The **River Leven Park scale** provides an overview of the primary and secondary layers which define the framework of the masterplan, including;

- how river restoration works will improve the ecological condition of the river,
- how the proposed path network will connect communities along and across the river and rail-line and provide access for all,
- how protecting and responsibly managing the green network will improve biodiversity and existing habitats,
- how the re-opened rail-line will integrate into the landscape and
- how references to heritage and new opportunities for play will be implemented within the river park.

The section concludes with more detailed design proposals for four key areas of focus at the **Garden scale** within the river park (potentially extending to six gardens, dependent on the train station locations). In addition to landscape drawings of existing and proposed, each garden also contains a synopsis of existing conditions, photos of the area and relevant case studies which provide design inspiration. The Burn Mill Garden also contains a more developed suite of drawings including a rendered plan, sections and perspectives.

Looking forward

The final section of the report outlines additional threads which should be further developed during Stage 3 - Detailed Design.

It continues with a chapter on the importance of detail and how it can contribute to creating a sense of place.

The section concludes with a series of phasing diagrams which illustrate the evolution of the river park over a 15 year period and broad associated costs for the Concept Design Masterplan proposals.

Finally, a summary outlining how the proposals have addressed the six masterplan principles bookends the report on page 118.

"In early 2018, the Leven Project Board was formed to explore opportunities to work together to deliver a range of agency and organisation aims and deliver real change to the communities along the River Leven in Fife. The project was instigated by SEPA, and a desire to undertake river restoration works in the area, but quickly grew to include social and economic objectives as well as environmental ones, and the Leven Catchment Programme is the result."

Green Action Trust (GAT) - River Leven Connectivity Project | Landscape Design Brief 2019

Continuing the journey

The aim of the Leven Catchment Programme is to help the area of mid-Fife prosper environmentally and economically, and to become a leading example of regeneration in Scotland and beyond, demonstrating how connecting people and place can drive inclusive growth for all. The Programme vision is that by 2030 the Leven catchment will be a living, breathing example of inclusive growth, achieving sustainability and environmental excellence whilst maximising social and economic opportunities.

The Connectivity Project is to be the first built project of the Programme, encompassing the installation of a new active travel network in the Levenmouth area and the creation a new public park within the river valley, the River Leven Park. This Stage 2 report sets out the Concept Design Masterplan principles for the River Leven Park, how the proposals fit into the wider Levenmouth context and the next steps that will underpin a rediscovery and new appreciation of the river valley.

The River Leven Park will be an accessible, attractive and ecologically thriving, biodiverse public park for local communities and visitors alike to enjoy. Strategic interventions situated around key crossing points will provide meaningful social spaces with new facilities and references to the unique industrial and natural heritage of the surrounding area.

On 8 August 2019 the Scottish Government approved the Levenmouth rail link, reintroducing a rail service between Thornton junction and Leven along the disused former Methil Branch line. The development includes the introduction of a dual rail corridor and two new stations (located at the western and eastern ends of the river park area). Whilst the Levenmouth rail link is a separate project being delivered by Transport Scotland, it is a fundamental element to consider during the design development of the Connectivity Project.

The project area for the river park is comprised of a 5km valley stretch of the River Leven from Windygates to its confluence with the Firth of Forth at Leven (see map on page 7). It is situated at the centre of Levenmouth, a group of settlements and villages located near Fife's coastline, including Buckhaven, Methil and Methilhill, the total population of which sits around 37,288 (2019). The River Leven runs centrally through the site and is flanked by arable land, woodland, grasslands and wetlands rich in ecology, habitats and history. It is this section of the river valley that the Concept Design Masterplan focuses on.

A changed world

At the time of the commissioning of the Connectivity Project in December 2019 the premise was to build on the work carried out in Stage 1 and 'produce a masterplan to develop designs and spatially illustrate the vision of the Connectivity Project'. The vision to reconnect people with the river, to recollect histories and stories and to create a positive future for the next generation.

This intention still remains at the heart of the project, but since the global pandemic of Covid-19 the world has fundamentally changed, with recurring references to the need for humans to adapt to the 'new normal.'

The impact of Covid-19 has identified many gaps and failings of the environmental and social structures that guide and shape our society and the places we live in. To this end the Concept Design Masterplan has drawn upon these issues to ensure that the Connectivity Project is a more mindful proposal through the establishment of a set of project principles (see right) to guide the process from vision to delivery. Though these principles were certainly applicable to the pre-Covid-19 context they are now arguably more pertinent than ever.

SIX MASTERPLAN PRINCIPLES

A **connected** project – embracing walking, cycling, and wheeling

A **spatial** project – providing a new network of public green spaces

A **green energy** project – integrating public transport, renewable energies and energy production

A **climate aware** project – working towards zero waste goals with the introduction of climate adaptation and mitigation measures

A **social justice** project – endeavouring to tackle broader social themes of inequality, particularly for those less heard and most at risk

A **community focused** project – helping to create a sense of ownership and a resilient economy through locally-produced food and community self-sufficiency

^
Mountfleurie housing development above northern slopes as viewed from the riverbank

"The River Leven Connectivity Project is the first stage of the wider Leven Catchment Programme. It aims to combine river restoration and habitat enhancement works with access and active travel improvements, community engagement, recreation opportunities and both social and economic regeneration."

Green Action Trust (GAT) - River Leven Connectivity Project | Landscape Design Brief 2019

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Indicative project area

The project brief that Iglu Studio Ltd were set for the Connectivity Project required the production of a Concept Design Masterplan, in accordance with Sustrans requirements, Project Pack v1.0, Category 4, Task 1 Design and Construction, Stage 2 Concept Design (see Sustrans Project Pack v1.0 Category 4, page 8). The Concept Design Masterplan should develop designs and spatially illustrate the vision of the Connectivity Project.

Continuing on from the Stage 1 development of the Visioning and Integrated Masterplan Report, Iglu Studio has worked with project partners and other project workstreams including the community engagement team to produce concept designs for the Connectivity Project. Amey plc were appointed as the active travel and paths consultant to develop an Active Travel Network for the wider Levenmouth area. Together we have collaborated to ensure the masterplan and active travel plan overlap and mesh to provide a unified and coherent proposal.

In addition to the development of the Concept Design Masterplan, a key aspect of the commission was to assist the community engagement workstream to facilitate a series of public events in the local area. From the beginning of 2020 Iglu Studio played a key role in the planning and programming of the engagement process including the facilitation of two public events in February and March through to the delivery of online consultation and 'town hall' events held in October. The impact of Covid-19 required the development of new engagement strategies to stay connected with the community. An overview of the engagement process and how it has influenced the Concept Design Masterplan is included in the supporting Engagement Report.

Sustrans

The Connectivity Project has been classified by Sustrans as a Places for Everyone Category 4 project. These are considered to be,

"highly ambitious and complex transformations of the urban environment, requiring the maximum support and oversight from Sustrans as project delivery partners…. eligible for multi-year and multi-million pound funding (over £2million grant)."

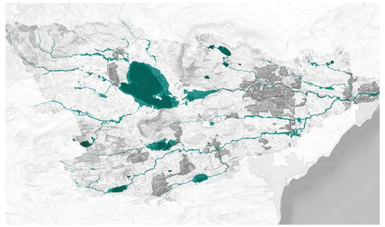
Sustrans Project Pack v1.0 Category 4, page 3

As they are the primary funder for The Leven Connectivity Project Stage 2 work, this Concept Design Masterplan Report will be submitted to Sustrans in December 2020 as part of the funding application for future project delivery. If the proposals are approved, and if the funding is successful, the Concept Design Masterplan will be taken through to form the basis of Stage 3 Developed Design.

"All projects, regardless of size, scale or scope, must demonstrate satisfactory completion of all project stages. The satisfactory completion of project stages will be reviewed by Sustrans at pre-determined gateways during project delivery."

Sustrans Project Pack v1.0 Category 4, page 7

1



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IMAGES

1 Conceptual Visioning image
2 The catchment and associated floodplain: a dynamic landscape unit
3 From the loch to the sea: ecology, economy and connectivity

Overview

The Visioning and Integrated Masterplan Report delivered by Iglu Studio in June 2019 presented a collation of existing data within the River Leven catchment area. The report covered three descending scales which progressively sharpened in design resolution: the wider Catchment Scale, the River Scale and the final 5km stretch where the river meets the Firth of Forth, the Connectivity Project.

Catchment scale

Initial analysis at the catchment scale identified potential issues linked to erosion, deforestation and flooding but also opportunities to reforest much of the catchment area as a means of natural flood management. Further detailed analysis across the catchment should be produced in order to identify the most suitable areas for a variety of natural flood management approaches. Ultimately, to effectively address the climate emergency further research at the river catchment scale should also be undertaken in the fields of renewable energy, sustainable transport and agricultural reform, to name just a few.

River scale

Ultimately, one of the key goals of the Leven Programme is to establish more direct pedestrian and cycle routes from Loch Leven (the source of the river) to the sea. It is envisaged that this new route would provide a major tourist destination with opportunities for leisure and recreation to boost the regional economy. References to the industrial heritage of the river would provide a coherent narrative and tell the story to a contemporary audience. Other opportunities at the river scale covered in the report included agro-forestry, addressing hydrology issues and improving urban ecology.

The Catchment and River scales are inherently relevant and important to the design of the Connectivity Project and vice-versa.

1

The Connectivity Project

This final stretch of the river where it empties into the sea has been selected as the first built project to be undertaken as part of the Leven Programme. The production of initial habitat surveys for the Connectivity Project area allowed for a more detailed approach in the Visioning and Integrated Masterplan Report, with 8 distinct character zones proposed within the site and key design principles established through the construction of a large scale model of the existing landscape (see image above).

The 8 character zones consisted of a gateway park, a riverside park, an 'incubator' greenspace (pollinating wildflower slopes), a woodland park, an activity park, a neighbourhood park, a riverside walkway and the river's edge (see Character Zones diagram, right).

In addition, the report set out a strategic programme for each of these areas from which the GAT brief identified a series of actions and principles that the Connectivity Project could include, but not be limited to. These formed the basis of the Stage 2 Concept Design Masterplan works:

- River restoration and pollution control measures;
- The creation and enhancement of habitats, including woodland, wetland, grassland and pollinator patches, to provide opportunities for recreation and improved ecology;
- The creation of multifunctional, accessible greenspaces;
- The upgrade and creation of new footpaths, cycle routes and greenways to provide active travel and recreation opportunities;
- The creation of play areas, community multi-use areas, growing areas and community gardens, and outdoor exercise facilities;
- A performance space to encompass a range of future activities;
- The installation of signage, interpretation and other interpretative structures such as viewing screens, pond dipping platforms, activities etc;
- The provision of quality, long-lasting and uniform amenities such as benches and litter bins.

Overall, the vision for the area is of a well-connected, multi-functional and valued network of green and blue spaces which provide a wide variety of recreation and leisure opportunities for residents and visitors as well as enhancing the biodiversity of the area and ensuring that future maintenance is more sustainable.

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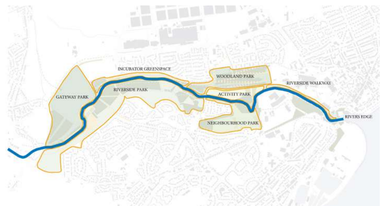
IMAGES

1 The Connectivity Project: using the model to identify design principles
2 Character zones diagram



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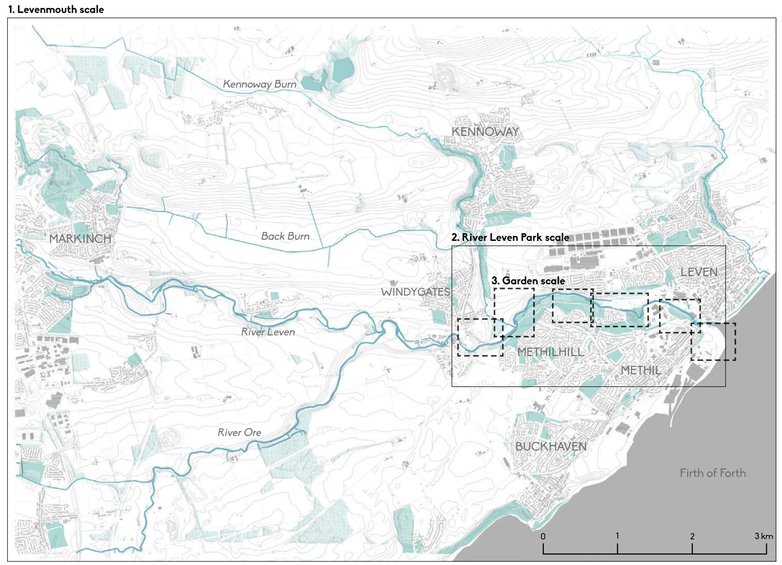
A multi-scalar approach

As with the Stage 1 Visioning approach to first investigate and identify wider scale landscape issues and dynamics, the production of the Stage 2 Concept Design Masterplan followed a multi-scalar process looking at three scales which consecutively sharpened in design detail.

1. Broad design principles - **The Levenmouth scale** including wider connections to Windygates, Kennoway, Buckhaven and potentially to Markinch and further west to Glenrothes.

2. Site specific information - The **River Leven Park scale**. The 5km stretch of the River Leven corridor from Windygates to the Firth of Forth at Leven.

3. Detailed site studies - The **Garden scale**. An increased level of design for six key connecting spaces within the River Leven Park situated around crossing points along the river. Design layouts were produced for two gardens at each end of the river park but their integration into the wider masterplan hinges on confirmation of the finalised train station locations at Cameron Bridge and Leven itself. The station locations are yet to be confirmed by Network Rail at the time of submission (16 November 2020).



A multi-scalar approach: the three scales explored by the masterplan

4 STAGE 2 - CONCEPT DESIGN MASTERPLAN | *OVERVIEW*
[Setting the scene]

The River Leven viewed from marshy grassland near Kirkland Dam

Fundamental to any potential development project is an understanding of the site, the space, the place. This understanding is gained through a wide range of techniques including field study, desktop research and engagement. The following pages present a collection of panels that illustrate some of the surveys carried out by the project team, including a range of information and material gathered from the comprehensive survey of the existing path network within the river valley, through to flood risk assessment.

Fundamental was the field survey, the analytical survey, walking the site, observing and recording the visible (and invisible) archaeological and historic features in the landscape. The field survey work included man-made features such as buildings, structures, new and historic, derelict areas such as the Creosote site, along with managed vegetation. In addition natural habitats and geological and ecological phenomena were recorded. As such the field survey work was an especially powerful tool to understanding the development and evolution of the river landscape, its cultural shifts and its historical tracery. This, combined with desk-based research of current and historic maps, aerial photographs, historical documents, oral testimony and the findings of the previous Stage 1 research, was key to understand fundamental aspects of the river. This work only underpins the design process but conservation, protection and interpretation of the landscape.

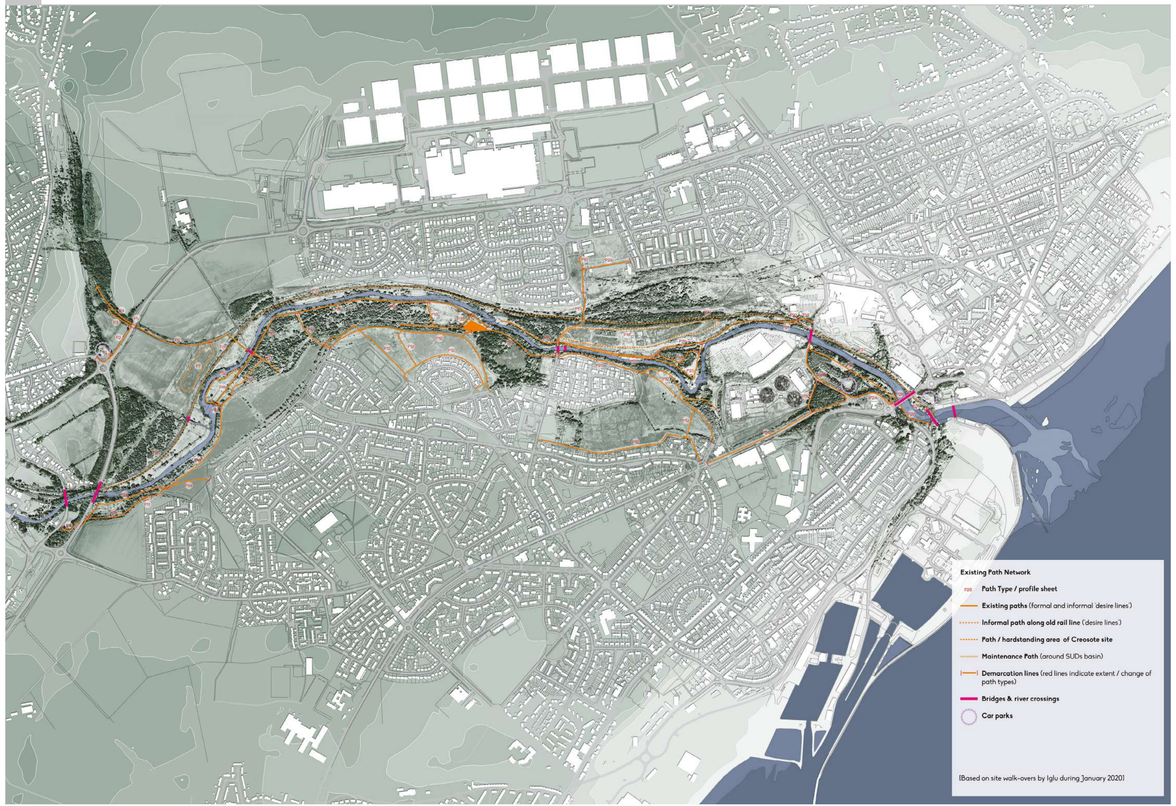
Walking and observing the site over the past two years it is important to note the realisation of the river and river valley as a dynamic place, as a sensory place, as a specific place. This is something experienced every day by those who inhabit and use the site and who have conveyed this message through the engagement process.

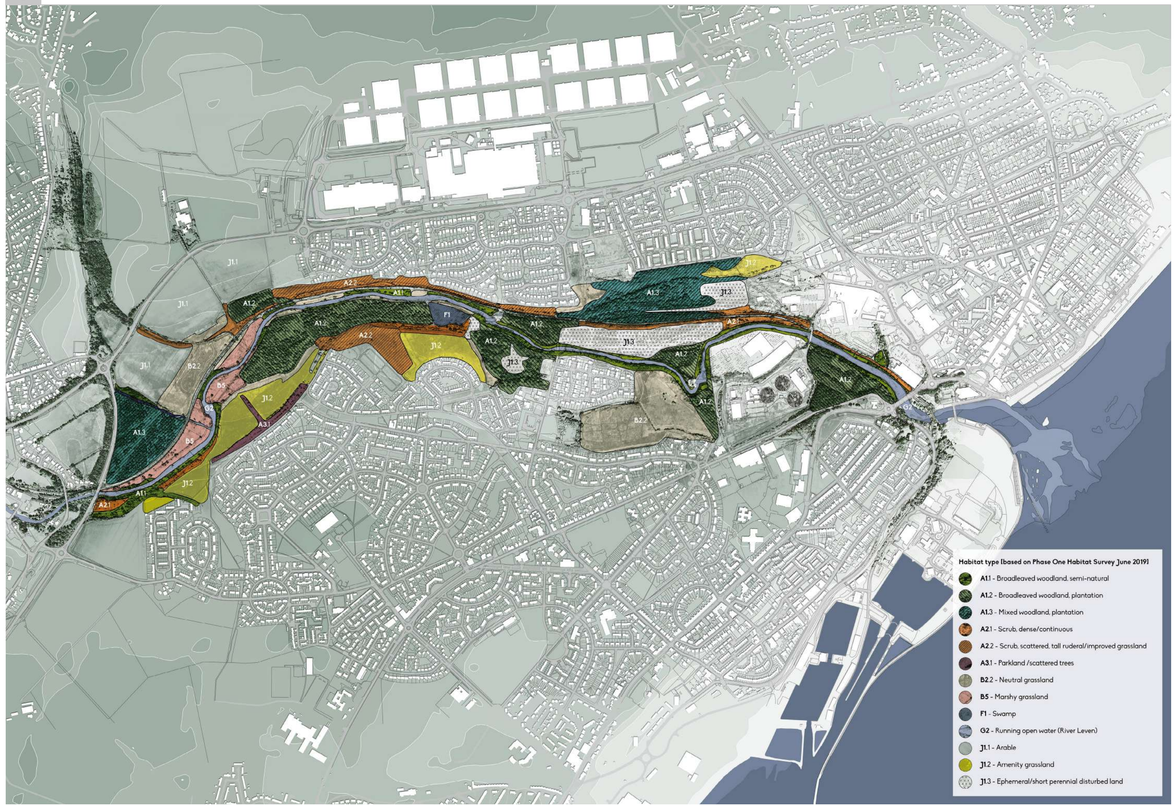
"landing...the moment when a designer reacts to the difference between his or her preconceived idea of a place and the reality that appears during the first steps of a visit"
Christophe Girot

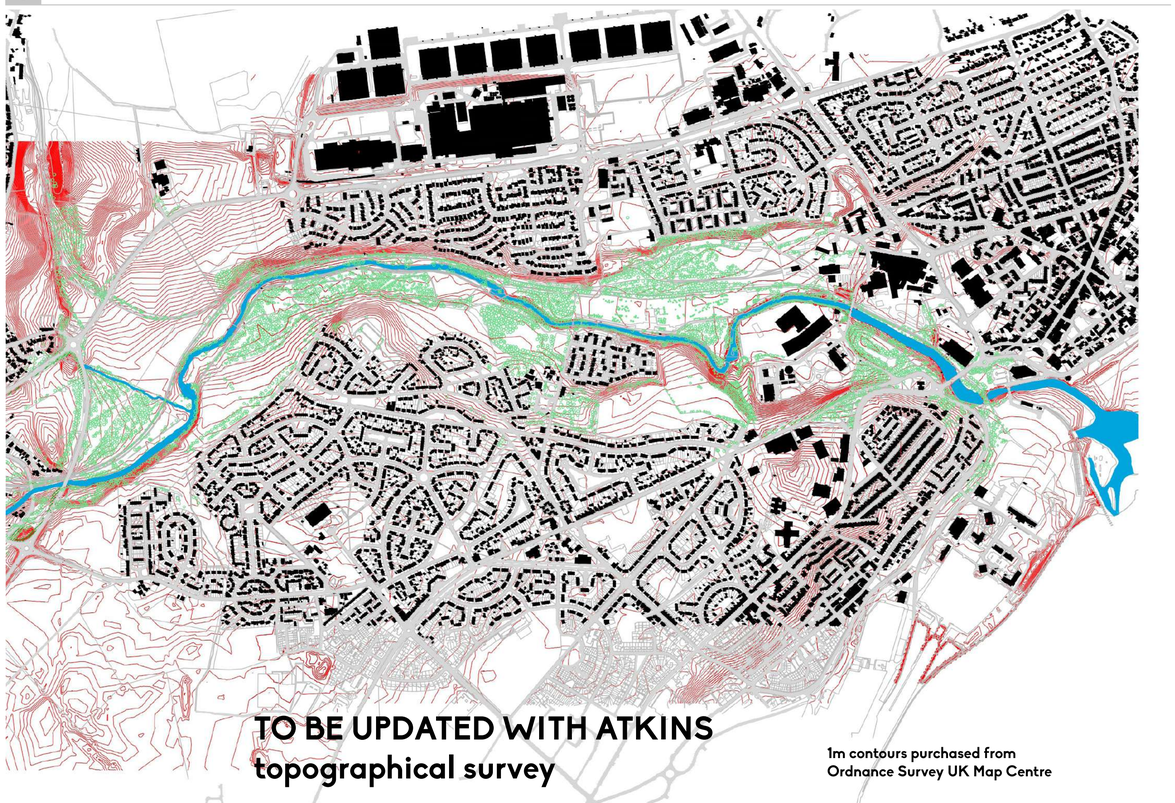
Local Development Plan:

The survey panel opposite right, illustrates the key allocations and designations of the FIFEPlan Local Development Plan (LDP). The LDP was part of the considerations in the Stage 1 development process and is important to the landscape of the River Park in respect of Green Network linkages with neighbouring communities and villages.

Key for further consideration and development is the LDP allocation of the Creosote site as a Safeguarded Employment Area. This allocation has been part of on-going discussions with Fife Council and with the owners of the Creosote site, with a view to the removal of the allocation in the forthcoming LDP review process.

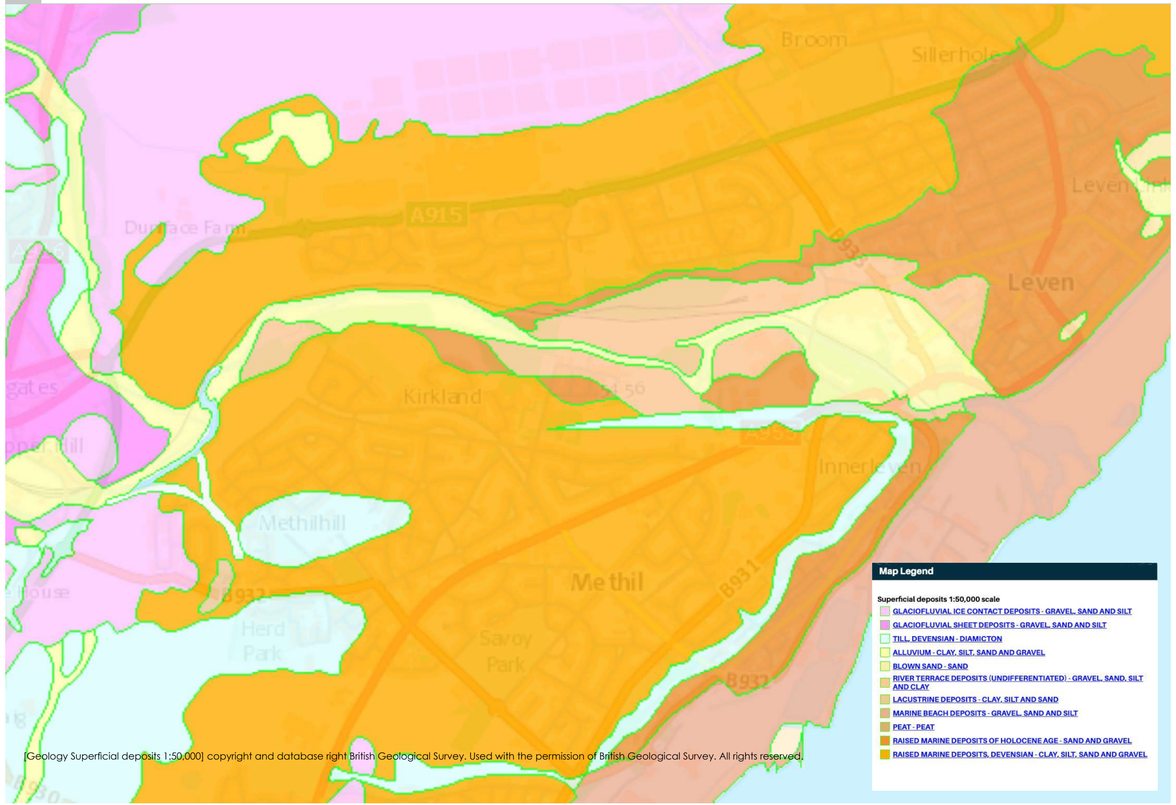

Existing Path Network
P28 Path Type / profile sheet
Existing paths (formal and informal 'desire lines')
Informal path along old rail line ('desire lines')
Path / hardstanding area of Creosote site
Maintenance Path (around SUDs basin)
Demarcation lines (red lines indicate extent / change of path types)
Bridges & river crossings
Car parks
(Based on site walk-overs by Iglu during January 2020)


Habitat type (based on Phase One Habitat Survey June 2019)
A1.1 - Broadleaved woodland, semi-natural
A1.2 - Broadleaved woodland, plantation
A1.3 - Mixed woodland, plantation
A2.1 - Scrub, dense/continuous
A2.2 - Scrub, scattered, tall ruderal/improved grassland
A3.1 - Parkland /scattered trees
B2.2 - Neutral grassland
B5 - Marshy grassland
F1 - Swamp
G2 - Running open water (River Leven)
J1.1 - Arable
J1.2 - Amenity grassland
J1.3 - Ephemeral/short perennial disturbed land



TO BE UPDATED WITH ATKINS topographical survey

1m contours purchased from Ordnance Survey UK Map Centre

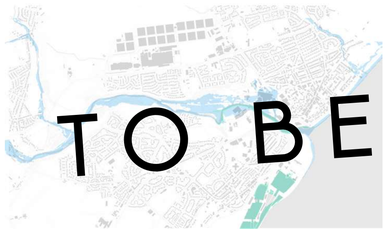


High likelihood of fluvial and coastal flooding (1:10 chance any one year)

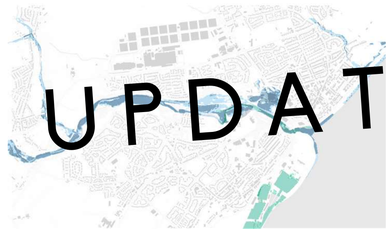
Medium likelihood of fluvial and coastal flooding (1:200 chance any one year)

Low likelihood of fluvial and coastal flooding (1:1000 chance any one year)

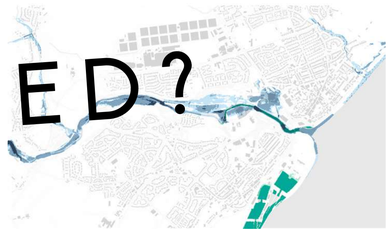
- Up to 30cm
- Between 30cm and 1m
- Greater than 1m



High likelihood of fluvial and coastal flooding - to a depth of 30cm



High likelihood of fluvial and coastal flooding - depth between 30cm and 1m



High likelihood of fluvial and coastal flooding - depth greater than 1m

INSERT DETAILED FLOOD RISK INFORMATION FROM ATKINS WHEN MADE AVAILABLE

^
View upstream from the footbridge near Kirkland Dam

"It is interesting sometimes to stop and think and wonder what the place you are currently at used to be like in times past, who walked there, who worked there and what the walls have seen."

Patrick Geddes

Telling the story

The following section contains further research into the background and heritage of the Levenmouth area along with a summary of the engagement process, including a the early public events held in February and March 2020, details of the post-Covid-19 alternative engagement approach and an outline of emerging community desired outcomes. A detailed report on the engagement process has been produced in conjunction with the masterplan report.

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C-listed footbridge from former Kirkland Works, late 19th century

History of the area

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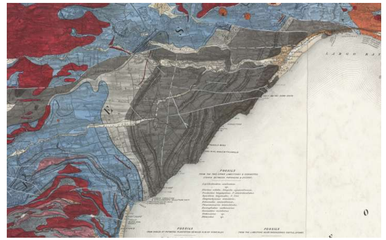

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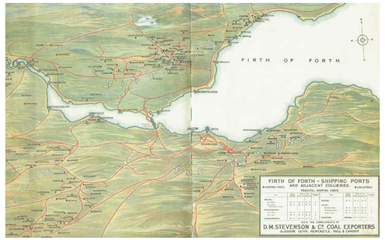

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1100-1800

The oldest record of Leven dates back to the middle ages, specifically the first half of the 11th century when the village was gifted to the Culdees of Loch Leven. In reality the 'village' most likely only comprised of a manse and a couple of cottages. The first evidence of the existence of a riverside settlement and port at Leven relates to the 1546 donation of funds to repair the monastery at 'Levynnismouth.' It is also referred to as a small weaving village, suggesting that textile production was one of the first industries to establish in the area.

In 1609 the town was elevated to the status of Burgh of Barony which unlike a Royal Burgh was only able to grant the landowner (in this case the Archbishop of St Andrews) the option to hold weekly markets, rather than participate in foreign trade. [1]

By the end of the 18th century, Leven was a thriving burgh with three ships and opportunities to engage in the Dutch and East Seas trades. Handloom weaving was now the principle industry in the area, with significant advances also made in salt extraction (hence the name Methill Pans), coal mining, rope manufacturing and bleachworks. A fishing fleet was able to supply the entire town with sufficient supplies of fish, including salmon caught locally in the river.

1800-1900

The story of the conurbation of Levenmouth is fundamentally connected to the Industrial Revolution. The lowering of Loch Leven in 1828 to serve industrial needs along the length of the River Leven saw the construction of several mills on the riverbanks in Leven itself.

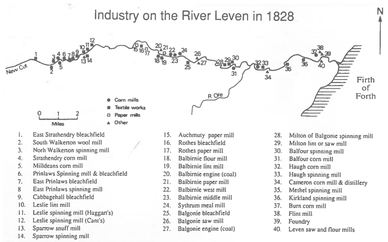
Handloom weaving remained one of the key trades of Leven until 1835, providing employment for hundreds of locals who worked from their own homes. This was superseded by the establishment of five spinning mills for flax and tow. Of significant note was the balance of both male and female employees.

