

ST LEONARD PARK REGENERATION

PART OF THE ST. MARY'S DRAINAGE STRATEGY FEASIBILITY STUDY

Client: Scottish Water , NatureScot and Dundee City Council

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01

INTRODUCTION

This document has been produced by OPEN to record the feasibility work which has been undertaken looking at the regeneration of St Leonard Park within the St Mary's catchment of Dundee. The regeneration of the park is being considered as part of a drainage solution for the area which would remove surface water from the combined sewer, and introduce new overground conveyance and sustainable drainage features within the park.

It provides an exciting opportunity to showcase what could be achieved by retrofitting sustainable drainage into an existing landscape. It provides an ideal opportunity to create imaginative multifunctional, multi-beneficial and nature-based solutions which provide improvements not only for drainage but also for recreation, biodiversity and nature, active travel, community identity and health and well being. The project is highly relevant to many of the key challenges of our times, particularly relating to climate change and reductions in biodiversity. It is an important project which could become a benchmark for future schemes.

This chapter sets out the project brief, the site, the client and design team and gives a brief summary of the structure and purpose of the document.

1.1 THE PROJECT

The Brief

Scottish Water and Dundee City Council are jointly developing a storm water strategy to reduce flood risk in the St Mary's area of Dundee. Whilst the focus of the strategy is storm water, the project provides exciting opportunities to realise multiple benefits for people and nature. The strategy proposes to retrofit multifunctional blue-green infrastructure above ground to reduce the flood risk whilst also delivering other benefits, such as improved water quality, enhanced biodiversity, improving areas of greenspace for walking, cycling, play and recreation, and improving the health and wellbeing of the community.

The St. Mary's area of Dundee is already experiencing regular flooding, and this situation will be exacerbated by the impacts of climate change with increased incidents of heavy precipitation. Of particular focus is the regular overflow of a combined sewer in St. Leonard Place, see figure 1 below.

Much of the open space within the St Mary's area of the city is owned by Dundee City Council, and much of it is relatively sterile encompassing large areas of grass requiring regular (and expensive) cutting and offering little in the way of biodiversity.

Together, this provides an opportunity for a drainage strategy across the whole St Mary's area which can disconnect the surface water drainage flow from the combined sewer network and into above ground solutions within features which convey and attenuate water, provide infiltration and storage as well as numerous other water benefits ranging from cleaner water to increased sewage capacity in the network. A phasing plan for the strategy is visible in figure 2 opposite.

This Feasibility Study is for Phase 1 of the works which will offer the fundamental key to unlocking this potential; creating a new above ground conveyance route which runs through St. Leonard Park, and continues eastwards across the roundabout on Strathmartine Road to the rear of Burnside Road and through the former High School grounds, and onwards to the east of the new Baldrigon Academy where it will reconnect with existing pipework and then discharge into the Dighty Water. This new feature will offer water storage for future phases as well as providing capacity for the green corridor through which it flows. Through design of the new burn corridor there is an opportunity to introduce other controlling and quality improving measures such as cascades and riffles. By manipulating landform in association with creating the new channel and water storage, there is an opportunity to introduce wet, dry and damp water storage features thereby expanding the habitat opportunities. The potential to increase habitat connectivity and diversity and to introduce a new riparian habitat in association with the conveyance route will significantly improve green networks and biodiversity.

The neighbours along this corridor include established residential development, a church, two primary schools, a secondary school and a future development site. The redevelopment of the park has the opportunity to improve active travel connections, ensuring that walking, wheeling or cycling are the default options, and making it easy, safe and legible for people to choose sustainable options for travel.

The Client and Design Team

OPEN has developed this feasibility report in close dialogue with the following client and design team:

- Scottish Water
- Dundee City Council
- NatureScot
- Stantec

Programme

The project programme currently has the following milestones:

- Concept design: August 2022
- Detailed design: Winter 2022
- Start on site: Autumn 2023
- Completion: Summer 2025

Budget

No budget has been currently identified for the project. Budget and possible funding streams is expected to follow on from the Feasibility Stage of the project.



fig. 01: Image of flooding at St Leonard Place



fig. 02: St Mary's Drainage Strategy, phasing plan

1.2 THE VISION

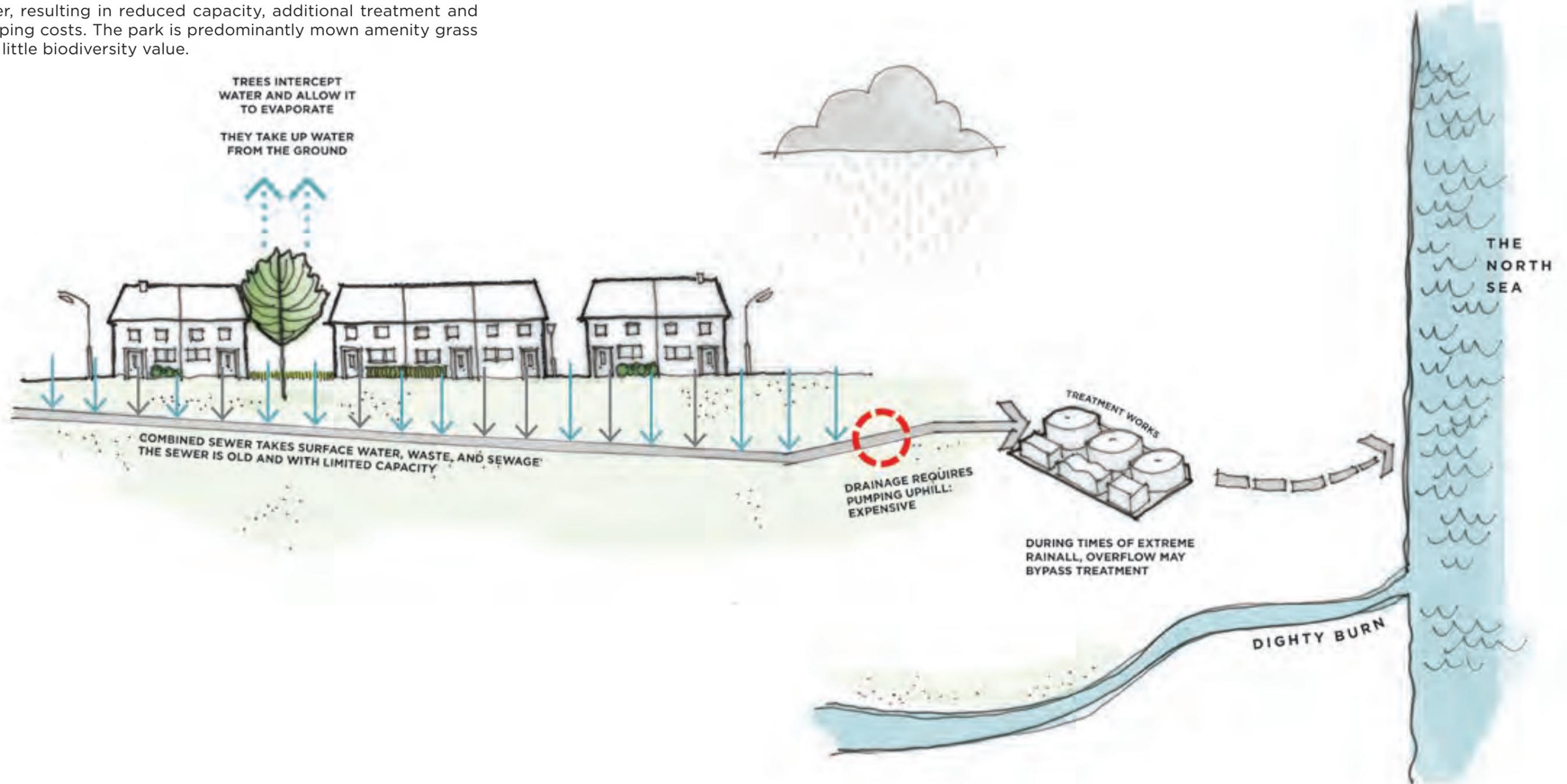
In collaboratively working to reduce current and future flood risk in St Mary's we will provide multiple benefits to the community and environment.



1.3 CONCEPTUAL DIAGRAM

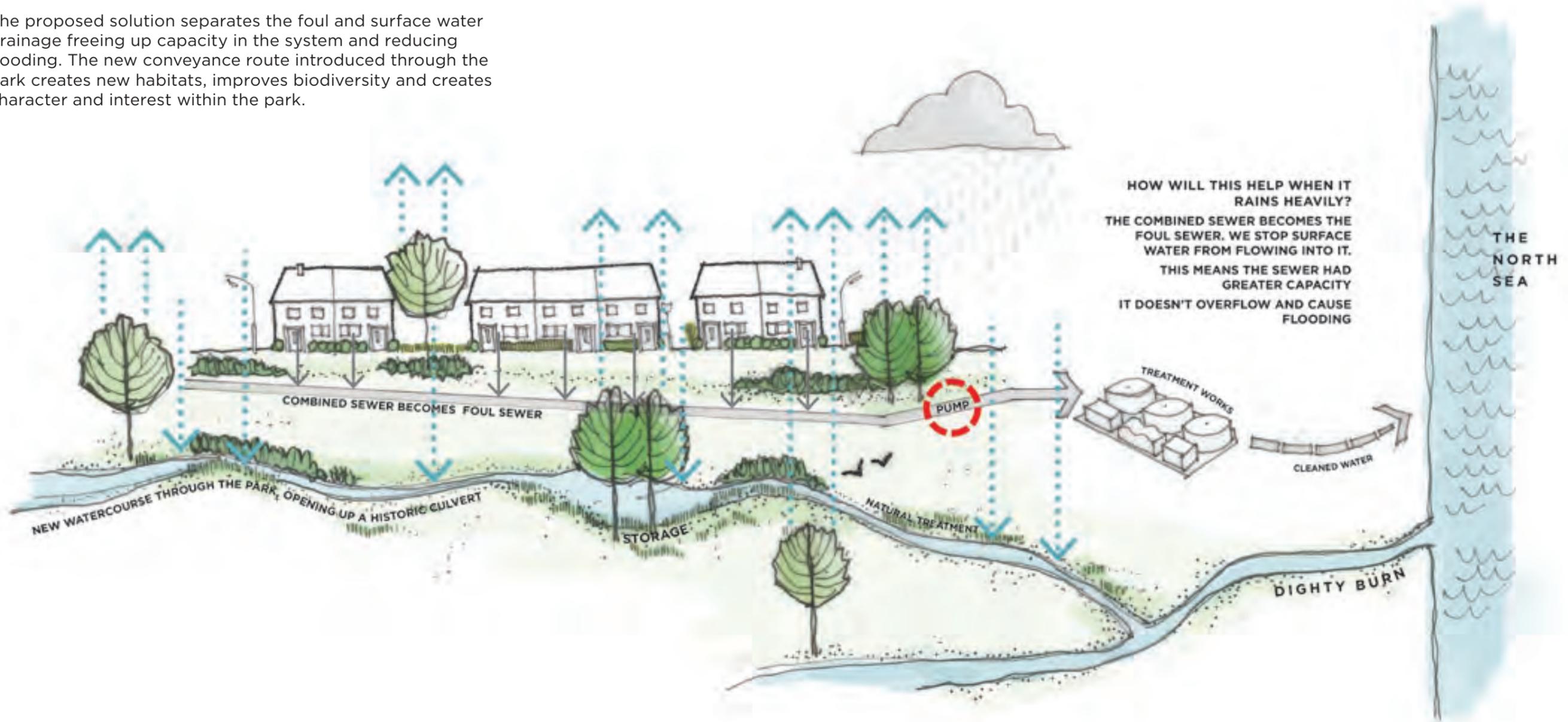
The current situation

Currently surface water and foul water both enter the combined sewer, resulting in reduced capacity, additional treatment and pumping costs. The park is predominantly mown amenity grass with little biodiversity value.



The proposed solution

The proposed solution separates the foul and surface water drainage freeing up capacity in the system and reducing flooding. The new conveyance route introduced through the park creates new habitats, improves biodiversity and creates character and interest within the park.



1.4 PROJECT CONTEXT

Dundee City Council

Climate Change

In June 2019, Dundee City Councillors declared a climate emergency, recognising the serious and accelerating environmental, social and economic challenges we face due to climate change. In response, the Climate Action Plan has been prepared to set out a first set of ambitious actions in a long-term pathway to support Dundee in a just transition to a net-zero and climate resilient future by 2045 at the latest.

Dundee's Climate Change Action Plan

The Dundee Climate Change Action Plan recognises that severe weather and climate impacts are already affecting communities and service delivery provided by organisations across Dundee, with operational, reputational, financial and legal consequences. The latest UK Climate Projections (UKCP18) projections show that this trend is set to increase in the future and the impacts we see today may occur more frequently with higher average temperatures, increased flooding and more extreme, unpredictable weather patterns.

The long-term vision is for Dundee to become a Sustainable City and in the coming decades to pass through a period of transition from a carbon-based economy to one that plays a leading role in Scotland's goal to achieve net-zero greenhouse gas emissions by 2045 or sooner. To do this, each of the four themes of the Climate Action Plan has a key objective:

Energy: Reduce the consumption of energy, promote energy efficiency and increase the proportion of power and heat from low and zero carbon technologies.

Transport: Encourage active travel through walking, cycling and public transport and deploy sustainable alternatives to decarbonise transport.

Waste: Manage waste sustainably by reducing, reusing, recycling and recovering waste to improve resource efficiency whilst working towards a circular economy.

Resilience: Ensure our communities, green networks and infrastructure are adaptable to a changing climate and reduce the risks and vulnerability to unavoidable impacts.

The St Leonard Park regeneration can contribute to this by:

- Reducing the energy requirements of pumping and treating surface water by removing this from the combined sewer.
- Encourage active travel by providing safe, connected and convenient routes.
- Separating waste water from surface water to allow sustainable management.
- Adapting the park to provide climate resilience.

Biodiversity

Nature Conservation (Scotland) Act 2004 Section 1 (1) states:

"It is the duty of every public body and office-holder, in exercising any functions, to further the conservation of biodiversity so far as is consistent with the proper exercise of those functions."

Dundee Biodiversity Action Plan

At the Earth Summit in Rio de Janeiro in 1992 the UK signed up to the Convention on Biological Diversity (CBD). This led to the first UK biodiversity Action Plan being published with the goal – "to conserve and enhance biological diversity within the UK and to contribute to the conservation of global biodiversity through all appropriate mechanisms".

In 2004 'The Scottish Biodiversity Strategy, It's in Your Hands' was published. In 2010 during a Conference of Parties in Aichi, Japan, an updated strategic plan for Biodiversity for 2011-2020 was adopted including 20 'Aichi Targets'. Following this 'The 2020 challenge for Scotland's Biodiversity' was published in 2013, which sets out the six major steps we need to take to improve the state of nature in Scotland and achieve the Aichi targets.

The UK and Scottish plans are implemented through Local Biodiversity Action Plans (LBAPs), which seek to ensure that internationally, nationally and locally important species and habitats are conserved through local action.

Further details of the Dundee LBAP and how the St Leonard Park Regeneration could help contribute to its aims are included within Section 2.8 of this document.

Dundee Green Network

Dundee's Green Network is identified within the Dundee Local Development Plan 2019. Within this plan the St Leonard Park area is identified as a 'Green Network Link' under the name 'Ardler Green Network Link'. The aims of the green network are to:

- **Improve the Quality of Place:** Provide attractive and well integrated green networks close to existing and proposed communities.
- **Enable Climate Change Adaptation and Mitigation:** Help the City adapt to flooding and extreme weather events.
- **Facilitate people to lead healthier lives:** Enable people to increase their activity levels by providing sport, recreation, play and community growing spaces which are accessible and integrated into the walking and cycling network.
- **Protect and enhance the City's green and blue assets:** Protect and enhance the city's existing green and blue assets to allow habitats and biodiversity to co-exist and flourish in an environment that people live, work and play in.