The discovery of extensive beds of coal in Fife in the mid 19th century transformed Methil into one of Scotland's most significant coal ports, at its peak exporting millions of tons of coal every year around the world. During this period many rail-lines were built to serve the coalfields in the region, including the five-mile Thornton to Leven railway line via Cameron Bridge, which opened in 1854.

It was at this point that Leven started to attract tourists, steam-boats would depart for Edinburgh from the port twice a day in summer and once in winter.

IMAGES

1 William Roy Highlands map (1747-1752)
2 Geology map (1860-1940)
3 Firth of Forth - Shipping Ports and Adjacent Collieries (1914)
4 Industry on the River Leven (1828)



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REFERENCES

1 Bygone Leven, Eunson, E. 1991

History of the area

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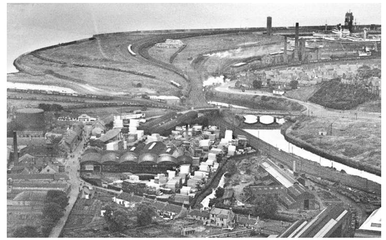

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1900-2020

Coal mining continued as the primary industry and source of employment in the area until the 1960s. After WWI, Methil became Scotland's main coal port, by 1923 exporting over 3,000,000 tons per year. The docks were connected to the nearby colliery at Wellesley (in Buckhaven) which employed over 1,600 people. The discovery of cheaper sources of energy in the 1960s, such as North Sea oil and gas, along with the emergence of nuclear power brought about the beginning of the decline in the UK coal industry.

Regardless, Methil power station was built in 1965 on the site of a former golf course to burn coal slurry from the coal-washing plants of Fife's coalfields. Following the move into North Sea oil extraction, coal mining was supplanted as the main industry in the area by oil platform construction. The Wellesley colliery was used as the site for construction of huge rig 'jackets,' though employment in the area fluctuated due to the cyclical nature of the market.

The Levenmouth rail-link stopped operating passenger services in 1969 though it was still partially used until 2001 as a freight line between the Cameron Bridge distillery and the Methil Docks and power station. The power station was decommissioned in 2000 and demolished in 2011.

As of 2018, the Levenmouth area was the most deprived area of Fife[2]. Manufacturing and construction are still the dominant forms of employment, predominantly Diageo and the Fife Energy Park along with retail and education/ health services, although there is a relatively high level of unemployment in the area compared to other towns of a similar size in Scotland. Car ownership is low, meaning that many residents in the area are reliant on public transport.

In August 2019 the Scottish Government announced that the Levenmouth rail connection would be re-opened with two new stations constructed in Cameron Bridge and Leven.

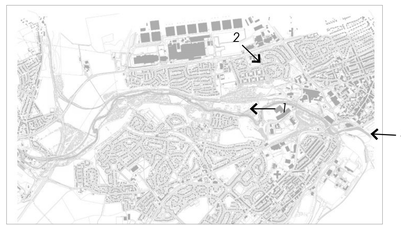
Above and on the following pages (26-29) are some of the historical plans and photographs of Levenmouth, showing the evolution of the area and the growth and decline of industry along the river. The final Heritage panel on page 29 shows the historic traces of the mills and industry within the river valley.

It is anticipated that the re-opening of the rail-line together with the regeneration of the River Leven as part of the Connectivity Project will help boost the local economy and make this proud area of mid-Fife a thriving place to live, work and visit again.

IMAGES

1 Telegraph Pole and Railway Sleeper Works (1932)
https://canmore.org.uk/collection/01257434
2 Durie Foundry and docks development (1935)
http://canmore.org.uk/collection/1438719
3 Methil Power Station (1989)
http://canmore.org.uk/collection/1672413

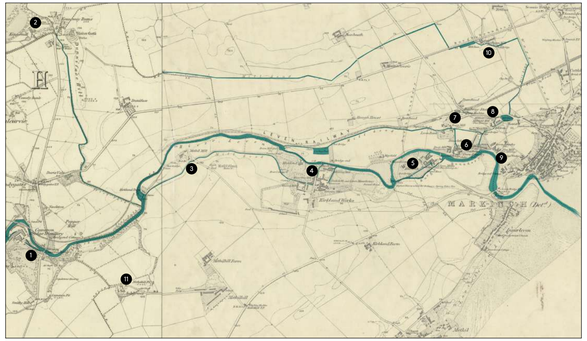
IMAGE LOCATION MAP



REFERENCES

2 Levenmouth Local Strategic Assessment, Fife Council, 2018

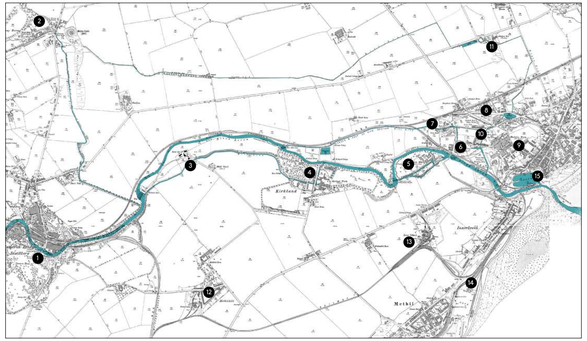
Historic maps



OS 6 inch 1843-1882

Industry

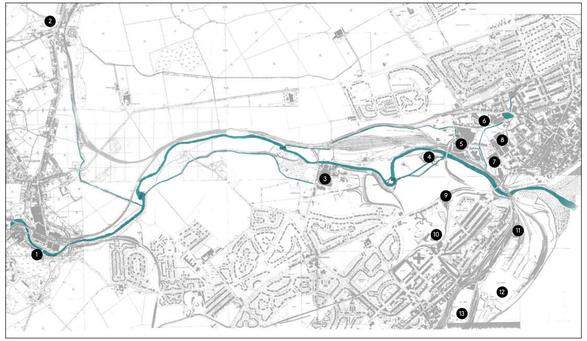
1. Cameron Bridge distillery
2. King's Mills (oatmeal and barley)
3. Methil Mill (spinning)
4. Kirkland Works (weaving, bleaching, linen manufacturing)
5. Leven Mills (flax spinning)
6. Durie Mill + Foundry (flax spinning + iron)
7. Burn Mill (flour)
8. Millfield Mill (flax spinning)
9. Leven Foundry (iron) + New Mill (flax spinning)
10. Shotburn Mill (thrashing)
11. Methilhill Pit (coal)



OS 25 inch 1892-1905

Industry

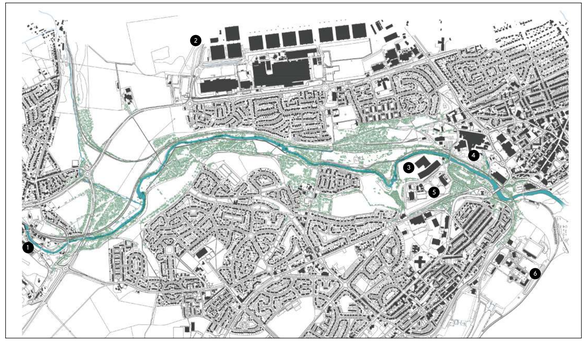
1. Cameron Bridge distillery
2. King's Mills (oatmeal and barley)
3. Methil Mill (spinning)
4. Disused Kirkland mill (flax spinning)
5. Leven Mills (oilcake and bone)
6. Wemyss Saw Mill
7. Burn Mill (threshing)
8. Millfield Mill (paper) + Millfield Rope and Twine
9. Hawkslaw Works (flax spinning)
10. Riverbank Mill (flax spinning)
11. Shotburn Mill (threshing)
12. Pirniehill Colliery
13. Leven Colliery
14. Methil Dock No.1
15. Leven Dock



OS 1944-1969

Industry

1. Cameron Bridge distillery
2. King's Mills (oatmeal and barley)
3. National Steel Foundry
4. Leven Mills (fertilisers)
5. Durie Foundry (iron)
6. Fife Paper Mills
7. Wemyss Saw, Planing and Moulding Mills
8. Hawkslaw Works (flax spinning)
9. Methil Brick Works
10. Aberhill Works (fertilisers)
11. Hydraulic Power Station
12. Methil Dock No.3
13. Methil Dock No.1

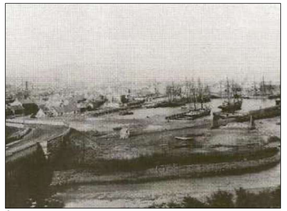


OS 2020

Industry

1. Cameron Bridge distillery
2. Diageo Global Supply
3. Donaldson James and Sons (timber merchant)
4. Pfaudler Balfour (manufacturer)
5. Waste Water Treatment Plant
6. Fife Renewables Innovation Centre

Historic photos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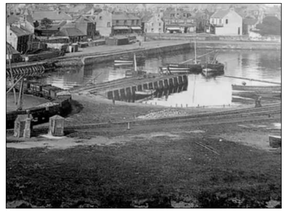
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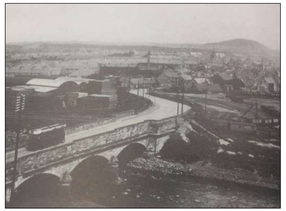
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IMAGES ^ >

1 *Leven docks (1889)*
2 *Leven docks (date unknown)*
3 *The Bawbee Brig (1907). Bygone Leven, Eunson, E. 1991*
4 *Mill opposite the Iron Brig (1908). Bygone Leven, Eunson, E. 1991*
5 *A boiler being towed from the Durie Foundry (1920s). Bygone Leven, Eunson, E. 1991*
6 *Donaldson and Sons Sawmills and Timber Yard (1932) http://canmore.org.uk/collection/1257450*
7 *Bruce and Co. Telegraph Pole and Railway Sleeper Works (1932) https://canmore.org.uk/collection/1257437*
8 *Cameron Bridge distillery (1980) https://canmore.org.uk/collection/00570076*


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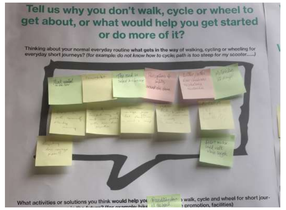

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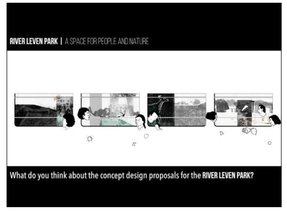

10

IMAGES < ^

1 Fish in the classroom exercise at Methilhill Primary School (image: Methilhill Primary School)
2 Postcards from the Leven exercise with Levenmouth Academy pupils (image: Fife Council)
3 Mountfleurie Primary School pupils releasing fish fry as part of outdoors exercise (image: Mountfleurie Primary School)
4-6 Photos from the second engagement event at Methillhill Senior Citizens Centre
7 Behaviour change comments recorded at the second engagement event
8 Locals give their say at the BRAG market in September
9-10 Stills taken from the River Leven Park animation to be launched October 7

Concept Design Task 2 - Community Engagement

A fundamental part of the Connectivity Project has been about engaging with the local community and addressing issues raised through the development of the Concept Design Masterplan. Fife Council, the workstream lead assisted by Iglu Studio, have achieved this through the facilitation of public events, online and social media events and collaboration with project partners including Forth Rivers Trust, SEPA and principle funding body Sustrans.

While a separate detailed report of the Connectivity Project engagement work to date has also been produced, the following overview summarises the process and emerging community desired outcomes.

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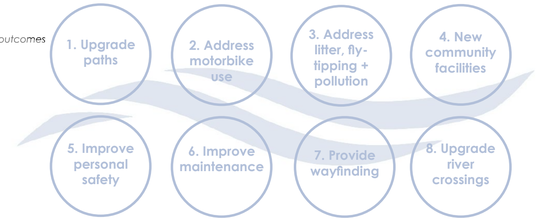


1 Initial community desired outcomes

Stakeholder event

The first engagement event undertaken as part of the Concept Design phase was a stakeholder event organised by Fife Council in November 2019. Invitations were sent out to over 100 local stakeholders, businesses and community groups with 59 recorded attendees participating in the event. This introductory session intended to outline the ambition and scope of the project at an early stage to generate local support and ensure that the broad design principles for the River Park formulated in the Stage 1 Visioning Report were consistent with the views of key local figures. It was a productive exercise: the participants were unified in supporting improvements to the river valley which would benefit the local community and provide recreation facilities and better access to a valuable greenspace.

Public engagement events

Two public events were then scheduled to assess early opinions of the existing river valley from the community to be followed by a third event where an initial draft Concept Design Masterplan for the River Park would be presented and reviewed with locals in person. The first two events were held in Leven and Methilhill in February and March respectively; the final event was cancelled due to the onset of the Covid-19 pandemic. Again, like the stakeholder event, the participants at the two events were fully supportive of the project aims and furthermore were able to provide precise information about both positive and negative issues such as favourite routes for walking, running and dog-walking, wildlife spotting, flooding, fly-tipping and anti-social behaviour amongst others. One of the predominant themes to emerge was that accessibility within the river valley was problematic for wheeling and very limiting for many people with impairments.

Several locals re-iterated that the majority of the existing desire lines throughout the valley were in fact the most practical and direct routes: this knowledge has proven hugely useful to inform the proposed path network.

Alternative engagement

With the onset of the Covid-19 pandemic, the engagement team had to create alternative means of maintaining a connection with the community, usually through digital platforms. This included,

- The release of historic photos of the valley and surrounding area on Twitter as part of local history month
- The organising of an Accessible Rivers Photo Competition on Facebook, the winner of which received over 500 votes
- Cognitive mapping exercises undertaken by local Levenmouth Academy pupils
- Further encouragement to contribute to the Commonplace map resource on theleven.org
- Setting up an information stall at BRAG community markets in Leven which gathered a range of comments from all age groups
- Working with local organisations to distribute emergency food aid packages
- The creation of an animation which outlines the initial Concept Design River Leven Park proposals
- Online 'Town Hall' events open to the public to comment and provide feedback on the initial Concept Design Masterplan proposals.

Engaging with seldom heard voices

From the beginning of the process, the project team have sought to engage with seldom heard members of the community. This included hosting one of the public events at a senior citizens centre, setting up a job club discussion and site visits with the Department for Additional Support within Levenmouth Academy. Furthermore, the animation, titled A Journey Through the River Leven Park, has been narrated and subtitled to provide accessibility to those with sensory impairment. Engagement with seldom heard voices has been thorough so far and the project team will continue to liaise with a range of groups, charities and organisations during the detailed design phase to ensure that the Connectivity Project addresses the social justice principle set out in the Executive Summary on page 5.

A Journey Through the River Leven Park

The launch of the animation in October 2020 was in support of the public presentation of the initial Concept Design Masterplan. The masterplan was accompanied by a conversation through Facebook, an extensive questionnaire and two on-line 'Town Hall' events. The events provided the opportunity for locals to talk to the project team, comment on the masterplan and leave feedback. The overall response was very positive in support of the proposals with many people requesting to become more involved in the Leven Project.

^
View of wetland adjacent to Burn Mill Dam

Design narrative

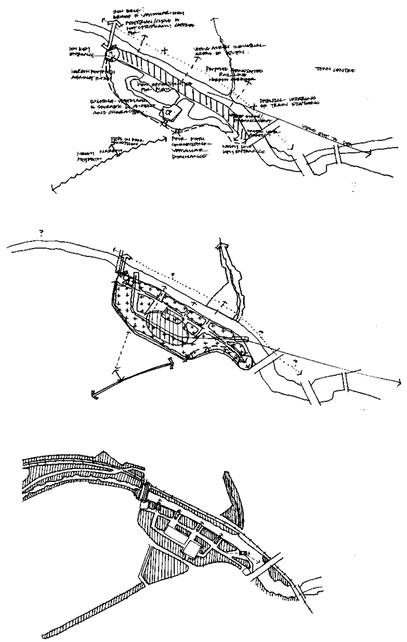
The following section illustrates the narrative process of the masterplan and the initial concept design proposals. As with the macro scale research approach taken during Stage 1 Visioning, the design process for the Connectivity Project first investigated the broad landscape and socio-ecological dynamics within the wider context of Levenmouth. In particular, the communities, the links between them and their environments.

This section begins with a look at the ongoing work to find alternative locations for dirt-biking within Fife. It then follows with chapters analysing connectivity and ecology, two of the principle themes of the Leven Programme and the Connectivity Project. It continues with a brief overview of the river and the rail-line: how they have developed and how they will be redeveloped as integral elements of the River Leven Park.

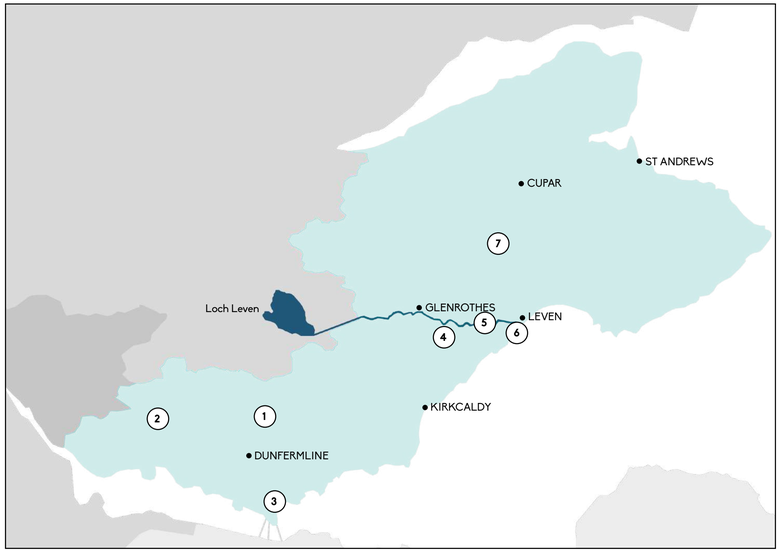
At this point, the primary concept guiding the design of the masterplan is introduced - how the restructuring and light-touch upgrading of key areas of focus at existing crossing points of historical significance can provide new social spaces for communities to meet and interact with nature.

The initial Concept Design Masterplan, fashioned by the factors discussed in the earlier sections is presented on pages 50-51, with key proposals and features identified in teh accompanying legend. Explanation and examination of the masterplan is provided through a breakdown of the primary and secondary framework layers which influenced and shaped the design. The primary framework layers have remained the core elements of the project throughout: the river, connectivity, the green network, the rail-line, heritage and play.

The masterplan is further explored by the conceptual design and illustrations of four areas of focus (gardens) although the final iteration will include an additional two gardens at either end of the river park once the train station locations have been confirmed. The section concludes with analysis and initial concept design proposals for the four gardens within the central area of the river valley, with more detailed visualisations for the Burn Mill Garden.



^ *Design development sketches of Iron Brig Garden*



Alternative Locations Considered For Dirtbike Use In Fife

Legend

1. St Ninian's former opencast mine
2. Comrie Colliery
3. Prestonhill Quarry
4. Balgonie Bing
5. Fields south of Windygates
6. Former Methil Power Station
7. Former Cults brick works

A number of potential alternative locations for offroad dirtbike use have been identified through consultation with Kingdom Offroad (KO), a local charity aiming to provide safe spaces for offroad motorbiking. Some of these locations would be accessed through organised pick-up of the bikes from an agreed location by KO. The locations were cross referenced with Fife Council's vacant and derelict land team and planning department in terms of suitability and feasibility.

Of the seven locations initially identified, only Balgonie Bing is considered a suitable site. The other six sites have all been deemed unsuitable due to a variety of issues: some of the sites are allocated for specific land use related to employment, some are too close to residential areas, some contain existing unstable/dilapidated infrastructure and some are considered to be sensitive sites due to high profile accidents and unlikely to be positively received by the local community for offroad motorbike use.

Following discussions with Fife Council's Economic Regeneration team it appears that vacant and derelict land is not ideally suited to offroad dirtbike use due to shifting priorities post Covid-19 and numerous statutory requirements, such as environmental health. However, one avenue worth further exploration would be underutilised agricultural land as it would most likely have less environmental issues than vacant and derelict land. This is a conversation that will continue in Stage 3 - Detailed Design.

^
View north from slopes below Methilmill Cemetery, including woodland, Mountfleurie housing and Largo Law in the distance

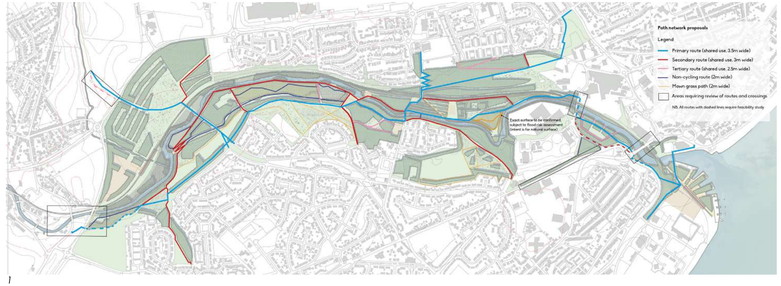
Connectivity / Active Travel

The following pages set out the large scale studies of the sustainable transport connections within the wider area surrounding Levenmouth: namely, existing and proposed train routes and how the active travel network could link up with existing cycle and pedestrian routes.

The wider context Active Travel Network workstream is led by Amey and through collaboration with Iglu Studio, a coherent Active Travel Network has been established between the river valley path network and the active travel routes proposed within the surrounding area. The initial proposals for the River Leven Park path network are based on a hierarchy of path types (see image 1 right) and pages 40-41 for more detail and illustrations of each path type.

On-site analysis has been severely limited due to Covid-19 restrictions throughout 2020, in particular the months of lockdown which removed any possibility of visiting the site. However, due to previous site visits, analysis and surveying before lockdown, Iglu Studio were able to provide an extensive overview of the existing path network to Amey who had only been appointed at the start of the year. This consisted of maps, photos and descriptions of footpath types at key interface points where the river valley path network intersects with the wider active travel routes (see images 2 and 3 right).

This initial document was followed by frequent online meetings between Amey, Iglu Studio and Sustrans to develop a joined-up path network. Continuing this efficient collaboration will be crucial during the Stage 3 - Detailed Design phase.



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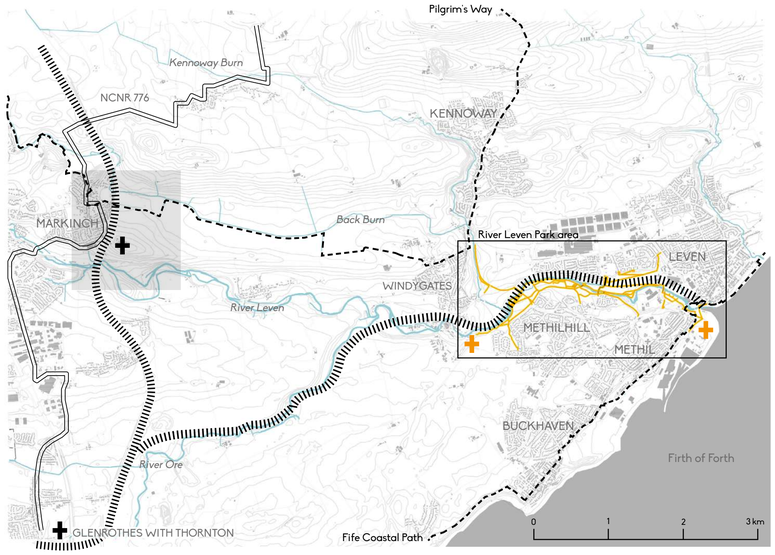
1 Path hierarchy diagram shared with Amey
2 Example location map from Iglu Studio footpath type document
3 Example path photograph from Iglu Studio footpath type document

8 DESIGN NARRATIVE | CONNECTIVITY / ACTIVE TRAVEL NETWORK [Illustrating the proposals]



Context

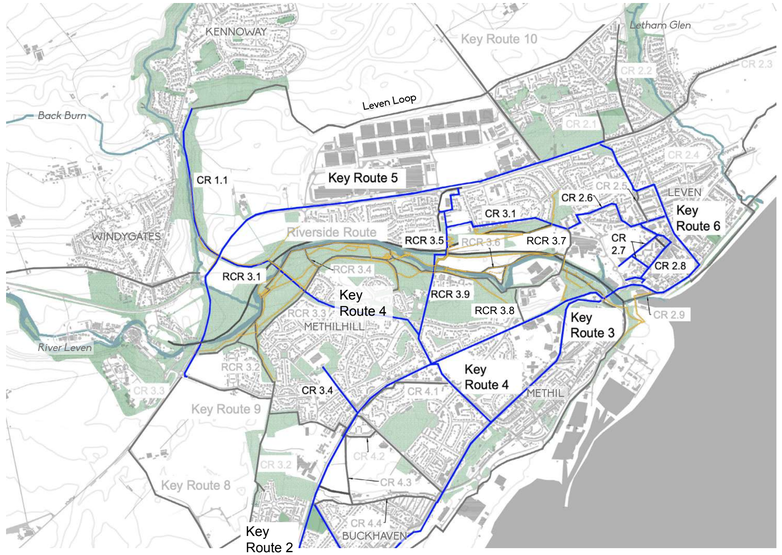
Legend

- Rail-line
- Pedestrian route
- National Cycle Network Route 776
- Existing train station
- Proposed path network
- Indicative locations of Levenmouth train stations

The re-opening of the Levenmouth rail-line will provide significant social benefits and opportunities, with greater access to jobs across Fife and Edinburgh, which is estimated to be a 70-75 minute journey.

The adjacent diagram identifies two of the most significant existing pedestrian routes which the Connectivity Project will join up with as part of a wider strategy to connect traffic-free routes within the surrounding area. Furthermore, the proposed paths will also extend into the local neighbourhoods within the Connectivity Project area to provide a more connected walking and cycling network (see masterplan section for more detail).

The National Cycle Network Route 776 runs north from Kirkcaldy to Milldeans Wood north of Glenrothes, linking Route 76 and Route 1. An eastern extension of this route approximately 5km from Markinch could connect up with the proposed path network at Windygates.



Active Travel Network Connections

Legend

- Existing greenspaces
- Stage 2 priority active travel routes (identified by Amey)
- Other routes not taken forward (identified by Amey)
- CR — Connecting routes (identified by Amey)
- RCR — Riverside connecting routes (identified by Amey)
- Proposed Masterplan path network (river park routes identified by Iglu Studio)

Active Travel Network Summary

The following summary considers the preferred active travel network illustrated in the Levenmouth Connectivity Project Final Report issued by Amey on October 28th 2020 and its relationship to the Masterplan proposed path network. Amey's matrix appraisal identified five key routes and 11 connecting routes to be taken forward to Concept Design as the preferred network with an approximate total length of 18km. Two of the routes were identified as part of the river park and were therefore included in Iglu Studio's masterplan path network (**RCR 3.1** and **RCR 3.5**).

The adjacent diagram overlays the Stage 2 Priority Active Travel Network (blue) identified by Amey with the Stage 2 proposed Masterplan river park path network identified by Iglu Studio (yellow). The following appraisal summary identifies the Riverside Connecting Routes (**RCR**) and Connecting Routes (**CR**) where the active travel network connects with the river park path network.

Appraisal summary

Key Route 2

Key Route 2 along Methilhaven Road is an important route to the river park as it will lead to the Bawbee Bridge and the entrance to the Iron Brig Garden. Furthermore, Key Route 2 also intersects with Key Route 4 where Key Route 4 forks west towards along Kirkland Walk towards the river park.

There is one other connection along this key route which has been identified by Amey as a potential opportunity to access the river park (**RCR 3.8**) and a connecting route to Methillhill Primary School **(CR 3.4)**.

- **RCR 3.8** - This route provides a potentially significant access point into the river park from Methilhaven Road and although not identified as part of the preferred network by Amey, this could be a route to consider further during Stage 3 - Detailed Design.

Key Route 3

Key Route 3 is identified on the adjacent diagram running through Methil on Wellesley Road and crossing the Bawbee Bridge. As with Key Route 2 there is one important point of access to the river park as the entrance to the Iron Brig Garden would connect up to the west of the Bawbee Bridge.

Key Route 4

Key Route 4 provides a crucial access route to the river park through Methilhill where it meets **RCR 3.1** at Poplar Road.

- **RCR 3.1** - This route into the river park through Methilhill via Key Route 4 along Kirkland Walk was identified during Stage 1 - Visioning as an ideal access route due to the expansive area of existing amenity grass which could be adapted for active travel purposes. This entrance could be further enhanced with the installation of a gateway or landmark sculpture to create a sense of arrival when entering the river park at Poplar Road **(RCR 3.3)**.

- **RCR 3.9** - This route into the river park was also identified during Stage 1 - Visioning as the central north-south axis between Mountfleurie and Kirkland. It is viewed as a crucial entry point from the south of the river into the Creosote Garden. In addition, the proposed masterplan path network connects west towards the Burn Mill Garden and east alongside the existing Methil Brae housing development.

Key Route 5

This route runs around the north of the project site with several important connections into the river park identified on the adjacent diagram, notably **RCR 3.1** and **RCR 3.5**. The connecting route **CR 3.1** is also significant for the river park as it links access to the Creosote Garden and the Iron Brig Garden along Montgomery Drive - a key route for Mountfleurie residents. Although **RCR 3.7** is not identified as part of the preferred network this could provide a key route towards the Iron Brig Garden and could be considered further during Stage 3 - Detailed Design.

- **RCR 3.1** - This route provides access to the river park from Kennoway along the old East Fife Central Railway. This route connects up to Key Route 5 via an existing grassy path adjacent to existing degraded steps, both to be upgraded.

- **RCR 3.5** - Together with RCR 3.9, this route into the river park was also identified during Stage 1 - Visioning as part of the central north-south axis between Mountfleurie and Kirkland. Due to the steep slopes adjacent to the Mountfleurie housing, the installation of this route would likely involve a switchback path to ensure accessibility for all. This route will also need to cross the re-opened rail line through the construction of an active travel bridge.

- **CR 3.1** - This connecting route was identified during Stage 1 - Visioning as the challenging topography in this area limits access for all into the river valley. Although the woodland south of Montgomery Drive does contain access routes, these involve steps: any proposed paths leading into the woodland would involve the installation of switchback routes to achieve the required gradient of no steeper than 1:12 as stipulated in Inclusive Mobility, DfT 2002.

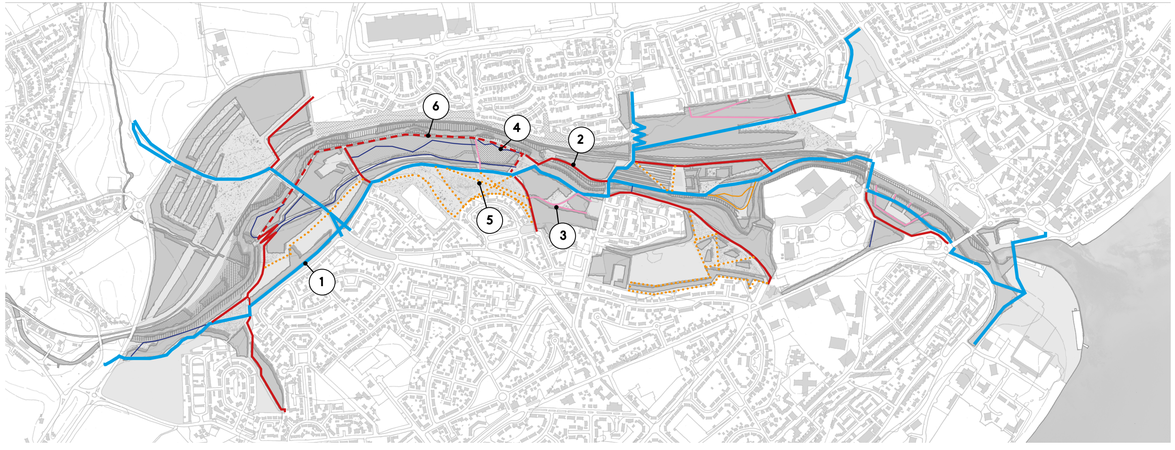
Key Route 6

Key Route 6 is the main active travel route proposed through the town of Leven. The most significant connecting route to the river park is **CR 2.8** which will cross the Bawbee Bridge: improvement works to the Bawbee Bridge are on-going.

Conclusion

Through collaboration with Amey a cohesive path network has been proposed with key connecting routes to the river park identified. Stage 3 - Detailed Design will require continued teamwork to tie together any overlaps between the Priority Active Travel Network and the proposed Masterplan path network.

Access points (gateways) into and out of the river park are an important element of the masterplan. Ensuring that elements and features of the gateways such as materiality, signage, alignment and continuity of movement are consistent, particularly where the active travel network meets the river park path network, will be one of the fundamental objectives of the next phase of design.



River Leven Park
Path network hierarchy proposals

Legend

- Primary route (shared use, 3.5m wide)
- Secondary route (shared use, 3m wide)
- Secondary route raised walkway (shared use, 3m wide)
- Tertiary route (shared use, 2.5m wide)
- Non-cycling route (2m wide)
- Mown grass path (2m wide)
- 1 Path profile type (see adjacent page)

Note: The proposals set out above and opposite are indicative based on current Sustrans guidance for traffic-free routes. The exact detail and design of these routes will be subject to further discussions with Sustrans and stakeholders to ensure that the routes meet functional requirements whilst not adversely impacting the landscape.