Ardler Green Network Link

Ardler Green Network Link has the following description:

Green assets including SUDS, play space and green space provide 'stepping stones' between strategic green network areas at Camperdown Country Park and Dighty and Fithie Corridor.

The opportunities identified for the link include:

- Protect and diversify functions of existing green assets. For example increase biodiversity interest.
- Create additional woodland at appropriate locations to link
- existing woodland at Templeton / Downfield Golf Course to wider countryside.
- Improve the biodiversity interest of SUDS.
- Control of Giant Hogweed.
- Re-route the Green Circular through greenspace / Consider countryside route in Angus.
- Consult external Green Flag Action Plan for opportunities within Templeton Woods, Trottick Ponds, Camperdown Park and Downfield Park.

The St Leonard Park project has the potential to contribute significantly to some of these aims.

Scottish Water

Scottish Waters' Strategic Plan 'A Sustainable Future Together' is an ambitious long term vision which sets out how the sector will deliver its vital services and provide leadership in responding to the climate emergency. Of particular relevance to the St Mary's project are the following statements:

Waste water collection

We plan to lead the transformation of the management of surface water, working in partnership with Local Authorities, SEPA, house builders and communities. We will promote blue-green approaches and drive innovative solutions to reduce flooding and pollution and create better places to live.

Enhancing the natural environment

We will seek out opportunities to enhance the natural environment, reducing the water we take from the natural environment and using our land and assets to increase biodiversity, planting trees, restoring peatlands and creating better places to live.

The St Leonard Park Project is a great opportunity to help contribute to Scottish Water's vision for 'A Sustainable Future Together'.

1.5 THE SITE

Site location and size

The Phase 1 site is located between the residential neighbourhoods of St Mary's and Downfield in the north-east of Dundee.

The diagrams illustrate the general size and scale of the site:

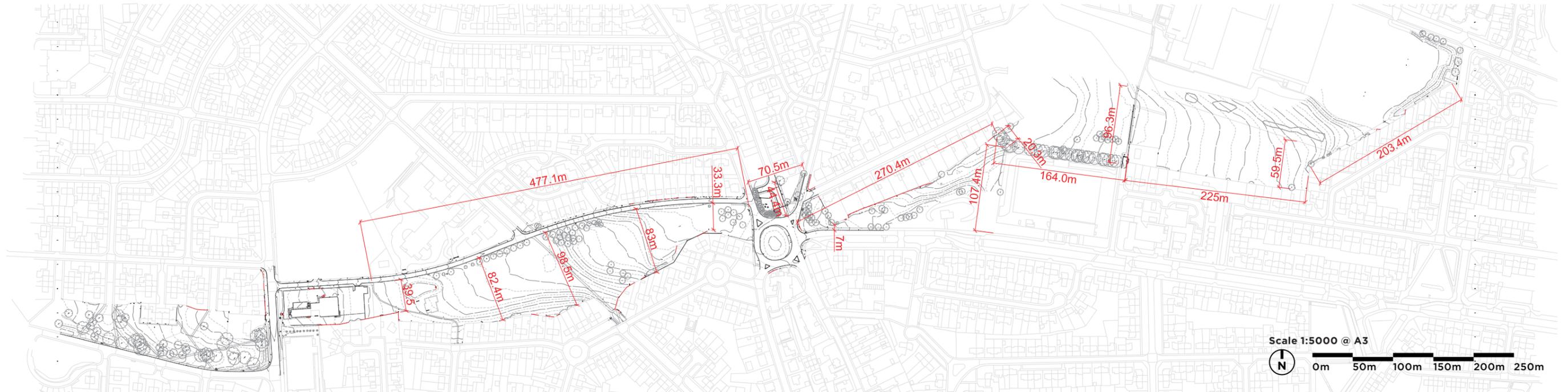


fig. 03: Approximate dimensions

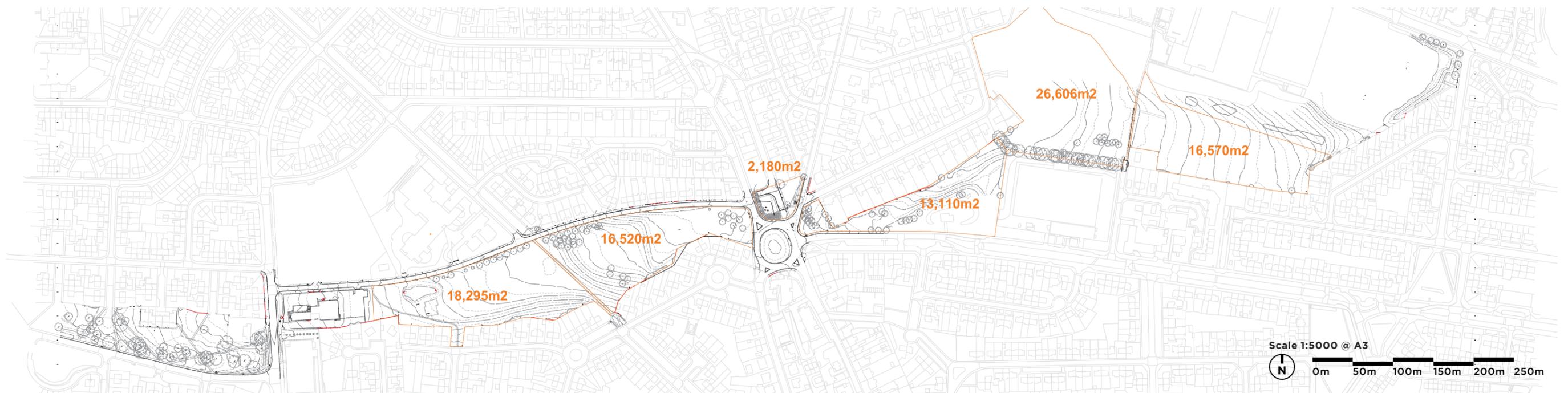


fig. 04: Approximate areas

1.6 SITE PHOTOS

Macalpine Road

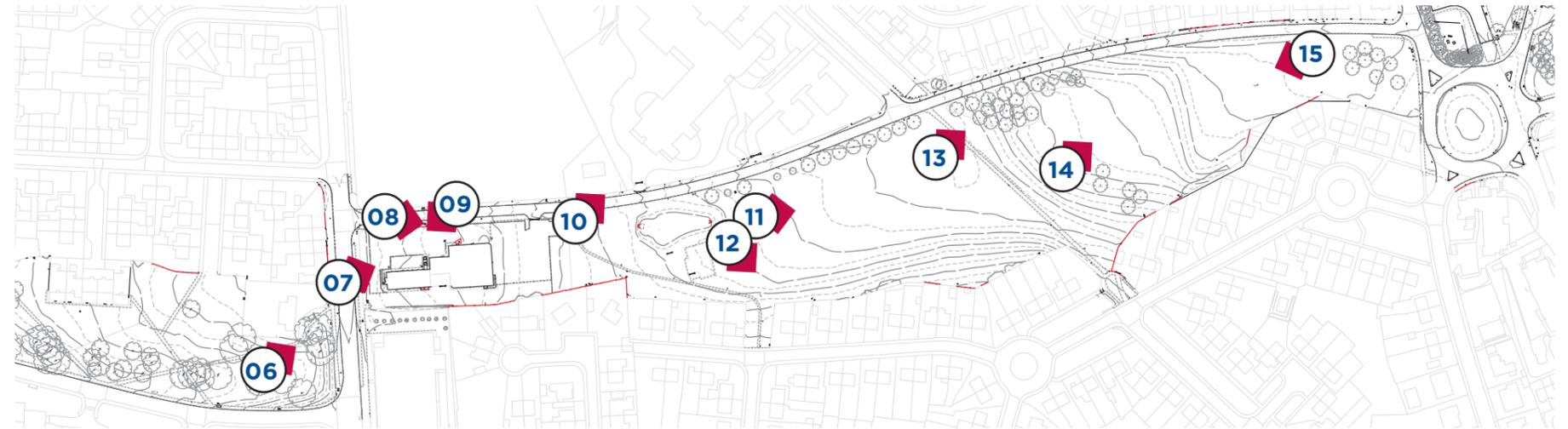


fig. 05: Photo key plan



fig. 06: View east across Macalpine Road



fig. 07: View east from Macalpine Road to St Leonard and St Fergus Church, new housing development and St Andrews RC Primary School.



fig. 08: View east down St Leonard Place with St Leonard and St Fergus Church on the right and new housing development on the left.



fig. 09: View south-west from St Leonard Place across Macalpine Road.



fig. 10: View east down the park from the edge of the Church grounds.

St Leonard Park



fig. 11: View east down the park.



fig. 12: View south towards Lauderdale Avenue.



fig. 13: View east down the park across path that continues from St Leonard Road.



fig. 14: View east down the park.



fig. 15: View west up the park.

Roundabout on Strathmartine Road

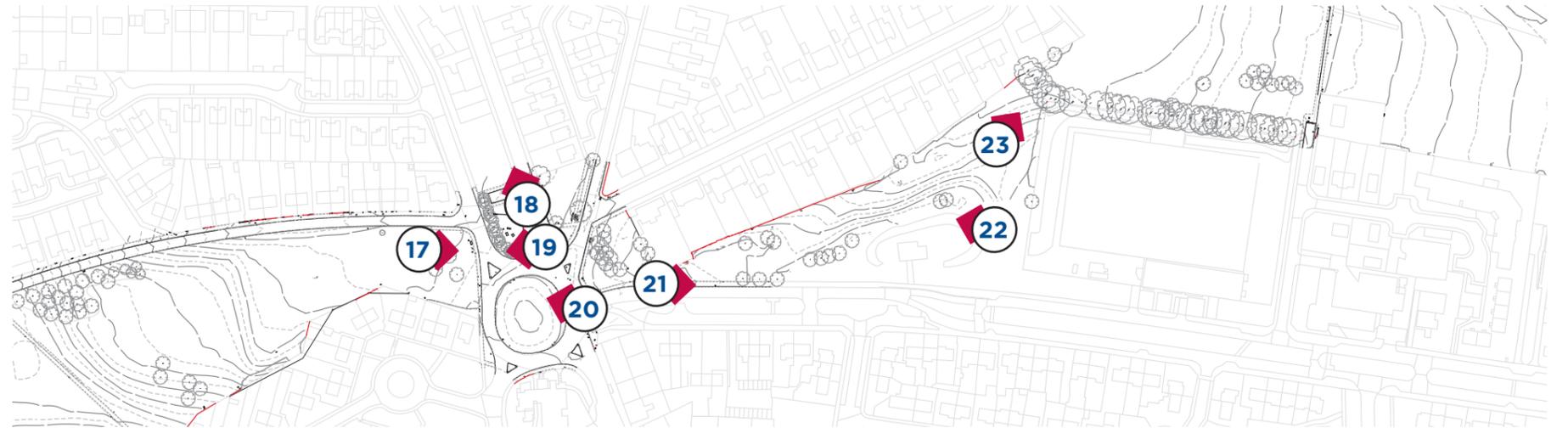


fig. 16: Photo key plan



fig. 17: Looking east across the roundabout on Strathmartine Road from the bottom of the park



fig. 18: Looking north along Strathmartine Road.



fig. 19: Looking west up the park from the roundabout on Strathmartine Road.



fig. 20: Looking west across the roundabout on Strathmartine Road towards the park.

Balgowan Avenue Park



fig. 21: Looking east down Balgowan Avenue.



fig. 22: Looking west up Balgowan Avenue park.



fig. 23: The existing fence and trees between properties on Burn Street, the former Baldrigon Secondary School site and Downfield JFC grounds.
pg. 15

Former Baldragon Academy/Kirkton High site

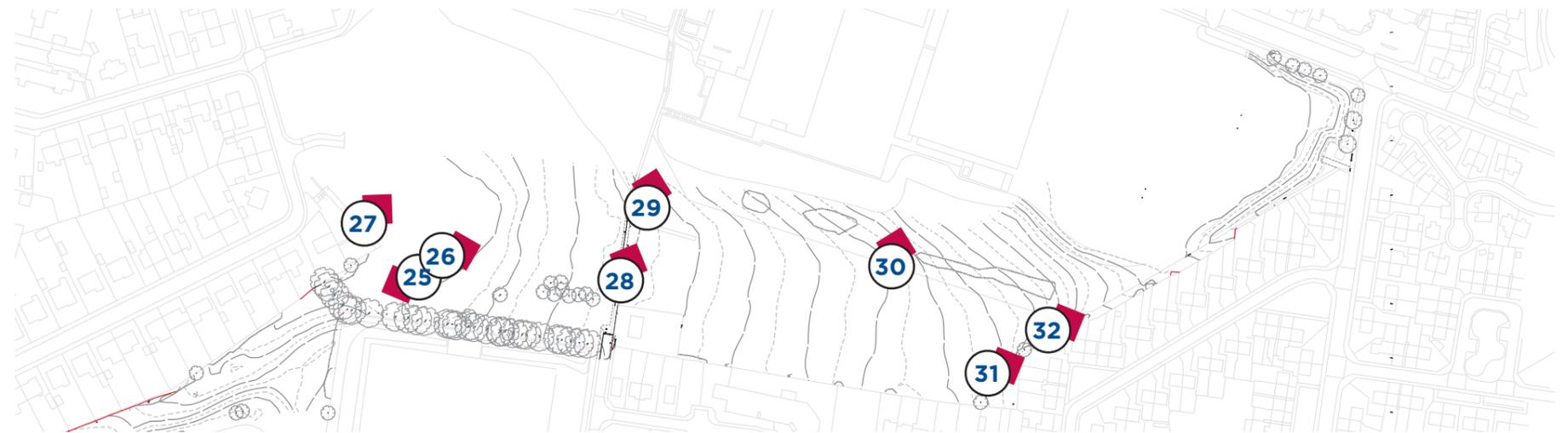


fig. 24: Photo key plan



fig. 25: Looking west at the end of Burn Street from the former Baldragon Academy/Kirkton High development site.



fig. 26: Looking east across the former Baldragon Academy/Kirkton High development site.



fig. 27: Path access from Burn Street to Sidlaw View Primary School.



fig. 28: Path access from Balgowan Drive to Baldragon Academy.



fig. 29: Stepped path access from Balgowan Drive to Baldragon Academy.



fig. 30: View north to Baldragon Academy.



fig. 31: View north-east along the edge of Baldragon Academy grounds.



fig. 32: View north-east along strip of land between the edge of Baldragon Academy grounds and housing on Helmsdale Drive.

02

SITE ANALYSIS

This chapter sets out the existing condition and context of the site as well as identifying existing constraints and opportunities.