1. PRIMARY ROUTE

This is the key west-east route through the river park for all users. It will be accessible for all with gentle gradients and allows for shared use with both cyclists and pedestrians at 3.5m width.

2. SECONDARY ROUTE • 6. RAISED WALKWAY

These routes will provide supplementary paths throughout the river park and extend into communities. Like the primary routes, the paths will be accessible for all to Sustrans required specifications providing 3m width for shared use between cyclists and pedestrians. The example tile 6 shown adjacent illustrates how a perforated steel route could be fixed with screw piles above the existing pipeline running alongside the river.

3. TERTIARY ROUTE

This route still permits shared use at the minimum width of 2.5m though it is expected to be less frequently used as the primary and secondary routes.

4. RAISED BOARDWALK

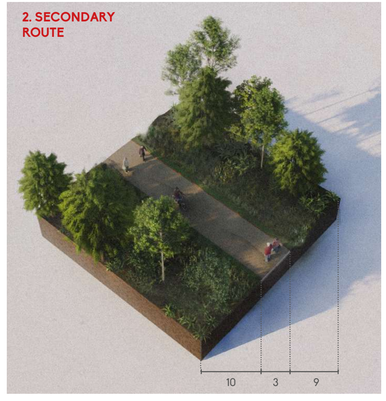
This route has been designed for sensitive habitats such as the wetland, the river's edge and the re-opened mill lade. The materiality will be finalised during Stage 3 - Detailed Design and is indicatively illustrated as perforated steel grating walkways.

5. MOWN GRASS PATH

These paths will be mown through grassland areas several times a year to maintain accessibility. The example shown adjacent is for a 6m wide route though widths will fluctuate throughout the river park depending on the surrounding habitat.

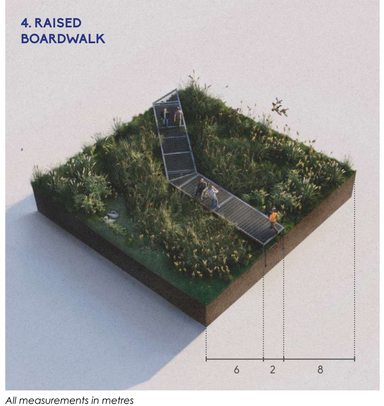
1. PRIMARY ROUTE

2. SECONDARY ROUTE



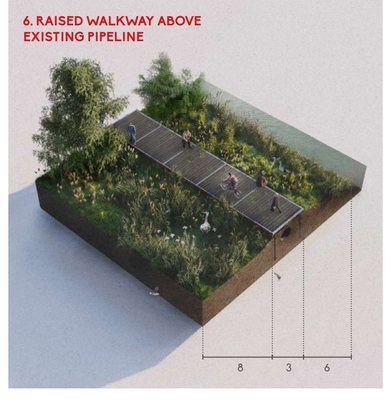
3. TERTIARY ROUTE

4. RAISED BOARDWALK



5. MOWN GRASS PATH

6. RAISED WALKWAY ABOVE EXISTING PIPELINE



All measurements in metres

Green Networks

Green networks offer ways to enjoy the outdoors close to home and provide safe and quiet off-road access to all sorts of urban greenspace – and to other local amenities and the wider countryside. Activities involved in creating green networks help to reduce habitat fragmentation, contributing to habitat networks and biodiversity, as well as to human health and well-being. A well connected and thriving ecosystem can play a major role in mitigating the climate emergency through solutions such as reforestation, carbon sequestration and natural flood management.

The Green Network workstream for the Connectivity Project is led by Forth Rivers Trust (FRT) and includes NatureScot, Fife Council, Fife Coast and Countryside Trust and Iglu Studio. This phase of work involved analysis of the existing green network in Levenmouth, including riparian corridors, grassland, woodland and wider ecological connectivity. Some of the key outputs emerging from this process involve,

- The identification of existing areas of amenity grassland suitable for renaturalising to rough grassland (through liaison with the Grounds Maintenance Service department at Fife Council)
- The identification of appropriate woodland management principles for areas of existing woodland and potential opportunities for further planting (see Woodland assessment and enhancement opportunities report May 2020)
- The identification of suitable pollinator corridors (see River Leven Pollinator Corridor Report July 2020)
- The identification of habitats, species and invertebrates within the river valley (see Habitat and Species Management Plan 1st Draft June 2020)
- The creation of a habitat toolkit aimed at enabling community ownership through self-directed transformation and management of a range of habitat areas within the Levenmouth area (see Grassland section of the Habitat Toolkit)

View of ancient willow trees at the river edge

8 DESIGN NARRATIVE | GREEN NETWORK [Illustrating the proposals]

CONTEXT

Legend

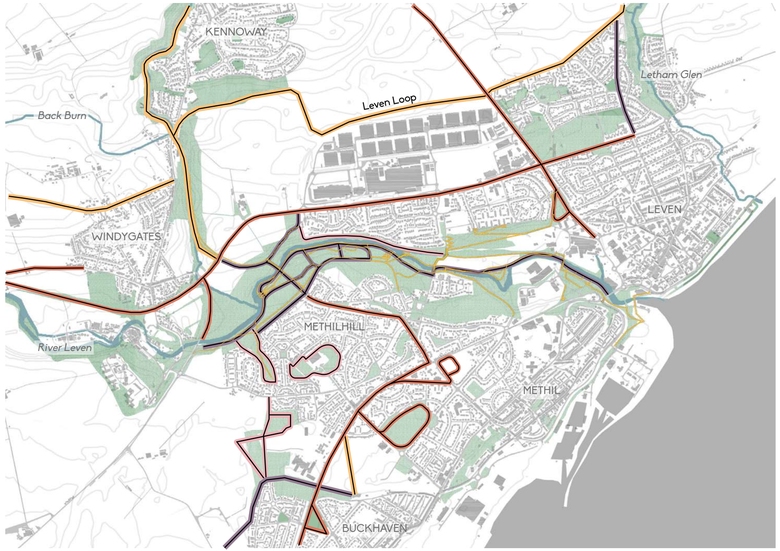
- Existing greenspaces (parks, riparian corridor, woodlands)
- Existing vacant and derelict land (to be brought back into use)
- Proposed green network connections (linkages for improved species movement)

The ecological approach for the Connectivity Project must emanate as much from the mosaic pattern of the surrounding landscape as from the site itself. Correspondingly, we have broadly investigated the wider landscape context at the Levenmouth scale and beyond.

To ensure ecological connectivity and maintain healthy natural processes, rivers, streams and tributaries within the catchment should form part of a varied mosaic of habitat types along with farmland, woodland edges, linear habitats and open ground. This includes bare ground, inundated wetlands, shrubs, trees, coastal habitats, hedgerows and grassland/wildflower areas. Reforesting riparian corridors will provide a valuable habitat for species, help to stabilise slopes and absorb both diffuse agricultural pollution and excess water produced by heavy rainfall.

The areas of vacant and derelict land identified provide the function of connecting patches within the green network when combined with pollinator corridors, hedgerows and native woodlands.

A well connected cycle and pedestrian network linking Levenmouth with Buckhaven, Kennoway and Glenrothes and beyond, will provide opportunities for further ecological connectivity. This will be achieved by establishing a variety of habitats along the routes.



POLLINATOR CORRIDORS

Legend

- Existing greenspaces
- Proposed Masterplan path network (river park routes)
- Pollinator corridor along roadside verges
- Pollinator corridor alongside arable land
- Pollinator corridor connecting to schools and parks
- Pollinator corridor within greenspaces

Up to 32km of partially continuous corridors have been identified on the adjacent diagram for potential transformation into pollinator corridors. These types of corridors vary from roadside verges to active travel routes alongside schools, parks, greenspaces and arable land.

Originally illustrated in the Green Network Phase 1 Report produced by Forth Rivers Trust in June 2019, the proposed pollinator corridors have huge potential for engagement opportunities with schools and local community groups. Similarly, the corridors could be significantly enhanced if local businesses and residents are encouraged to strategically plant wildflowers on their premises. Local farmers are also key to this proposal with corridors running alongside arable land requiring the controlled management of pesticide use.

A detailed description of the steps needed for communities to transform amenity grassland to wildflower areas is provided in the Habitat Toolkit Grassland chapter.

^
View of path mown through rough grassland south of Methil Brae affordable housing

"Prior to the rapid urbanisation of the 1800's, Scotland's rivers were of very good quality. The deterioration of river water quality throughout the 19th and 20th centuries was mainly caused by the discharge of sewage and changes in agricultural and industrial practices which accompanied the economic lifestyle of the time. Significant efforts to restore Scotland's rivers did not occur until 1965. Reductions in heavy industry, the enforcement of new legislation and heightened environmental awareness have all contributed to improvements in river quality."
Long-term river water quality indicator, SEPA

The River

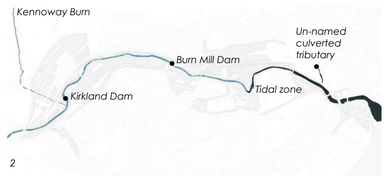
The River Leven stems from Loch Leven, winding its way through the intensively farmed, industrialised and heavily populated valley before entering the Firth of Forth at Leven.

There is one significant tributary at the western end, the Kennoway Burn, which is also the focus of a river restoration project currently being undertaken by SEPA. There is a minor tributary at the eastern end of the river with mature broadleaved trees overhanging the water. It is almost completely inaccessible, wedged between Sainsbury's and an industrial estate with security fencing. This burn is within the tidal range, which extends west from the estuary to the Dam Wood.

The river corridor and all of its biodiversity is protected both by the steep valley formation of the landscape and the generous distance from neighbouring housing developments. The Kirkland housing south of the Creosote Site is approximately 25m from the river and the Mountfleurie housing above the northern slopes is around 35m though the inaccessible nature of the slopes increase this distance in practice. The majority of the site though provides a significant buffer protecting wildlife and their habitats from disturbance. Furthermore, in the absence of formal paths users of the site have created a series of desire lines which mostly maintain an element of protection for the surrounding habitats.

1

The river itself is full of potential for migrating salmon, sea trout, eels and lamprey. Flounder are also common within the tidal zone. The pools created above the two dams at Kirkland Dam and Burn Mill Dam, provide deep water for adult trout to feed in and to take cover. The pool at Burn Mill Dam would be ideal for learning to fish as it is so accessible and contains plenty of brown trout. The dams act as a major barrier for migrating fish however, and there is a need to reconfigure the dams to incorporate fish passes to allow fish upstream access to spawn or feed.



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IMAGES

1 View upstream of Burn Mill Dam
2 The river, tributaries, dams and tidal zone

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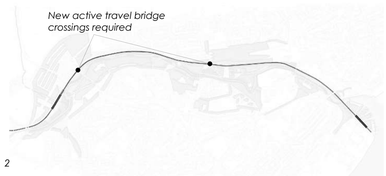


2

IMAGES

1 View west of the Iron Brig from rail-line
2 The rail-line running through the river park

The Rail-line

As previously noted in the heritage section on page 24, the rail-line connecting Thornton and Leven via Cameron Bridge was opened in 1854 and served the local industry for over a century. The rail link stopped running passenger services in 1969 though partial freight use between Cameron Bridge distillery, the Methil docks and Methil power station continued until 2001.

In August 2019, the re-opening of the Levenmouth rail link was announced by Transport Scotland with an expected opening in 2023 to better connect communities within Fife and beyond (a trip to Edinburgh is expected to take 70-75 minutes.

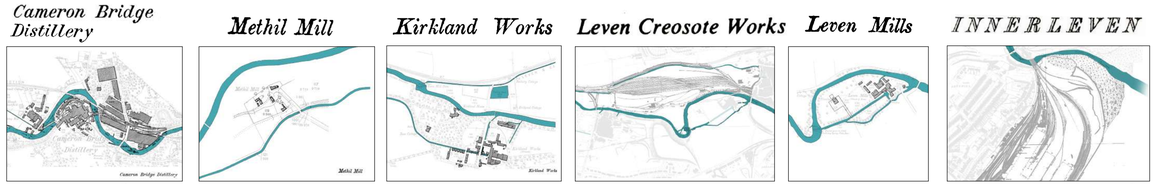
Two rail stations will be installed as part of the project: one at Cameron Bridge and one at Leven. The exact location of the stations is yet to be finalised though an initial selection of 12 potential sites between the two areas was developed in January 2020. Iglu Studio have prepared masterplan responses to accord with each option to ensure that the river park path network will connect with pedestrian and cycle routes emanating from the stations. The twelve sketch options can be viewed in the supporting document Rail Station Options - Masterplan Considerations.

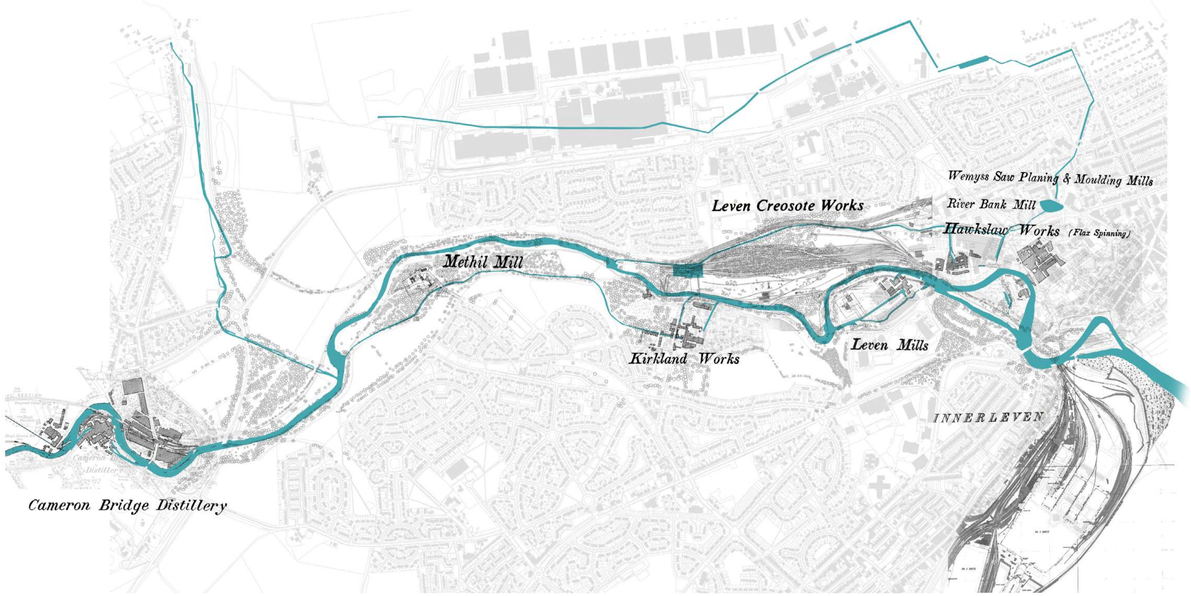
The masterplan illustrated on pages 50-51 includes station locations which at the time in May 2020 were considered by Iglu Studio to be best case scenario in terms of the Leven option (on the former power station) and worst case scenario in terms of the Cameron Bridge options, the east option which would require the removal of a significant area of established native woodland. At the time of writing in July 2020, Network Rail are still considering all options and are yet to confirm the final station locations, though it is anticipated that neither of the two sites included in the current masterplan will be taken forward. Iglu Studio will revise and update the masterplan accordingly once the station locations are finalised, expected to be sometime in late 2020/early 2021.

Integrating the rail-line and the active travel network

Currently the disused rail-line is a popular walking route for locals both for recreation and to quickly navigate sections of the river valley (eg. from the Leisure Centre at the estuary to the Creosote site/Methilhill/Mountfleurie). The installation of a new path network within the river park is fundamental to replace the pedestrian shortcuts currently well used by the community.

The new path network will require at least two new active travel bridge crossings and one existing replacement over the re-opened rail-line (locations identified on the adjacent diagram). One north-west of the existing river crossing near the Kirkland Dam and one at the northern entrance of the Creosote site. There is the potential requirement for additional rail-line crossings depending on the final station locations.





Flow / Lines

As evidenced through the progression of historic maps the River Leven valley evolved from its pre-industrialised state in the William Roy Highlands 1747-1752 map through various industrial guises to its current state.

An extensive lade and weir system, already visible in the OS 6 inch 1843-1882 maps, was constructed to provide hydro power to the nearby mills and introduced a sense of order and geometry to the natural flow of the river, bringing linear forms into the landscape.

Remains of the former industry have almost disappeared from the river valley; the Connectivity Project aims to discreetly reference the industrialised past through the formation of a linear river park with six designated areas of focus (gardens).

Spaces for people and nature

This is a river park for people and wildlife, including spaces where there will be a greater intensity of social activity than others.

Each of the six gardens is strategically located around a connecting point within the river park, placing greater emphasis on social activity yet maintaining ecological quality. In-between the gardens the emphasis is placed on ecology though visitors are still able to be immersed in nature. These stretches are more ecologically focused, will require less maintenance and there will be opportunities throughout the river park to provide moments for interaction between people and nature.

Concept Design Masterplan

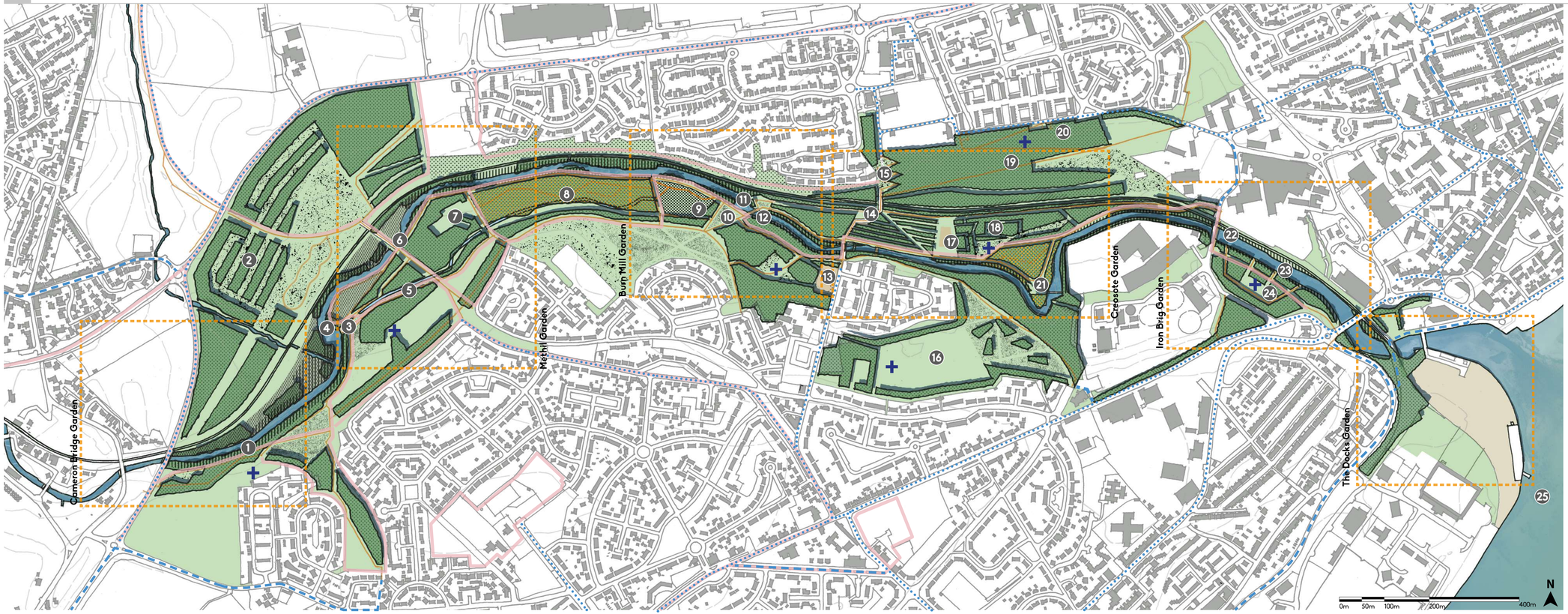
The Concept Design Masterplan is illustrated on the following pages (50-51). This is the first distillation of the concepts above, the information gathered and comments received into a visual form, around which the process of delivering the River Leven Park can begin in earnest. Pages 52 to 101 outline the primary and secondary masterplan layers and then in more detail the garden areas of focus.

Pre-industrialised state

Industrialised state

Future state

RIVER LEVEN PARK - CONCEPT DESIGN MASTERPLAN



Legend

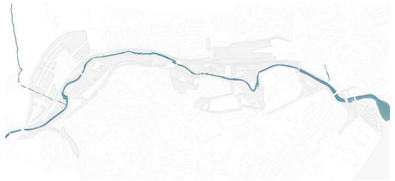
- **Proposed pollinator corridors** - Including wildflowers and pollinating vegetation
- **Proposed river valley path network** - Smooth surface to Sustrans specifications
- **Proposed priority active travel network** - Smooth surface to Sustrans specifications
- **Proposed secondary active travel network** - Smooth surface to Sustrans specifications

- **Woodland** - Existing woodland to be retained and reinforced with new native planting
- **Grassland / low meadow** - Existing grassland to be maintained regularly
- **Wet Woodland** - Existing woodland thinned, managed and enhanced to establish flood tolerant area
- **Grassland / high meadow** - Existing grassland to be allowed to grow and renaturalise (good for biodiversity)
- **River margin and embankment reinforcement** - Including slope stabilising solutions
- **Wildflower** - Existing grassland planted with wildflowers
- **Floodplain** - Existing wetland and low-lying river margins to be protected and managed to accommodate flooding
- **Pollinator space** - Existing south facing slope planted for nectivorous insects
- **Gardens, Detailed Design Areas** - Areas of focus where communities can meet, play, relax and socialise
- **Proposed play spaces** - Including natural play elements such as mounding and tunnels. Potential for other play equipment.

NB Two train stations will be situated at Cameron Bridge and Leven, the exact locations are currently being finalised by Network Rail (October 2020)

Features

1. Woodland walk extended with viewing platforms through trees
2. Proposed agroforestry trial landscape
3. New viewing platform at Kirkland Dam
4. Weir/dam upgraded to allow fish migration
5. Former lade re-opened and exploration route
6. Existing river bridge crossing upgraded to new active travel bridges across river and new rail-line
7. Proposed Heritage trail focal point of former Methil Mill
8. Re-connected lade and raised boardwalk through wet woodland
9. Green roof shelter and observation hides above wetland
10. Central gathering space with seating, wildflowers and interpretation boards
11. New fishing platform at Burn Mill Dam, upgraded to allow fish migration
12. New active travel bridge over pipe
13. New housing units (16 no.) for Kingdom Housing Association, currently under construction
14. New active travel bridges to cross rail line and the river
15. Switchback pathway to address steep gradient down to river
16. Community pitches and play facilities
17. Potential community hub location with WC facilities
18. Experimental community gardens and growing spaces
19. Potential new pathways and community spaces within woodland
20. Proposed lookout platform at top of slope
21. Wet-woodland and river facilities - Canoeing? Screening of existing pipeline with vegetation?
22. New active travel bridge / crossing to Iron Brig
23. Viewing platforms cantilevered over river, through woodland, from Iron Brig Garden
24. New co-designed community play space and car park
25. Potential for seeding coastal fringe with seagrass



The River

The river itself was the very spark that started The Leven project. Physically, culturally and historically the river lies at the heart, the very centre of the first phase of The Leven Programme, the Connectivity Project. Historically the river powered the economic growth of the surrounding area and it is a fundamental tenet of the project that the river will again drive the regeneration of the town and local area.

Studies of the project area, both completed and on-going, have identified the richness and diversity of the habitats, the flora and fauna of the river, assets that already provide benefits to the community, but that also draw people into the valley and as such need to be valued and protected. To this end a number of key measures will be realised including the replacement of the two existing weirs (Burn Mill and Kirkland Dams) with fish friendly structures, and reinforcement of the existing Otter protection areas.

Landscape measures will include improvement works to the river embankments through natural means, reinforcement and replanting of existing woody features (Willow stands), interplanting of existing habitats where required and the removal of litter and invasive non-native species.

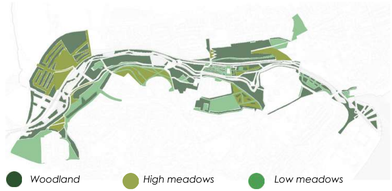
Additional proposals are being considered to address and accommodate for existing and future pressures along the river from climate emergency including flooding, erosion and pollution.

Connectivity

The path network builds on the existing assets of the site, the formal and informal routes that locals use every day. From extensively walking the paths on-site ourselves, we have marked and recorded the profiles of the existing routes (see page 14) and established, along with an understanding of the landscape context through which they move, their current functionality and the potential future use they could provide.

The path network has been informed by Sustrans guidance, including traffic-free routes and greenways design guide, and aims to provide traffic free routes for walking, cycling and wheeling. Consideration has been given to maintenance operations and will be taken further at the detailed design stage.

The path network proposals incorporate both the local and the wider setting. At the local level how and where the paths cross the river is a fundamental consideration and will include the design of new bridge structures. At the wider scale, gateways, access points and DDA compliance are all relevant aspects, as well as providing important connections to neighbouring villages (Kennoway), routes (Pilgrims Way, Fife Coastal Path), facilities (Diageo) and features (Leven High Street, Bus Station etc).



Green Network

The fundamental asset of the Connectivity Project, of the River Leven as a whole, is the existing green network that runs throughout the river valley. Key to that structure is the native mix of species providing enclosure, screening, food, shelter and valuable local habitats.

The approach to the Connectivity Project has from the start been about retaining and maintaining as much of the inherent assets of the valley. Retention of the woodlands not only provides a sense of familiarity, but maintains established ecologies and habitats, gives spatial structure to the site and underpins the amenity assets of the site.

Whilst maintaining the existing woodland is key to the project, there is a requirement to make it 'fit for purpose', whether that is a change in functionality or to ensure it's robustness in tackling the impacts of the climate emergency such as flooding, erosion and drought. As such the woodland has been considered on a long-term strategic basis of reinforcement, replanting and re-structure.

The masterplan proposals suggest re-naturalising areas of the existing amenity grassland to improve biodiversity within the river park and allow a more relaxed, differentiated grassland management scheme with less frequent mowing. This is manifested in a maintenance scheme which ranges from less frequent cutting of the 'high meadows' and more frequent cutting of the 'low meadows.'

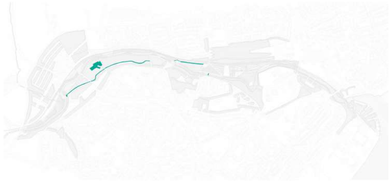
Rail-line

Reinstatement of the Levenmouth rail-line is now a reality. In the first stage of the project there was uncertainty about whether it would be live again or would form the basis for a memorable walking experience, but from the start of the second stage of the project the reinstatement was guaranteed.

As such the rail-line, the rail corridor and the potential station locations have been a primary factor in the design development of Stage 2 of the Connectivity Project.

Whilst the masterplan does not dictate the alignment of the rail track or the location of the rail stations, associated elements are being considered to make positive contributions, such as protection to sensitive ecological zones, visual identifiers to add to the legibility of the gardens within the park, and as a generator of landmarks along the river valley, bridges, stations etc.

At the same time there are realities that accompany the inclusion of a working rail-line. These include the need to make adequate provision for the movement of wildlife and people across or under the tracks, tunnels, bridges etc. These factors have been woven in to the masterplan process and form the base of the network of routes and runs.

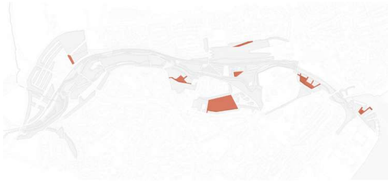


Heritage

As explained in earlier sections of the report, the River Leven valley evolved from its pre-industrialised state (William Roy Highlands 1747-1752 map) through various industrial guises to its current state. The installation of an extensive lade system to power the various mills located along the riverbanks physically altered the character and form of the landscape, introducing a sense of order and geometry to the natural flow of the river and bringing linear forms into the landscape. The traces of the lades are part of a number of proposals to revive and reveal the traces of the river's industrial heritage.

Remains of the former industry that have almost disappeared from the river valley will be discreetly referenced within the designated areas of focus, the Gardens. The exact details of the re-emergence of these traces could be determined with locals, heritage groups and the council. This will ensure that the focus is not on the elite industrialists but on the stories of the local people whose everyday lives and journeys revolved around the industrial areas in the river valley. Where there is an absence of physical presence, programmes and stories can provide a memory of place and people.

The project is keen that the heritage does not just focus on the industrial past but looks at the natural heritage along the river (eg an intervention which guides the visitor towards the ancient willows/riparian corridor), as well as making vital links and connections with the wider historical assets of Mid-Fife.



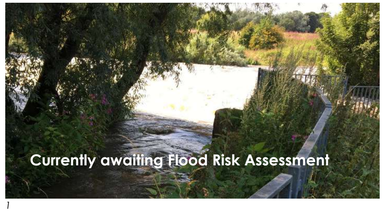
Play

With no existing play facilities within the Connectivity Project area play is not an immediately recognisable element in the structuring of the river park. However, prioritising natural play will provide opportunities for individuals, groups, families and classes to interact with each other and the landscape, to learn, to have fun and to explore. The river park provides a fitting opportunity to use play as a major framework element.

The Iron Brig Garden is seen as a particular opportunity for the community to co-design a play experience that can adapt and change with generations, with environmental needs and to really take ownership of the park.

Out-with the Iron Brig Garden the 'play' strategy is to provide for free and natural play that is multi-functional, that engages with a wide range of demographics, and sets a standard for future public space development. This natural play will be woven throughout the river park in designated areas and along movement routes.

The final point to identify is that play provision will be fundamental to the consideration and provision of 'Health and Well-Being' for Leven and the immediate communities of Methil up to Kennoway and down to Buckhaven.



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Flood Alleviation

One of the key principles to alleviate flooding would be to target measures at the root causes of degradation (such as erosion and deforestation) not the symptoms. As such any measures proposed for the Connectivity Project would be considered and designed in respect of proposals for upstream and wider catchment management. Any measures proposed should look to use minimal intervention and where possible to reinstate natural processes to allow the river (and tributaries) to recover by themselves.

Any detailed measures would accord with Fife Council's Adopted FIFEplan (2017) which sets out key planning polices and proposals for the development and use of land across Fife. A number of the FIFEplan policies have direct applicability to the wider River Leven project including sustainable services, and implementation of green infrastructure complying with green network requirements. Policy 12 (Flooding and the Water Environment): is particularly relevant, stating that development proposals will only be supported where they do not adversely impact on ecological quality of the environment. Any detailed flood risk and surface drainage measures would be designed and managed to avoid or reduce the potential for surface water flooding and to ensure that the functional floodplain is safeguarded. Underpinning all proposals will be the imperative to protect and enhance natural heritage and improve access to woodlands, green networks/greenspaces and path networks. Furthermore all proposals should increase biodiversity in the wider environment whilst protecting habitats and species.

Floodplain management

In line with the exploratory approach to the landscape of the river valley, the approach to flood accommodation and management is seen as an opportunity not a constraint. Water is one of the central elements to the life and identity of the park. With climate change bringing the prospect of rising tides, fiercer storms and run-off from surrounding residential and agricultural lands, rising waters will be considered as part of the detailed design palette for the River Leven Park masterplan.

Ground-breaking examples include Rotterdam's approach to climate change where the construction of multi-use facilities became emergency reservoirs, public spaces and gardens that can act as sustainable drainage facilities and retention ponds. The principle is to let water in where possible and adapt to it, rather than struggle to keep it out.

Following an initial review of the ongoing Levenmouth Flood Risk Assessment there appears to be an increasing risk from rising fluvial and coastal waters, a risk that leaves many landscapes and urban areas vulnerable to rising levels. Whilst not a comprehensive solution, as upstream measures are needed, accommodation of flood waters within the River Leven Park would be an important step. A number of key measures were proposed in the River Leven Restoration Project report by RSK, March 2020 (commissioned by Fife Council). Building on these, the Concept Design Masterplan proposes a series of measures to accommodate flooding across a range of existing landscape features, including,

- Accommodating flood water within two identified risk areas, the low-lying river edge at Methil and a large, but contained, expanse of the Creosote site.
- Opening up and reconnecting the historic Methil Mill Lade.
- Forming areas of wet woodland through management and replanting of existing areas of woodland
- Creating overspill storage areas, dipping ponds and enhanced wetland areas
- Increasing diversity of existing habitats such as wetland and grassland
- Thinning and vegetation enhancement of existing wetland pond at Burn Mill Garden
- Reinforcing and stabilising existing embankments, including measures to reduce energy of the river
- Replanting and vegetation enhancement along river banks, in particular planting of stands of willow trees.

In addition to the specific measures outlined above accommodation would be guided by effective river restoration principles including improvement of the overall ecosystem integrity and biodiversity, along with enhanced habitat value through appropriate new planting and management of existing woodland assets.

IMAGES ^ >

1 View from Kirkland Dam
2-3 Flooding at footbridge near Kirkland Dam
4 View from southern bank near Kirkland Dam
5 View east from footbridge
6 View west of Burn Mill Dam


4


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6

Riparian corridor

The riparian corridor, or zone, is the interface between the land and a river or stream, forming the link between the two environments. (The word 'riparian' is derived from the Latin ripa, meaning river bank). Riparian zones are important in terms of the river's ecology, habitat and environmental resource management, protecting stream banks from erosion, providing a storage area for flood waters, and providing food and habitat for fish and wildlife.

Environmental benefits can include:

- Providing habitat for many species, otters, water voles, etc and increased biodiversity.
- Linking fragmented and isolated habitats through which species move.
- Providing habitat and food for aquatic species such as fish and invertebrates.
- Strengthening river banks, reducing the risk of bank erosion and flooding.
- Reducing the impact of diffuse pollution on the water environment by providing a barrier to, and breaking down, pollutants before they reach the watercourse.
- Reducing the risk of flooding by increasing the channel 'roughness', slowing flows and stopping flows increasing downstream.
- Amenity and recreation provision.

This important area of the River Leven provides shelter and food for wildlife, and just as importantly, it can also provide protection from flooding and erosion in addition to filtering run-off from agricultural fields and pollution from surrounding industrial areas.

Assessment of the River Leven riparian corridor undertaken as part of the RSK report identified potential opportunities along the Leven for improvement including riparian and floodplain naturalisation and restoration including weir and bank modification, wetland improvement, and waters edge replanting. These opportunities have been translated into the masterplan proposals.

It is noted that any potential restoration or modification works to the river or riparian corridor will require consideration of a number of constraints / requirements including, but not limited to, land ownership.

Bank modification / reinforcement

As with much of the valley, the river and its reaches have not been maintained, which whilst that provides for a natural evolution there are opportunities identified in the RSK report for bank protection, modification and re-profiling to help introduce a diversity of habitat forming erosion–deposition processes to restore natural flow dynamics, morphological diversity and improve habitat conditions for key aquatic and riparian species.

There are also sections of the riverbank that have eroded, presenting potential future conflicts with neighbouring facilities and functions such as the embankment along the northern edge of the Donaldson James & Sons Timber yard.

The stretches of embankment that have been identified for potential modification works have been translated as part of the Concept Design Masterplan and will be reviewed and developed with the project team as part of the Stage 3 - Detailed Design phase. The detailed design works will ascertain the exact siting of bank re-profiling works in order to determine the nature of the bank re-profiling with due consideration of the channel dimensions and gradients and associated predicted flow rates to ensure that no detrimental erosion will take place.

Weir modification

SEPA have identified that both the Kirkland and Burn Mill weirs / dams act as major barriers for migrating fish, needing modification and the inclusion of fish passes to allow upstream access to spawn and feed. Modification could also benefit other aspects of the river including:

- Allowing more natural water level variations upstream.
- Reducing interruptions to sediment transport.
- Allowing the development of more varied flow types upstream.
- Allowing movement of fish between suitable habitats.

At this stage no decisions have been taken to how best modify Kirkland Dam and Burn Mill Dam. In general, the options investigated would include full or partial removal of the weirs, installation of a fish pass, or a means of 'easing' fish passage such as a rock ramp. Specialist surveys will be undertaken to determine the most appropriate option at each site.

After obtaining the relevant permissions, SEPA will appoint external specialist consultants to investigate the feasibility of one or more proposed solutions at each site.

Other potential options for mitigating the environmental effects of the weirs identified in the RSK report include the following:

- Lowering of the weir crest elevation
- Cutting of a new bypass channel. The head loss is spread over a significant length of channel, usually without any areas of supercritical flow velocity. There should be sufficient velocity and flow at the outlet to attract migrating fish
- Notching of the weir crest to provide a local area of lower head loss
- Installation of a fish pass. Essentially a separate, small channel through which the total head loss of the weir is separated out into smaller steps, usually with small resting pools between miniature weirs, notches or baffles
- Construction of a downstream cascade
- Exact proposals will be subject to further investigations and discussions between the relevant statutory bodies.

Replanting

An essential aspect of the river / riparian improvement works would include the management and replanting of willow stands and native trees along the rivers edge. At present there are significant stands of willow and wetland trees along the rivers edge that create habitat niches, shading of water and areas of slower flow that act as fish refuges. These trees and vegetation stands also provide foraging sites for species such as otters.

A full survey of the trees along the river, their health, quality and likely longevity is required as on initial visual inspection there appears to be a range of trees, of varying age and quality, some that need replacement and some that need reinforcement and replanting.

Any replanting of the banks would be carried out in accordance with SEPA guidance - Engineering in the Water Environment Good Practice Guide: Riparian Vegetation Management Second edition, June 2009(Document reference: WAT-SG-44).

In addition to reinvigorating the existing waterside trees, replanting would not only replace older existing trees but strengthen banks: a key factor in determining channel form and habitats which can affect the quality of in-stream habitats. The strengthening will also reduce the risk

1

of flooding, slowing and alleviating surface run-off. The vegetation will also offer a buffer strip that can protect water quality by reducing the impacts of diffuse pollution.

Importantly the aim of any new planting would be to achieve a cover of vegetation on river banks which is appropriate to the site and includes species native to the area with a multifunctional purpose of stabilising the bank, creating good wildlife habitats and creating an aesthetically pleasing landscape. Low impact management interventions are required in these areas including selective planting, INNS control and deadwood management, as disturbing banking and the existing biodiversity on the banks could cause more damage than good.

Wetland Improvement / Creation

Both the RSK and FRT report highlighted options to improve floodplain conditions of the riparian habitats included improving existing wetland and pond habitats, improving wetland connectivity, creating new wet woodlands and flood storage features. These measures would provide significant advantages for key species, improve biodiversity and water quality (by filtering water runoff and sediment flows), reduce potential erosion and help to mitigate flood risk.

In addition to the floodplain accommodation identified at Methil and the Creosote site on page 54, the creation of wetland / wet woodland by reconnecting existing areas of woodland along the southern side of the river was proposed as a key measure in any improvement works. The potential linkage route would involve the reinstatement and utilisation of the former lade from Kirkland Dam, a key feature of the masterplan. Not only would the lade

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reconnect the wet woodland to the river but it also presents significant opportunities for flood storage as well as providing a sediment sink. Further investigation will be required during Stage 3 - Detailed Design.

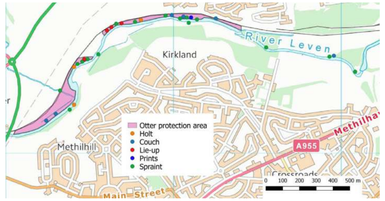
In respect of existing pond and wetland habitats the Green Network Biodiversity and Habitats Phase 2 Report set out the results of a 2019 ecological survey that identified thirteen water bodies (ponds, marshes, ditches and flushes) in the river valley. The survey identified a lot of potential to improve the quality and biodiversity of these habitats through a range of conservation management options, with particular involvement and engagement of local volunteers particularly in respect of planting activities. The main actions identified are the creation or extension of areas of permanent open standing water with new wildlife ponds created and several areas of existing habitats and ponds refurbished. Other actions include the installation of boardwalks, dipping platforms and educational trails.

Specific existing features identified for improvement include the SUDs pond serving Mountfluerie, the expanse of the Methilhill wetland and the lade pond at Kirkland Dam. The Burn Mill wetland is regarded as a wetland centrepiece of the river valley and as such the masterplan has focused on this asset as a core focus for community use and project development.

Otter protection areas

Otters are very much present within the river valley, using the area heavily as there is plenty of cover in the form of emergent, marginal grasses and vegetation to allow them to enter the water safely and then return to their burrows to rest. Pools to fish in and cover to hide in when they are resting are both plentiful in this section of the River Leven.

An otter survey carried out by FRT (Leven Connectivity Project Green Network Phase 1 Report June 2019) found



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IMAGES < ^

1 View of wetland adjacent to Burn Mill Dam
2 Photo of otter (Image credit: Jacquelyn Johnston, FRT)
3 Map showing survey area, outflow location, otter signs and good quality cover (FRT Leven Otter and Water Vole Survey p11)

many spraint sites along extensive lengths of the banks identifying rest sites and holts among the trees and in the grass. Otter activity is concentrated within the western half of the river valley, in inaccessible and undisturbed places where there is minimal human disturbance. The FRT report proposed the creation of two otter protection areas. With the reinstatement of the Levenmouth rail line providing the necessary separation from human activity, the River Leven Park proposals have identified these protection areas as part of the Green Network proposals.

Otters are a charismatic and popular species and have provided a base for FRT engagement and activities with the public. Continued otter interpretation and materials should be used to enhance and instigate engagement with the community and schools including visits and journeys along the riverside.

Otters, bats, nesting birds, Atlantic salmon, European eels and lamprey, along with Invasive Non Native Species, are all present within the river valley and will all be appropriately considered before carrying out any works. It is known where these species are present within the site and where their preferred habitat is located. Accordingly paths and active travel routes have been designed to protect these sensitive areas from disturbance to enable new habitats and ecological proposals to establish.

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Paths

To develop the Concept Design Masterplan, the project team had to really understand the site through the routes people use to move in, around and through the river valley. Since Stage 1 - Visioning, Iglu Studio have extensively walked, analysed and surveyed the existing path network comprising tarmac, concrete, mud and grass routes.

The existing routes that people take, the worn paths and muddy tracks are there for a reason: they are logical and functional direct routes from that fit the existing landscape form, features (slopes, vegetation, river) and destinations. Where new facilities, features and functions have been proposed, new paths have been added to connect to this existing network. (Note: all new proposed paths will be monitored to see how people use them, and adjusted if necessary). The approach to establish a path network for the river park has been sense checked with the community at public events and through online engagement.

Consequently, the existing path network has formed the basis of the connectivity framework layer for the Concept Design Masterplan.

From this robust foundation routes have been considered in terms of accessibility, use, function, requirement and traffic free requirements. A hierarchy has been rationalised with Primary, Secondary, Tertiary, and non-cycling routes (see pages 40-41). Mown grass paths also have a place within this network.

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Existing retained / upgraded

Not all existing desire lines have been incorporated into the proposed path network. Where this is the case these paths will be retained as they are, informal routes appropriate to function and place. Existing paths that do form part of the network will be upgraded and reconstructed as to ensure they comply with existing national or Sustrans guidance for paths and access for all / traffic free routes.

Traffic free routes that are to provide access for all and comply with Sustrans guidance are the Primary, Secondary, and Tertiary routes. These routes at present are proposed to be fully constructed shared use paths with edging and foundations as required, varying in width from 3.5m to 2.5m. The final design and detail of the paths will need to be appropriate to place and as such will be subject to further discussions with stakeholders and funders.

Certain routes will not comply with Sustrans access for all guidance but will still provide accessibility for a range of users. These routes will still be safe and appropriate to their use and function but may be constructed from non-compliant materials (timber boardwalks, whindust paths etc) or may be designed with narrower or variable widths. These routes will be used where landscapes require a more unique and place sensitive solution.

3

Proposed new

Proposed new routes will make connections within the River Leven Park to link residential areas, allow communities to access the river and existing assets of the area, as well as provide for proposed future facilities.

As with the upgraded existing routes, where required new routes providing access for all will be in compliance with Sustrans guidance, fully constructed with edging and foundations as required, varying in width from 3.5m to 2.5m. Where routes such as boardwalks will not be in compliance with Sustrans access for all guidance, they will still provide accessibility for a range of users in a safe and appropriate manner to their use and function.

It should be noted that all new paths, steps and ramps, will be designed and constructed in accordance with current guidance including Cycling by Design 2010 (Revision 2, July 2020) and Sustrans traffic-free routes and greenways design guide.

IMAGES ^ >

1 Concrete path above existing pipeline south of the river
2 Mud path crossing the former Mill Lade at Kirkland Dam
3 Whindust path south of the river at Methil Brae residential area
4 Flooded grass path adjacent to the wetland at Burn Mill Dam
5 Fibredec surfacing in a woodland setting

4

Boardwalks / raised walkways

Boardwalks and raised walkways are proposed in specific areas of the river park to address landscape sensitivities or existing construction issues.

Boardwalks are proposed within and along the Methilhill wetlands to maximise access with a minimum footprint and impact on the habitat. The raised boardwalks will be able to withstand fluctuating water levels and flooding, as well as providing platforms at different times of the year for 'dipping' and 'netting' (typical activities proposed for outdoor education trips the park can accommodate).

In addition to the boardwalks through sensitive landscape areas a raised walkway is proposed above the line of the existing mains sewer that runs on the south side of the river from the Kirkland Dam to the wetland at the Burn Mill Dam.

The potential complexities of building on or over an existing sewer pipe means that a cautious approach must be taken with the proposed installation of a metal framed walkway, fixed by screwpile foundation rods, that sits above the existing concrete path on top of the pipe. This will not only minimise any potential conflict during construction but will also provide for ease of access should the pipeline (or sections of it) need to be accessed or replaced.

It should be noted that raised walkways are being considered for other areas in the River Leven Park as a measure to allow for potential future flood events. Discussions have been held with Atkins, the consultants producing the Flood Risk Assessment, and will be on-going during Stage 3 - Detailed Design.

5

Construction materials

Construction materials for the paths within the river park will need to be cognisant and coordinate with the wider Active Travel Network. In addition, any material choice for Sustrans compliant and funded routes will need to accord with and be approved by Sustrans. To this end the masterplanning team have been researching materials that other Sustrans funded schemes have used. An example material is Fibredec surfacing (see image above) which was used for a cycle path project in a sensitive woodland setting with site constraints at Wisemans Bridge, Stepaside, Pembrokeshire.

Paramount is the installation of suitable materials which will not negatively impact on the habitats through which the paths will run whilst at the same time ensuring that routes are safe, secure and have a long-term maintenance guarantee.

One of the other factors being considered in the initial material consideration process is the ambition to realise a zero waste project, potentially the first of its kind in Scotland. As such the choice of material will be vital; whilst asphalt is the base standard surface material costed it is not a preferred material.

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IMAGES ^

1 Angers Saint-Laud train station, Angers, France
2 Luchtsingel footbridge, Rotterdam
3 Eysturkommuna Town Hall, Faroe Islands

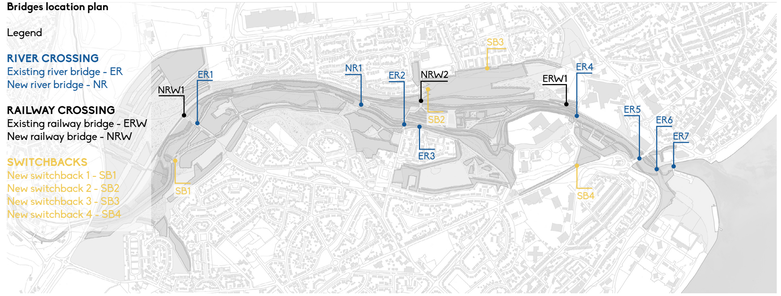
Bridges location plan

Legend

RIVER CROSSING
Existing river bridge - ER
New river bridge - NR

RAILWAY CROSSING
Existing railway bridge - ERW
New railway bridge - NRW

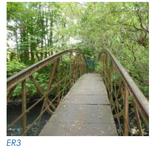
SWITCHBACKS
New switchback 1 - SB1
New switchback 2 - SB2
New switchback 3 - SB3
New switchback 4 - SB4



Existing bridges

ER1

ER2



ER3

ER4

ER5

ER6

ER7

ERW1

RIVER CROSSING
ER1 Existing - Pedestrian timber and metal bridge in Methilhill area to be replaced
ER2 Existing - Concrete vehicular bridge
ER3 Existing - C-listed metal footbridge from former Kirkland Works
ER4 Existing - Iron Brig, vehicular bridge, proposed refurbishment under review
ER5 Existing - Bawbee Bridge, on-going improvements works
ER6 Existing - Metal rail bridge at river mouth to be refurbished
ER7 Existing - Concrete bridge at river mouth to be refurbished
NR1 Proposed - New active travel bridge at Burn Mill Garden

RAIL CROSSING
ERW1 Existing - Metal footbridge west of Iron Brig to be replaced
NRW1 Proposed - New active travel bridge north-west of ER1
NRW2 Proposed - New active travel bridge in the Creosote Garden

Bridges

Within the river valley there are **eight existing bridges, seven cross the river (ER1-7)** and **one bridge that crosses the old rail line (ERW1)**. All are in poor condition, require further structural assessment and in a number of cases full replacement.

The Concept Design Masterplan proposes to retain all existing crossings and to introduce three new bridge crossings: **two new rail bridges (NRW1 and NRW2)**, and **one new river bridge (NR1)** (above the existing pipeline at the Burn Mill Garden, see visual on page 89). All bridges would be traffic-free and shared use for pedestrians and cyclists. Of the existing bridges the masterplan proposes the replacement of two bridges across the river **(ER1 and ER 2)** and the improvement or refurbishment (where possible) of the remaining five bridges across the river **(ER3, ER4, ER5, ER6 and ER7)**.

Bridges will be needed to cross the new rail-line and to cross the river but these structures should not be perfunctory structures that simply provide access. In a similar fashion to the red pavilions in Parc de la Villette in Paris, the bridges should be iconic structures that sit in the landscape as landmarks, a place to meet, talk and socialise with others in the community and a means to use to orientate yourself. The images opposite show three such iconic bridges that have inspired our deliberations.

Bridge precedents

Angers Saint-laud train station, Angers, France is a distinctive structure that has been designed as more than just a railway crossing. It is a new urban landmark where the wooden frames have been designed to provide a place for people to stop, linger, watch the trains arrive and depart, cross and meet, shaping the relationship between the passers-by, and with the place. The bridge becomes a path and a destination.

Luchtsingel, Rotterdam (Luchtsingel means "air canal") is a unique bridge in Rotterdam that was the world's first crowd-funded public infrastructure project. A 400-metre-long pedestrian bridge runs through a building and across roads and railways to connect three previously disconnected areas of the city, including the recently renovated Rotterdam Central Station with the historic Laurenskwartier district.

Eysturkommuna Town Hall, Faroe Islands bridges across a river to physically and symbolically connect two formerly separate municipalities on the Faroe Islands. Pedestrians cross the river using a walkway that leads across the building's green roof.

Gateways

Gateways can create a sense of arrival and exit: they are proposed at key junctions where the routes from the river park connect to the Active Travel Network. These gateways have the potential to provide a successful connection and smooth transition in terms of spatial requirements, to deliver high quality public realm and to enhance the sense of character of the River Leven Park.

The gateways could become places where people agree to meet, to stop and exchange stories of their days journey. To this end these spaces will be generous, providing seating areas, informal play for all with sculptural landmarks and land art.

Steps and ramps (switchback)

The majority of travel routes will be easily accessible by all with longitudinal crossfalls within acceptable guidelines. However there are a number of points where the existing situation is out-with Sustans compliant gradients, and potentially hazardous and exhausting to people with limited mobility. Some of these locations already have steps but the majority are in poor condition and will need to be replaced. The installation of switchback routes is proposed at these locations to enable access for all. Initial locations are outlined below and illustrated on the adjacent map but are subject to further discussion with the project team during Stage 3 - Detailed Design to ascertain if there are other locations to address.

SB1 - Kirkland Dam
SB2 - Creosote site (accessing to and from the north)
SB3 - Montgomery Drive
SB4 - Methilhaven road (south of the water treatment plant)

Signage and wayfinding

Signage and wayfinding are important detailed elements of any project involving travel, movement and connectivity. Careful consideration is required to balance the need for clear, visible and consistent directional information, with the need to minimise any potential visual impacts, avoid street furniture clutter and maintain the character of place. This is especially relevant in the River Leven Park where it is imperative to protect existing habitats and wildlife.

Having set out the key parameters for signage within the river valley, it is understood that the River Leven Park signage should connect to and correspond with a range of other routes, including the wider Active Travel Network, Fife Coastal Path, and the Pilgrims Way. To this end the masterplanning team have already been engaged in conversations with Fife Coast & Countryside Trust about their signage strategy set out in their new design guide, Fife Outdoor Tourism Infrastructure Design Guide, September 2020.

Signage and wayfinding has to be accessible for all and include people of different abilities and ages. Local access groups and national bodies such as the RNIB and the Alzheimer's Society will be part of the conversation. Text, colours, textures, sounds and braille will be considered to ensure the on-ground measures are truly inclusive for all.

Lighting

In a similar manner to signage and wayfinding, lighting within the River Leven Park will have to balance the positive benefits of lighting of routes and places for safety of movement, security of property, and other activities at times of darkness, against the need to minimise any potential light pollution.

It is known that human health and ecosystems can be adversely affected by excessive artificial lighting. As such the aim is to balance the need for any lighting proposal against the negative effect it may have on the environment. In particular, artificial light at night has negative and deadly effects on many creatures including amphibians, birds, mammals, insects and plants as light pollution radically alters their night-time environment by turning night into day. This affects sleep, migration, breeding and hibernation patterns, and even basic requirements such as hunting.

Woodland Structure

Produced during Stage 1 - Visioning, the Phase 1 Habitat Survey included a map illustrating the distribution of vegetation and woodland types within the river valley. Building on this base during Stage 2, a survey was commissioned to identify and assess all woodlands within the river valley and develop a management plan with recommendations for improving biodiversity and habitat quality. The report was undertaken by Mark Hamilton Landscape Services and was completed in May 2020.

In summary the report identified a total 46.39 ha of woodland in the river valley. The majority of woodlands in the valley are relatively young (1-15 years), although there are smaller quantities of semi (15-35 years) and early mature trees (35-60 years). Composition is mostly broadleaved and native, but there are some areas of non-native trees as well. Most of the woodland is healthy, but there are some areas of slope erosion, limited rooting in poor soils, competition due to lack of thinning, waterlogging, poor drainage and Chalara ash dieback.

The Scottish Government has set statutory targets for the reduction of Greenhouse gas emissions (GHG) in Scotland through the Climate Change (Scotland) Act 2009. One of the ways in which they aim to meet this target is through increased woodland cover. The River Leven Park Masterplan proposes to contribute through the improvement of the existing woodland, including both the reinforcement of woodland compartments and the planting of new mixed native woodland. In addition, proposals include supporting sustainable adaptation of the river park area to a changing climate through the conversion of identified blocks of woodland to wet woodland, and the proposed introduction of agro-forestry at the western end of the project site. These proposals are in addition to a community focused initiative of planting tiny forests as outlined on page 64 and illustrated in the Habitat Toolkit supporting document.

Mixed Woodland

In the main the proposals for the mixed woodland within the river park fall into two programmes, 1) the management and expansion of existing woodland compartments, and 2) the planting of new mixed native woodland.

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1) Management and expansion of existing woodland

The management report identified the need, throughout the river valley, to thin existing woodland compartments, selecting individual trees (usually the non-natives) for removal to reduce crowding and competition, allowing for better canopy development and more diverse successional woodland understorey layers.

Areas of existing woodland that are currently unmanaged or subject to low levels of maintenance are identified for potential 8ha expansion through the planting of native trees. This would reduce habitat fragmentation and improve connectivity of the Green Network throughout the river valley.

Other management options proposed included:

- Creating deadwood habitats
- Constructing beetle bands and hibernaculae for amphibians
- Wildflower planting, sowing and bulb planting
- Erection of bird and bat boxes
- Edge pruning along path corridors
- Pruning and brashing of woodland edges.

IMAGES ^ >

1 View of existing woodland east of Kirkland Dam
2 Example of mixed native planting west of Kirkland Dam
3 View of wet woodland west of Burn Mill Dam (Image credit: Forth Rivers Trust)
4 Photo of agroforestry at Glensaugh Farm (IMage credit: James Hutton Institute)

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2) Planting of new mixed native woodland

There is also significant scope to expand the overall area of woodland in the Leven valley through new planting. This would not only help realise a robust landscape that addresses climate change and enhances environmental sustainability, but also reconnect fragmented sections of the river valley woodland structure, enhance habitats and create beautiful habitats for both wildlife and people to enjoy.

Woodland areas are more effective and have more impact when they are large. The expansion of existing woodland and new planting will significantly add to the already sizeable 46ha of woodland in the river valley. This could provide a great opportunity to engage with the community. As such, Iglu Studio have developed a series of Habitat Toolkits including one for woodlands, which will be used to facilitate discussions with locals to determine the most suitable sites, species and how they can get involved.

New woodland blocks should have a complex structure of layers starting from the canopy down, made up of the tallest (or climax) species, a lower shrub layer with plenty of structural complexity and finally a field layer with shade tolerant specialist woodland plants including ferns, bluebells and wood anemone. Dead wood is a key woodland habitat and will be retained. In addition, woodlands will be created to provide food and shelter for bats and birds, and where possible to make conditions attractive for lost species such as newts, owls and grey squirrels.

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Wet Woodland

Wet woodland is deciduous woodland often found on floodplains and as small patches within larger wooded areas when damp ground is colonised by species such as willow, birch and alder. Whilst wet woodlands can be sensitive to changes in climatic conditions, the masterplan proposes to create wet woodland areas on the southern side of the river to accommodate flooding within the valley and act as a natural management technique to mitigate erosion and improve water quality.

In addition wet woodland is an extremely rich habitat for invertebrates, supporting a large number of species particularly associated with willow, birch and alder. Unfortunately due to clearance and land use conversion there has been a considerable loss of wet woodland habitat in Britain during the last century. Therefore the realisation of a strong and healthy wet woodland within the valley is seen as a key element to increase biodiversity in the River Leven Park.

The wet woodland will be implemented through a gradual and sensitive management process, removing and substituting existing trees in poor condition with new wetland species. It is crucial to maintain a diversity of species, sizes and age classes of trees and shrubs. This will encourage complexity in the structure and species composition of the ground vegetation.

It should be noted that retaining significant quantities

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of standing and fallen dead wood is essential, along with controlling the spread of invasive and non-native trees and shrubs. In addition, a mosaic of sub-habitats with bare mud or peat, level and higher moss-covered areas are important for many wet woodland insects and invertebrates as they provide spaces to retreat if water levels rise.

Wet, boggy habitats are very fragile and easily damaged by trampling, so it is proposed that access to and through the wet woodland areas would be via boardwalks or raised platforms in order to minimise or avoid disturbance.

Agroforestry

Agroforestry is the integrated use of trees on a farm or small holding for a wide range of benefits. It is referred to as silvopastoral where livestock is managed and silvoarable where crops are grown.

As noted earlier, the Scottish Government has set statutory targets for the reduction of GHG emissions in Scotland through various measures including increased woodland cover. This increased woodland cover includes the expansion of agroforestry in Scotland.

In line with this principle, an area of approximately 15.4 hectares of existing agricultural land at the north western end of the River Park is proposed for adaptation to agroforestry.
The proposal was conceived as a community / social based scheme that would look to evolve the current commercial agricultural landscape to one that provides for local community food production, a key aim of which would be local jobs and training, including apprenticeships. In addition, a number of external factors support the introduction of agroforestry: localism resulting from Covid_19, Brexit, and Climate Change, which the National Farmers Union sees as the challenge of the time (Business Green, Michael Holder, 21 May 2020). Agroforestry would provide a number of environmental benefits similar to those identified in a recent report by ClimateXChange Scotland (Scotland's centre of expertise connecting climate change research and policy) titled 'Agroforestry in Scotland – potential benefits in a changing climate 2018.'

The potential benefits of increasing the use of agroforestry practice in Scotland, include,

- Facilitation of climate change mitigation through carbon capture
- Improved animal welfare
- Improved ecological condition, especially of soils and water courses
- Reduced pest load due to natural predation
- The 'legacy' effect of leaving land in a better ecological state for the next generation
- Improvement of the visual landscape
- Nutrient retention and nutrient cycling
- Landscape (woodland) connectivity and biodiversity improvement, generating new opportunities for wildlife.
- Cost savings
- Income generation

More species of insects and a greater abundance of insects are found in agroforestry than in conventional agriculture. The same applies to birds, with more species (both open-field and woodland bird species) and a greater abundance recorded in agroforestry systems.

Whilst Iglu Studio have been researching agroforestry schemes in Scotland including the research being carried out by the James Hutton Institute at Glensaugh Farm (see image 4) in Aberdeenshire there is a great deal of further research to be carried out and importantly conversations with landowners and the wider Levenmouth community.

Tiny Forests

Tiny forests are based on forest management methods developed in the 1970s by Japanese botanist Dr Akira Miyawaki. The trees are planted at high density, at a rate of around 3 trees per square metre, essentially mimicking nature. When a gap appears in a natural forest, tree seeds will germinate quickly in response to the new opportunity and then compete, shooting up to grab the light. This approach leads to a density of growth which captures a lot of carbon and which is impenetrable, excluding people to the benefit of wildlife.

"Scientific modelling has shown that four years after planting, one tiny forest will grow up to five times faster and absorb up to 30 times more carbon compared with traditional monoculture tree-planting schemes; attract more than 500 species of animals and plants; process 30,000 litres of rainfall; improve air quality through dust reduction; and reduce noise and heat."

Catherine Early, Yourweather.co.uk, March 2020 – Small is beautiful – tiny forest promises big wins for environment

A specific site within the River Leven Park to trial this would be identified with the community, although initial suggestions include locations near Poplar Road. While the preference would be to collect tree seed from a range of native species in the area and grow them until they are large enough to plant out, native saplings and whips could be sourced from local nurseries. The proposal is that the tiny forest(s) would be a community-led project; from site selection, to planting and subsequent maintenance of the trees, at least for the first couple of years. After that it is hoped that the trees can then be left to create a perfectly formed mini-forest.

The UK's first 'tiny forest' was planted in early 2020 in Whitney, Oxfordshire, led by environmental charity Earthwatch and Whitney Town Council.

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Grassland

Whilst the river valley includes a wide range of habitats, (See Phase One Habitat Survey on page 15), a significant proportion of the area consists of amenity grassland. Amenity grassland is essentially areas of closely mown grassland which are both labour intensive and poor for biodiversity with no structural complexity. Whilst they provide spaces for play and recreation, there is little scope for natural play or educational programmes.

The masterplan presents the opportunity to re-naturalise some areas of amenity grassland and subsequent conversations should be held with community groups to explore how these areas can be improved for wildlife and people. To help facilitate these conversations, an ecological Habitat Toolkit booklet was created as part of the production of the River Leven Park Concept Design Masterplan. It includes a chapter which outlines the significance of naturalised grasslands and provides step by step illustrations to enable the community to create and establish wildflower meadows.

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< ^ **IMAGES**

1 View of existing renaturalising grassland near Kirkland Dam
2 Birdsfoot trefoil wildflower found throughout the River Leven valley
3 Meadowsweet wildflower found throughout the River Leven valley
4 Yellow flag wildflower found throughout the River Leven valley

Wildflowers

One of the striking aspects about the existing landscape of the river valley is the array of wildflowers already within the river valley. The Green Network team have been engaged in discussions with the Grounds Maintenance Service team at Fife Council (FC) to understand the intent and goals of the current maintenance programmes, and to develop a focused programme to support the establishment of wildflower meadows within the River Leven Park.

The creation and management of native wildflower meadows can significantly contribute to the delivery of public body duties on biodiversity and climate change, and with Scotland having lost 97% of lowland wildflower meadows since WWII the River Leven Park presents a great opportunity to reverse this loss and create new meadows.

Wildflower meadows have a range of benefits including,

- Long-term cost savings.
- Carbon sequestration and reduced emissions due to less use of machinery. (Potential to sequester twice as much carbon as forestry)
- Biodiversity benefits more species than amenity grass
- Potential for energy production from biomass of cuttings
- Health benefits
- Community involvement and partnership working
- Potential for related activities around flowers including skills development, learning and education

Despite these benefits, successful establishment and management of the meadows could depend on community support. The maintenance regime should be flexible with clear lines of communication between FC and the community. The project team see the creation of wildflower meadows as an opportunity to get young people involved to learn new skills and boost job prospects. Creating meadows is a great way to engage people with the environment at a time when many seem to be separated from it, to profit from the health and well-being benefits, and to provide opportunities for people to learn about meadows and their local wildlife.

Pollinator corridors

The Green Network (GN) workstream, in conjunction with BugLife, has developed a network of proposed pollinator corridors to improve biodiversity through a connected system of greenspaces which includes roadside verges, arable land, school grounds, parks and the river valley itself (see page 44).

The River Leven valley is seen as one large pollinator corridor, potentially forming the core of the network due to its diversity of habitats. To and from the river valley, the proposal will create approximately 28km of pollinator routes, many of which will overlap with the proposed Active Travel Network throughout Levenmouth.

Within the river valley the range of habitats considered for the creation of pollinator corridors includes wet grassland, species-rich grassland, rough grassland, woodland and tree-lined avenues, meadows, open mosaic habitats and south facing banks. Areas out-with the river valley included schools and park grounds, roadside verges and paths adjacent to arable land.