2.1 LANDFORM

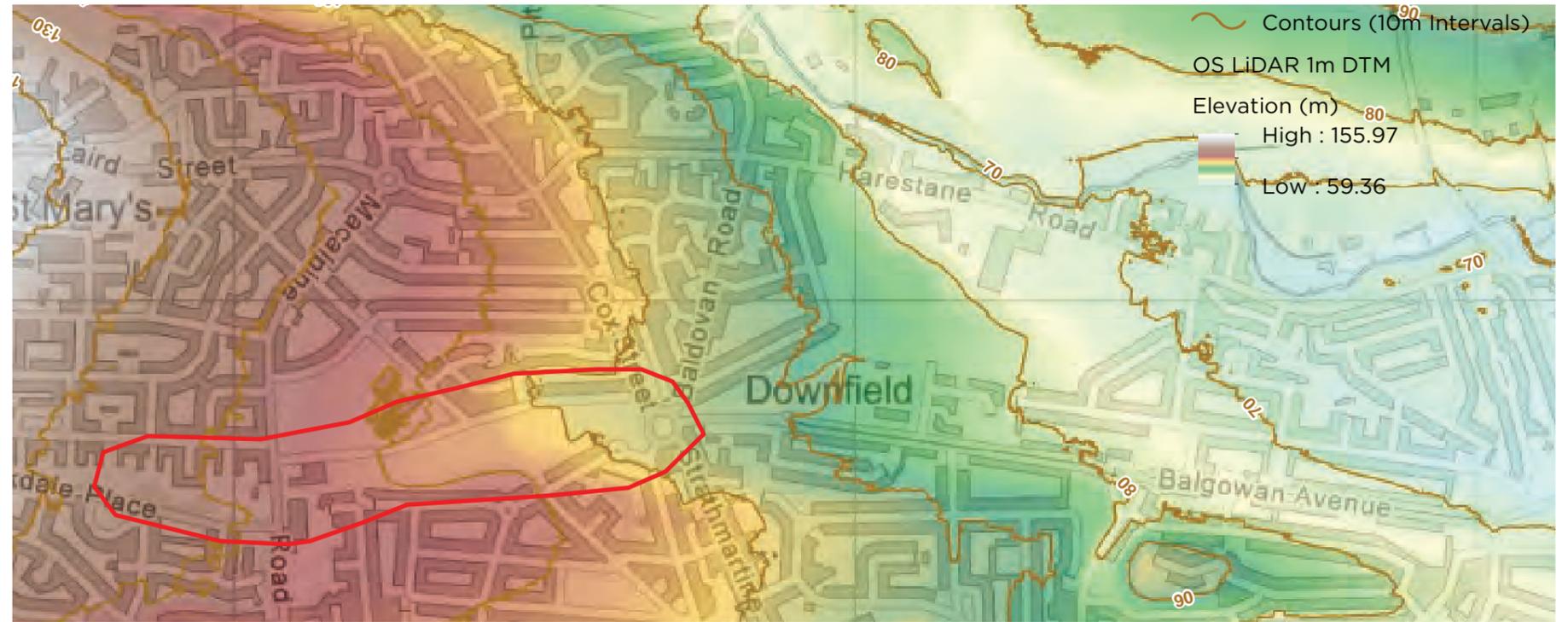
Elevation

The site generally slopes from west to east, falling towards the Dighty Burn. Macalpine Road, at the western boundary of the Phase 1 area, sits at around 116m AOD whilst Harestane Road in the east is at around 70m AOD, giving a total fall of 46m across the Phase 1 area.

The elevation through the phase 1 area consistently falls and therefore there are no large barriers to achieving a new conveyance route corridor presented by the existing topography.

Slope

Slopes within the majority of the site sit within the 0-10% bracket however there are noticeable steeper sections of landform. Within the main body of St Leonard Park the slopes are noticeable to the south side of the park and also running north-south across the park in two locations and dividing the park body into three main terraces.



Scale 1:10000 @ A3
 0m 100m 200m 300m 400m 500m

fig. 33: Elevation

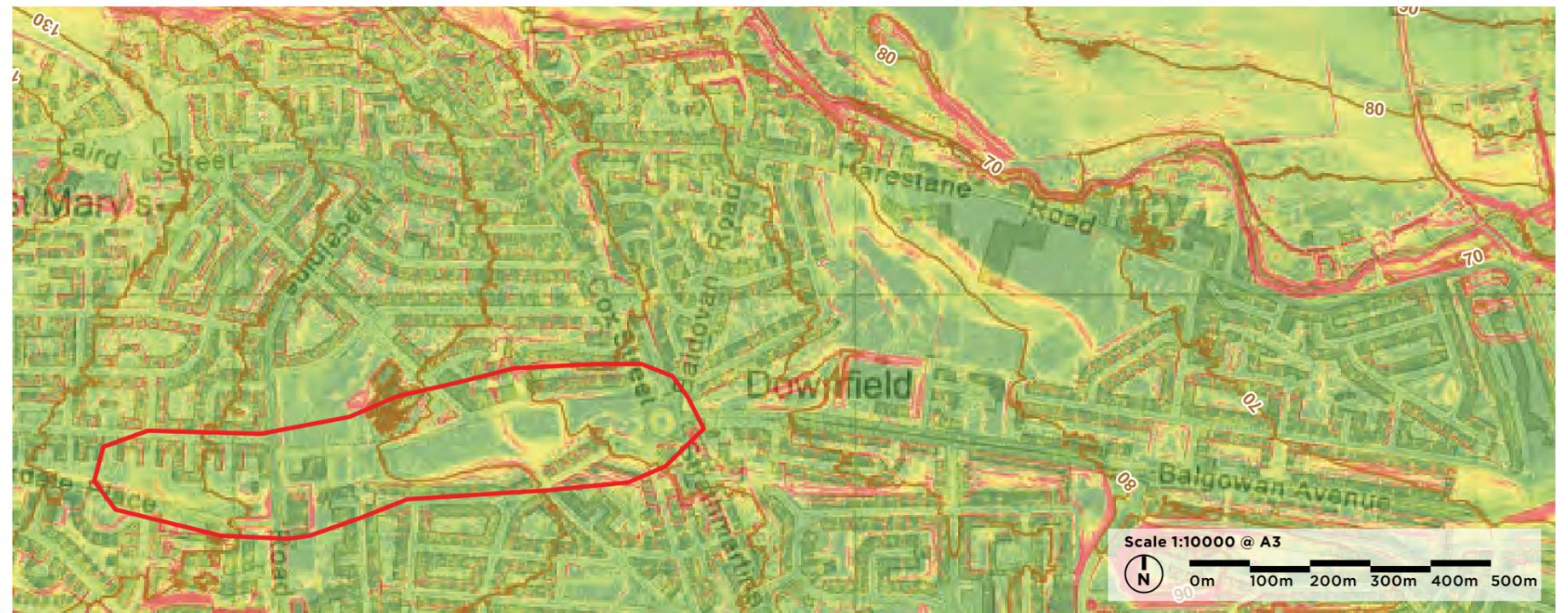
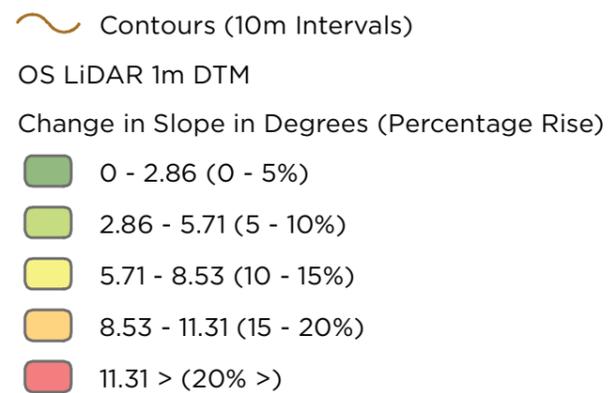


fig. 34: Slope

2.2 HISTORIC DEVELOPMENT

Evolution of the area

In 1865 Downfield can be seen as a standalone village complete with train station. The course of the burn can be seen forming the boundary to fields and woodland areas are present, remnants of which are still present today to the west of Macalpine Road.

By 1923 the area has expanded, removing trees to the north. A public park has been formed to the east of the station with the burn to its northern edge. More community uses such as Public Hall, Churches, Industrial School and a Police Station have been created reflecting the growth in population.

By 1945 the Downfield area has become more integrated with Dundee as the greenfield land has filled in with housing. From this point onwards the urban form becomes more recognisable

with the current park layout.

From 1945 onwards the area around the site has undergone significant change, with substantial residential development, as well as a number of large buildings such as schools and churches being constructed, demolished or reconstructed. The tower blocks at Ardler visible in the south west corner of the aerial image from 2001 were demolished in 2013 and changed the skyline of Dundee as well as the area of St Mary's.



fig. 35: Existing trees west of Macalpine Road



fig. 36: Map extract 1865
Map reproduced with the permission of the National Library of Scotland



fig. 37: Map extract 1923
Map reproduced with the permission of the National Library of Scotland



fig. 38: Aerial photo 1945



fig. 39: Map extract 1958
Map reproduced with the permission of the National Library of Scotland



fig. 40: Aerial photo 2001
© Google 2021



fig. 41: Aerial photo 2018
© Google 2021
© Crown copyright, All rights reserved [year]. Licence number [Number].
© Google [year].

2.3 COMMUNITY FACILITIES

Community facilities

Community facilities are identified on the plan opposite. These form destinations around the site and can create desire lines. Knowing where these are located will influence new paths created through the park.



fig. 42: Community facilities within the St Mary's and Downfield neighbourhoods



2.4 ACCESS AND MOVEMENT

Access and Movement

The plan opposite highlights some of the existing access and movement routes. The proposed park design should tie into and complement these networks wherever possible.

Legend

- Phase 1 Extent
- Bus Stops
- Core Paths
- A Road
- B Road
- Dundee City Council Cycle Routes 2019
 - Low speed restriction (signed as 10-20mph)
 - Signed Cycle Route Off-Road
 - Traffic-free Path
 - Walk your bike
 - Dundee Green Circular Route



2.5 PLAY AND SPORTS FACILITIES

Play and sports facilities

The plan opposite identifies existing play and recreation opportunities in the surrounding area. Knowing where these are can help ensure that any new play opportunities are positioned in appropriate locations and ensures that all homes within this area are within walking distance of play facilities.



1



2



3



4



5



6

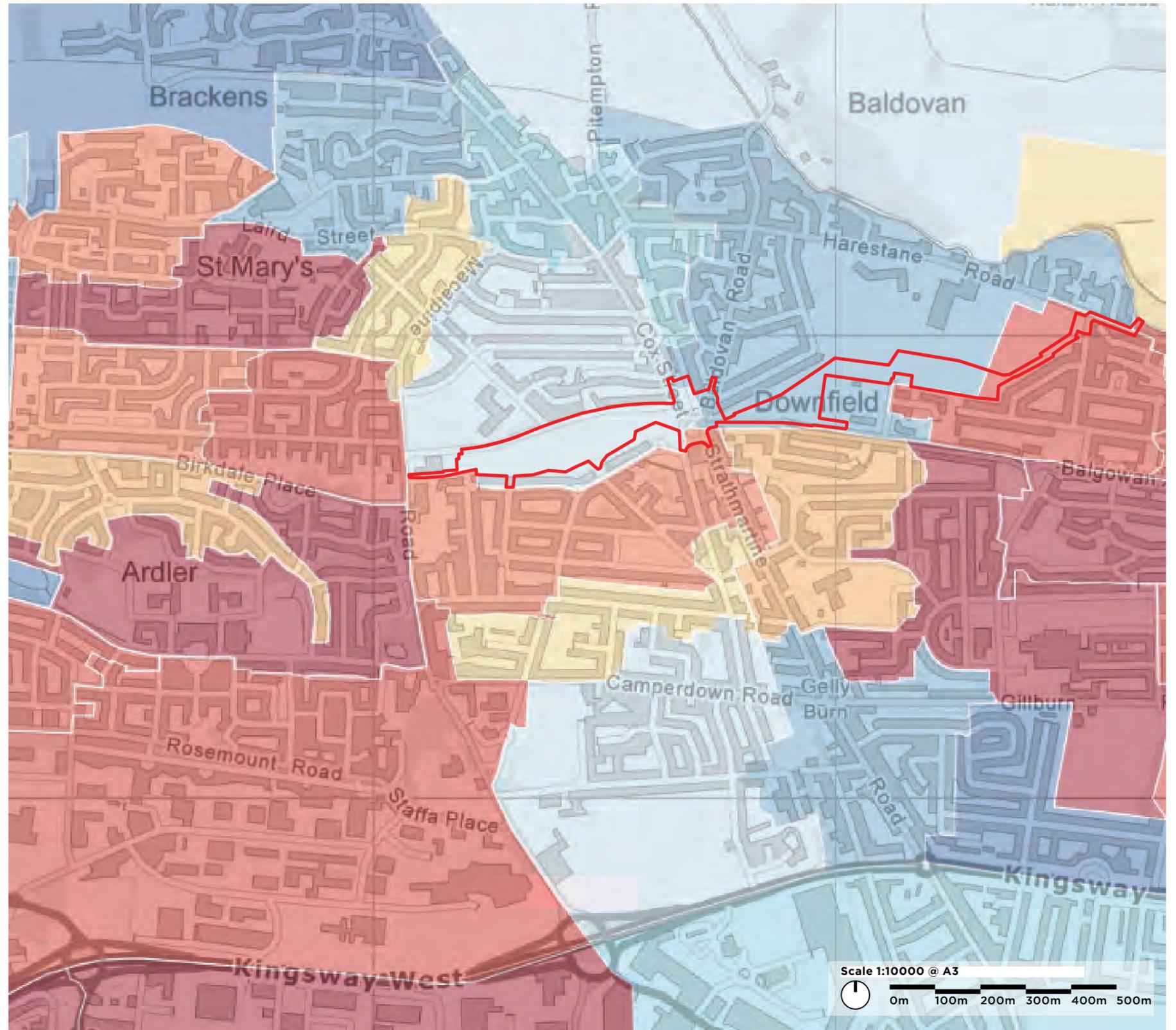


- Play equipment-
Pieces of equipment
grouped or
individual
- Play Park-
Pieces of equipment
grouped and on a
wider surface (larger
scale or more formal
than play
equipment)
- Informal Play-
Landscaped areas
suitable for play with
no equipment
- Bowling Green
- Sports courts or
pitches

2.6 DEPRIVATION

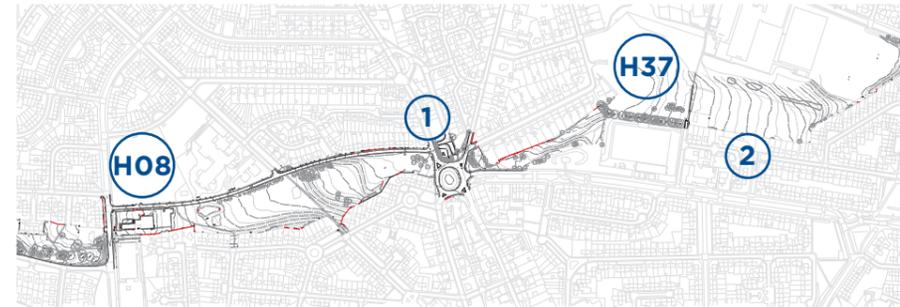
Scottish Indices of Multiple Deprivation (SIMD)

The map opposite highlights deprivation in the area. It is quite clear that the park creates a significant boundary between two areas with the south being considerably more disadvantaged than the north. The park design should strive for inclusion for all and help bring the two sides of the community together.



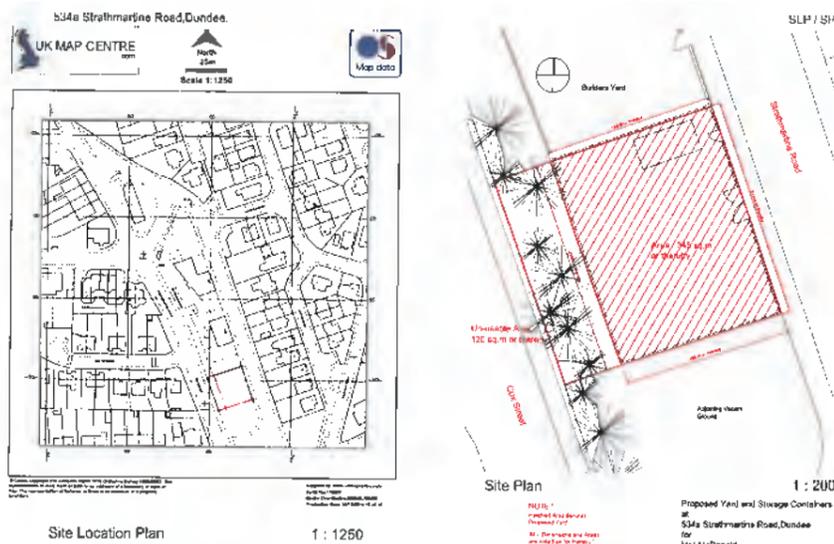
2.7 ADJACENT DEVELOPMENT

The plan below identifies two sites where development is allocated in the Dundee Local Development Plan 2019. It also highlights two relevant locations where recent planning applications could have an impact on the design of the park.