The creation of the corridors is seen as a community-based programme involving engagement with local schools, groups and organisations, training them in activities such as digging and turning soil, scattering seed and planting hedgerows, fruit tree whips and plugs. Some maintenance will be required, and volunteer groups will be invaluable in looking after their respective 'patches.'

It is suggested that a legacy organisation or a social enterprise, perhaps a Friends of the River Leven Park group be established to develop and maintain the pollinator routes. If this was achieved it is hoped that other traditional methods of grassland management such as scything could be offered for long term volunteers. This would also help with interpretation, training and branding to create a local feeling of shared ownership and reduce the risk of vandalism.

Rail line

The exact alignment and extent of the new rail line and the proposed stations at the eastern and western extents of the River Park has yet to be determined and fixed. This section of the report will be completed on final receipt.

The route of the new rail line is proposed along the route of the former railway. There will be adjustments necessary to ensure that the new line accords with current guidance on horizontal alignment. In preparation, works along the existing line have included the removal of existing trees, in line with discussions between Network Rail and Forth Rivers Trust. The removed trees have been chipped and used locally, and currently there is a programme of woodland and tree replanting works along the rail corridor in to which FRT and Iglu Studio will make comments and recommendations.

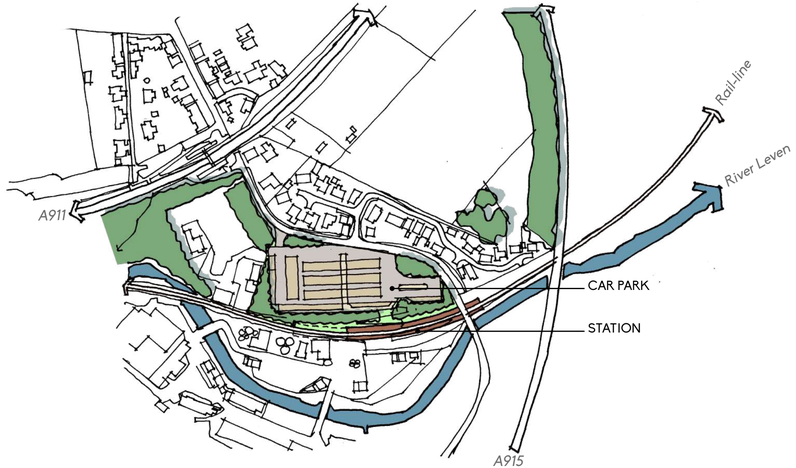
Stations

"Railway termini are our gates to the glorious and the unknown. Through them we pass out into adventure and sunshine, to them, alas! we return". E. M. Forster

Whilst the two train station locations have yet to be agreed, Iglu Studio have been working (along with the wider Leven Project team) with Network Rail to assess the options available, of which there are twelve options and variations.

The two new stations will be provided at either end of the River Leven Park at Cameron Bridge and at Leven. Network Rail consultants, Atkins, produced optioneering reports in January 2020, and February 2020, with eight and twelve options respectively. The optioneering process looked at a range of determining factors including,

- Connectivity
- Accessibility
- Catchment Area
- Land availability
- Stakeholder requirements and feedback
- Engineering
- Constructability
- Maintainability
- Functionality



^ *Cameron Bridge Station - Option 3 - 3a & 3b Former Station Site Option - February 2020*

As part of the masterplan development process Iglu Studio produced a supporting document Rail Station Options - Masterplan Considerations which assessed all twelve options (see example Option 3 sketch layout above) through the lens of the River Leven Park Masterplan. This process involved looking at factors such as flooding, connectivity and sustainable travel, proximity to residential neighbourhoods, landscape architecture, ecology, and urban design. A series of existing and proposed diagrams considered the general positive (+) and negative (-) factors as well as more specific detailed elements such as bridges and crossings. Iglu Studio also included alternatives where it was felt appropriate.

In addition to an assessment of the proposed station locations Iglu Studio considered the potential design of the stations, highlighting a selection of leading precedent examples (see adjacent page) along with the features and implementation required. An initial list of facilities that should be considered as part of the station development includes,

- Toilets
- Ticket points
- Charging points
- Cycle stands
- Information points
- Wi-fi
- Work stations
- Lighting, seats, bins etc
- Delivery lockers

"There's something about the sound of a train that's very romantic and nostalgic and hopeful".

Paul Simon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IMAGES >

1 *Fish Market, Bergen, Norway*
2 *Tunnel Hoop, Kew Gardens*
3 *Dieser Helsingborg, Germany*
4 *Promenade Samuel de Champlain, Canada*
5 *Kohta Train Station*
6 *Waiting area, Barneveld, Holland*
7 *Tram stop Alicante*
8 *Bus stop*
9 *Bus shelter, Aachen, Germany*
10 *Metro station, Lusanne, Switzerland*
11 *UCCA Dune Art Museum, China*
12 *Barnevald Noord Station, Holland*

Introduction

Levenmouth's industrial heritage of mining, mills and the rail line presents an opportunity to tell the story of the area, not to celebrate or eulogise it, but to frame it from the perspective of the community through their lens and their stories.

The Collapsing of Timelines graphic and Flow / Lines concept sketch in the design narrative on pages 48-49 reveal the footprint of the industrial past within the river valley. Having mostly been lost, removed or buried, the majority of these traces are invisible though the land endures.

Hidden History Trail

Through a similar approach to the National Trust for Scotland's Kiltyrie Hidden History Trail in the Ben Lawers Nature Reserve, we are keen to tell the stories of the people who lived along the banks of the river, who crossed the river, made their living from the river and how their lives have been connected to the Leven, the adjoining land and the sea.

One of the remnants of the former industrial past is the former lade stretching from Kirkland Dam to the wetland at the Burn Mill Dam. Careful re-opening of the lade will not only provide an opportunity to establish a heritage trail along the southern flanks of the river but also mitigate future flooding.

Local vernacular

Further to the research, digs and investigations to be carried out by Fife Council and Historic Environment Scotland, revealing the local vernacular should be complemented by conversations with the community.

Perhaps we will hear stories of the dramatic changes to the river and peoples lives in the past, their current relationships with the river, and their aspirations and hopes for the future. A storybook of the River Leven telling not just the tales of the elite but everyday, local people.

1

As you stroll across the open grassland keep your eyes open for the grey heron. Listen out for the rustle of the majestic willows. Look down for the paw print of an otter in the mud, and suddenly you are on a journey into the past on a trail that tells of Levenmouth's hidden heritage, subtle details of lives and places you would not know unless the buried detail and features of the landscape told you the story.

^ > IMAGES

1 Excavation at Ben Lawers for the Kiltyrie Hidden History Trail
2 Sculpture Garden at the Kröller-Müller Museum

2

Interpretation

Access for all should be a fundamental principle for any heritage interpretation. The development and design process will involve people of all abilities, all ages, and all levels of familiarity and knowledge about the river valley. It is important to extend the invitation as widely as possible from the start of the process.

Our initial approach to introduce heritage references within the River Leven Park does not involve traditional interpretation panels. Even if interesting they can be counter-productive and age quickly if sited incorrectly and constructed with sensitive materials. More significantly, interpretation panels can be seen as creating cultural homogenisation, and a loss of the individuality of the river. To counter this the intention is to weave information into the structures, the features and spaces of the landscape. This can take a range of forms, perhaps where stories are laser cut into the metal balustrade of a bridge, or engraved into the timber façade of a birdhide. Perhaps it will involve 'old school' leaflets or 'new school' QR codes for your smart phone.

Interpretation is not seen as a one-way process. It is hoped that users of the park will contribute and feed in to interactive maps or websites such as Slowways, https://slowways.uk/, a new website created by walkers who contribute information to establish a network of walking routes using existing footpaths to connect all of Great Britain's towns and cities as well as thousands of villages.

Interpretation will include a process of evaluation to sense check that it is effective or requires tweaks to meet agreed objectives. Ultimately though we want people to think for themselves. Part of this process will be the need to stimulate all the senses where possible. What can people see, hear, feel, smell and taste? What can people take away and what will they remember from visiting the River Leven Park?

Landmarks / Sculptures

Throughout the development of the masterplan, ideas for sculptures and landmarks have been part of the conceptual process. From discussions with Scottish Canals about the Kelpies and Helix Park at Falkirk to the on-going proposals of the breaching whales at the river mouth.

The River Leven Park presents opportunities to incorporate sculptural content, monuments and landmarks within the landscape. Recent global events have shown that the inclusion of monuments is a complex and difficult process but the inclusion of artworks and sculptures that reflect the people and place, record heritage and realise cultural assets, can be a good thing to reinforce identity, as well as provide a cultural draw to Levenmouth.

One inspiring example of this is the Kröller-Müller Museum (see adjacent image), the national art museum and sculpture garden in Otterlo in the Netherlands. The museum and art gallery house famous works of art set in a park that covers 5,500 hectares of woodland, heath, and grasslands. A place where anyone is free to roam on foot or bike and a great precedent example for the River Leven Park.

Introduction

Play is a core driver of the proposals for the River Leven Park. It is the intention to maximise the natural opportunities that the site offers, to be inclusive of all abilities, ages and all levels of familiarity, and as such it is vital to involve the right people in the process from the start: the community, social groups, schools, parents, care givers, Fife Council, other stakeholders, and most importantly children.

Play provision will accord with guidelines from Play Scotland[1] and other policy guidance to ensure safe and secure play without stifling inventiveness, inquisitiveness, and exploration. Play is intended to be fun, but also to be educational, contribute to life lessons, and crucially create confidence, a sense of purpose and a feeling of comfort. Children learn by doing, exploring and experiencing the world around them and to this end the ambition is for all children and young people to enjoy high quality play opportunities within the river park. Play which is stimulating, that provides access to nature, and contributes on a daily basis to learning, whether in childcare, nursery or school.

At the time of writing this report during the Covid-19 pandemic, it is even more important that the mental well-being of children and young adults is at the forefront of decisions made and actions realised. Children who play outdoors more often have better social networks, are more confident and are more involved in their local communities. The Play Scotland website outlines research evidence demonstrating "that playing is also central to children's spontaneous drive for development, and that it performs a significant role in the development of the brain, particularly in the early years. Play and recreation facilitate children's capacities to negotiate, regain emotional balance, resolve conflicts and make decisions."

Whilst all children and young people have the right to play and the right to learn (enshrined in the UN Convention on the Rights of Children), providing quality open and green spaces for children to explore and spend time outdoors appears to be more challenging than ever. The River Leven Park though, can provide a vast range of opportunities, offer an unrestricted invitation to play outdoors and enhance learning so that children's health, well-being and development can thrive. With the input of the community, stakeholders and children themselves, diverse green spaces and landscapes that empower playing and learning can be realised.

1

To realise these intentions and aims, the Concept Design Masterplan has two core aspects to the play strategy: firstly, a series of fixed (more formal) play areas, or stations, that help to give a sense of structure, legibility and coordination, and secondly a series of small, informal natural play opportunities alongside travel routes that connect neighbourhoods and schools.

It should also be noted that initial conversations have been had with Inspire Scotland to explore possible avenues for collaboration.

IMAGES ^ >

1-2 Playmounds and natural play areas at Draper's Field, London
3 Children playing on grassy parapet at Parc du Grand Pré, Brittany, France

REFERENCES

1 https://www.playscotland.org/play/playful-learning/outdoor-play-and-learning/

9 DESIGN NARRATIVE | SECONDARY FRAMEWORK LAYERS - PLAY [Illustrating the proposals]

"Wherever they live, children and young people of all ages and abilities should be able to play outdoors, in a variety of ways, in high quality spaces, within sight of their homes, or within easy walking distance, where they feel safe whether or not they are accompanied by adults."

Getting it Right for Play: The Power of Play.

2

3

Natural Play

The design of play has changed radically over recent years moving away from static, fenced, fixed equipment play parks that are inflexible and costly to maintain. The increasing use of natural materials, undulating surfaces and imaginative landscaping has allowed children and young people to experience irregularity and develop the skills and abilities necessary for assessing physical risk.

Natural features and spaces allow freedom of expression where trees, rocks and water provide the canvas to learning everything from seasonality to engineering. Who of a certain age has not learnt to build a dam in a burn, or to set up home in a house of branches, twigs and leaves? Play Scotland identifies that the presence of natural features has a positive effect on children and young people's social contacts, concentration, self-control and ability to deal with stressful events.

Natural environments also have the innate ability to be flexible, to change over time, offering opportunities for imaginative, creative, dynamic, social and decision-making play that change and evolve as the child does. This also offers benefits to those supporting, funding and maintaining play spaces as equipment can be replaced with minimal cost, on a regular basis and remain relevant to changing economic and societal factors. It certainly negates the current malaise of the often blandness of existing play facilities which offer few opportunities for exploration and imagination for children to stretch and challenge themselves.

Children often want to play outdoors but the reality of Scotland's unpredictable weather can limit opportunities. Therefore a range of natural play spaces is essential, some with safe shelter, some without, that can be flexible to accommodate changing climatic, residential and education patterns.

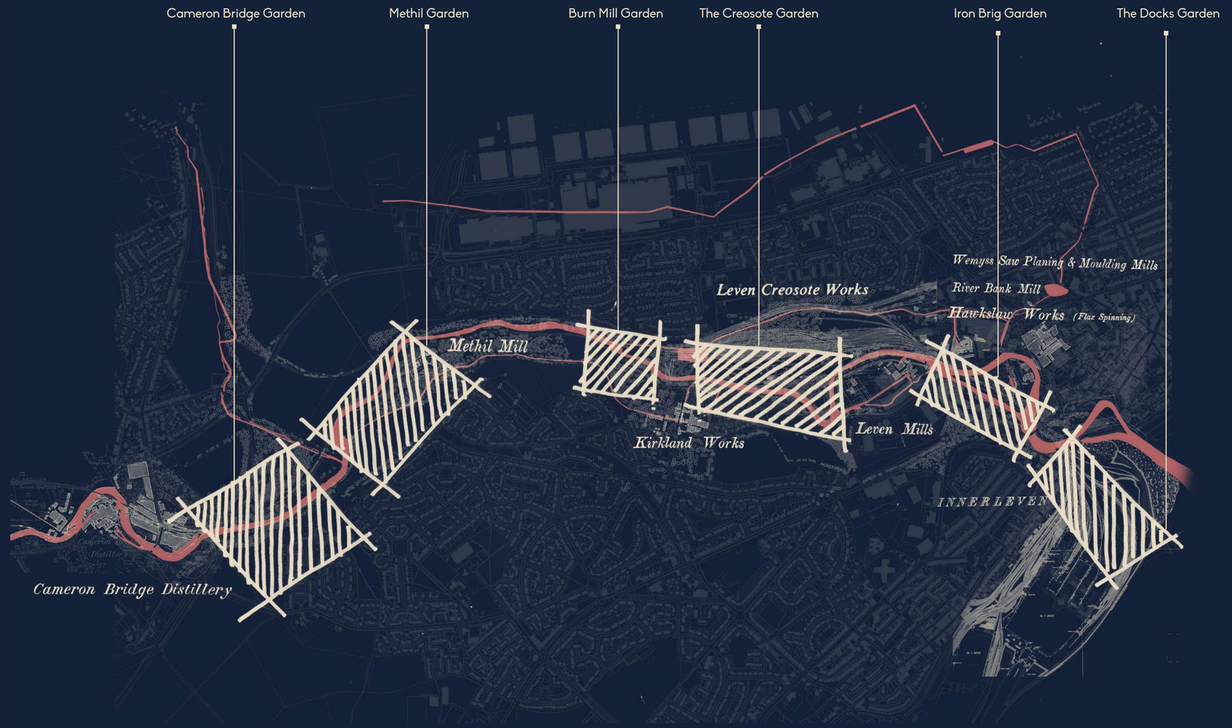
Community Co-Design

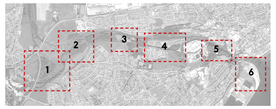
We use co-design here in a broader sense to refer to the creativity of designers and people not trained in design working together in the design development process.

The project team understand the importance of working with the community and this is no different when designing and developing play spaces. We are keen to work with locals both within and out-with the River Leven Park. The proposed Iron Brig Garden presents a great opportunity for co-design to develop a major play space, a focus for community events and activities, similar to the Baltic Street Adventure Playground in Glasgow.

It is also true that children's outdoor play commonly takes place in the streets and open spaces nearest their homes, so it is essential to work with the community beyond the river park and to connect the river park to residential areas to ensure the safe movement of children. Safe movement from street to play space is good for friendships, socialisation, developing independence and learning about risks or challenges as children benefit from not just the physical exercise but also healthy social interaction.

A linear river park containing six gardens





1. Cameron Bridge Garden site

3. Burn Mill Garden site

5. The Iron Brig Garden site

2. Methil Garden site

4. The Creosote Garden site

6. The Docks Garden site

Existing Situation

Overview

Site photos

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Habitats

The approximately 9 hectare woodland plantation to the north of this area is between 20 to 30 years old with a good mix of native species. The semi-natural riparian woodland contains many large, mature trees. There are also significant areas of dense scrub and a stretch of marshy grassland which is classified as an otter protection area. The River Leven itself flows through this area.

Character

This area within the river valley is arguably the least accessible of the six areas of focus, subsequently with the least evidence of current human use. The character fluctuates from a narrow, dense, steep, sunken and shady woodland to a busy A road and overpass. The river itself is partially hidden from view from the southern riverbanks.

Constraints

The steep southern slopes have heavily degraded whindust paths with limited room for widening the walkway. The A915 is a very busy road linking St. Andrews and Kirkcaldy. The otter habitat on the northern edge of the riverbanks should be protected during any construction works. The re-opening of the rail-line and subsequent rail corridor will limit the public space available.

Opportunities

The dense riparian corridor has been left unmaintained for many decades and presents a significant landscape feature to protect and enhance. Similarly, the area of otter habitat is of particular ecological importance and any design moves should avoid any disturbance. The installation of a new train station within this area means it will be a key arrival point for visitors and as such needs to be well connected with the river park and the path network.

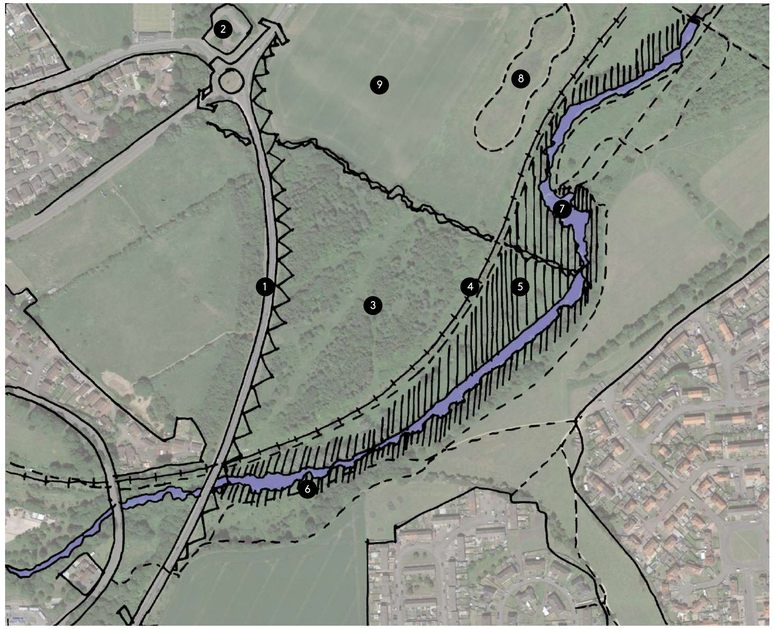
IMAGES

1 The current pedestrian crossing across the A915
2 Dirtpath above southern river bank
3 Birch forest to east of A915
4 View of Kennoway Burn from rail-line bridge

10 AREAS OF FOCUS | CAMERON BRIDGE GARDEN [Illustrating the proposals]

Existing Situation

Overview



EXISTING SITUATION ZOOM

Legend

- **Key ecological features**
- **Informal path network**
- **Disused rail-line**
- **Physical barrier**

1. Main road A915 and vehicular bridge
2. Windygates car-park
3. Semi-mature mixed woodland plantation
4. Disused Levenmouth rail-line
5. Otter protection zone
6. Steep embankment/river edge and woodland
7. Kirkland Dam
8. Suds feature
9. Arable land

Cameron Bridge Garden - Case studies

1. Lund Institute of Technology (LTH), Lund

Relevance: The relevance of this project is very much focused on the way the designers at LIT addressed the water's edge of old clay quarry pits, whose rims have steep drops, almost vertical, creating new social spaces and hubs. The concept was to make the steep edges to the water accessible, creating socially attractive places and promenades, to sit, watch and enjoy the views with friends and colleagues. The steep embankments have a resonance with the southern slopes of the River Leven and the introduction of a cantilevered walkway and platforms could provide opportunities for moving along the rivers edge, as well as 'look outs' through the trees.

2. The Burnley Bouldering Walk, Melbourne

Relevance: A hidden gem in Melbourne, is the inspiration for activating the unused spaces of the Cameron Bridge area. Located underneath the city link motorway, is an oasis of fun and activity through a series of climbing walls (3No) built as part of the infrastructure and offering a free training ground. The walls are accessible by path, cycle, bus and car. The walls offered opportunities and ideas for how the western gateway (under the A915) could be handled and designed.

3. The Landscape Therapeutic Park, Brilon

Relevance: The Landscape Therapeutic park in Brilon is of particular interest for the Cameron Bridge Garden with its contrasting spaces of open meadow and steep forest slopes, beautiful trees, fragrant flower meadows and hilly grassland. The use of recurring elements such as comfortable benches, the colour red and explanatory lettering help to provide unity, a sense of place and directionality for users of the park. The image adjacent (3) illustrates how paths are marked to orientate travellers and also provide informal resting opportunities.

4. The Chronograph Museum, Rezé

Relevance: The museum was designed to act as a beacon in the local landscape and has been staged on three different levels: the ground and first levels dedicated to exhibitions and public entrance, and the top terrace and belvedere which enable the visitor to read and understand the wider landscape.

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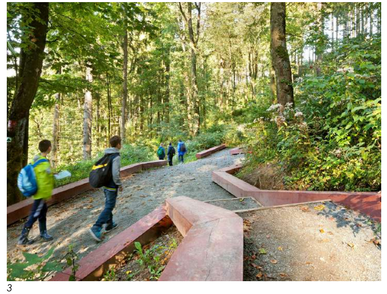

3

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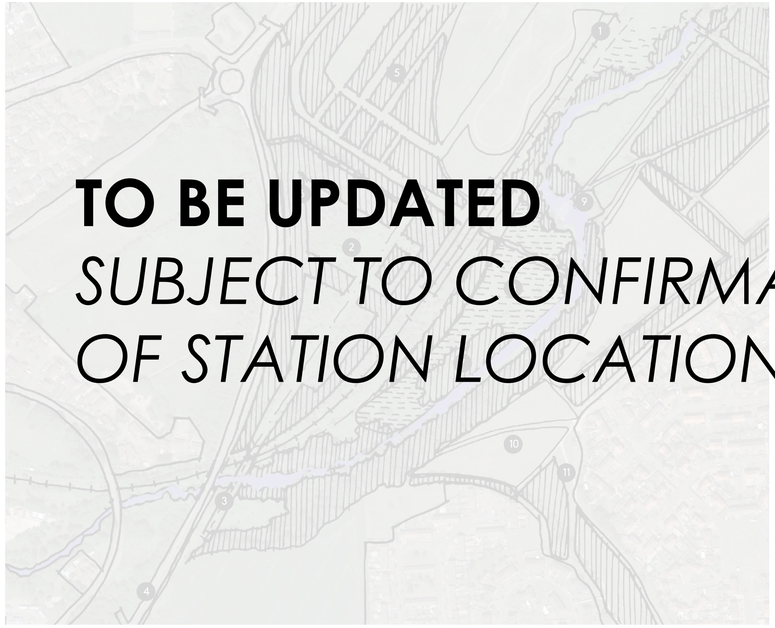
^ **IMAGES**

1 Lund Institute of Technology, Sweden
2 The Burnley Bouldering Walk, Australia
3 The Landscape Therapeutic Park, Germany
4 Le Chronograph Museum, France

Concept Design Proposal

Overview



Key moves

1. Reconstructed rail-line, re-aligned with new train station at western end of site.
2. Train station car park to be 'fitted' within existing woodland block.
3. Proposed pedestrian bridge connected with train station and housing to west and south.
4. Improved crossing along A915
5. Agro-forestry adaptation from arable land
6. Existing woodland block to be reinforced with new planting/structural green framework
7. River edge/embankment reinforcement and [illegible] planting
8. [illegible] flood-water protection area, reconnect to the floodplain
9. Upgraded viewing platform at Kirkland Dam
10. Wildflower meadows as open welcoming space
11. Tiny forest to build on existing woodland stands on the edges of the amenity grassland and provide continuous habitat connectivity with CLEAR Buckhaven orchard/hedgerow proposals to the north-west of Levenmouth Academy

Existing situation

Overview

Habitats

The Methil Garden encompasses an area which includes neutral grassland, marshy grassland, amenity grassland, both semi-natural and plantation broadleaved woodland and the River Leven itself.

Character

This area feels almost rural compared to other stretches of the river valley with only fleeting glimpses of the A915 and housing at Mountfleurie visible from the riverside.

The character of the area fluctuates between peaceful and enclosed grassy riverside verges to dense wet woodland and large open mown grassy spaces within the parkland next to the housing on Poplar Road.

Constraints

The Kirkland Dam presents a significant fish barrier. There are no existing formal paths in the area, all routes are either mud or grass tracks which acutely limit accessibility for people who use mobility aids.

Opportunities

This area provides great opportunities to access the river up close and appreciate the sense of being "in nature." There is an opportunity to reference the existence of the former Methil Mill, the footprint of which is still visible within a small clearing within the woodland.

Site photos

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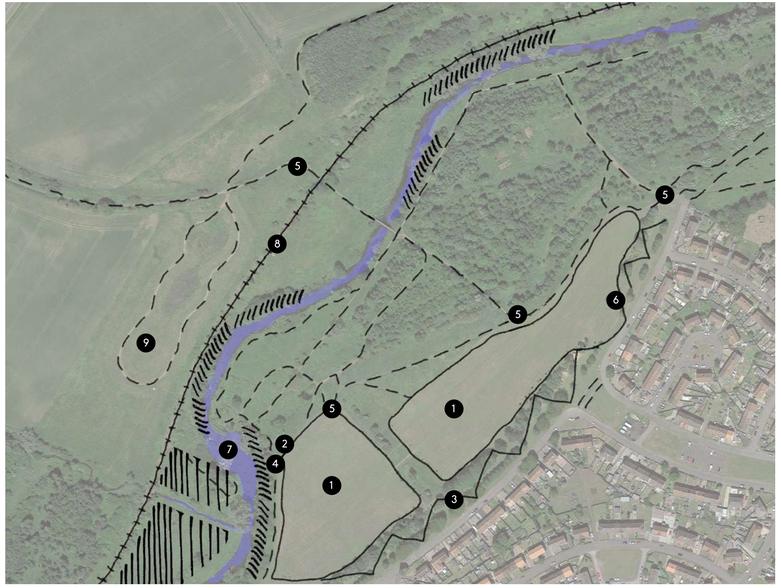
IMAGES

1 The river's edge
2 Existing pedestrian bridge
3 View south from bridge
4 View of existing tree rows adjacent to Poplar Road

Existing situation

Overview



EXISTING SITUATION ZOOM

Legend

Key ecological features
Informal path network
Disused rail-line
Physical barrier

1. Large areas of amenity grassland
2. Degraded timber steps
3. Visual barrier
4. Steep slopes with dense riparian edge
5. Unofficial entrances
6. Fragmented woodland habitat
7. Kirkland Dam
8. Disused rail-line
9. Suds feature

Case studies

1. Queen Elizabeth Olympic Park, London

Relevance: This switchback path highlights good practice of a suitable gradient to provide access for all. The planting palette provides a physical buffer between the hard surfaces. Although this example is distinctively urban in character the principles can be applied to the proposed switchback path in the Methil Garden.

2. Grand Voyeaux Regional Nature Reserve, Congis-sur-Thérouanne

Relevance: The raised boardwalk example broadly outlines the aesthetic proposed for a river edge walkway (though the surface materiality may need to be more robust than timber, eg. perforated steel). The boardwalk would most likely be installed using screw piles which are literally wound into the ground - this will allow for both ease of removal at the end of its design life and the continuing flow of water beneath the walkway.

3. Parc de Lancy, Geneva

Relevance: This project illustrates how subtle interventions can indicate the presence of a hidden landscape feature, in this case a series of steps guide the visitor to a river hidden behind dense vegetation. Perpendicular to the river, the steps follow the curve of the valley and accentuate the morphology of the terrain.

4. Girona's Shores, Girona

Relevance: This project demonstrates how a bottom-up / co-design approach to landscape management can enable the swift installation of small scale interventions, how a differentiated maintenance regime can immediately improve biodiversity and introduce the practice of agroforestry at a relatively low cost and how hosting events and festivals with an emphasis on horticulture, land art and public art can expand opportunities for engagement with the community.

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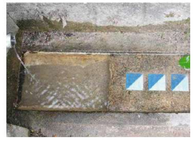

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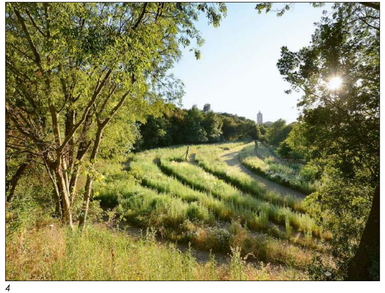

4

^ IMAGES

1 Queen Elizabeth Olympic Park, England
2 Grand Voyeaux Regional Nature Reserve, France
3 Parc de Lancy, Switzerland
4 Girona's Shores, Catalonia, Spain

Concept Design Proposal

Overview

Key moves

1. Introduction of a switchback path will provide a smooth surfaced route at a gradient no steeper than 1:14, allowing access for all to the river's edge.

2. Re-opening the former lade will allow for periodic flooding to flow into the existing wet woodland with a series of raised boardwalks allowing visitors to explore. This move brings a new purpose for the lade whilst maintaining its historical significance.

3. Proposed native woodland planting to provide visual enclosure and connect existing habitats. Scatter log piles of removed, thinned trees from adjacent wet woodland to provide hibernaculum. *[Also potential for local productive urban forestry partnership between the community, Wemyss Estates and Donaldson's Timber Merchant]*

4. Mow broad paths through grassland and allow the rest to naturalise [Potential involvement of urban sheep flocks rather than mowing as a more sustainable means of maintenance]

5. New hard surface paths inbetween existing tree rows to create a distinctive promenade leading to the main entrance of the garden

6. New hard surface paths help to create a clear central entrance to the garden from Poplar Road

7. Extend rows with interspersed trees and hedgerows to provide continuous habitat for birds and bats

8. Formalise clearing of the area associated with the former Methil Mill with details to reference the footprint of the buildings [to be developed further]

9. Raised perforated steel boardwalk alongside river's edge provides a clear route for visitors to use without trampling grasses

10. Upgraded and widened bridge

11. New bridge/underpass/crossing required over rail-line [to be developed further]

12. Formalise desire line from Mountfleurie housing into key connecting pedestrian/cycle route with gateway feature

Existing Situation

Overview

Habitats

This area includes a diverse range of habitats. From the tall, scattered scrub on either side of the river (including the pollinating south-facing slopes) to large areas of broadleaved woodland and the only swamp habitat within the project boundary. There is also a significant area of amenity grassland at the foot of the southern slopes.

Character

The character of this area alternates from a secluded wetland space and tranquil riverside walkway to dense woodland. To the south the topography flattens out with a large open space of low meadow grassland. Generally the area is well used by the community for fishing and dog-walking.

Constraints

The Burn Mill Dam is a significant fish barrier which restricts upstream access. Flooding issues have been identified next to the existing wet woodland. Overall, the path network is mainly consituted of informal desire lines or poor quality materials with the pipeline walkway particularly narrow.

Opportunities

The unique wetland swamp provides a significant opportunity to enhance and protect. The area is a central meeting point of several routes and therefore lends itself to recreation and social activity. It is also a suitable location for a new bridge, potentially above the existing pipe. There are many secluded spaces within the woodlands which could be upgraded with raised boardwalks.