1. **19/00608/FULL | Change of use of a vacant area of ground to form an enclosed storage area for a builder business and erection of 4no storage containers, boundary wall and gates | Land To South Of 534A Strathmartine Road Dundee**

The above application was approved subject to conditions on Wed 08 Apr 2020



2. **18/01011/FULL | Erection of 2 Dwelling Houses | Land To The West Of 149 Helmsdale Avenue Dundee**

The above application was approved subject to conditions on Fri 25 Jan 2019



Development Site H37 - Former Baldrigon Academy

Site H37 has been allocated in the Local Development Plan for indicatively 75 units. The Development Site Assessment produced by Dundee City Council notes that evaluation of retention of trees on site is required and that there is Designated open space to the south and an opportunity to link into this network of green infrastructure.



Development Site H08 - Former Macalpine Primary School

Site H08 was allocated in the Local Development Plan for indicatively 25 units. The DCC Development Site Assessment noted that there were mature trees on south boundary which may be worthy of retention and that Scottish Water had indicated sufficient capacity within the network to support foul only connections. Early engagement recommended. In particular, consideration should be given to the management and attenuation of surface water flows. Lined SUDS may be required due to potential contamination.

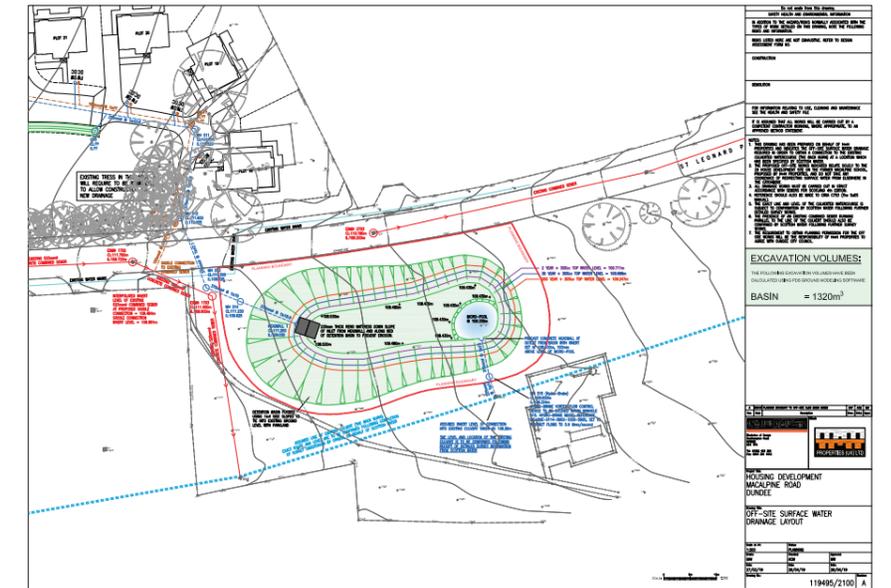
The below planning application for 29 homes was approved on Mon 24 Jun 2019, subject to conditions, it is currently under construction.

- **17/00420/FULL | Erection of 29 houses | Site Of Former Macalpine Primary School St Leonard Place Dundee**



The below application to construct an off site SUDS facility in the park was then approved subject to conditions on Mon 15 Jul 2019.

- **19/00333/FULL | Construct off site SUDS facility to serve a residential development | Site Of Former Macalpine Primary School St Leonard Place Dundee**



Following this a further application has recently been made for an additional 4 units on Fri 16 July 2021, this application has not yet been determined.

- **21/00406/FULL | Erection of four houses | Site Of Former Macalpine Primary School St Leonard Place Dundee**



Dundee Local Biodiversity Action Plan

A new LBAP for Dundee was published in 2020 which highlights opportunities for partnership working to protect, enhance and raise awareness of biodiversity within the city over the next 10 years. Within the action plan there are significant areas where the design of the Park could possibly contribute to achieving the objectives of the plan. These include:

- Apply for WIAT funding from Scottish Forestry to extend current woodland areas and connect smaller compartments in line with the Strategic Forest Plan
- Continue to develop new ponds and wetland at suitable sites
- Ensure appropriate access is maintained along rivers and around ponds to protect both wildlife and the safety of the public.
- Support communities to develop plans for their ponds/wetlands so actions can be developed at grass roots level.
- Reduce the use of herbicide in management practices
- Review grassland management across the city. Increase in the amount of grass managed to improve biodiversity
- Continue to maintain and expand areas of native perennial meadow
- Continue to maintain and expand annual flower areas.
- Continue to maintain and increase the diversity of bulb panels.
- Continue to promote and support the 'Take Pride' Campaign
- Review the management and storage of green waste (leaf litter, grass cuttings and wood chip) in Dundee's parks to reduce fuel costs, provide a resource and prevent damage to biodiversity.
- To find innovative ways to incorporate green infrastructure into new projects across the city. For example bat and swift boxes, green roofs, rain gardens and establishment of appropriate habitats along cycle and roadways.
- Promote community growing and identify suitable sites for new projects.
- Ensure that council managed ornamental flower and shrub beds are appropriately managed for biodiversity- including planting more native, wildlife friendly species and ensuring that cover is maintained for breeding and roosting birds.
- Maintain Green Flag status for current parks and look to increase sites with Green flag.
- Continue to support local Friends of groups to improve and manage biodiversity within their parks.
- Develop relationships with schools in terms of environmental education and involvement.

Dundee Green Network

The Dundee Green Network is composed of 4 Green Network Areas: Citywide, Tay Corridor, Dighty and Fithie Corridor, and Western Gateway.

A key aim of the Green Network is to recognise existing green assets and to identify opportunities to protect them. Currently they are connected through the 'Green Circular', 'green ways' and core paths (see previous section for details). Opportunities to strengthen this connectivity have been identified through 6 Green Network Links through which connectivity of the larger Green Network can be further enhanced through the promotion of green corridors and active travel routes. One of these six identified links - The Ardler Link is situated within the study area.

Ardler Green Network Link

The Ardler Link includes green assets including SUDS, play space and green space which provide 'stepping stones' between strategic green network areas at the Western Gateway and Dighty and Fithie Corridor.

Strategic forest plan, Dundee City woodlands 2015 - 2025

The strategic Forest Plan sets out a strategic approach to the management of Dundee's woods. Key woodlands in relative to this project are Dighty Valley and Templeton Woods. The park proposals will have the opportunity to enhance the habitat connectivity of these two areas.

Existing Habitats

Key habitats around the area are Clatto Country Park, Templeton Woods and Camperdown Country Park to the west, the wetland habitats of Ardler also to the west and the Dighty Burn to the east. The majority of the site and surrounding area however consist of mown amenity grass with specimen tree planting and bulbs. The diagram opposite illustrates some of these areas and connections.



-  Woodland
-  Ancient Woodland
-  Surface Water
-  Open space and green network
-  Dundee local wildlife corridor



fig. 43: Existing habitats

2.9 UTILITIES

Water and drainage

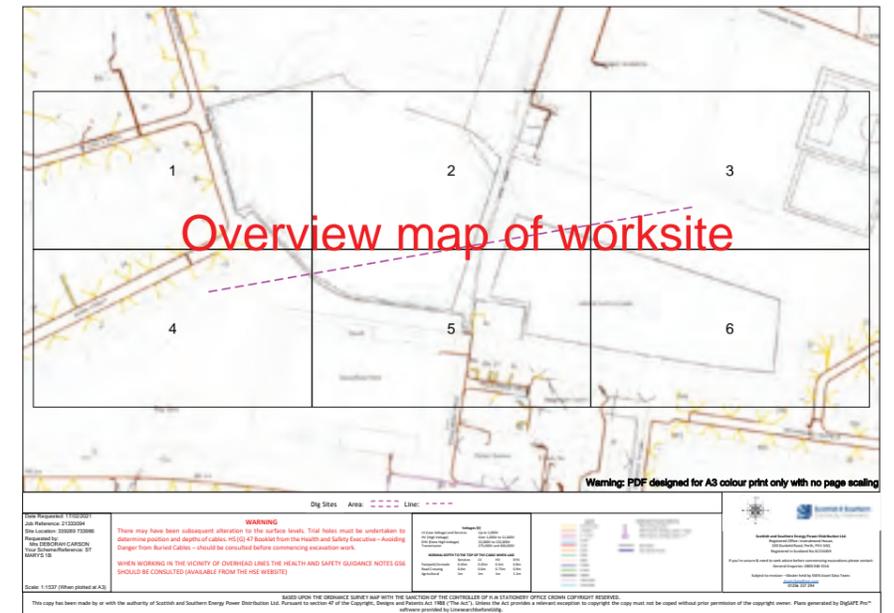
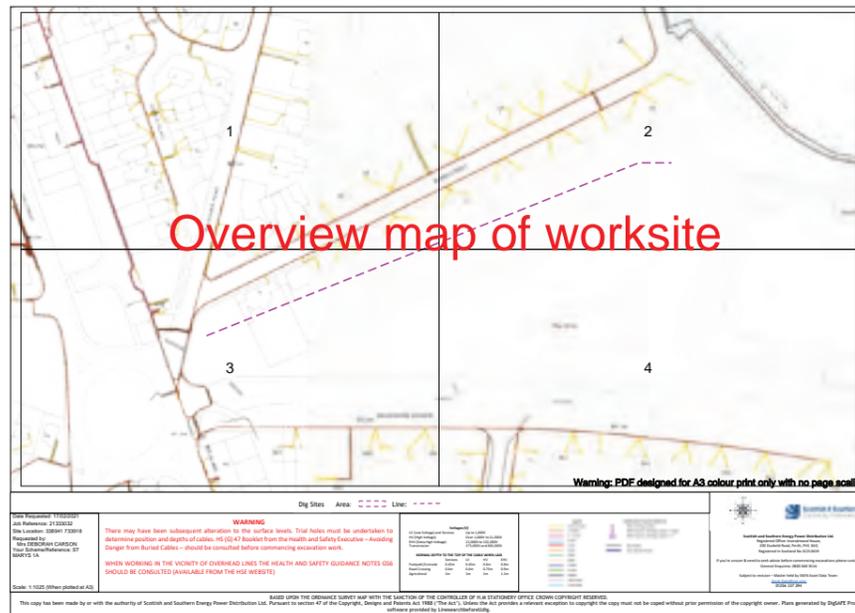
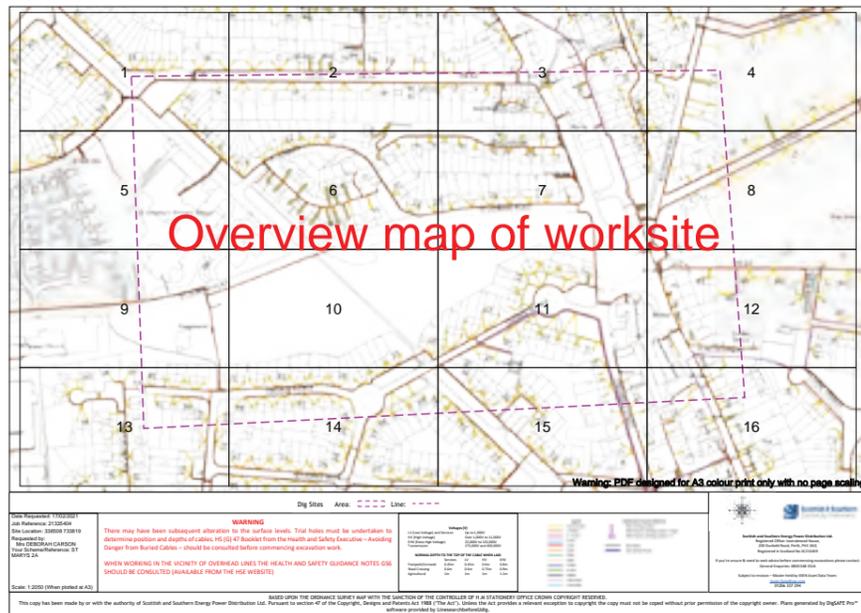
The below plan illustrates the water and drainage networks in the vicinity of the park. Key constraints are the water main which bisects the park and the combined sewer which runs the length of the park. The area around the roundabout also has a number of pipes which converge in the area.



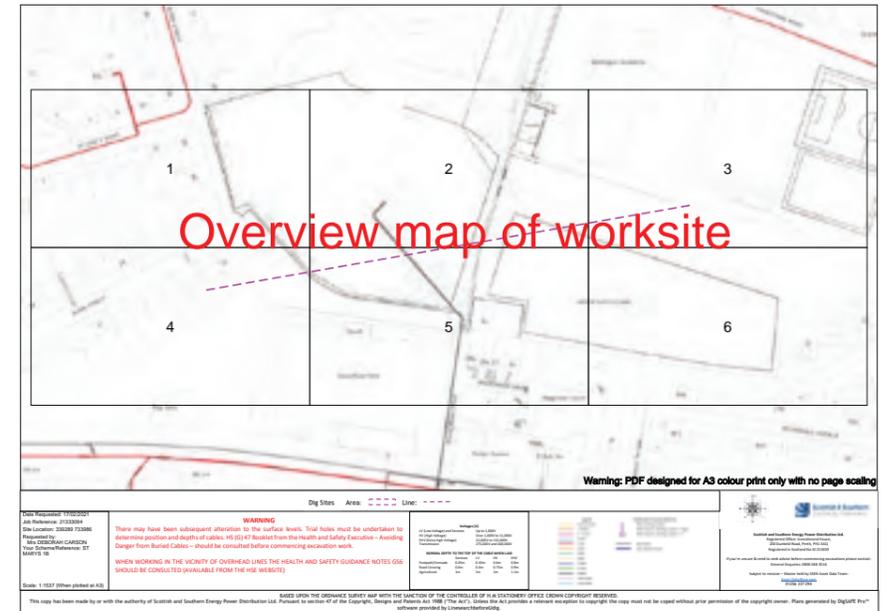
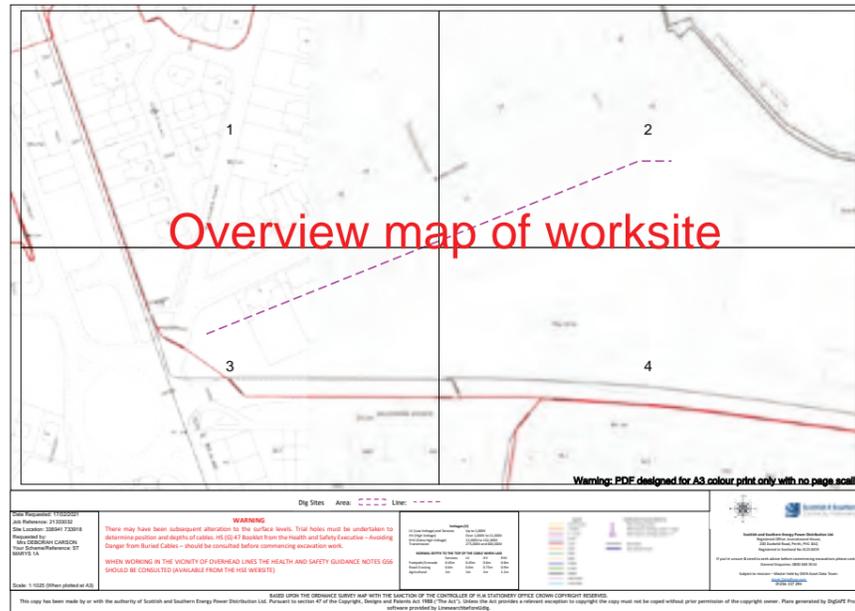
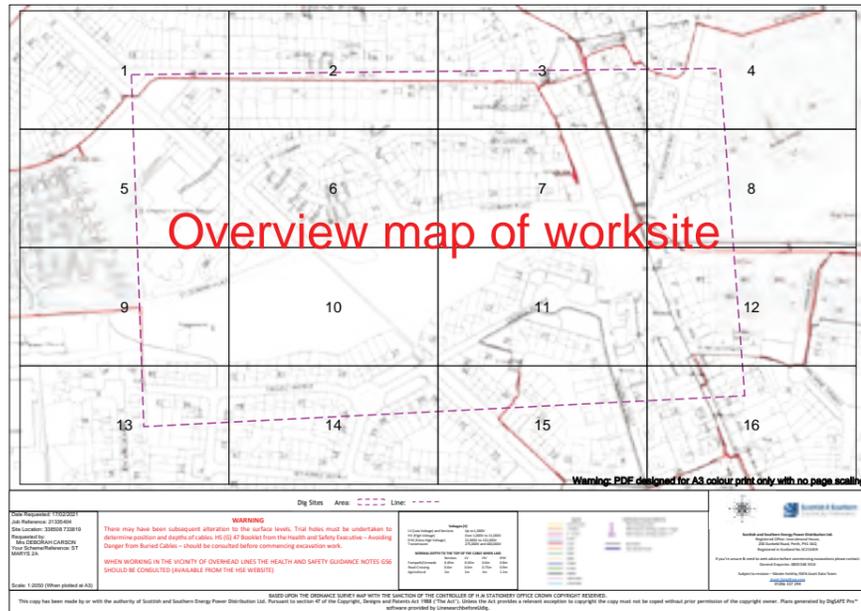
Electricity