Site photos

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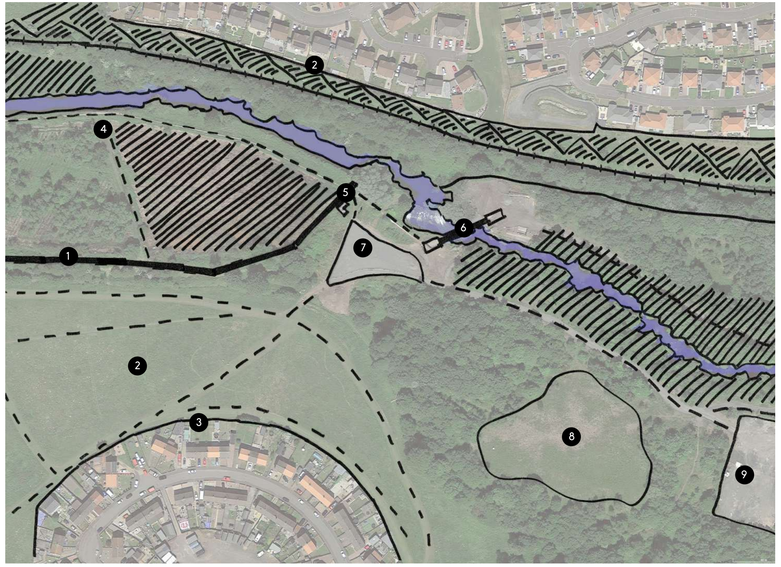
IMAGES

1 Burn Mill Dam
2 Flooded area between the swamp and the wet woodland
3 Bulrushes in the swamp during Spring
4 Narrow concrete walkway above pipeline adjacent to the river

Existing Situation

Overview



EXISTING SITUATION ZOOM

Legend

Key ecological features
Informal path network
Disused rail-line
Physical barrier

1. Former lade from Kirkland Dam
2. Area of amenity grassland
3. Backs of housing facing away from the river
4. Area prone to flooding
5. High barrier to step over (approximately 0.5m)
6. Pipeline
7. Poorly compacted whindust area
8. Area classified as ephemeral/short perennial disturbed land in Phase 1 Habitat Survey [former site of Kirkland Works]
9. Area classified as derelict land by Fife Council Vacant and Derelict Land Audit 2018 [also former site of Kirkland Works *steel foundry]*

Burn Mill Garden - Case studies

1. Parc du Chemin de L'Ile Nanterre, Nanterre

Relevance: The timber raised platform above this tranquil stretch of the River Seine was constructed primarily as a fishing spot, though it also acts as a resting spot where visitors can sit on the edge. The pool of water above the Burn Mill Dam has been identified as an ideal fishing location where a similar platform could be installed.

2. Half-Mile Line, Massachusetts

Relevance: The hand-made, in-situ raised boardwalk allows visitors to observe the previously inaccessible wetland, furthering shared knowledge of the merits of the habitat and increasing the likelihood of preservation.

3. Park am Gleisdreieck, Berlin

Relevance: This urban park in Berlin maintains the site's 'wild' aesthetic, which evolved from its previous use as a railway yard subsequently to a large post-industrial space, through the installation of minimal interventions. The adjacent image illustrates some of the key principles for the Burn Mill Garden: maintaining existing vegetation, providing new lighting, installing seating areas and upgrading surfacing.

4. Jock Marshall Reserve Nature Walk, Victoria

Relevance: The lightweight bridge structure incorporates seating, leaning rails and is wheelchair accessible. The tree trunk shaped mesh patterns on the corten steel balustrade panels reflect the purpose of the boardwalk - to protect the vegetation of the nature reserve below.

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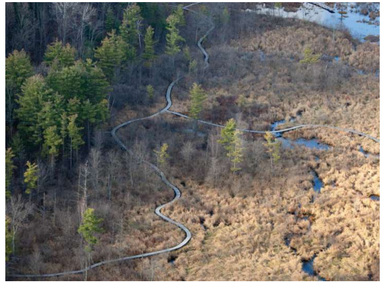

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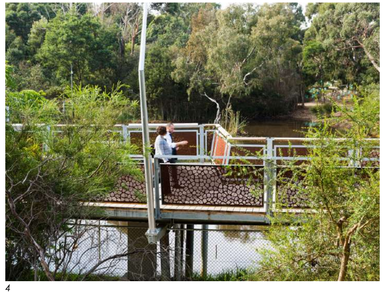

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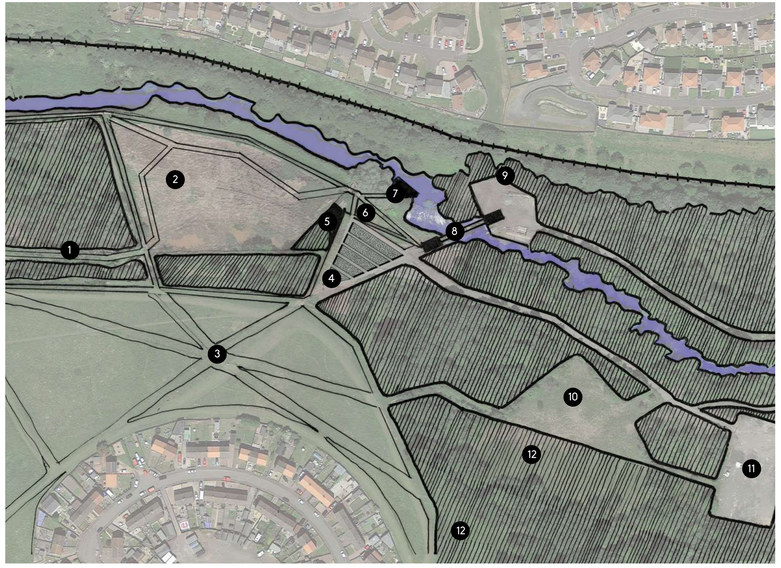
IMAGES

1 Parc du Chemin de L'Ile Nanterre, France
2 Half-Mile Line, Massachusetts, USA
3 Park am Gleisdreieck, Germany
4 Jock Marshall Reserve Nature Walk, Australia

Concept Design Proposal

Overview



Key moves

1. Re-connected lade (from Kirkland Dam) with associated raised boardwalk through wet woodland, opportunities to create new wetland ponds

2. Raised boardwalk above swamp with resting spots and educational engravings to share knowledge of wetland habitats

3. Reorientate mown grass paths to connect to new path network

4. Central plaza space with renaturalising grassland borders and 2m wide mown paths between, key connecting area with long 5m seating benches for pedestrians and cyclists to take a break

5. Green roof structure to provide shelter and hang-out spot for local young people

6. Switchback path to allow access for all down to the river's edge and the fishing platform

7. Timber deck raised platform across still pool above the Burn Mill Dam for fishing and relaxing

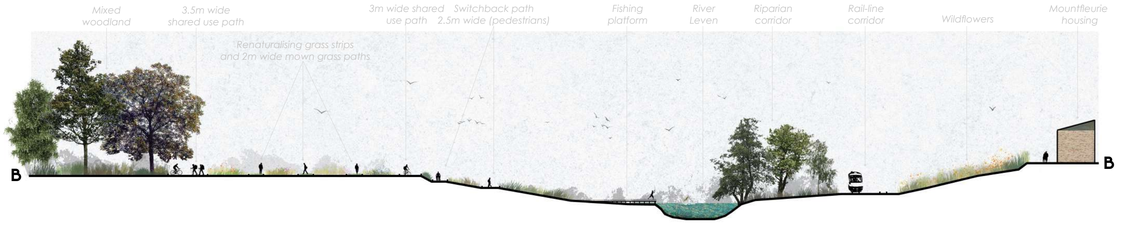
8. New pedestrian bridge above the existing pipe

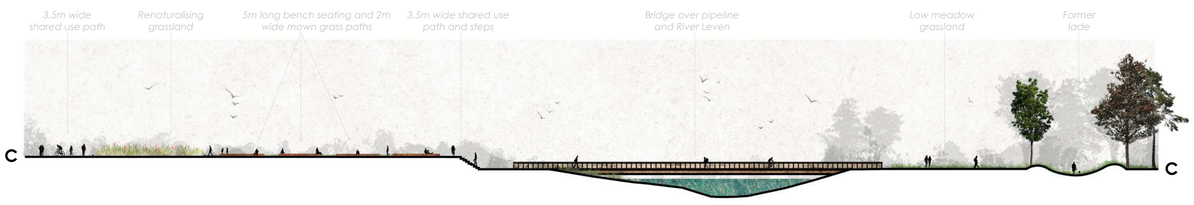
9. Reference former lade *[detail to be developed]*

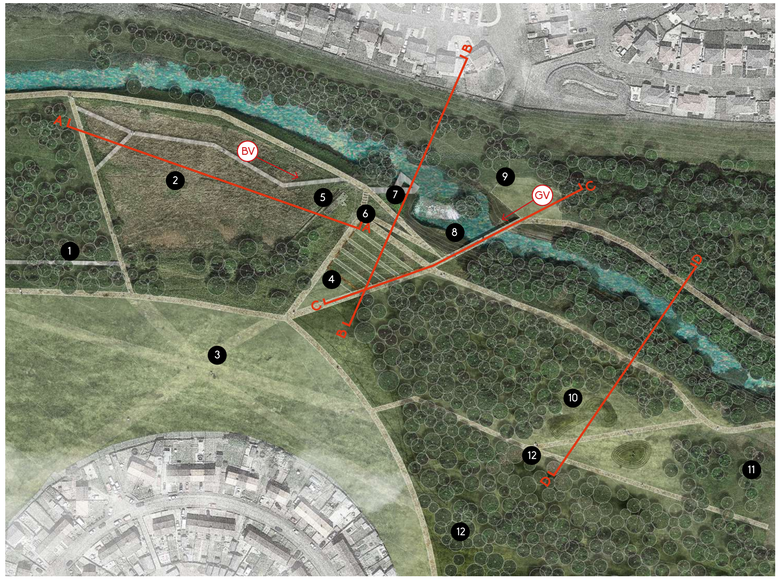
10. Natural play area with mounding, tunnels, climbing walls *[detail to be developed with reference to former industrial use as Kirkland Works]*

11. New social housing (16 units)

12. Extend broadleaved woodland with native species to provide habitat for birds and bats







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BV Birdseye view visualisation over proposed Burn Mill Garden

GV Ground level visualisation over proposed Burn Mill Garden

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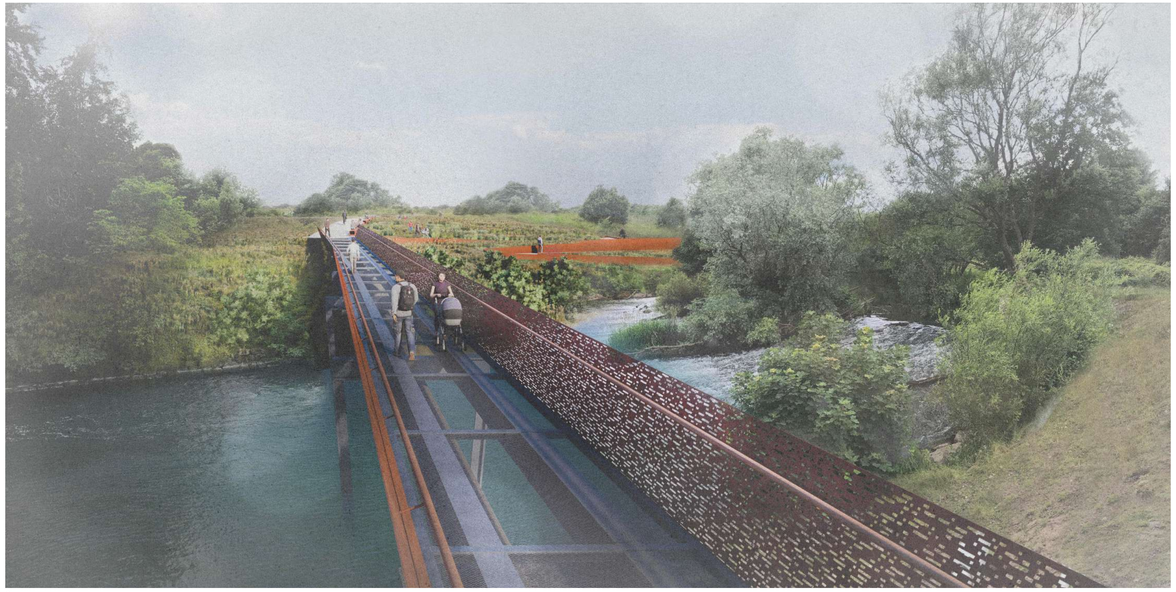
10 AREAS OF FOCUS | *BURN MILL GARDEN* [Illustrating the proposals]



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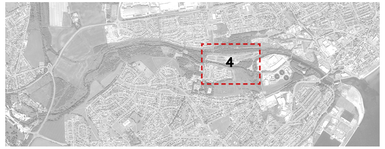
IMAGES < ^

1 Birdseye view above the wetland looking east across the Burn Mill Garden
2 Perspective view from proposed active travel bridge across pipeline looking west towards Burn Mill Garden

Existing Situation

Overview



Habitats

This large area encompasses a broad range of habitats, from the mature trees in the riparian corridor to the native shrubs dominating the disused railway embankment north of the Creosote site. Within the Creosote site itself, a wide variety of shrub and tree species are vigorously regenerating alongside scattered patches of colonising flora. There are also large areas of mixed woodland to the north and neutral grassland to the south.

Character

The general character of the area is post-industrial with many visible remnants of previous uses, including disused rail-lines, retaining walls and old materials such as bricks and concrete. A long walkway alongside the river above a pipeline provides a popular access route for locals. Overall the area is flat and open on the north side of the river until the slopes below the Mountfleurie housing. To the south the slopes are much steeper as the land form was raised on top of former coal waste.

Constraints

The area is currently heavily used by dirtbikers, there are potential issues with flooding on the low-lying Creosote site. The tidal zone extends up to the Dam Wood. There is also potential contamination of the soil within the Creosote site - detailed investigations are planned by Fife Council.

Opportunities

This is the largest of the six areas of focus with arguably the most potential for transformation. The open mosaic habitat on previously developed land in the Creosote site provides a unique opportunity, proposals should aim to preserve elements of this habitat. The potential to allow for periodic flooding should be further explored once more detailed flood survey information is available to the design team.

Site photos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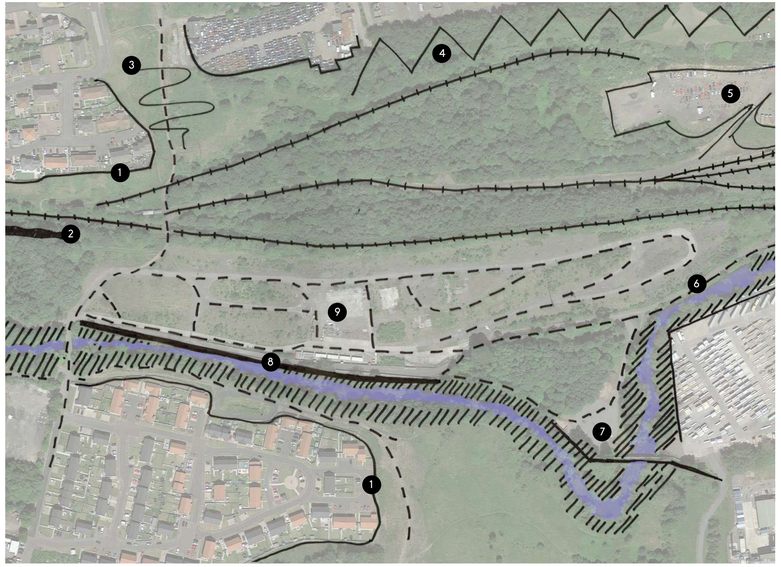
IMAGES

1 Southern entrance into the Creosote site
2 C-listed footbridge from former Kirkland Works, late 19th century
3 View of the river from raised walkway above pipeline
4 Gorse and regenerating woodland on southern banks below the Dam Wood

Existing Situation

Overview



EXISTING SITUATION ZOOM

Legend

Key ecological features
Informal path network
Disused rail-line
Physical barrier

1. Fenced housing development, predominantly facing away from the river

2. Disused former lade extending from Burn Mill Dam

3. Steep slope limits accessibility for all

4. Dense woodland on steep slopes, mostly inaccessible area

5. Fife Heritage Railway

6. Riverbank erosion

7. Area prone to flooding

8. Pipeline underneath retaining wall alongside river until the Dam Wood where it is raised and crosses into the waste water treatment plant

9. The creosote site requires a full investigation and to determine potential pollutant linkages associated with its former use

Case studies

1. Zollverein Park, Essen

Relevance: A former colliery, this site has been transformed into a large urban park which retains the regenerating woodland and provides a new clear structure for visitors.

2. Parc du Grand Pré, Brittany

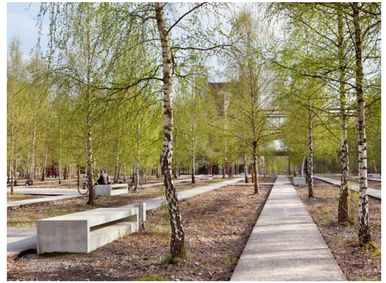
Relevance: This park in northern Brittany is an exemplar project on many levels, from its similar context of a public park which leads the visitor towards the sea to the subtle design references to the surrounding valley. It is perhaps the pinewood plantation which is most thought-provoking: a future woodland which invites the community to observe its growth and provide maintenance.

3. Test Unit / Agile City, Glasgow

Relevance: The Test Unit 2016 project was a prototyping experiment in architecture and public space creation which used a derelict site along the Union Canal as a testing grounds for a hands-on alternative to formal education.

4. Baltic Street Adventure Playground, Glasgow

Relevance: This small charity-run playground in Dalmarnock highlights the importance of community-based projects led by motivated and dedicated local champions.
Baltic Street Adventure Playground was created to provide a supervised environment which encourages children to use their imagination to build their own play space. It is now expanding its scope to include community growing with the recent construction of wheelchair accessible raised planters within the playground and a University of Glasgow led research project looking at the logistics of setting up a community food hub in Dalmarnock.



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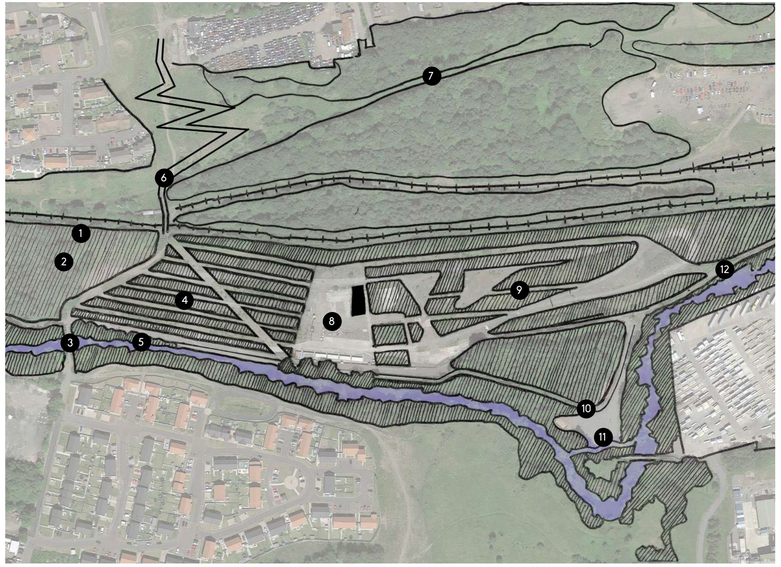
^ **IMAGES**

1 Zollverein Park, Germany
2 Parc du Grand Pré, France
3 Test Unit / Agile City, Scotland
4 Baltic Street Adventure Playground, Scotland

Concept Design Proposal

Overview



See Appendix page 128 for alternative design layout for the Creosote Garden

Key moves

1. Reference existence of former lade through landform / incorporate new seating element or sculpture *[detail to be developed further]*

2. Extend woodland up to path edge

3. Upgraded pedestrian bridge

4. Vegetation strips of existing regenerating shrubs and trees, community orchard, hedgerows, growing plots

5. Re-open and upgrade C-listed footbridge dating back to the late 19th century *[survey needed to examine structural capacity, to be further developed]*

6. Switchback pedestrian bridge across re-opened rail-line to allow access for all

7. New woodland promenade to provide access to the garden via Montgomery Drive (Mountfleurie)

8. Central plaza with new community hub building, spaces for seating and shelter, areas of natural play and start of running tracks around extended woodland (100m, 200m, 500m). Approach Fife Heritage Railway to see if any unused rolling stock is available for sculpture or play. *[Details to be further developed]*

9. Extended woodland to provide continuous habitat across the site incorporating existing patches of regenerating vegetation and open mosaic habitat on previously developed land. Spaces surrounded by vegetation provide secluded opportunities for seating, play, sculpture, exercise and sensory elements.

10. Raised boardwalk to allow excess stormwater to enter the area whilst maintaining pedestrian access

11. Secondary flow option identified in RSK report. Potential for spaces with landform features for natural flood management techniques such as wetland creation, retention ponds, rain garden *[to be developed further once more detailed flood risk information is available]*

12. Opportunity for riverbank restoration - bank grading to increase capacity of channel

Existing Situation

Overview

Habitats

This is the smallest area and covers only three different habitats: broadleaved plantation woodland, dense scrub on the north side of the river and the river itself.

Character

The character varies from a protected, thick woodland to the adjacent working industrial area. The valley is quite steep and the existing routes are somewhat disconnected from river, both visually and physically.

Constraints

The route across the river via the Iron Brig lacks a footpath for pedestrians and the bridge appears too narrow to provide space for both vehicles and a walkway. The woodland is partially isolated and surrounded by industry and loud/busy roads.

Opportunities

The proximity to Leven's town centre is a positive opportunity to create better pedestrian connections. The sheltered spaces within the woodland are well suited for adaptation to new activities, play and resting spots.

Site photos

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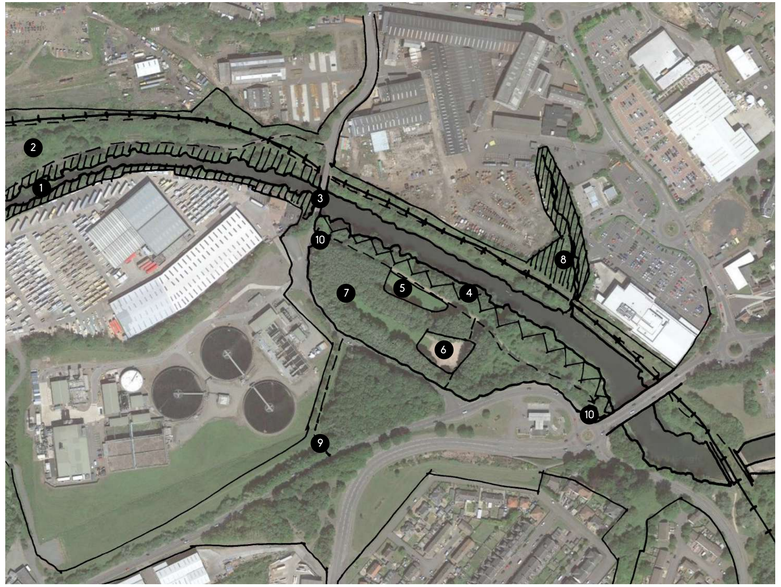
IMAGES

1 View from north of the river showing the Iron Brig
2 Industrial yard on north side of the river
3 Disused car park within the woodland area
4 View west looking upstream showing retaining wall to the right and woodland to the left

Existing Situation

Overview



EXISTING SITUATION ZOOM

Legend

Key ecological features
Informal path network
Disused rail-line
Physical barrier

1. Low-lying river edge, some signs of erosion
2. Edge of Creosote site, rough scrubland
3. The Iron Brig, provides vehicular crossing but no provision for pedestrians
4. Rising embankment to river. Views across to industrial estate and wider residential area of Leven
5. Open space within woodland
6. Car park
7. Broadleaved woodland
8. Minor tributary to river (fenced off and inaccessible)
9. Steep steps and path
10. Entrances to woodland (Bawbee Bridge area lacking pedestrian crossing)

Case studies

1. Elbe Waterfront Park, Riesa

Relevance: The architectural mark of the lookout tower in the Elbe Waterfront Park provides a key inspiration for the Iron Brig Garden. The park area is enclosed and framed by woodland but through the woodland glimpses of the Leven could be realised, stretching further across the industrial yards on the northern bank of the river. The lookout structures (Hafenwaechter) could offer views in to the wider surroundings of the park including the coastal fringe to the east. The structures are seen as taking inspiration from the industrial heritage of the area, and sitting on the high point of the local landscape they are hoped to provide an iconic marker to locals and visitors alike.

2. Draper's Field, London

Relevance: Draper's Field is a new park in east London, a legacy of the 2012 Olympics. The Iron Brig Garden is seen as an opportunity to realise a play and community focus space within the Connectivity Project for Methil, Leven and wider communities beyond. The design encourages children and young people into sport through play and informal activity – health and well-being, education and connectivity.

3. Ypres WWI Landscape Memorial, Ypres

Relevance: Whilst the Ypres landscape is the antithesis of the Iron Brig Garden, the restrained but informative design applied to the project is the reason for inclusion in this section. The light touch of the raised paths, the strong gateway entrances, and the materiality that reflects the place and historical traces are qualities are highly relevant to the detailed design phase of the wider Leven Connectivity Project.

4. Wonder Wood at the Skørping School, Rebild

Relevance: The Wonder Wood at Skørping School has an emphasis on encouraging the students to be more energetic, particularly those who normally lead less active lives. The design complements the natural setting of Skørping School, encouraging participation and learning amongst students and the local community through an active interaction with nature. This approach is fundamental to the Leven Connectivity project; multifunctional places, educational facilities and design that utilises the local, natural assets. A 'forest loop' runs through the playground, comprising a raised wooden walkway incorporating various activities along its route, including a balance beam, ladders, benches and a treetop house.

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^ **IMAGES**

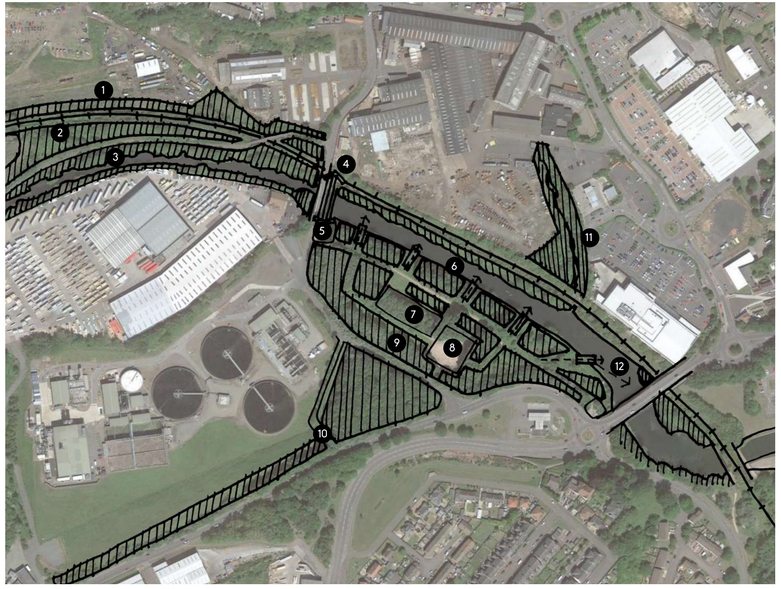
1 Elbe Waterfront Park, Germany
2 Draper's Field, England
3 Ypres WWI Landscape Memorial, Belgium
4 Wonder Wood at the Skørping School, Denmark

10 AREAS OF FOCUS | *THE IRON BRIG GARDEN*

[Illustrating the proposals]

Concept Design Proposal

Overview



Key moves

1. Barrier planting to rail-line [subject to detailed design/layout of rail-line corridor]

2. End of Creosote site to feature experimental planting programme

3. Existing river edge to be reinforced with bank modification, re-profiling and new planting palette

4. New pedestrian bridge connection across the river

5. Upgraded entrance into Iron Brig Garden (parkland)

6. River embankment modification including toe bank removal to create more natural riverbank and morphological processes to occur.

7. New play space with native planting [Details to be further developed]

8. Existing car park retained and upgraded

9. Existing woodland restructured and reinforced

10. Existing path and steps formalised and reprofiled [Details to be further developed]

11. Existing tributary to be incorporated into river walk experience

12. Proposed viewing platforms and walkways along river edge *[Potential for views out to sea to be explored further]*

Existing Situation

Overview

Site photos

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Habitats

Unfortunately this area was not surveyed as part of the Phase One Habitat Survey. The site of the former power station is classified as derelict land and there is an adjacent woodland area of vacant land. The site of the former power station could potentially include open mosaic habitat on previously developed land though this would need to be surveyed to be confirmed.

Character

The character of the former power station area is hard to establish as much of it is inaccessible, closed off by disused bridges. Presumably, the sense is of a large post-industrial space. It appears to be very open with unobstructed views across the Firth of Forth and towards Leven town centre. This area also contains the estuary of the river.

Constraints

At present the area is unwelcoming with fences and disused bridges. Further investigations of any site contamination should be undertaken.

Opportunities

The proximity to Leven town centre presents a significant opportunity with the right pedestrian connections. undertaken. Furthermore, the area is essentially a coastal waterfront and thus provides many opportunities to encourage coastal habitats (e.g. sea grass) to thrive. The intention for this large area should be to create a meaningful public space which can adapt to potential rising sea levels. Finally this area has also been identified as one of the potential locations for the new Leven train station.

IMAGES

1 View of disused footbridge to former power station
2 View from disused footbridge
3 Blocked entrance to Docks area from South Street
4 View of Harbour View car park on periphery of former power station area (note fishing on top of seawall to the right of image)

Existing Situation

Overview

EXISTING SITUATION ZOOM

Legend

- **Key ecological features**
- **Informal path network**
- **Disused rail-line**
- **Physical barrier**

1. Derelict land of former Methil power station
2. Rail-line bridge covered with regenerating vegetation
3. Disused footbridge to former power station
4. Bawbee Bridge
5. Small tributary to the river
6. Rising embankment to river
7. Car Park
8. East Fife Football Club

Case studies

1. Dania Park, Malmö

Relevance: A classic coastal project that addresses the waters edge in bold fashion, offering different ways to be close to the sea, ranging from simple access to purposeful challenges. The materiality of the detailed design is visually and physically engaging from local coastal boulders to native timber promenades. The park experiences similar environmental conditions to Leven with a range of weather from sunny days to violent autumn storms, calm and frosty winters.

2. Air Castles, Malmö

Relevance: The Air Castles are look out towers also located in Malmö. They are an example of the potential design exploration that the Leven could incorporate. Lookout towers, nests, that offer the opportunity to rise above the public place, see far and wide where the land and sea come together. The towers could reflect the forms of structures found in the former power station, and are envisaged as incorporating renewable technologies such as solar 'skins' and micro-turbines in the form of shimmering scales.

3. Glenorchy Art and Sculpture Park, Tasmania

Relevance: This art and sculpture park is located on the Hobart waters edge in Australia. It shows how post-industrial spaces can provide a spectacular setting for art, sculpture and experience. The Methil docks have space and potential to not only accommodate the terminal station for the re-opened train line but also recreation and entertainment uses for the local community, and provide a new arts hub for Fife.

4. Franklin Wharf, Tasmania

Relevance: Franklin Wharf is also located on the Hobart waterfront and is aimed at providing improvements for the public, whilst maintaining the functions and character of a working wharf. The project is relevant due to its conceptual ideology. It discards the notion of public space as type, and promotes instead an appeal to the intellectual capacity of people to enquire, interpret and enjoy urban environments which are not designed urban public spaces.

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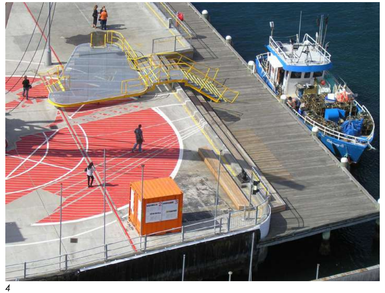

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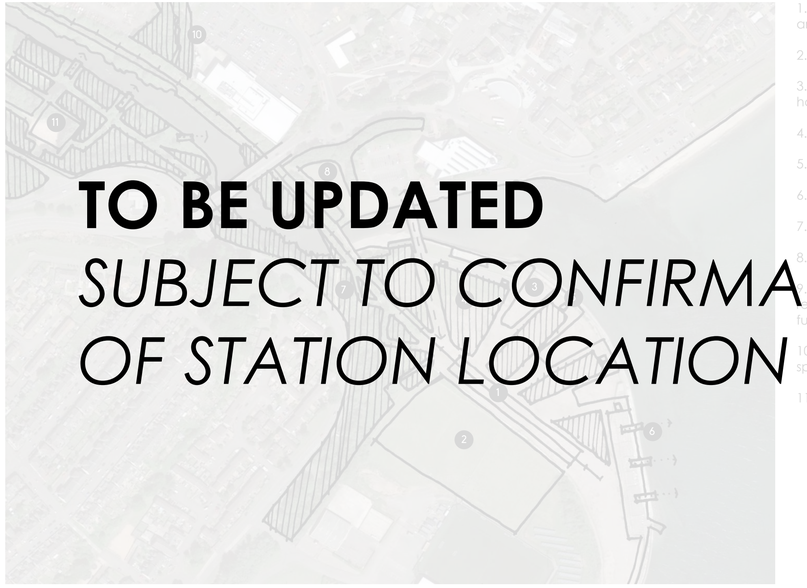
Instead of making new public space on the wharf, the concept is one of "granting public permission" - keeping it as a working area maintains the wharf as a wharf, and the visitor as a visitor. Something that is hoped to become the norm around the edges of the wider docks area.

^ IMAGES

1 Dania Park, Sweden
2 Air Castles, Sweden
3 Glenorchy Art and Sculpture Park, Tasmania, Australia
4 Franklin Wharf, Tasmania, Australia

Concept Design Proposal

Overview



Key moves

1. Potential extension of Levenmouth rail-line into Docks area and new train station
2. Car park for train station
3. Reconfiguration of Docks area to increase coastal habitat, profile takes the form of 'intertidal fingers'
4. Coastal habitat testing grounds
5. Viewing towers / renewable energy creators
6. Raised viewing platforms and activity space
7. Existing vegetation stand reinforced and re-profiled
8. Reinforced green barrier to extended car park
9. Pedestrian / cycle crossing point at bridge [may require dual carriageway / roundabout - to be further explored]
10. River tributary to incorporate walkways and activity spaces
11. Car park and upgraded Iron Brig Garden

^
View of estuary from existing bridge adjacent to the former Methil power station

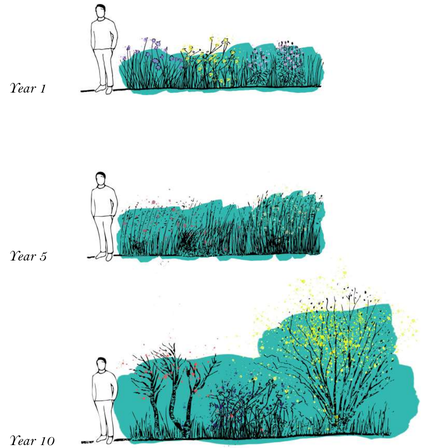
Looking forward

The following section outlines a series of additional threads to the primary and secondary layers of the concept design masterplan. These threads have been explored initially for their potential suitability to the Connectivity Project and further research will be developed during Stage 3 - Detailed Design to establish how they can be implemented.

This section also includes deliberation on the significance of detail: how considered interventions can reference the local vernacular and create a distinctive project with a sense of place. Several examples with an emphasis on light-touch, minimal intervention are provided for their relevance to the sensitive landscapes of the river valley.

A series of phased diagrams are provided to illustrate the initial thoughts about how the river park might evolve over a period of 15 years. Costings information is also included which outlines broad associated costs for the Concept Design Masterplan proposals.

The report concludes with a synopsis of how the proposals address the six masterplan principles defined in the Executive Summary on page 5.



^ *Extract from Grassland Habitat Toolkit*

IMAGES >

1 Eelgrass meadow near Ord, Skye. © Project Seagrass - Scottish Wildlife Trust
2 Seagrass image © Marine Conservation Society: Lancashire area group
3 Lochore Meadows, Willie Clark Centre, © Copyright Fife Council
4 Kamikatz Public House, Kamikatsu, Japan © Laurian Ghinitoiu

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Seagrass - carbon capture / carbon neutral landscapes

"A million seagrass seeds are being planted as part of Britain's largest project to save the 'wonder plant'."
https://www.bbc.co.uk/news/uk-wales-51804404

Seagrass is important to the planet as,

- It helps tackle the effects of climate change by absorbing carbon from the atmosphere up to 35 times faster than tropical rainforests
- It accounts for 10% of annual ocean carbon storage globally, despite only taking up 0.2% of the seafloor
- It protects coasts from coastal erosion
- It is a habitat for many types of fish like cod, plaice and pollock providing a nursery for young fish and a habitat for invertebrates.
- It produces oxygen
- It cleans the ocean by absorbing polluting nutrients

"Planting seagrass is an opportunity to reverse loss and start to kick into action a recovery for our seas around the UK."
Dr Richard Unsworth, of Swansea University
https://www.bbc.co.uk/news/uk-wales-51804404

Project Seagrass, World Wildlife Fund (WWF), Sky Ocean Rescue and Swansea University, are currently seeding a 4.9-acre (2 hectare) project at Dale Bay in Wales and are working along the Edinburgh coastline. They are looking at a further three potential sites on the West Coast of Wales and Scotland.

Ecologist Leonie Alexander, (part of the Iglu Studio team) has been involved in the seagrass seeding along the Edinburgh coastline and has been in contact with Dr Richard Lilley, the Founding Director of Project Seagrass, about the possibility of seagrass seeding in the Firth of Forth, and Leven in particular. Initial reaction has been that it could be a potential site, as well as a good site for community engagement. As the seeds are gathered from around the UK coast, and then transferred into small hessian sandbags and lowered onto the seabed, the seeding process could involve schools, community groups, various stakeholders and educational establishments.

Project Seagrass have started the permissions process with SNH about Scottish sites and funding, a process that would help in any potential programme at Leven.

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ParkPower - sustainable energy

"The heat pumps providing low carbon heat to the visitor centres at Lochore Meadows Country Park (Fife) and Saughton Park (Edinburgh) demonstrate the key principle that renewable energy projects can be implemented without any long-term visual impact on the park. Indeed, they have no obvious detrimental impact on the normal functions of parks in terms of their amenity or ecological value."
Greenspace Scotland, ParkPower: An Introduction, January 2020, p9

One of the additional threads that Iglu Studio have been researching is ParkPower, a multi-phase programme run by Greenspace Scotland to investigate the potential for hosting green energy infrastructure within parks and greenspaces in Scotland.

In line with the Nesta Rethinking Parks report (2013), the River Leven Park area is seen as having some potential to generate renewable energies due to its large open greenspace and river. Furthermore, without the constraints of buildings in the river valley there is sufficient open space to consider further review. As the park is surrounded by urban development with high demand for heat and electricity, any renewable energies can either help local energy use and / or generate funding to maintain the longer-term proposals.

In the Stage 3 - Detailed Design phase it is suggested that discussions with Greenspace Scotland are progressed to explore how the open greenspace within the park area can be used to generate energy through water, solar, thermal and wind power, all of which are potentially available in the park and adjacent docklands area. Iglu Studio have looked into the Phase 2 categorisation of greenspaces across Scotland.

The greenspace would play a key role in improving the health and well-being of the Levenmouth community, whilst providing renewable energy and potential project funding.

ParkPower opportunities can directly address this challenge through a series of measures, including:

- New, long-term income streams can be generated
- Long-term financial savings can be made by reducing annual greenspace running costs.
- Their value as vital public assets is enhanced making them less vulnerable to other forms of development.
- They can play a key role in climate change mitigation through supporting the decarbonisation and decentralisation of our energy systems

(Greenspace Scotland, ParkPower: An Introduction, January 2020, p5)

Zero Waste - materiality and recycling

"Zero waste is the conservation of all resources by means of responsible production, consumption, reuse and recovery of products, packaging and materials without burning, and with no discharges to land, water or air that threaten the environment or human health".
Definition of Zero Waste as adopted by the Zero Waste International Alliance (2019)

Iglu Studio have been working with project partner Zero Waste Scotland (ZWS) to explore how the masterplan can be under-pinned by the joint principles of zero waste and circular economy, where the products, services and systems in the design, delivery and maintenance of the River Leven Park are designed to maximise their value and minimise waste. 'Make, use, remake' as opposed to 'make, use, dispose'. Not only will this include the careful selection and use of materials, but it will also include the energy required to grow, make, process and transport them, whether they are made here in Scotland or elsewhere. Not only should products and resources be chosen and used responsibly but materials, labour and manufacture should be local.

ZWS have exemplar architectural projects based on circular economy principles, but no landscape architecture projects, yet. The River Leven Park could be the first circular economy landscape project in the UK if the principles are embedded from the start of Stage 3 - Detailed Design.

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Community Focus - Hub + Productive Growing Spaces

A key desired outcome from the engagement process was the realisation of new community facilities.

The following facilities have been suggested by the community:

- a new community hub building
- toilet facilities
- shelters for young people
- fishing platforms
- cafes
- outdoor exercise equipment
- new play provision
- bbq areas with seating
- kayak hire

The development and evolution of the Concept Design Masterplan has been influenced through these suggestions made by the public though the community feedback. As such Iglu Studio have been researching community programmes and social enterprises, including Shettleston Community Growing Project (SCGP-set up in 2009) and the Ridge in Dunbar (see image above).

The Ridge, originally set up as a single social enterprise, was formed in 2012 and has seen its scope of work expand to include referrals from the nine Community Response Groups in Dunbar and West Barns. Work and programmes include:

- Crisis support
- Apprenticeships
- Volunteering
- Schools programmes
- Training
- Community growing
- Food Bank
- Debt Advisory Service
- Children in need
- Families in need including those living with a family member with dementia
- Adult and child mental health
- Support for health needs

Initial sites for community focus included the proposed rail stations, a former steelworks site (now under development for social housing), and the Creosote site. The Creosote site is the current most likely location for proposed facilities.

Community Ownership - Habitat Toolkits

One of the guiding masterplan principles under-pinning the development of the proposals centred around empowering communities through a sense of ownership. The sixth masterplan principle set out at the start of the report,

*"A **community focused** project – helping to create a sense of ownership and a resilient economy through locally-produced food and community self-sufficiency".*

To start this process Iglu Studio have endeavoured to develop community focused guidance. The initial work has included a set of habitat toolkits, including grassland, woodland, scrub, wetland and open mosiac habitat. The toolkits provide simple and clear guidance (see adjacent images) that community groups and organisations can follow and implement. We believe that community focus is another potential thread for collaboration with Inspire Scotland and other similar organisations.

As mentioned earlier in the report, initial conversations have been held with the Grounds Maintenance Service department at Fife Council.

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Temporary landscapes – Temporary nurseries, Pop-ups (café, cycle library)

Temporary landscapes are places that can express current events, that may or may not be repeated, but allow the local community to shape and mould them. They can be beneficial spaces that convey memories, facilitate rituals and social interaction, garner community engagement and provide opportunities for learning and education.

In a similar fashion to the Stalled Spaces Scotland national programme commissioned by the Scottish Government and delivered by Architecture and Design Scotland (A+DS), the River Leven Park provides opportunities to facilitate the temporary use of under-used green spaces, stalled development sites or vacant and derelict land within the Connectivity Project area.

The programme would be focused on supporting community groups to temporarily use currently under-utilised spaces within the river park. The intention would be to help kick start vital community-based projects with a focus on education, social interaction and health and well-being.

The Leven Partnership have already been involved in the development of outdoor classrooms in conjunction with Fife Council, an aspect integrated in the Concept Design Masterplan and Green Network workstream. Other potential programmes that have been part of discussions include temporary plant nurseries, pop-up cafes and cycle lending libraries, similar to the Bicycle Library (see images above), located at Netil Market, 1 Westgate Street, London, itself based in a temporary, moveable, converted double decker bus.

IMAGES ^ <

1-2 The Ridge, Dunbar
3 Step-by-step guide to plug-planting extract from Grassland Habitat Toolkit
4-5 Bicycle Library, London

Architecture - Hub

The provision of a new community hub for the area has constituted part of the masterplan discussions since Stage 1 - Visioning. It is envisaged that this will be realised through the traditional device of a multi-functional building with a garden that provides a place for everyone and anyone to be, to meet, to exchange views, opinions and just to talk. However this may not necessarily be the final iteration as the community needs to determine what is needed for the benefit of all - a space of co-operative relationships and opportunities that improves community welfare?

The hub could provide a focus for social enterprise projects on arts, health, social well-being and community cohesion, contributing to community ownership and a sense of self. Key though to the success of the hub will be the involvement, participation and reflection of the community, of its needs and values, as well as the ability to engender flexible responses to their evolving needs.

The hub has been at the centre of the masterplan right from the start, reflected by the early inclusion of Collective Architecture to the design team for Stage 3 - Detailed Design, one of the most respected architectural practices in Scotland.

Aspirationally the architecture should be recyclable following zero waste principles, climate aware, low maintenance and inspirational. These all tie in with Collective's ethos and approach.

Children at Ark Franklin Primary Academy in London collect creatures for their insect hotel

Outdoor Classrooms

"Historically, geographically, climatically and culturally, Scotland offers schools and their pupils one of the richest and most varied outdoor classrooms in the world. Our own back yard – whether rural, urban or suburban – is one of the greatest resources available in taking forward the aims, principles and values of the Curriculum for Excellence. Outdoor Learning may be seen as an 'extended classroom', encompassing all learning environments beyond the school wall."

Outdoor Learning: The Extended Classroom - Architecture + Design Scotland

The project team have been exploring a number of lines of enquiry and opportunities in relation to outdoor learning. As pupils have returned to school after a summer of lockdown and as the pandemic continues to impact resources and 'normal' activities, schools, pupils and staff are faced with significant challenges, in particular the requirement to maintain social distancing. The use of outdoor learning spaces or temporary outdoor shelters within school grounds, and the wider landscape, is seen as an asset that can help reduce those pressures.

Of particular note, the project team has secured an opportunity to work in partnership with Fife Council's Education Department in developing and delivering a pilot project to demonstrate how The Leven and delivery partners can support the restart of education and embed outdoor learning in schools for the long term.

The pilot project is being tested with East Wemyss Primary and aims to prove and develop the concept for wider roll out across the River Leven catchment area.

The river valley appears to lend itself to outdoor learning and education activity. Through the survey and site exploration process the project team have identified a number of potential locations for outdoor classrooms, areas that are easily accessible, safe and in close proximity to nature and wildlife. These locations should be further assessed for feasibility during Stage 3 - Detailed Design.

Survey work by the Forth Rivers Trust (FRT), and consultants, have also started to identify potential learning programmes. These include outdoor classroom and picnic areas, safe fry release areas, foraging, Disability Discrimination Act (DDA) Compliance, dipping ponds, community wildflower meadows, wetland learning, otter city, kids angling areas, bird hide / viewpoint, bat box alleys and a school bus layby.

Health & Well-being

"What we are doing is focusing on the problems people have and trying to fix those problems for them…….It is not the right way to do things. People become passive recipients of services rather than active agents in their own lives. We need to turn that around, and start thinking afresh…..developing the assets that local communities have, which sustain and create health….I would argue here that what we are talking about is not about health improvement. It is something more significant. It is life improvement."

The tenth Kilbrandon lecture (2012) - Sir Harry Burns. Former Chief Medical Officer for Scotland.

The words of Sir Harry Burns resonate with the ethos behind the River Leven Park proposals. Health and well-being is at the heart of the project, but more than providing new paths and improving connections between communities, or opportunities to access the River Leven, it is about changing and improving the lives of the people who live in Levenmouth.

This is an extremely ambitious goal, and one that is difficult and complex to achieve, particularly in the uncertain times of Covid_19. This will not happen without the participation of all, community, stakeholders, the government, funders and requires ambition and strong leadership.

The Landscape Institute identifies the term 'healthy landscapes' as well-planned and designed landscapes, designed to promote good health and wellbeing. The LI position statement 'Public Health and Landscape: creating healthy places' sets out five principles (see below) that create these 'healthy landscapes'. These principles, supported by the aforementioned leadership and ambition, should be followed to realise the life improvement needed in Levenmouth. This is the strategic approach of the Concept Design Masterplan.

1. Healthy places improve air, water and soil quality, incorporating measures that help us to either adapt to climate change or mitigate its impact on us.
2. Healthy places help overcome health inequalities and promote healthy lifestyles.
3. Healthy places relax people, increase social interaction – and reduce anti-social behaviour, isolation and stress.
4. Healthy places optimise opportunities for working, learning and development.
5. Healthy places are restorative, uplifting and healing for both physical and mental health conditions.

Back Gardens

The River Leven Park Masterplan has defined boundaries, but the project has always been about the wider context, looking beyond edges and to connect communities, landscapes and habitats. This is no different at the edges of the masterplan where we would like to have a conversation with neighbouring communities and owners of properties that are in close proximity to, back on to, face, or interact with the river park.

Urban gardens can contribute to bird, mammal and pollinator (bees, moths, butterflies) populations as they can provide a wide range of trees, fruits, vegetables, flowers, and even areas of bare soil for ground nesters throughout the year. Recent research has found that urban areas are amongst some of the most populous places for trees, even placing Camden and Croydon in the top 20 places in England and Wales for most tree cover (Bluesky International Ltd, Esri UK, Wesley Stephenson BBC web article, 18 October 2020). Trees increase biodiversity, provide shelter and food sources for bats, birds and pollinators, as well as playing an important role in cooling urban areas, improving air quality (through the capturing of airborne pollutants such as carbon dioxide) and the mental and physical well-being of people (see research by Sir Harry Burns, former Chief Medical Officer for Scotland).

Yet there is an ongoing discussion about the exact value that urban gardens can provide, particularly to native species such as bee populations, where there is evidence that exotic plant species provide a relatively low attraction for native bees.

As the River Leven Park Masterplan develops we would like to continue the discussion with local residents and community groups about what more can be done to make the gardens of Levenmouth beneficial to animals, bats, birds and insects. Some measures include ensuring that the right plants are planted in the right places, planting native species of trees, shrubs, flowers, grasses and wildflowers, collecting local native seeds, ensuring that there is ample bare, loose soil for ground nesters and using natural measures to control pests.

^ *Back gardens near the Burn Mill Dam*

"University of Pittsburgh biologists found that the non-native and native plants used for pollinator habitats could have a variety of deleterious effects not only on urban native plant remnants but also the native bee specialists that depend on them. Unless they are grown from seed collected locally — almost never the case in commercial horticulture — native plantings could swamp unique gene pools in nearby urban fragments."

Janet Marinelli, YaleEnvironment 360, Yale School of the Environment, November 9, 2017

Localism

The global impact of Covid_19 has devastated economies and communities alike. Amidst the turmoil the crisis has crashed supply chains, severely restricted travel and caused a constriction in globalisation. Consequently, consumers have started looking to local producers for local products, services and activities, which have given support to localism (noun: localism - preference for one's own area or region – Oxford languages).

Globaldata, 19 May 2020, identified a number of trends behind consumers turning to their local community and shops during the pandemic,

- Trust and transparency
- Fresh produce
- Nostalgia
- Sense of community
- Online options

Even before Covid_19, closer scrutiny of globalised consumerism revealed a lack of accountability over food supply chains, an ever-increasing carbon footprint and the negative impact on local economies. The pandemic has provided an impetus to the localism movement and local producers are adapting accordingly. This will hopefully continue to gain momentum in Levenmouth.

Whilst a core tenet of the River Leven Project has always been about improving the local economy, the Concept Design Masterplan looks at particular opportunities to build and strengthen localism. Primary strategies include,

- creating local productive areas – agroforestry and community hub growing areas
- encouraging and facilitating the seeting up of a Social Enterprise (Friends of the River Leven Park group)
- enabling the installation of pop-up shops and cafes as local start-ups
- providing apprenticeships – building elements of the River Leven Park through local jobs, skills, materials and communities.

Climate Change

"The scientific evidence is that if we have not taken dramatic action within the next decade, we could face irreversible damage to the natural world and the collapse of our societies."

Sir David Attenborough - BBC programme Climate Change - The Facts

The generally held scientific view is that increased levels of atmospheric carbon dioxide produced by the use of fossil fuels is causing the earth's climate to change. The effects are already visible throughout the world: the loss of sea ice, accelerated sea level rise and longer, more intense heat waves. Humanity's impact on ecosystems is causing bird, animal and plant extinctions through deforestation and destruction of habitats.

Designing landscapes that mitigate and adapt to climate change by sustaining biodiversity and allowing species to thrive in connected habitats can contribute to reversal. "To conserve a representative network of resilient, connected lands and waters that will allow nature to adapt to climate change". (Dr. Mark Anderson Director of Conservation Science at the Nature Conservancy).

Iglu Studio believes that the River Leven Park could play a small but innovative role through the implementation of landscape interventions such as tiny forests, wildflower meadows and natural flood management measures including wet woodlands, secondary flows and wetland creation. Underpinning the strategic decisions and proposals for the Concept Design Masterplan is a joint approach of climate change mitigation and adaptation. Mitigation addresses the root cause of the problem (lowering GHG emissions), and adaptation addresses the consequences of the problem.

Mitigation interventions seek to reduce the release of greenhouse gas emissions, or to increase the capacity of carbon sinks. These include using renewable sources of energy, using open space for ground source heating/ cooling and introducing carbon capture measures such as new woodland/tree planting, wildflower meadows and sea grass seeding. At the centre of this approach is encouraging traffic-free movement through walking, cycling and wheeling.

Climate adaptation measures tackle physical impacts including flooding and increasing temperatures. Whilst the overall expansion of woodland will help in terms of mitigating rising urban temperatures (the river park as a whole acts as a green oasis regulating temperatures), the adaptation of the riparian corridor to allow periodic future flood events and ameliorate surface run-off is important. This adaptation includes the creation of wetlands in the Creosote Garden, re-opening the historic mill lade in the Methil Garden and the expansion of wet woodlands.

In addition to the measures identified in the earlier reference to localism the Concept Design Masterplan proposes to address climate-related threats to food security and the pandemic through the establishment of a community focused productivity area, based on the principles of agroforestry. This will include learning and education, training, new jobs as well as wider benefits in recreation, community development, biodiversity, food provision and placemaking. Agroforestry, and expansion of woodland / forestry, is one of the ways in which the Scottish Government aims to meet its statutory five year programme for adapting to climate change as set out in The Scottish Climate Change Adaptation Programme 2019-2024.

Sustainable Landscapes

Sustainable landscapes cover a range of different factors, from placemaking, economy, climate change, education and health, as set out in the UN 17 sustainable development goals (national performance indicators), many of which overlap with the Leven Programme themes. Perhaps more pertinent are the ten principles comprising the One Planet Living sustainability framework,

- Health and Happiness
- Equity and local economy
- Culture and Community
- Land and nature
- Sustainable water
- Local and sustainable food
- Travel and transport
- Materials and products
- Zero waste
- Zero carbon energy

All of these principles are addressed in one form or another within the Concept Design Masterplan proposals.

Creating a sense of place

The River Leven Park provides a unique opportunity to create an accessible, memorable and verdant public space which accommodates people and nature. The heavily vegetated riverbanks throughout the valley provide the perfect habitat for wildlife to thrive while human users of the site mostly stick to the existing desire lines for walking or running. This has effectively minimised intrusion into the surrounding habitat areas: the proposed path network within the river valley predominantly adheres to the existing grass and mud routes to maintain habitat protection.

As with the integration of the upgraded path network, any interventions to be installed within the garden areas should be light-touch, minimalist and sensitive to the landscape and its inhabitants. For example, the initial concept design proposals for the Burn Mill Garden include a bird hide/ shelter with a green roof overlooking the wetland area. The hide will enable bird spotting for all ages and the green roof will contain pollinator friendly planting to attract bees and butterflies, thereby increasing biodiversity.

There will be many opportunities to create detailed landscape interventions both within the garden areas and perhaps in more subtle locations, at the edges of a path, or within a woodland. To design a park that is distinctive to Levenmouth, these details should reference elements of the landscape, heritage and local vernacular which distinguish the area from others. For example, the play features suggested for the Iron Brig Garden take the form of large circular tunnels as a nod to the sheet metal fabrications visible in the industrial yard opposite the garden. This could also include engravings of local dialect, poetry and stories onto new features such as benches, bridges, paths and signage.

Referencing the local culture and heritage of Levenmouth will be a fundamental aspect of Stage 3 - Detailed Design with particular emphasis on community engagement to further inform the narrative.

∧
View from wetland boardwalk looking east at proposed bird hide green roof in the Burn Mill Garden

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∧ IMAGES

1 Steps which lead the visitor to the river at Parc du Lancy
2 Shore loungers in Girona
3 Re-purposed oyster posts

1. Parc du Lancy

This project is a subtle example of how stategically located features can reveal the history of a site whilst encouraging the visitor to explore and use their imagination. Before being levelled and drained for farming purposes, the River Aire in Lancy, Geneva was an undulating waterbody in the foothills of the plain, surrounded by native vegetation and it is this historic state that the project seeks to reference and celebrate.

The steps shown in the image above both visually and physically lead the visitor down into the dense, riparian corridor. This intervention provides an element of mystery and encourages exploration whilst accentuating the topography of the valley through the placement of the steps along the contours. The steps also reorientate this forgotten landscape towards the river which originally formed it.

2. Girona's Shores

There are many relevant and applicable initiatives of EMF's Girona's Shores to the Connectivity Project, including a pioneering differentiated landscape management regime though it is their approach to the path network which provides inspiration for detailed interventions of a temporal nature.

The paths within the park act as 'tellers of the landscape,' highlighting views and encouraging moments of reflection through bordering 'confetti' - defined by EMF as ad-hoc micro-interventions that allow the visitor to identify and celebrate distinctive footprints of the place.

One example intervention would be the timber loungers in the image above which were designed and constructed to echo traditional seating found along the shores of Girona and allude to further interventions within the surrounding area. Furthermore they were carefully situated in a quiet and tranquil space by the project team after hours of walking and analysing potential sites.

3. Parc du Grand Pré

This park in Brittany is a good example of landscape design drawing inspiration from the surrounding context to create a connection between greenspace and a nearby estuary.

An experimental pine tree nursery was created in 36 equal sized test plots: 5,000 seeds were sown of varying combinations of a vast array of pine species such as Austrian pine, Scots pine and Monterey pine and covered with different types of mulching (eg flax waste, gorse, sheep fescue). Natural succession within each varying plot will eventually leave approximately five trees per plot.

Each test plot has been demarcated through the painting of colour-coded recycled posts from local mussel farms, providing a protective barrier and immediate visual impact through height and colour. The posts also allow locals to easily monitor the growth of the trees and includes them in the phasing process.

The Concept Design Masterplan illustrates a 'vision' of the final proposed River Leven Park. The following phasing diagrams are provided as a starting point for conversations to establish and agree an optimum timetable for development.

Phasing and implementation will be influenced by factors including land ownership, funding, planning, utilities and community needs, and as such should be flexible. However an agreed phasing programme (strategy) will establish a framework, and reference point, for the project partners and community to set goals and targets.

The phasing programme should be accompanied by a development capacity and financial model, in order to test the feasibility and impact of different assumptions and scenarios.

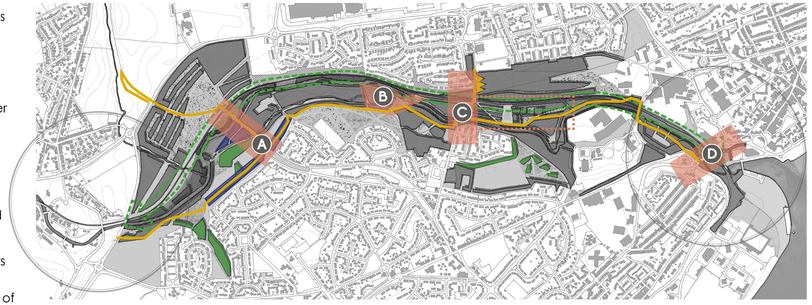
The phasing programme considers a number of key factors and influences including,

- the proposed rail line and station implementation date of 2023,
- the establishment of the Levenmouth Active Travel Network,
- projects that can be delivered early,
- masterplan framework elements that provide structure without limiting flexibility.

Year 1 (2021)

- Site investigation of masterpan area including
  - line and level survey across entire site,
  - structural investigations of key structures (bridges etc),
  - 3D laser survey
  - Flood Risk Assessment - further study of Methil Mill lade, Kirkland Dam environs and Creosote area.
- Full survey of agreed projects, including the Burn Mill area, and key priority path routes.
- Development of interim community programmes with FRT and Project Team, including wildflower seeding, woodland/ tiny forest planting and outdoor classrooms.
- Planning programme to remove existing Local Development Plan (LDP) allocation of Creosote site (currently industrial).
- Compensatory planting of trees removed from rail corridor in agreement with Network Rail (NR).
- Continued re-development of Kirkland and Burn Mill dams

Phasing Stage 1 - Years 1 - 3 (up to rail line / station completion)



Legend

- Primary river park route development
- Connections to train stations - final station locations subject to agreement.
- Existing woodland to be reinforced
- Rail corridor to be cleared with compensatory planting located in appropriate areas of the river valley
- Proposed new areas of woodland / tiny forest
- Proposed priority development areas
- Proposed temporary community space
- A Bridge across rail + river at Methil Garden
- B Burn Mill Garden
- C Bridge across rail + river at Creosote Garden
- D Bawbee Bridge - upgrade

Year 2 (2022)

- Planting of new woodland blocks,
- Continued replanting of compensatory trees removed from rail corridor.
- Detailed design development of primary river park routes (paths for all / traffic free routes),
- Detailed design development of rail and river crossings (new and existing bridges),
- Detailed design development of Burn Mill Garden area,
- On-going community projects and planting programmes,
- Establishment and installation of temporary works at Creosote site (subject to landowner agreement) including community productive spaces, workshops, tool library, cycle library etc.
- Establishment and planting of temporary nursery (location to be agreed),
- Detailed reconfiguration of Kirkland and Burn Mill Dams.
- Identification of off-road biking facility location.

Year 3 (2023)

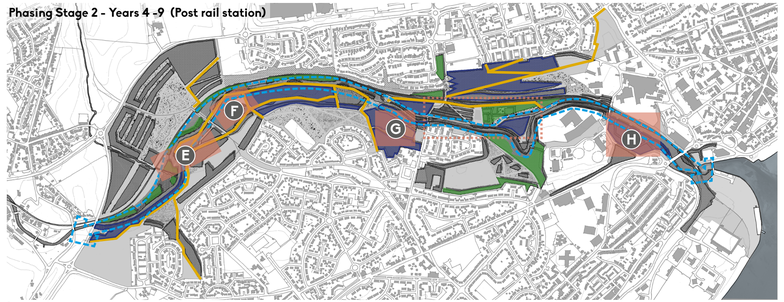
- Continued development of detailed construction packages,
- Tender issue of Burn Mill Garden,
- Tender issue of primary river park routes,
- Establishment of project construction parameters including sample sections and comparative panels,
- Potential tender return and construction start of selective initial priority projects or route sections,
- On-going community projects and planting programmes,
- Continued re-configuration of Kirkland and Burn Mill Dams,
- Detailed design development and construction of off-road biking facility.

Note: Detailed design development stages will likely straddle years subject to survey and site investigation works.

Years 4 - 9 (2024 - 29)

- Continued exploration and representation to Fife Council for removal of current LDP allocation for Creosote Garden.
- Detailed design and development of Secondary and Tertiary river park routes
- River / riparian corridor improvement works
- Reinforcement planting works to existing woodland areas
- Continued planting of new woodland areas
- Continued development and implementation of community and social enterprise works
- Renewable energy resource, and sustainable landscape project development, such as seagrass seeding in the Firth of Forth

Phasing Stage 2 - Years 4 -9 (Post rail station)



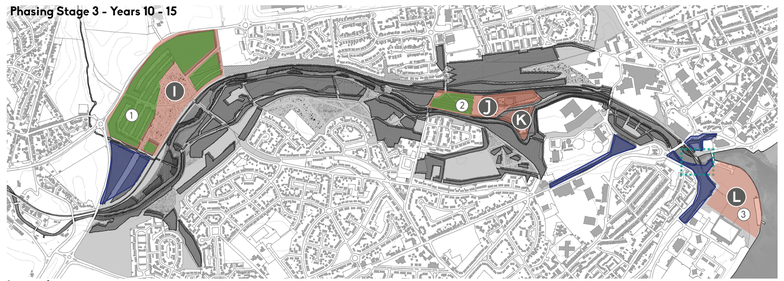
Legend

- Secondary/Tertiary river park route development
- Existing woodland to be reinforced
- Proposed new areas of woodland / tiny forest
- River / riparian corridor improvement works area.
- Proposed seagrass seeding zone in Firth of Forth
- Proposed priority development areas
- Proposed temporary community space
- E Kirkland Dam / Methil Garden area
- F Methil Mill Heritage area
- G Former Kirkland Steelworks play area
- H Iron Brig Garden - Co-Design play space

Years 10 - 15 (2030 - 35)

- Development and construction of permanent proposals for Creosote Garden including community hub
- The Docks Garden development, including recreation and watersports hub
- Renewable energy resource, and sustainable landscape project development,
  1. Agroforestry
  2. Ground heat source
  3. Solar, wind and tidal power
- Green bridge development of existing former rail bridge.

Phasing Stage 3 - Years 10 - 15



Legend

- Existing woodland to be reinforced
- Proposed new areas of woodland / tiny forest
- Proposed priority development areas
- Green bridge development
- 1 Agroforestry
- 2 Ground heat source
- 3 Solar, wind and tidal power
- I Agroforestry community productive area
- J Creosote Garden community hub
- K Millenium wood water events area
- L Docks Garden development area

Costings

Having produced the Concept Design Masterplan, an estimate of the likely construction costs was prepared by Thomson Gray Quantity Surveyors. The costing was based on the masterplan proposals and allocated under the three suggested development phases.