The below maps illustrate the LV and 11kV electricity network in the area. There is one LV main and one 11kV which crosses the park. The area around the roundabout also has several LV mains associated with it.

LV Mains

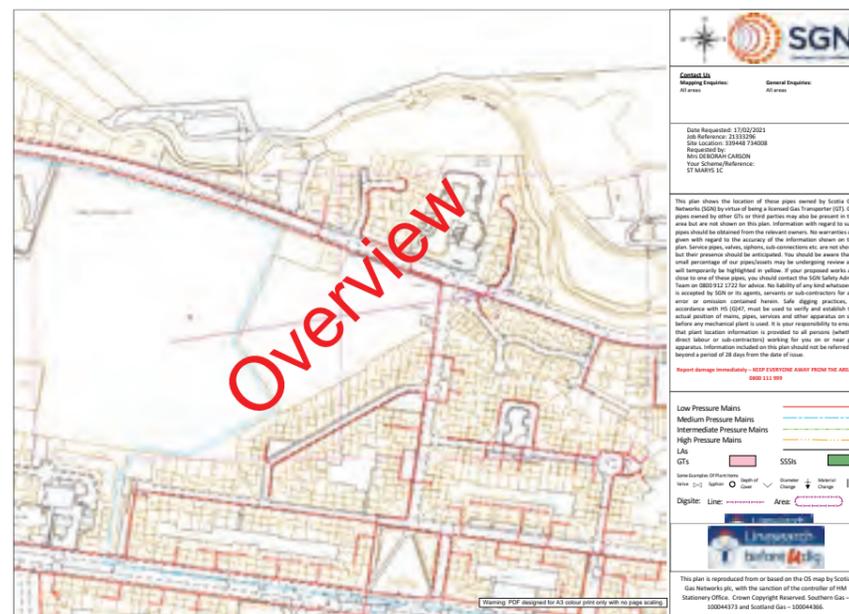
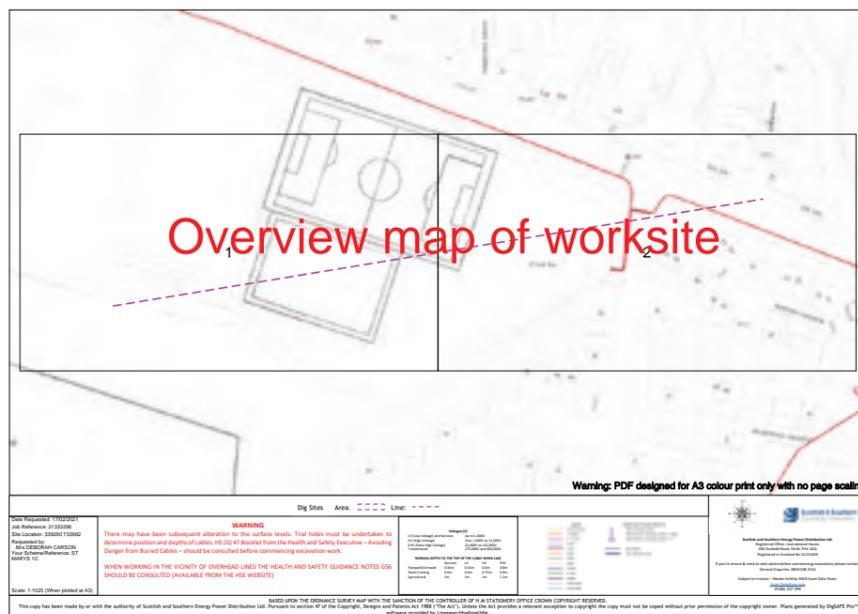
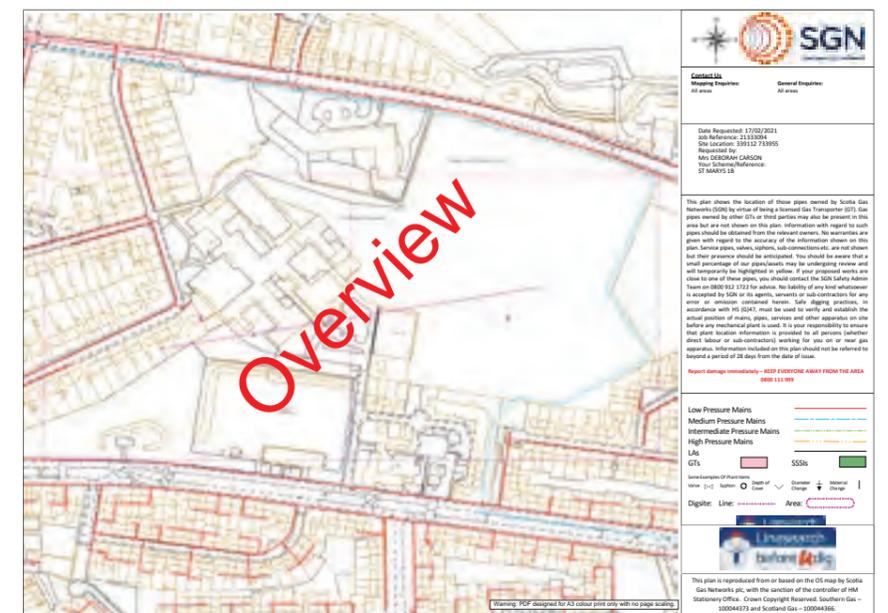
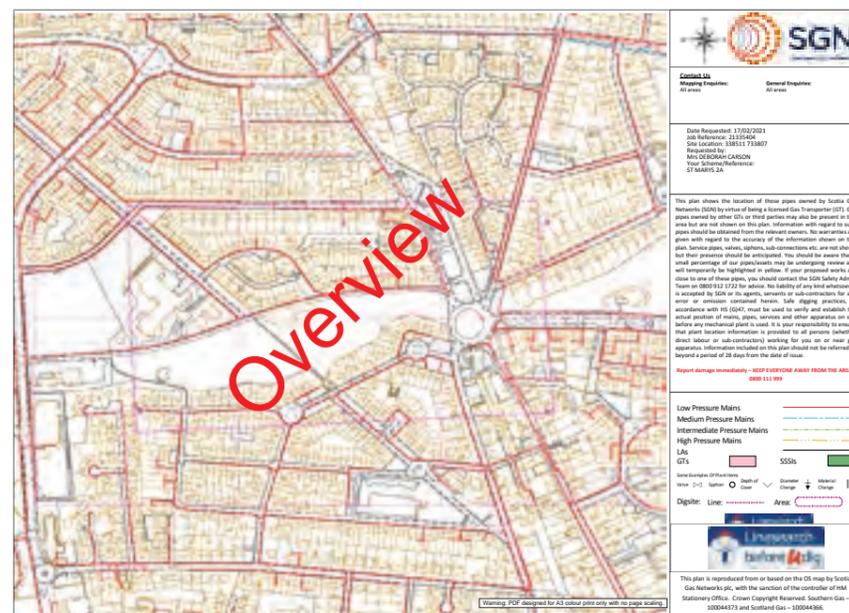
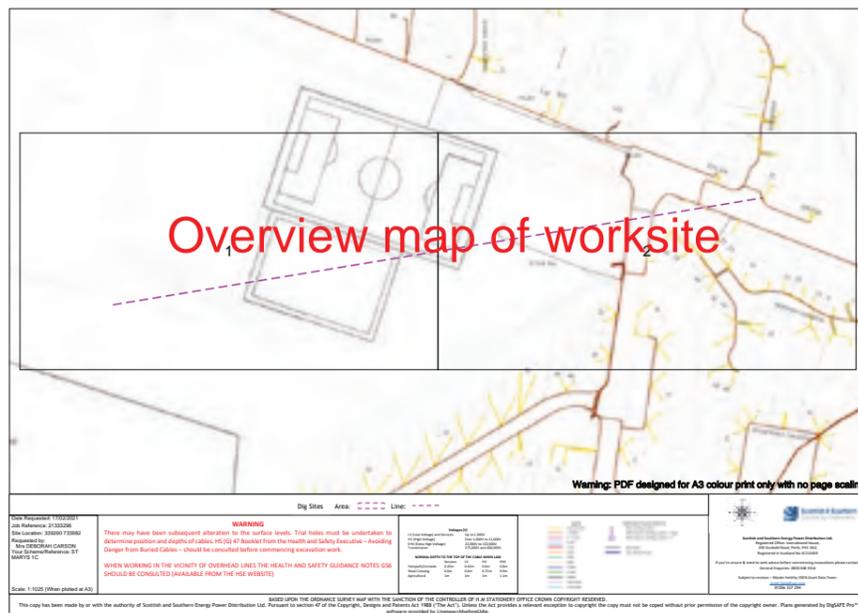


11kV



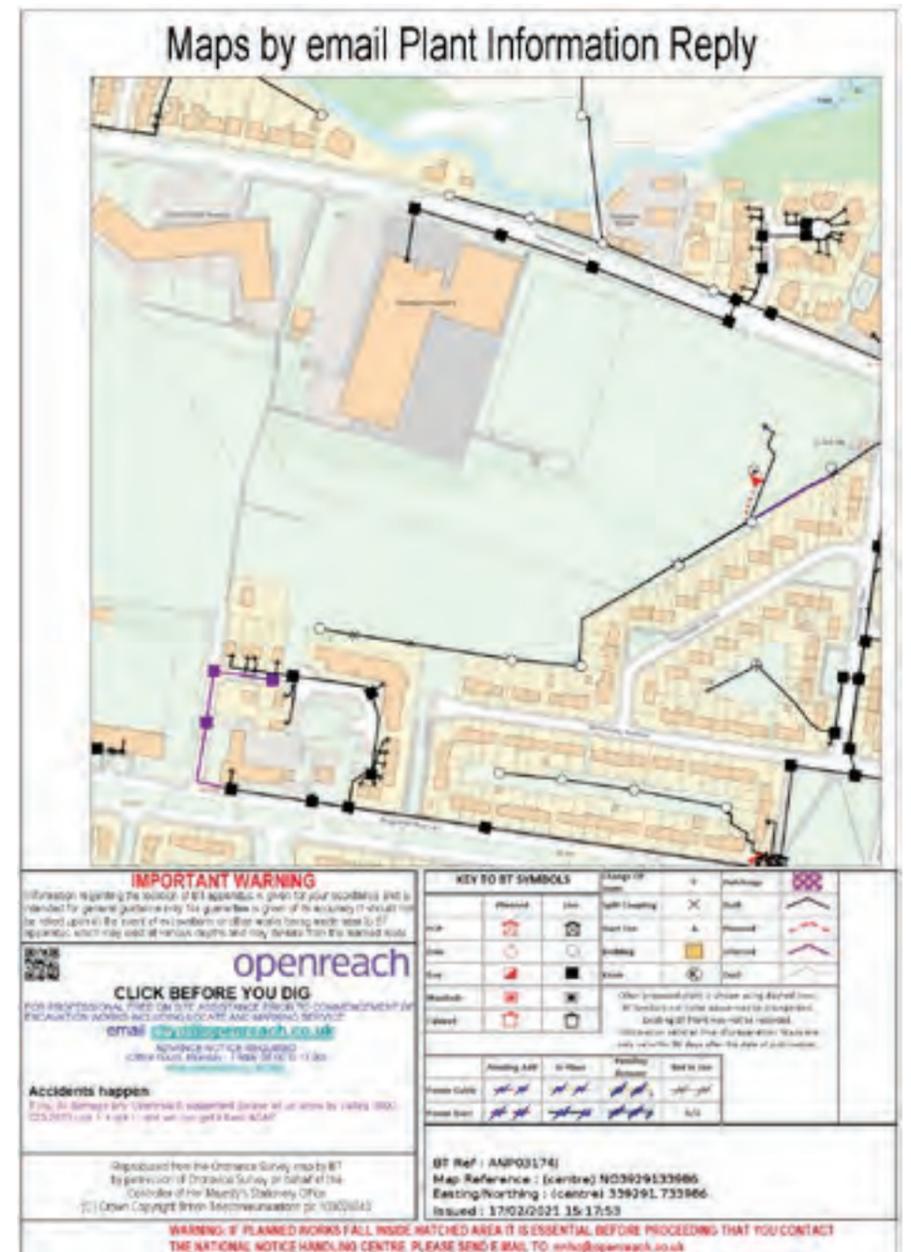
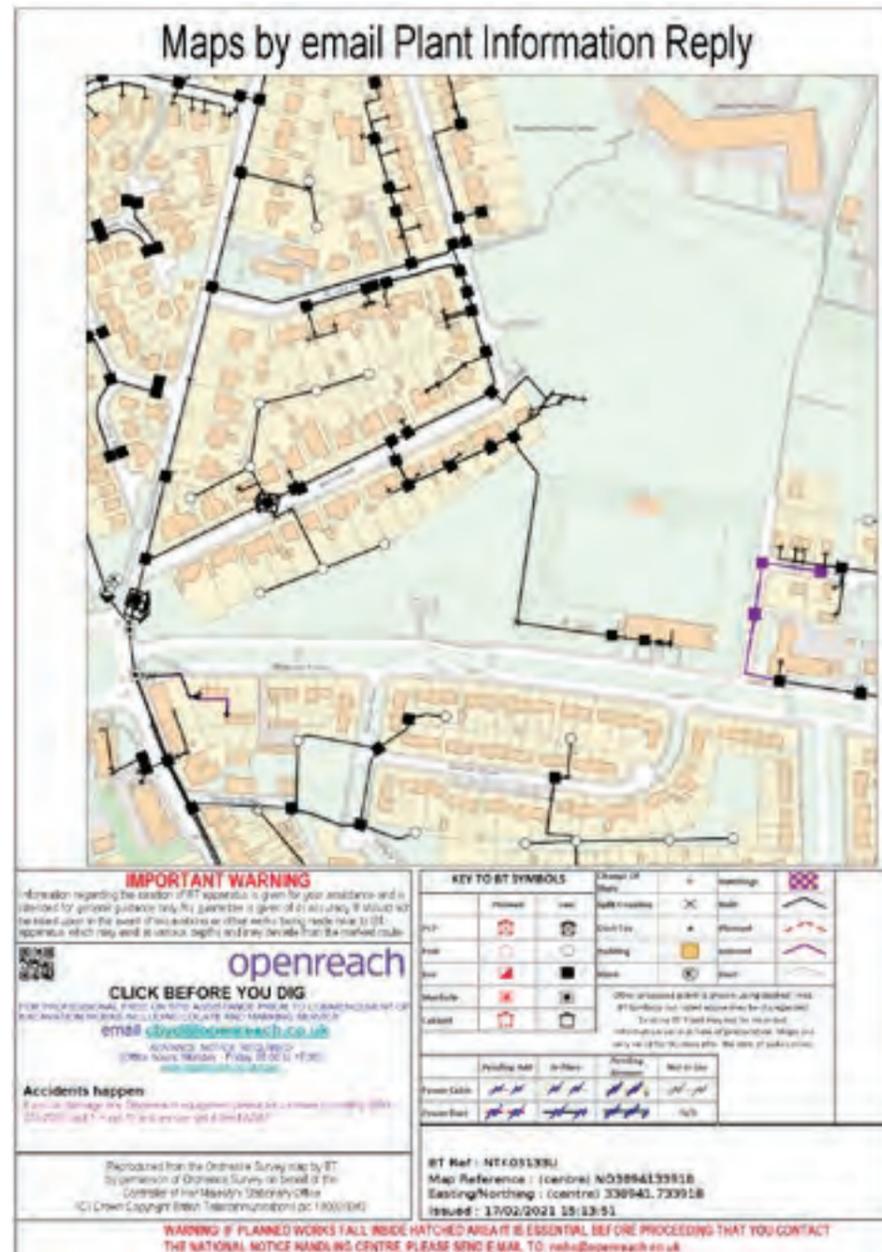
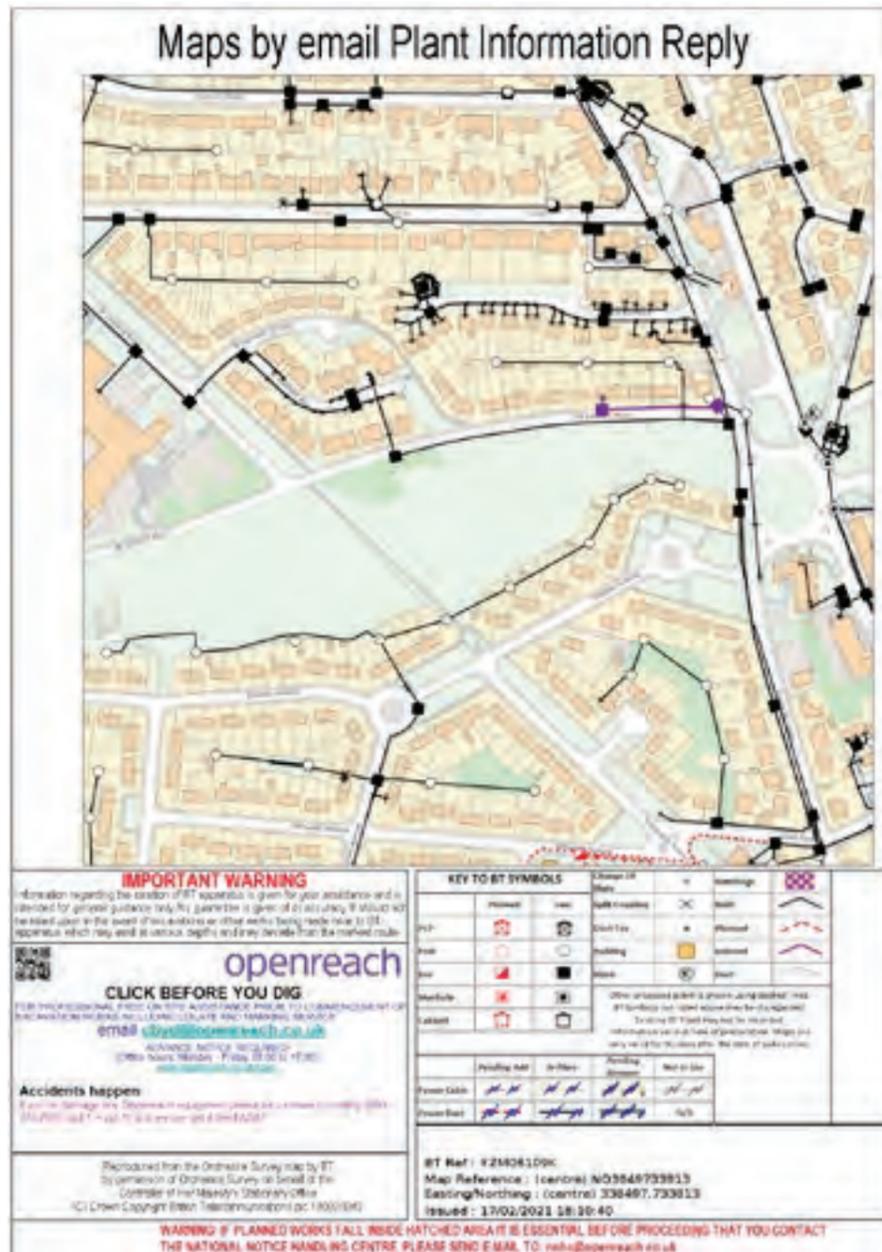
2.9.1 Gas

The main constraints formed by gas pipes are at the roundabout and along Balgowan Avenue, particularly at the pinch point between the houses on Burn Street and Balgowan Avenue.



BT

BT services generally trace the edge of the park.



Virgin media

Virgin Media services generally trace the edge of the park.



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Important information - please read The purpose of this plan is to identify Virgin Media apparatus. We have tried to make it as accurate as possible but we cannot warrant its accuracy. In addition, we caution that within Virgin Media apparatus there may be instances where mains voltage power cables have been placed inside green, rather than black ducting. Further details can be found using the "Affected Postcodes.pdf" which can be downloaded from this website. Therefore, you must not rely solely on this plan if you are carrying out any excavation or other works in the vicinity of Virgin Media apparatus. The actual position of any underground service must be verified by cable detection equipment, etc. and established on site before any mechanical plant is used. Accordingly, unless it is due to the negligence of Virgin Media, its employees or agents, Virgin Media will not have any liability for any omissions or inaccuracies in the plan or for any loss or damage caused or arising from the use of and/or any reliance on this plan. This plan is produced by Virgin Media Limited (c) Crown copyright and database rights 2020 Ordnance Survey 100019209.

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Important information - please read The purpose of this plan is to identify Virgin Media apparatus. We have tried to make it as accurate as possible but we cannot warrant its accuracy. In addition, we caution that within Virgin Media apparatus there may be instances where mains voltage power cables have been placed inside green, rather than black ducting. Further details can be found using the "Affected Postcodes.pdf" which can be downloaded from this website. Therefore, you must not rely solely on this plan if you are carrying out any excavation or other works in the vicinity of Virgin Media apparatus. The actual position of any underground service must be verified by cable detection equipment, etc. and established on site before any mechanical plant is used. Accordingly, unless it is due to the negligence of Virgin Media, its employees or agents, Virgin Media will not have any liability for any omissions or inaccuracies in the plan or for any loss or damage caused or arising from the use of and/or any reliance on this plan. This plan is produced by Virgin Media Limited (c) Crown copyright and database rights 2020 Ordnance Survey 100019209.

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2.10 EXISTING SITE



fig. 44: Existing Conditions

2.11 OPPORTUNITIES AND CONSTRAINTS

- | | | |
|--|--|---|
| <ul style="list-style-type: none"> ① Opportunity: To create habitat improvements and incorporate SUDS conveyance along St Leonard Rd ② Opportunity: Remove existing SUDS and incorporate function within new park area ③ Opportunity: to relocate and improve play facilities ④ Constraint: Crossing point of watercourse and active travel route over Macalpine Road ④ Opportunity: to connect to wider active travel network along Macalpine Road ⑤ Opportunity: improve southern boundary / provide additional access along southern boundary ⑥ Opportunity: to relocate and improve sports pitch | <ul style="list-style-type: none"> ⑦ Opportunity and Constraint: retain and enhance existing avenue trees within new park design ⑧ Opportunity: To promote views over Sidlaw Hills using seating or manipulation of topography ⑨ Constraint: water network main ⑩ Opportunity and Constraint: retain and enhance existing groups of trees within new park design ⑪ Opportunity: Change in topography to incorporate cascade features within watercourse ⑫ Opportunity: improve park entrances ⑬ Constraint: Waste water network gravity pipe | <ul style="list-style-type: none"> ⑭ Opportunity: De-culverted watercourse and active travel route incorporating surface water storage to accommodate flooding events ⑮ Constraint: Waste water network gravity pipe ⑯ Opportunity: to redesign roundabout to include safe active travel route and create space for an ecological corridor to improve connectivity of the Ardler Link ⑰ Constraint: Waste water network gravity pipe ⑱ Opportunity: To improve habitats across the entire park area incorporating a variety of woodland, wetland and grassland habitats as part of a better connected Ardler Link |
|--|--|---|



fig. 45: Opportunities and Constraints

03

PRECEDENTS

The following precedents have been selected for their relevance to the St Leonard Park Regeneration project. These examples illustrate what has been delivered elsewhere, the level of ambition that is possible and the level of intervention that has been required in order to achieve the project objectives.

3.1 CASE STUDIES

Bridget Joyce Square Community Rainpark: London, UK

Bridget Joyce Square is located between a school and two playgrounds, providing connection to a previously hostile and unsafe environment, dominated by traffic. The project mitigates surface water flooding by restricting flows and detaining water on site until downstream risks have passed. It also creates an attractive green space and focal point within the community, with space for events and learning.

SUDS components used:

- Permeable paving
- Planted basins
- Rain gardens
- Tree planting
- Downpipe disconnection

Scale:

- Total Site Area: 0.27Ha

Relevance to St Leonard Park Regeneration:

- Example of SUDS as key part of traffic calming around school.
- Example of adventurous play sensitively integrated with SUDS.
- Creative and sculptural detailing integrated with SUDS together with soft, textural planting contrasted with clean lines in the hard landscape creating a bold aesthetic and helping instil civic pride.
- Landscape fulfils important drainage role and provides flood resilience to deal with known flooding issues.
- Higher maintenance requirement of soft landscape



fig. 46: Bridget Joyce Square, London



fig. 47: Surface drainage from the roof incorporates sculpture



fig. 48: Rain garden



fig. 49: Multi-use space incorporating drainage features



fig. 50: The features encourage playfulness

Countesswells: Aberdeen, UK

Countesswells is a new planned settlement on the edge of Aberdeen, consisting of 3,500 new homes. One of the key landscape spaces is the creation of the 12 ha Cults Burn Park, which utilises a former minor watercourse and extensive field drainage on the site to combine into a new and larger burn. The burn now sits within a parkland corridor at the heart of the masterplan within a new linear park. Overlooked by new development, this generous swathe of landscape flows through the new settlement providing a park system accessible to all.

A water network made up of the burn, swales and retention basins stores and manages water from the surrounding development.

Several connecting paths cross the burn at key points. Areas of the burn are designed for safe access including stepping stones for crossing and shallow areas for paddling. The park and burn corridor are also used for children's ecological education.

Planting in the park is designed to add seasonal interest, and the large areas of meadow enhance biodiversity.

SUDS components used:

- Two stage detention basins
- New watercourse creation
- Tree planting

Scale:

- Budget: £2million
- Total Site Area - 4ha

Relevance to St Leonard Park Regeneration:

- Example of a new park which incorporates a new burn channel through its centre as a key element of the design.
- Example of adventurous play sensitively integrated with SUDS.
- Example of levels manipulation to achieve water storage and treatment.
- Example of active travel integrated within the park with bridges and boardwalks providing accessible routes across the burn channel.
- Example of a park as a linear feature running through residential development.
- Landscape maintenance managed by factor.



fig. 51: The Cults Burn: designed to accommodate fluctuating water levels



fig. 52: The burn corridor accommodates paths, seating and substantial planting

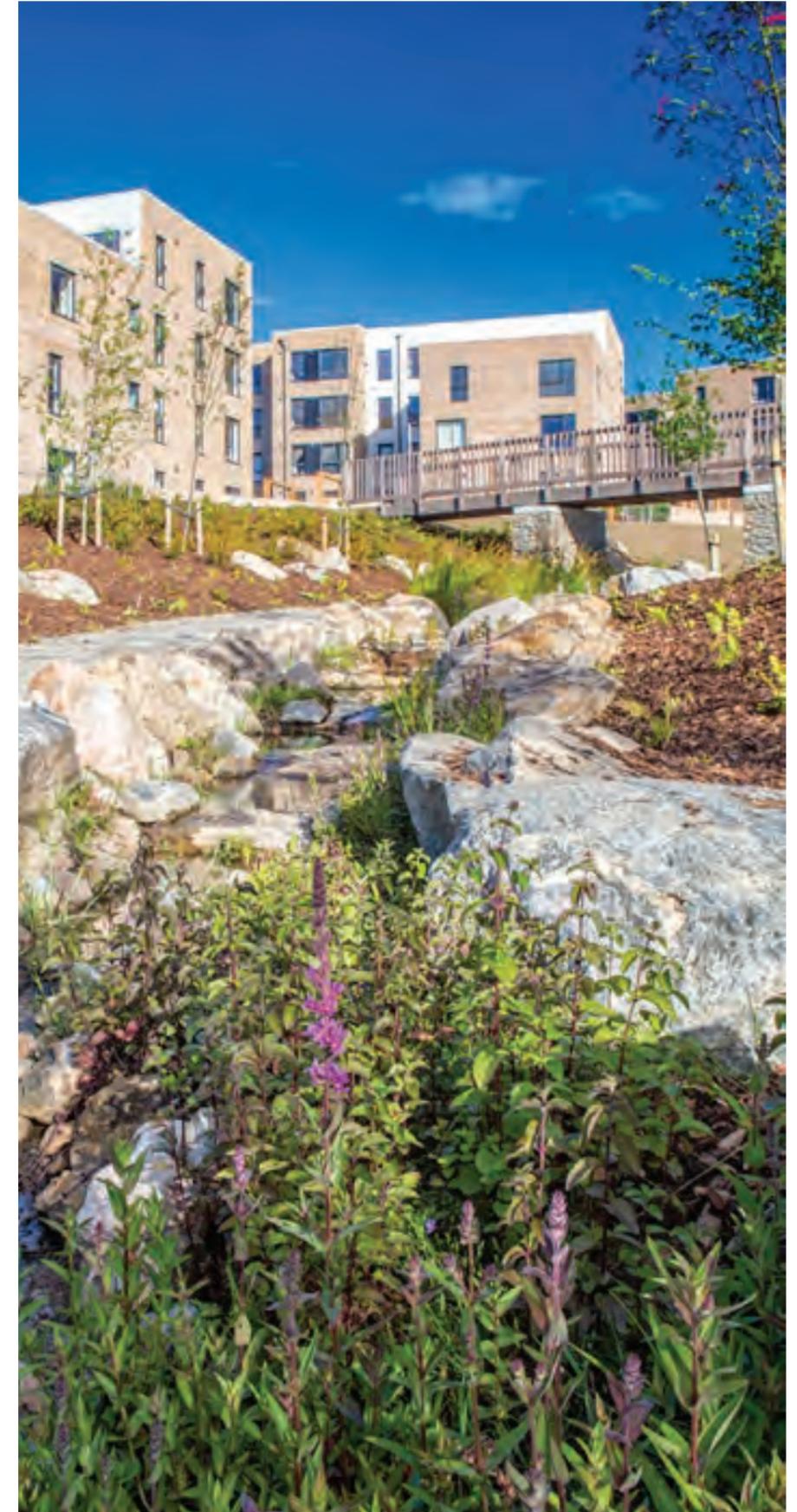


fig. 53: A close relationship between the burn corridor and adjacent housing

Forthquarter Park: Edinburgh, UK

The suds infrastructure in place at Forthquarter Park is designed to collect water from the surrounding landscape and feed it back into the Firth of Forth estuary. The existing, culverted watercourse was brought to the surface, and now flows through the park, integrated with a system of wetlands, swales, detention basins, constructed wetlands, and stormwater disposal systems. Wetland planting is used for natural water treatment to filter and clean the surface runoff before it enters the Firth of Forth. The park also has a strong focus on ecological connection, providing safe movement corridors for wildlife.