Phase 1 – Year 1 to 3
Phase 2 – Year 4 to 9
Phase 3 – Year 10 to 15

The estimate breaks the construction costs down into a range of key elements including paths, bridges and green infrastructure. For a more detailed breakdown refer to River Leven Connectivity Project Cost Estimate of Infrastructure / Public Realm – 13 November 2020.

2.0 KEY FACTS SHEET (Cont'd)

Summary of Estimate :

Average uplift of 3.35% per annum using BCIS Forecast

		2.44%	6.02%	10.05%	
PHASE 1	**Overall Construction Cost**	year 1	year 2	year 3	**TOTAL STAGE 1 COST**
Remove Existing Path Network	**£76,000**	-	£40,288	£41,819	£82,107
Bridges	**£3,919,000**	-	-	£4,312,860	£4,312,860
New Paths	**£4,870,000**	-	£2,581,587	£2,679,718	£5,261,305
Woodland	**£321,000**	-	£340,324	-	£340,324
Grassland	**£151,000**	-	£80,045	£83,088	£163,133
Wildflower	**£36,000**	-	£18,000	£18,000	£36,000
Play	**£375,000**	-	-	£206,344	£206,344
Options (Skate Park etc)	**£2,280,000**	-	-	£2,509,140	£2,509,140
Surveys and Legal Costs	**£240,000**	£122,928	£63,612	£66,030	£252,570
Design Costs	**TBC**	*****	*****	*****	
PHASE 1 - TOTAL CONSTRUCTION COST	**£12,268,000**	**£122,928**	**£3,123,856**	**£9,916,998**	**£13,163,781**

Appying Average uplift of 3.35% per annum using BCIS Forecast from year 6 onward

		13.93%	15.80%	19.15%	22.50%	25.85%	29.20%	
PHASE 2	**Overall Construction Cost**	year 4	year 5	year 6	year 7	year 8	year 9	**TOTAL STAGE 2 COST**
Remove Existing Path Network	**£99,000**	£56,395	£57,321	-	-	-	-	£113,716
Bridges	**£370,000**	£210,771	£214,230	-	-	-	-	£425,001
New Paths	**£5,206,000**	£2,965,598	£3,014,274	-	-	-	-	£5,979,872
Woodland	**£1,974,000**	£742,163	£754,344	£776,167	-	-	-	£2,272,674
Grassland	**£151,000**	£56,771	£57,703	£59,372	-	-	-	£173,847
Wildflower	**£36,000**	£13,535	£13,757	£14,155	-	-	-	£41,447
Wetland	**£173,000**	£57,090	£57,090	£57,090	-	-	-	£171,270
Incubator Spaces	**£25,000**	£9,399	£9,554	£9,830	-	-	-	£28,783
River Restoration	**£5,482,000**	£1,249,129	£1,269,631	£1,306,361	£1,343,090	£1,379,819	-	£6,548,030
Play	**£219,000**	£62,377	£63,401	£65,235	£67,069	-	-	£258,081
Heritage	**£168,000**	£95,701	£97,272	-	-	-	-	£192,973
Lade	**£132,000**	£75,194	£76,428	-	-	-	-	£151,622
Active Travel Hubs	**£438,000**	£124,753	£126,801	£130,469	£134,138	-	-	£516,161
Cycle/ e Cycle	**£78,000**	£22,216	£22,581	£23,234	£23,888	-	-	£91,919
Street Furniture	**£45,000**	£12,817	£13,028	£13,404	£13,781	-	-	£53,030
Surveys and Legal Costs	**£105,000**	£19,938	£20,265	£20,851	£21,438	£22,024	£22,610	£127,125
Design Costs	**TBC**	*****	*****	*****	*****	*****	*****	£0
PHASE 2 - TOTAL CONSTRUCTION COST	**£14,701,000**	**£5,773,847**	**£5,867,679**	**£2,476,169**	**£1,603,403**	**£1,401,843**	**£22,610**	**£17,145,550**

Appying Average uplift of 3.35% per annum using BCIS Forecast from year 6 onward

		32.55%	35.90%	39.25%	42.60%	45.95%	49.30%	
PHASE 3	**Overall Construction Cost**	year 10	year 11	year 12	year 13	year 14	year 15	**TOTAL STAGE 3 COST**
Woodland	**£1,073,000**	£237,044	£243,035	£249,025	£255,016	£261,007	£266,998	£1,512,125
Wildflower	**£17,000**	£3,756	£3,851	£3,945	£4,040	£4,135	£4,230	£23,957
Wetland	**£50,000**	£11,046	£11,325	£11,604	£11,883	£12,163	£12,442	£70,463
Play	**£99,000**	£21,871	£22,424	£22,976	£23,529	£24,082	£24,635	£139,516
Community Hub	**£477,000**	£105,377	£108,041	£110,704	£113,367	£116,030	£118,694	£672,212
Street Furniture	**£100,000**	£22,092	£22,650	£23,208	£23,767	£24,325	£24,883	£140,925
Surveys and Legal Costs	**£75,000**	£16,569	£16,988	£17,406	£17,825	£18,244	£18,663	£105,694
Design Costs	**TBC**	*****	*****	*****	*****	*****	*****	£0
PHASE 3 - TOTAL CONSTRUCTION COST	**£1,891,000**	**£417,753**	**£428,312**	**£438,870**	**£449,428**	**£459,986**	**£470,544**	**£2,664,892**

Summary

The development of the Concept Design Masterplan has taken longer and been more complex than imagined at the inception in January, thanks in the main to the impact of the Covid-19 pandemic. Nevertheless an initial masterplan proposal has been realised, one that we believe aligns with the Masterplan Principles that we started with in January 2020 (detailed on the following page 118). Most importantly the masterplan has been presented to the community, commented on and discussed, and whilst there is always more consultation that can be done, more people to talk with and more voices to be heard, the response has been overwhelmingly supportive of the River Leven Park proposals.

The Concept Design Masterplan is of place: it has been shaped by locals who live and work in Levenmouth, both through their suggested improvements and through the desire lines they have carved into the landscape. It is a plan that fulfils the core principles of the Leven Programme to reconnect communities, to regenerate the river and its immediate environs, and significantly has the potential to revitalise the economy of the area.

Perhaps most intriguing at a small scale is the potential for the project to incorporate localism, social enterprises and a community focus. This is a unique project though which can also play its own small role in addressing national and global issues such as renewable energy generation, climate change and health and well-being.

To achieve any of this for the long-term, it is paramount that the Connectivity Project is a community focused project enabling the community to help themselves and to create a sense of ownership and a resilient economy through local production, enterprise and community self-sufficiency. This is reflected in the Next Steps.

Next Steps:

- Secure funding for project team and workstreams for Stage 3 Detailed Design.
- Continued community engagement – establish a Stage 3 - Detailed Design strategy and programme.
- Investigating the potential formation of a Friends of the River Leven Park group to establish an administrative structure to manage aspects of the park and enable community stewardship. This development of programmes could share practical skills, training, planting and maintenance of the River Leven Park.
- Review, identify and agree the priority detail design projects in conjunction with Network Rail / the Levenmouth Rail link and Blueprint programmes.
- Establish a project team to deliver the proposed programme - members / partners to include community and social enterprise organisations (e.g. Inspire Scotland)
- Further exploration and development of the additional threads including seagrass and temporary programmes such as temporary nurseries, bike lending libraries etc.
- Identify and programme interim activities to raise awareness including FRT river-based work and as previously proposed archaeological dig in north west area of site (Kennoway).
- Identify, fund and enact a programme of site survey and site investigations, collated into a central data base.
- Identify and establish land ownership, continue on-going conversations and embark on new relevant conversations with landowners.
- Continued research and development of upstream programme.

A **connected** project – embracing walking, cycling, and wheeling.

As we delved further into the valley, through boggy grassland, across train tracks, discovering desire lines carved by locals we realised that the basis for a coherent path network was already in place. Following discussions with the community though it became clear that the steep slopes, dense vegetation and often unstable routes rendered this verdant and peaceful landscape often impassable. The proposed **upgraded, widened and accessible for all path network** will allow safe passage to, along and across the river for people of all abilities to **connect with nature**.

A **spatial** project – providing a new network of public green spaces.

The central concept of the masterplan is to **provide a series of social spaces** around key crossing points of the river. These six garden areas will provide **meeting places for communities to socialise, relax, play, learn and explore**. Each garden has a distinctive character of its own - where the Methil Garden focuses on heritage, includes a wet woodland and allows access close to the river the Iron Brig Garden will be a community co-designed play area at the top of the valley within a large broadleaved woodland.

A **green energy** project – integrating public transport, renewable energies and energy production.

One of the primary framework layers for the masterplan is the rail-line. The re-opening of the line and construction of two stations will bring a much needed source of public transport to the area. The stations will essentially bookend the river park and provide direct access for visitors, connecting Levenmouth to Edinburgh in 70-75 minutes.

An additional thread to be developed in Stage 3 - Detailed Design is the **potential hosting of green energy infrastructure** (water, solar, thermal and wind power) within the river park as part of the Park Power programme.

A **climate aware** project – working towards zero waste goals with the introduction of climate adaptation and mitigation measures.

Many of the proposals within the River Leven Park will address climate change: re-opening the mill lade in the Methil Garden will **accommodate periodic flooding**, the planting of pollinator corridors will **improve biodiversity** and the planting of native tree species and tiny forests will **sequester carbon**.

Furthermore, the materials used for paths and interventions will adhere to zero waste guidance with an emphasis on **re-using and recycling**.

A **social justice** project – endeavouring to tackle broader social themes of inequality, particularly for those seldom heard and most at risk.

Research has shown that regular access to green spaces can improve health and wellbeing: the River Leven Park will be a fully accessible and beautiful public park with a wide range of facilities to provide a **meaningful and generous green space** for one of the most deprived areas of Scotland/

The proposed **outdoor education programme** to be developed further during Stage 3 - Detailed Design is a unique opportunity for children and young adults to **learn new skills and knowledge in an inspiring environment**.

A **community focused** project – helping to create a sense of ownership and a resilient economy through locally-produced food and community self-sufficiency.

The formation of a Friends of the River Leven Park group has been suggested to create an administrative structure to manage aspects of the park and enable community stewardship. This could include the development of **programmes to share practical skills**, **training, planting and maintenance**, potentially as part of the guidance included in the Habitat Toolkits.

Finally, building and tending to extensive growing spaces would **improve food security** during this uncertain period of time when it's most needed.

RESEARCH PROJECT 1

AKERSELVA

PROJECT TYPE : Public realm, river restoration

LOCATION : Oslo, Norway

CLIENT : Oslo kommune

SCALE COMPARISON :

PROJECT SYNOPSIS

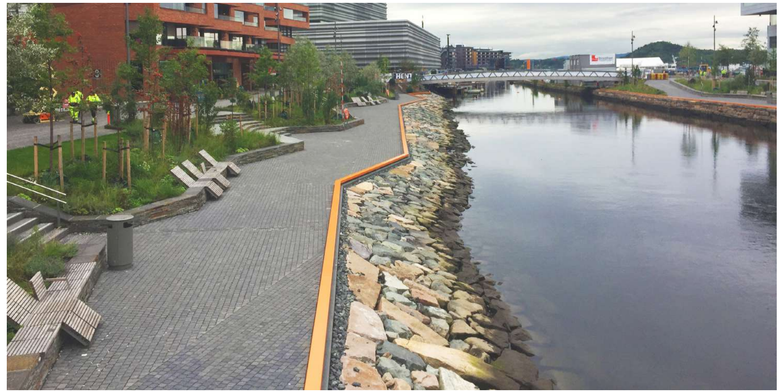
During heavy industrialisation in the 19th century, the Akerselva powered many saw mills, textile factories and mechanical workshops located along its riverbanks. Since de-industrialisation in the 1970s many of the structures and buildings were left abandoned and the river was left heavily contaminated after over 100 years of industrial and sewage discharge.

In the 1980s, a local drive was instigated to limit emissions and revive the flora and fauna of the river. This was followed by the transformation of the traditional industrial structures into cultural venues, food markets, cafes and schools, the installation of colourful street art and sculpture and the development of an integrated pedestrian and cycle path network.

The river and its associated public space is now perceived as Oslo's active, green heart providing opportunities to rest, walk, run, cycle, swim, fish, and kayak.

RELEVANCE TO THE CONNECTIVITY PROJECT

- Installation of cantilevered pedestrian bridges and walkways
- Public realm creates access to the river
- Post-industrial heritage



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SITE IMAGES

1 This public realm intervention uses a distinctive coloured line which is repeated throughout the city to delineate the waters edge
2 A regenerating fallen tree trunk indicates how ecology has been allowed to naturally thrive
3 Cantilevered pedestrian bridge over the water

RESEARCH PROJECT 2

VISTULA BOULEVARDS

PROJECT TYPE : Public realm, urban park, flood mitigation

LOCATION : Warsaw, Poland

CLIENT : The Capital City of Warsaw

SCALE COMPARISON :

PROJECT SYNOPSIS

The large public realm project to create a new riverside park in the centre of Warsaw has won numerous landscape design awards across Europe.

Prior to the project, the river was an underutilised asset, almost totally inaccessible with large undeveloped riverbank spaces. The public realm improvements have created a unique and accessible to all public space which reconnects neighbourhoods, allows the site to periodically flood and offers recreational and social activities to locals and visitors alike.

RELEVANCE TO THE CONNECTIVITY PROJECT

- Natural periodic flooding has been acknowledged and factored into the design of the space
- Public realm creates access to the river
- Mixture of playful and calm public spaces

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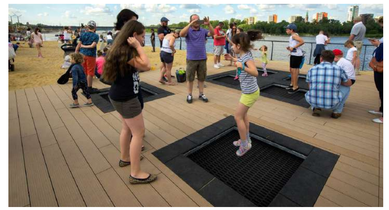

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SITE IMAGES

1 Stepped seating inlets were designed to allow periodic flooding
2 One of the many play spaces with trampolines built into the decking (sandy beach also visible in the background)
3 More tranquil spaces were also designed to provide moments of calm reflection

Image credits: 2-3 © RSAK

RESEARCH PROJECT 3

WALTHAM FOREST

PROJECT TYPE : Public realm, pedestrian / cycle green network

LOCATION : London, UK

CLIENT : Waltham Forest Council

SCALE COMPARISON :

PROJECT SYNOPSIS

This multi award-winning green transport scheme has created 24km of segregated cycle paths, dramatically improving air quality in an area previously dominated by vehicles. In addition to the long-term effect of huge reductions in carbon emissions more people in Waltham Forest are now using active travel instead of vehicles, the benefits of which include improved mental and physical health.

The public realm improvements associated with the transport network include new public spaces, growing spaces, parks and crossing points. Many of these areas are co-maintained by residents eager to take care of their community spaces.

As part of the community engagement an interactive website was set up which provided an anonymous messaging board to allow residents to comment on issues.

RELEVANCE TO THE CONNECTIVITY PROJECT

- Implementation of segregated pedestrian and cycle routes
- Robust street furniture using mostly natural materials
- Community management of green infrastructure

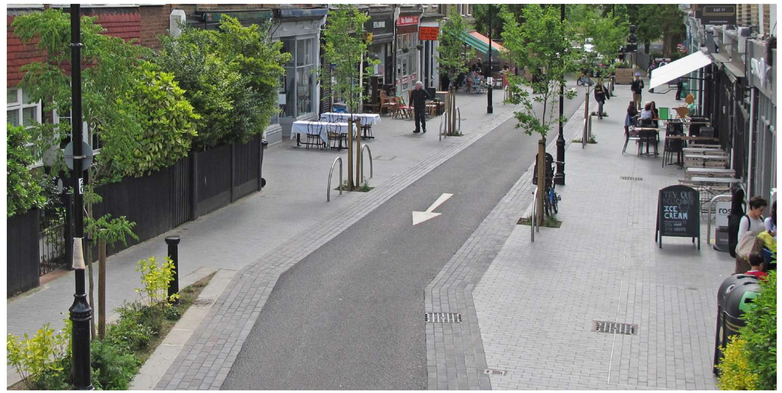

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Image credits: 1-3 Waltham Forest Council

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SITE IMAGES

1 Segregated cycle paths have replaced previously vehicular access roads
2 Pocket parks provide safe places for children to play
3 The edges of the cycle routes also provide opportunities for new planting and street furniture

RESEARCH PROJECT 4

SEVEN LOCHS WETLAND PARK

PROJECT TYPE : Public realm, urban park, green infrastructure

LOCATION : Glasgow, Scotland

CLIENT : Glasgow and Clyde Valley Green Network Partnership

SCALE COMPARISON :

PROJECT SYNOPSIS

The Seven Lochs Wetland Park is a large urban park in the north of Glasgow which provides a vast network of walking and cycling routes around an array of local nature reserves and the afore-mentioned seven lochs.

The project strives to manage the existing green infrastructure to protect wildlife habitats whilst also providing opportunities for humans to co-exist in harmony.

The education programme encourages locals to learn about the cultural heritage of the site and the environmental significance of wetlands. The extensive programme of events includes nature activities, den-building, crafts events, nature photography workshops, night walks and guided walks around the park based on a wide range of themes such as edible plants, birds of prey, wildflowers.

RELEVANCE TO THE CONNECTIVITY PROJECT

- Strategy for water management integrated with creation and management of the park
- Existing wildlife habitats carefully managed
- Emphasis on education and active travel

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SITE IMAGES

1 Stopping points are situated to frame views across the lochs
2 A selection of water-based activities are provided for visitors
3 Visitor centres have been constructed at gateways into the park

Image credits: 1-2 Glasgow and Clyde Valley Green Network Partnership

RESEARCH PROJECT 5

GLASGOW CLYDE GATEWAY

PROJECT TYPE : Public realm, urban woodland park

LOCATION : Glasgow, Scotland

CLIENT : Glasgow Clyde Valley Green Network Partnership

SCALE COMPARISON :

Glasgow Clyde Gateway

The Connectivity Project

PROJECT SYNOPSIS

The Glasgow Clyde Gateway is an area of 3.3 square miles sitting on the boundary between the city of Glasgow and South Lanarkshire. The recent interventions in the area include new pedestrian bridges, an upgraded active travel network and the creation of a new urban woodland and activity park.

The new pedestrian bridges allow access across the Clyde and there are over 3 miles of pedestrian routes in and around the Cuningar Loop which are accessible to all. Activities within the park include bouldering, a bike activity track and adventure play equipment.

The Forestry Commission (now Forestry and Land Scotland) were a key partner in the Cuningar Loop project, and instigated the planting of 15,000 native trees to further improve the wildlife habitat.

RELEVANCE TO THE CONNECTIVITY PROJECT

- Installation of pedestrian bridges and walkways
- Forestry and Land Scotland managed woodland
- Use of Sustainable Urban Drainage Systems (SUDS)

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SITE IMAGES

1 The Cuningar Loop Woodland Park contains one of the first bouldering parks in the country
2 SUDS has been implemented throughout the new active travel route network
3 A non-slip timber raised boardwalk provides access for all and views of the River Clyde around the park

Image credits: 2 GCV

RESEARCH PROJECT 6

BALTIC STREET ADVENTURE PLAYGROUND

PROJECT TYPE : Adventure playground, community facilities

LOCATION : Glasgow, Scotland

CLIENT : Baltic Street Adventure Playground

SCALE COMPARISON :

Baltic Street Adventure Playground

The Connectivity Project

PROJECT SYNOPSIS

The success story of this small charity-run playground in Dalmarnock highlights the importance of community-based projects led by motivated and dedicated local champions.

Baltic Street Adventure Playground was created to provide a supervised environment which encourages children to use their imagination to build their own play space. The ethos behind adventure playgrounds is to trust children to assess their own risk and build confidence in their own abilities.

Baltic Street is expanding its scope to include community growing with the recent construction of wheelchair accessible raised planters within the playground and a University of Glasgow led research project looking at the logistics of setting up a community food hub in Dalmarnock.

RELEVANCE TO THE CONNECTIVITY PROJECT

- Similar context of communities suffering high levels of deprivation
- Links to educational institutions create a knowledge-sharing culture
- Mixture of play and community growing

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SITE IMAGES

1 Supervisors / playworkers help the children to build treehouses, swings and other play equipment
2 The growing space is aimed at both providing food for the community and educating children
3 The construction of a WikitHouse has provided a base for the team and was built in collaboration with the community

Image credits: 1 Assemble 2 Baltic Street 3 Civic Soup

RESEARCH PROJECT 7

FLANDERS MOSS NATIONAL NATURE RESERVE

PROJECT TYPE : National Nature Reserve

LOCATION : Stirlingshire, Scotland

CLIENT : Scottish Natural Heritage

SCALE COMPARISON :

Flanders Moss

The Connectivity Project

PROJECT SYNOPSIS

Flanders Moss National Nature Reserve is the largest lowland raised bog in the UK, containing a whole host of specialist plants and animals. One of the key reasons to visit is to see how access has been realised with minimal impact on the sensitive landscape and the assets that draw people to the place; in particular the all-abilities boardwalk and viewing tower that provides views out across the reserve.

The boardwalk crosses the remote and water-logged landscape, the hues of which change across the seasons and is home to a range of animals and plants, in a similar fashion to the River Leven. Nesting birds, frogs, toads, and invertebrates.

RELEVANCE TO THE CONNECTIVITY PROJECT

- Natural landscape rich in diverse plants and animals
- Boardwalks, lookout tower and other structures including signage
- Access to the countryside, open green space and wayfinding for tourists and visitors

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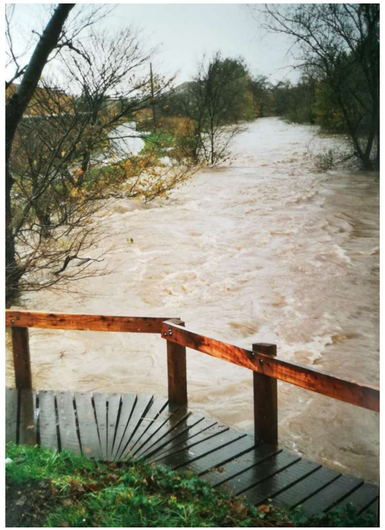
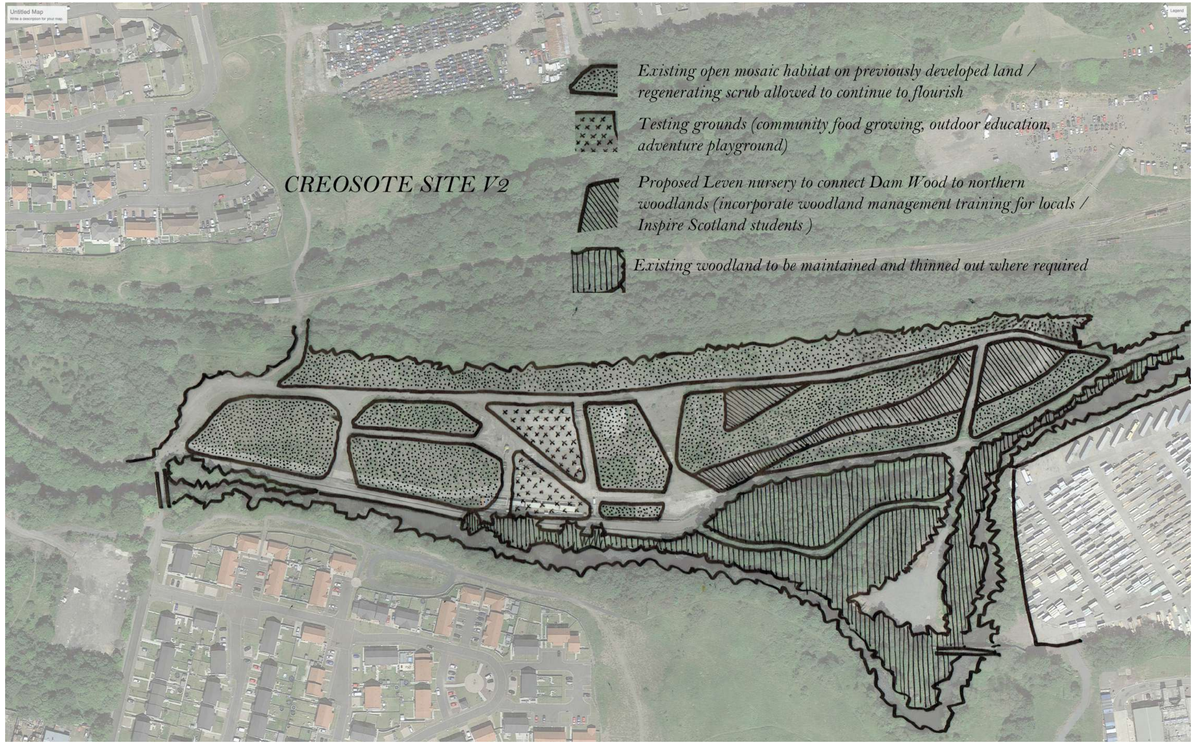
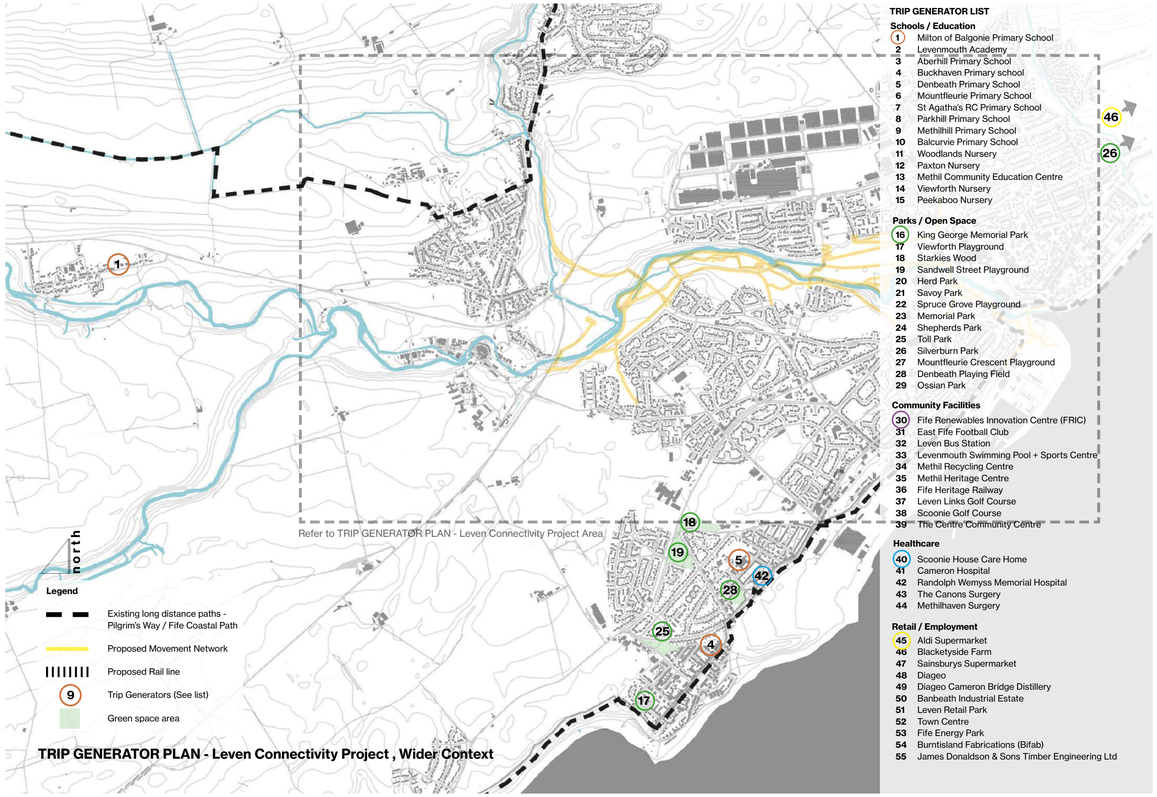
SITE IMAGES

1 Wide panorama of nature reserve landscape showing mosses and heathers
2 Boardwalk and viewing tower
3 Viewing tower structure




CREOSOTE SITE V2
Existing open mosaic habitat on previously developed land / regenerating scrub allowed to continue to flourish
Testing grounds (community food growing, outdoor education, adventure playground)
Proposed Leven nursery to connect Dam Wood to northern woodlands (incorporate woodland management training for locals / Inspire Scotland students)
Existing woodland to be maintained and thinned out where required


north
Legend
Existing long distance paths - Pilgrim's Way / Fife Coastal Path
Proposed Movement Network
Proposed Rail line
Trip Generators (See list)
Green space area
Refer to TRIP GENERATOR PLAN - Leven Connectivity Project Area
TRIP GENERATOR PLAN - Leven Connectivity Project , Wider Context
TRIP GENERATOR LIST
Schools / Education
1 Milton of Balgonie Primary School
2 Levenmouth Academy
3 Aberhill Primary School
4 Buckhaven Primary school
5 Denbeath Primary School
6 Mountfleurie Primary School
7 St Agatha's RC Primary School
8 Parkhill Primary School
9 Methilhill Primary School
10 Balcurvie Primary School
11 Woodlands Nursery
12 Paxton Nursery
13 Methil Community Education Centre
14 Viewforth Nursery
15 Peekaboo Nursery
Parks / Open Space
16 King George Memorial Park
17 Viewforth Playground
18 Starkies Wood
19 Sandwell Street Playground
20 Herd Park
21 Savoy Park
22 Spruce Grove Playground
23 Memorial Park
24 Shepherds Park
25 Toll Park
26 Silverburn Park
27 Mountfleurie Crescent Playground
28 Denbeath Playing Field
29 Ossian Park
Community Facilities
30 Fife Renewables Innovation Centre (FRIC)
31 East Fife Football Club
32 Leven Bus Station
33 Levenmouth Swimming Pool + Sports Centre
34 Methil Recycling Centre
35 Methil Heritage Centre
36 Fife Heritage Railway
37 Leven Links Golf Course
38 Scoonie Golf Course
39 The Centre Community Centre
Healthcare
40 Scoonie House Care Home
41 Cameron Hospital
42 Randolph Wemyss Memorial Hospital
43 The Canons Surgery
44 Methilhaven Surgery
Retail / Employment
45 Aldi Supermarket
46 Blacketyside Farm
47 Sainsburys Supermarket
48 Diageo
49 Diageo Cameron Bridge Distillery
50 Banbeath Industrial Estate
51 Leven Retail Park
52 Town Centre
53 Fife Energy Park
54 Burntisland Fabrications (Bifab)
55 James Donaldson & Sons Timber Engineering Ltd

TRIP GENERATOR LIST

Schools / Education

1 Milton of Balgonie Primary School
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38 Scoonie Golf Course
39 The Centre Community Centre

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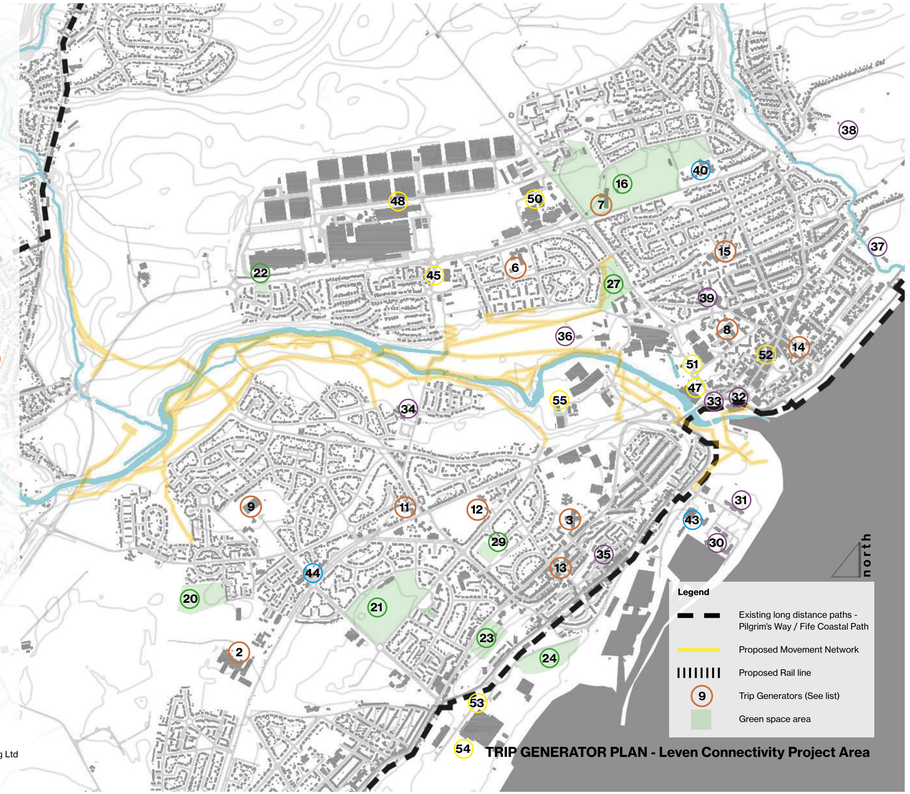

TRIP GENERATOR PLAN - Leven Connectivity Project Area

The Leven

Growing with the Flow