The planting is designed to look naturalistic and soft in contrast to the surrounding architecture. The minimal boardwalks do not disrupt this character, and plants grow up around them to further blend them into the landscape.

SUDS components used:

- Deculverted watercourse
- Wetlands
- Swales
- Detention basins

Scale:

- Area: Approx 8ha

Relevance to St Leonard Park Regeneration:

- Integration with existing community
- Integration into future masterplan developments for the wider area
- Provide pedestrian and cycle routes



fig. 54: A variety of landscape habitat type has been incorporated



fig. 55: Forthquarter Park, Edinburgh



fig. 56: Wetland habitats around the basin with meandering pathways

Vallon Park: Lyon, France

The design of Vallon Park brings a previously culverted stream to the surface once again, bring life to the park. The naturalistic meadow planting brings seasonal colour and benefits biodiversity, while being relatively budget friendly and low maintenance.

Elements of stormwater management are designed to double up as park features when dry, for example the dam has tiered bleacher style seating, and the bottom of the basins contain small interventions of play equipment.

SUDS components used:

- Deculverted watercourse
- Constructed flood plain

Scale:

- Budget: 6.3 million euros
- Area: 12.2 Ha

Relevance to St Leonard Park Regeneration:

- Example of a new park which deculverts a stream.
- Low maintenance and biodiverse planting.
- Multi use storm water features.



fig. 57: Destination play



fig. 58: Varying habitat types including meadow grassland



fig. 59: Paths and SUDS interlinked

04

CONSULTATION

Community involvement and engagement is important to the successful design of the park. To date the following consultation has been undertaken and is described in more detail over the following pages:

- Community event
- Online consultation
- 2no. Schools workshops
- Engagement with ParkRun
- Engagement with St Leonard and St Fergus Church

The input received from the community has helped form the designs which follow later in this document.

4.1 PUBLIC CONSULTATION

Consultation

Public consultation was held from 2nd of July to the 23rd of July and consisted of the following:

Website

The website was launched on 2nd June 2021 and is visible at: <https://www.scottishwater.co.uk/In-Your-Area/Investments-in-Your-Area/St-Marys-Drainage>

The website included:

- Description of the project, what we are doing and why.
- Advertisement for the public event
- Copies of the consultation boards
- A copy of the questionnaire
- A link to the PlaceCheck website

PlaceCheck

A PlaceCheck tool was set up to allow online comments to be made. The PlaceCheck tool allows people to click on specific areas of the park and leave comments which are publicly visible. Anyone who accesses the site after them can add to, contest, or support their comments while adding other ideas of their own. Unfortunately this tool was not very well used with only 8 comments left by two users.

<https://www.PlaceCheck.info/app/maps/stleonardpark>

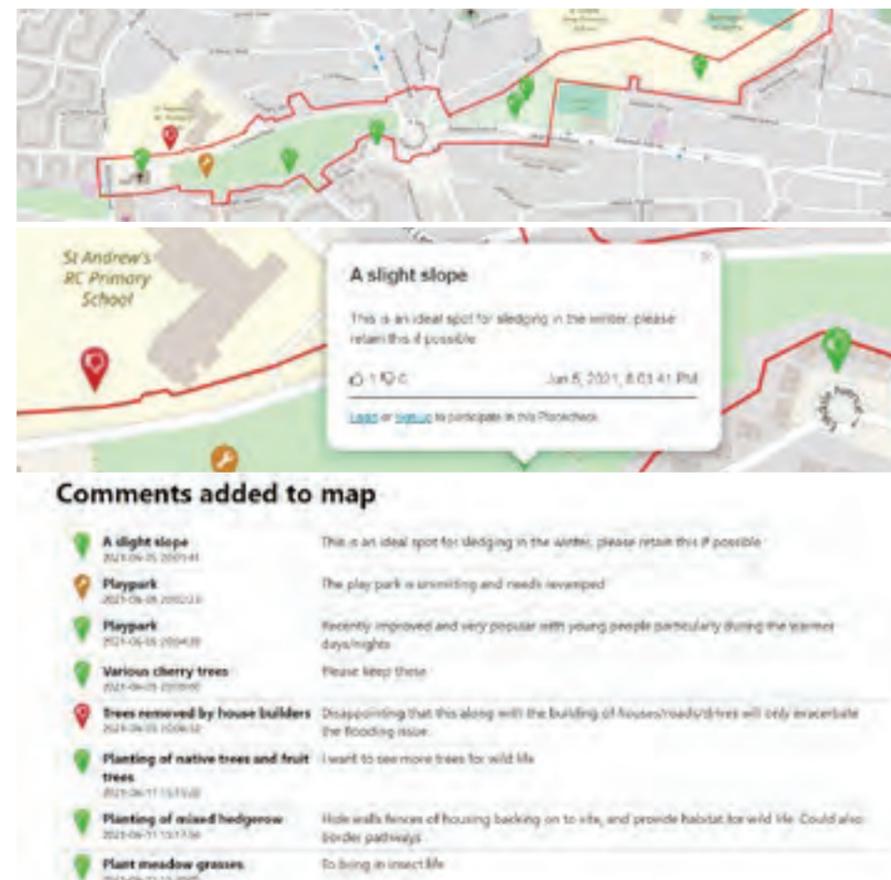


fig. 60: Screen shots from PlaceCheck

Consultation boards

The below consultation boards were produced and made available online from the project website. They were also printed at A0 for the public consultation event and were subsequently displayed at Baldrigon Academy where questionnaires were also provided.



fig. 61: Consultation boards



fig. 62: Consultation event images

Public consultation event

The consultation event was advertised by:

- Posters set up in the local area
- Details included on the project website
- Contact with the local schools and church
- Scottish Water and NatureScot flags at the marquee helped attract visitors, especially at school pick-up time.

Format

The public consultation event was held in the St Leonard and St Fergus Church car park at the west end of the park on Thursday 10th June, from 2:30pm to 7pm.

This location helped the local community to envision the proposals while reading and learning about them via six detailed information boards.

The boards were set up so that visitors could easily take in all of the information, then discuss the proposals with members of the design team to gain further understanding and give informal feedback.

Upon arrival, visitors were asked to place a sticker on a map of the local area, to gain an overall picture of where attendees had travelled from, and their locality to the park (opposite).

A large aerial image of the park was set up so that the community could draw or write their ideas directly onto it, workshopping different scenarios and demonstrating their priorities for the space (overleaf).

Questionnaires were handed out and there was a post box provided as well as a postal address for those who wanted to take the questionnaire away.

Staffing

The consultation was manned by members of the design team and client group including representatives from Scottish Water, NatureScot, Dundee City Council, Stantec and OPEN.

With representatives of the design team present, the public were able to find answers to their queries and discuss particular elements in depth.

Attendance

Despite the ongoing pandemic and having to adapt the event to be safe, the turn out was good, and the local community were keen to be involved. There was however a marked difference in the distribution in attendance at the event with the north side of the park being considerably better represented than the south. For future consultation events, efforts should be made to redress this balance.

Throughout the day (2pm-7pm) over 100 members of the community visited the event, as well as the headteacher and pupils from St Andrews RC Primary School. An STV film crew also attended to record an interview about the park for the local news.



fig. 63: Consultation event



fig. 64: Distribution of consultees

THOUGHTS ON THE PLAN
IF YOU WOULD LIKE TO SEE THE PARK IMPROVE,
USE A POST-IT NOTE TO GIVE US YOUR IDEAS



fig. 65: Post-it comments placed by visitors to the consultation

Questionnaire

Questionnaires were provided in order to gain feedback on all aspects of the proposal and to gain any additional ideas or local knowledge. The closing date for questionnaire submissions was 23rd July 2021, allowing 7 weeks for the public to have their say. All questionnaires received either through the event post boxes, postal or online have been reviewed and are analysed in detail over the next pages. In total 81 questionnaires were returned. This is considered to be a really good response.

The questions covered seven primary aspects of the park design: water in the park;

- traffic along St Leonard Place;
- the roundabout on Strathmartine Road;
- play facilities;
- planting;
- cycling and paths;
- and branding.

There was also a space reserved for any additional suggestions that fall out-with these main categories.

The responses to questions on these seven categories are set out on the following pages. Each (except no. 7, Branding) has an introductory statement, followed by a series of further statements which respondents were asked to mark their level of agreement with, on a scale of 'strongly agree' to 'strongly disagree'. Each of these statements has a pie chart to represent the responses. The darkest tone on the pie chart represents 'strongly agree', and the lightest represents 'strongly disagree'. Key findings from the statistics have also been summarised.

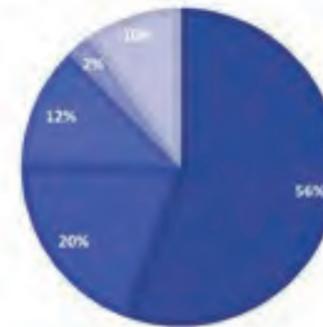
Overall consultation responses indicate that the initial ideas presented to the community are generally well supported.

1. WATER

We are still doing the technical study that will allow us to understand how much water we need to design for. It is useful for us to know how much water you would like to see in the park.

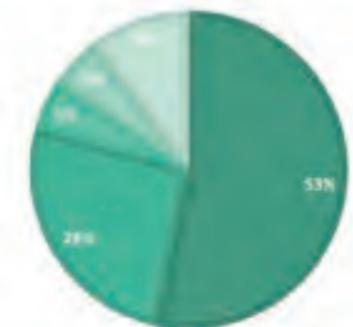
I WOULD LIKE TO SEE AREAS OF PERMANENT OPEN WATER IN THE PARK

Strongly Agree Agree Neutral Disagree Strongly Disagree



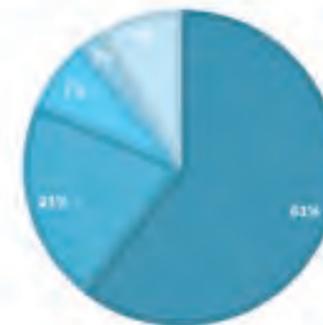
I WOULD LIKE TO SEE AREAS OF WETLAND MEADOW IN THE PARK

Strongly Agree Agree Neutral Disagree Strongly Disagree



I LIKE THE IDEA OF BRINGING THE BACK BURN BACK THROUGH THE PARK

Strongly Agree Agree Neutral Disagree Strongly Disagree



I WOULD LIKE TO SEE A COMBINATION OF ALL THREE IN THE PARK (THE BACK BURN, AREAS OF PERMANENT OPEN WATER, AND AREAS OF WETLAND MEADOW).

Strongly Agree Agree Neutral Disagree Strongly Disagree



Key Findings

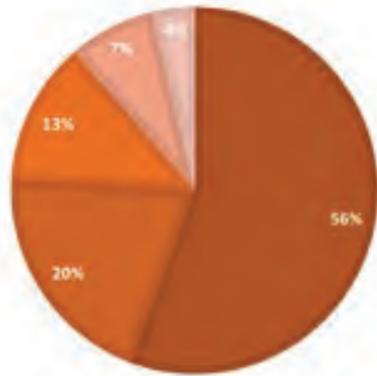
Over 75% of people surveyed are in favour of bringing water into the park, through the reinstatement of the Back Burn, areas of open water, and wetland meadow. 62% were strongly in favour of a combination of all of these water elements.

2. TRAFFIC ALONG ST LEONARD PLACE

What do you think about the level of traffic along St. Leonard Place, especially near St. Andrews Primary School?

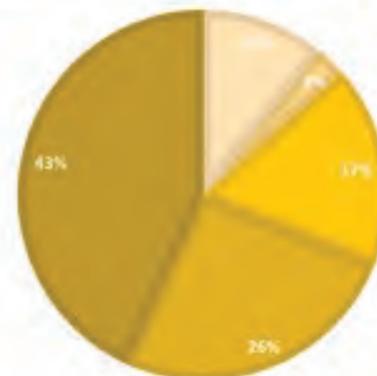
IT'S TOO BUSY AND SHOULD BE SLOWED DOWN.

Strongly Agree Agree Neutral Disagree Strongly Disagree



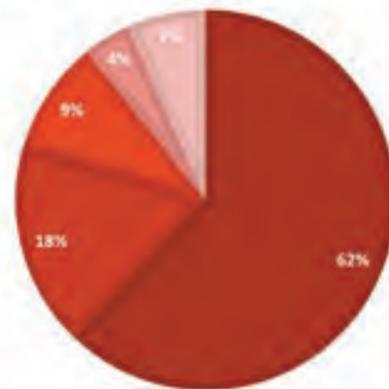
THE LEVEL OF TRAFFIC IS FINE AS IT IS.

Strongly Agree Agree Neutral Disagree Strongly Disagree



TRAFFIC SHOULD BE REDIRECTED, AND A GATHERING SPACE CREATED OUTSIDE THE SCHOOL INSTEAD.

Strongly Agree Agree Neutral Disagree Strongly Disagree



Key Findings

Over 3/4 of people surveyed agree that the traffic outside St. Andrews Primary School is too busy and should be slowed down.

80% of people agreed that traffic should be redirected and a gathering space created outside the school instead.

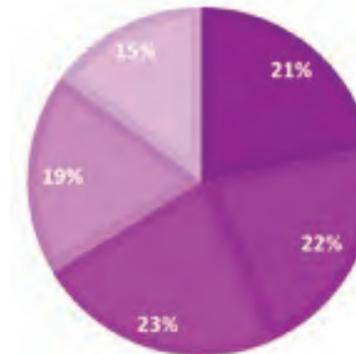
Only 14% of people surveyed thought that the level of traffic is acceptable as it is currently.

3. THE ROUNDABOUT ON STRATHMARTINE ROAD

Changes could be made around the nearby roundabout at the end of the park, on Strathmartine Road, which will make the environment more people focussed. This gives the community a green and safe active travel route between St. Leonard Park Baldragon Academy.

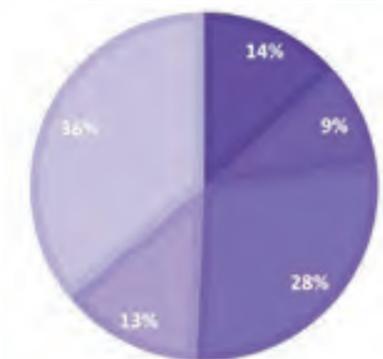
MINOR CHANGES ARE ENOUGH TO IMPROVE THE ROUNDABOUT ENVIRONMENT.

Strongly Agree Agree Neutral Disagree Strongly Disagree



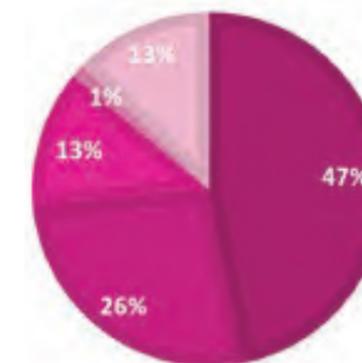
I THINK THE ROUNDABOUT SHOULD BE REMOVED ALTOGETHER AND REPLACED WITH AN ALTERNATIVE.

Strongly Agree Agree Neutral Disagree Strongly Disagree



I THINK THAT MAKING THE ROUNDABOUT MORE PEOPLE-FOCUSSED, WITH A GREEN AND SAFE ACTIVE TRAVEL ROUTE, IS A GOOD IDEA.

Strongly Agree Agree Neutral Disagree Strongly Disagree



Key Findings

Around 3/4 of people surveyed agree that making the roundabout more people-focussed, with a green and safe active travel route, is a good idea.

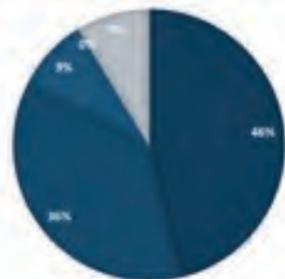
Around half of people surveyed did not think removing the roundabout altogether is the best solution. A further 28% of people surveyed felt neutral about the idea of removing the roundabout, with only 24% in favour of the idea.

4. PLAY FACILITIES

What kind of play facilities would you like in the park? This list might help you think about what could be possible, but we would like to gather other ideas too.

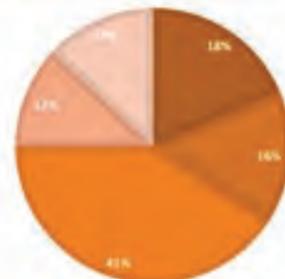
I'D LIKE TO SEE ADVENTURE PLAY IN THE PARK

Strongly Agree Agree Neutral Disagree Strongly Disagree



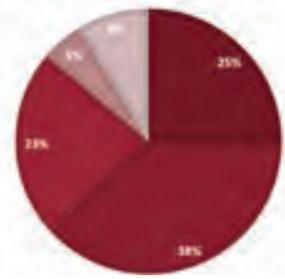
I'D LIKE TO SEE A PUMP/BMX TRACK IN THE PARK

Strongly Agree Agree Neutral Disagree Strongly Disagree



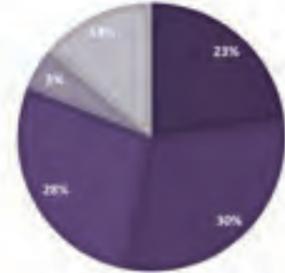
I'D LIKE TO SEE A PITCH FOR FOOTBALL, KICKABOUT, AND OTHER GAMES

Strongly Agree Agree Neutral Disagree Strongly Disagree



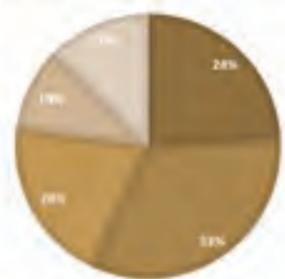
I'D LIKE TO SEE OUTDOOR GYM EQUIPMENT IN THE PARK

Strongly Agree Agree Neutral Disagree Strongly Disagree



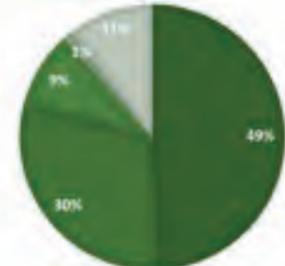
I'D LIKE TO SEE MARKED OUT ROUTES FOR RUNNING IN THE PARK

Strongly Agree Agree Neutral Disagree Strongly Disagree



I'D LIKE TO SEE NATURAL PLAY (WHERE PLAY IS FOCUSED ON EXPERIENCE, NOT EQUIPMENT) IN THE PARK

Strongly Agree Agree Neutral Disagree Strongly Disagree



Key Findings

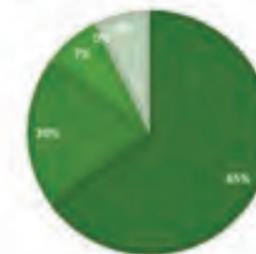
The most popular type of play that those surveyed would like to see in the park is adventure play, with 82% in favour. Natural play is also very popular (79% in favour), as is a pitch (63% in favour), and running routes (57% in favour).

5. PLANTING

Planting is not only beneficial for addressing climate change and enhancing biodiversity attractive green space is also good for our mental and physical health.

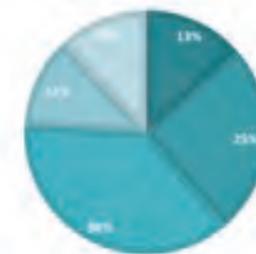
I SUPPORT THE IDEA OF INCREASED PLANTING IN THE PARK.

Strongly Agree Agree Neutral Disagree Strongly Disagree



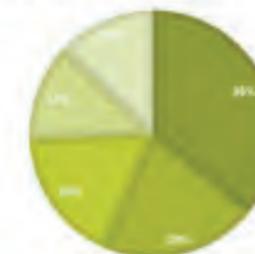
THERE COULD BE A LOT OF PLANTING AS PART OF THIS PROPOSAL. I WOULD LIKE TO BE INVOLVED WITH THE DESIGN, PLANTING AND LOOKING AFTER OF THESE AREAS.

Strongly Agree Agree Neutral Disagree Strongly Disagree



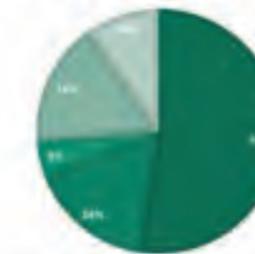
I SUPPORT CHANGING A LOT OF THE MOWN GRASS AREAS TO MEADOW.

Strongly Agree Agree Neutral Disagree Strongly Disagree



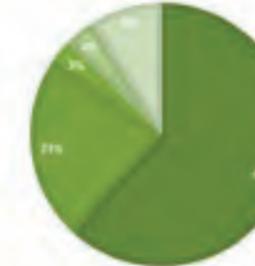
I WOULD LIKE TO SEE AREAS FOR COMMUNITY GROWING AND HARVESTING. E.G. - COMMUNITY ORCHARD, EDIBLE HEDGEROWS, HERB PLANTING, A COMMUNITY GARDEN, ALLOTMENTS.

Strongly Agree Agree Neutral Disagree Strongly Disagree



I WOULD LIKE TO SEE MORE TREES AND SHRUBS

Strongly Agree Agree Neutral Disagree Strongly Disagree



Key Findings

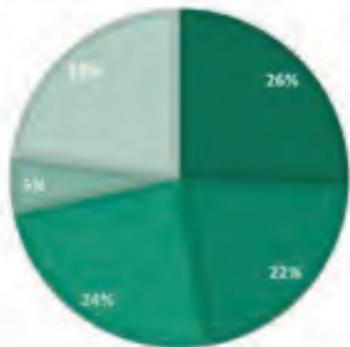
85% of those surveyed are in favour of increased planting in the park, and 84% would like to see more trees and shrubs; 56% support changing a lot of the mown grass areas to meadow; 69% would like to see areas for community growing and harvesting. 38% would be interested in being involved with the design, planting and looking after of these areas.

6. CYCLING AND PATHS

We would like to know what you think about the use of the park for cycling, for leisure or getting around

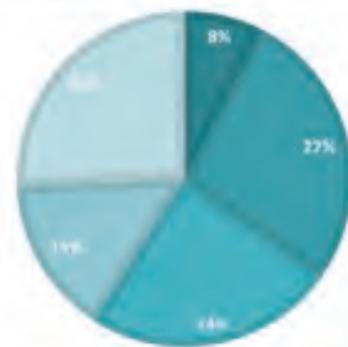
I (OR MEMBERS OF MY FAMILY) WOULD BE INTERESTED IN USING CYCLE ROUTES.

Strongly Agree Agree Neutral Disagree Strongly Disagree



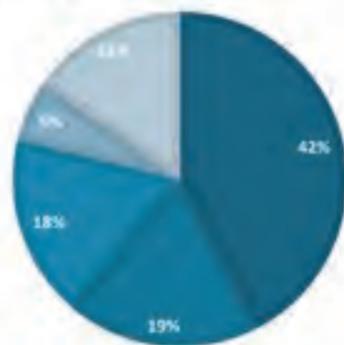
I WOULD LIKE TO SEE SHARED CYCLE/PEDESTRIAN ROUTES.

Strongly Agree Agree Neutral Disagree Strongly Disagree



I WOULD LIKE TO SEE SEGREGATED ROUTES I.E. CLEARLY DEFINED ROUTES WHICH ARE FOR PEDESTRIANS OR CYCLISTS ONLY.

Strongly Agree Agree Neutral Disagree Strongly Disagree



Key Findings

While responses were around 50/50 on whether those surveyed would be interested in using cycle routes, this result still suggests they would be well used within the community. Over half of those surveyed would like to see cycle routes in the park. 61% would prefer any new cycle routes to be segregated.

7. BRANDING

Finally, this project will lead the way in how we manage our water and environment in the future. Should we celebrate this in some way?

Suggestions

There was support for the renaming of the park, and for potential new artwork, however, some people felt that money would be better spent on trees and planting rather than artwork.

Suggestions also included new educational signage, a yearly water festival, a sculpture trail, a water wheel, and a park entrance sign. Many suggested involving the local schools in any potential renaming of the park and/or the selection or design of artwork.

Additional comments

The questionnaire also allowed respondents to provide further feedback, thoughts and comments. The key/most common suggestions from this extra feedback have been listed below with a commentary regarding how this could be integrated within the park design.

Respondents are in favour of bringing the Back Burn back through the park, as well as creating areas of permanent open water and wetland meadow. Some respondents requested that wetland meadow be provided with a focus on creating habitat for birds and animals.

- Habitat creation and enhancing ecology are a key aspiration of the project which will be incorporated in designs.

Some space needs to be retained for sledging in the winter, as this is one of biggest annual draws to the park currently.

- This has been considered within the design and an area suitable for sledging has been retained. In addition the park has been enhanced so it has a year around appeal.

Some respondents raised concerns about the safety of the water features when young children are playing in close proximity.

- Safety of all is a key consideration through development of the park design. Suitable gradients, passive surveillance, education, appropriate water depths will all help contribute to safety and will remain key considerations as the design progresses.

Ponds would be a great educational resource for families and the local schools- e.g.. Pond dipping

- Boardwalks and bridges which cross the ponds and conveyance route provide opportunities for pond dipping.

Respondents think that the level of traffic outside St Andrew's School unacceptable- it is too busy and should be slowed down. There is support for a gathering space being created outside the school, but concern that if traffic is re-directed it will create congestion elsewhere.

- Traffic surveys will be required to allow modelling of the impacts that closing St Leonard Place could have. If this option is progressed, this modelling will be a key next step in testing options so that the impacts can be understood.

There needs to be safe walking routes for children.

- The concepts presented in this document look to provide these routes and connectivity and address areas which are currently unsafe such as the roundabout on Strathmartine Road. Indeed this was a focus for the schools consultation event where children from Ardler, Sidlaw View and Baldragon considered how they could safely get to school through this area.

There should be 20mph signage and double yellow lines around the school.

- There are already double yellow lines outside the school on St Leonard Place with the exception of opposite the church. Options around the school require further development and this is an area where designs and consultation with the various interested parties will be ongoing.

There should be an area for parking near the school.

- There is currently parking in the Church which is heavily utilised at pick-up and drop-off times. Parking also occurs on St Leonard Place opposite the church. This project will aim to promote active travel and sustainable modes of travel to school. To create a new area of parking within the park does not fit with these aims. There may however be opportunities through this project to review the church car park and how this relates to the school to create a safer and better solution for all.

Making the roundabout more people focussed, with safe crossing points to the park and a green active travel route, is a good idea. Traffic calming measures would also be good around the roundabout to help reduce the speed of traffic.

- Designs for the roundabout will continue to be developed and will include the input of a traffic engineer. This will allow options to be developed in more detail and will consider how traffic speeds can be reduced.

The roundabout should be planted with a mix of trees, shrubs and wildflowers.

- The existing roundabout has various existing services running below it and so the planting of trees would not be possible without diversions. However shrubs and wildflower could be included and these suggestions will be borne in mind as proposals progress - particularly if the existing roundabout is retained.

The most popular types of play from the questionnaire responses were adventure play, natural play, and open space/pitch for games. Running tracks were also a popular addition to the park, particularly if they can accommodate junior ParkRun events, as well as the idea of a beginners pump track.

- All of the above elements have been included in the feasibility park design, along with other types of play such as ping pong tables.

Respondents support more planting in the park, particularly the addition of more shrubs and trees. The questionnaire also determined that those surveyed would be open to changing a lot of the mown grass to wildflower meadow.

- Much of the mown grass been changed to wildflower meadow within the feasibility design, and a variety of new trees have been proposed throughout the park.

There is support for community growing and harvesting opportunities in the park.

- A new orchard and edible fruit hedgerows are proposed for the site, to allow the community to harvest fruit and herbs, and benefit biodiversity.

Respondents would prefer any new cycle routes to be segregated.

- Segregated cycle routes have currently been proposed where space is available, however this is unlikely to be feasible throughout the whole park.

Picnic areas with shelter would be welcomed.

- A large picnic area with a shelter is proposed at a central location within the park, as well as several smaller uncovered seating and picnic areas.

Outdoor classrooms could provide a good resource for groups/clubs and schools.

- Terraced seating/grass banks onto the large grass football area could provide an outdoor classroom area.
- The amphitheatre space illustrated in the feasibility design could accommodate informal meetings as well as lectures or lessons.
- The smaller picnic areas could also provide this resource.

It would be desirable to have a space for outdoor music, movies and performances.

- Terraced seating/grass banks onto the large grass football area could provide a space for larger events.
- The amphitheatre space could accommodate out door movies and performances.
- No power/data connections have currently been included within the feasibility design however this is potentially an element for further discussion with the community to understand the desire for this, how it would be used, funded and organised.

4.2 SCHOOL ENGAGEMENT

Engagement

This consultation engaged students from three local schools;

- Baldragon Academy (S1 and S2)
- Ardler Primary School (P7)
- Sidlaw View Primary School (P7)

Unfortunately due to timings and Covid it was not possible to engage with the pupils of St Andrew's Primary School during this round of consultation however this is programmed to take place in Autumn 2021.

The consultation was held over two days, 15th and 16th of June 2021 with separate groups on both days.

Aim

The aim of these school consultation events was to gain valuable input and insights from one of the biggest user groups of the park. The children will use this park not only for leisure, but also as a route to school. The headteacher of Baldragon has ambitious targets to ensure as many pupils as possible walk, cycle or wheel to school.

Format

The overarching topic for the consultation was active travel and to get the pupils to think about how they travel to school, what routes they currently take, what are the obstacles to them walking, cycling or wheeling to school, what could be improved to make it easier.

Each day began with an introduction to the project, then a walk around the site, encouraging the pupils to think about the site and how they might like to see it change so that it would be more interesting or what would encourage them to use the space more.

Once everyone was familiar with the site, the groups returned to the classroom, where the children divided into groups to draw cognitive maps of the park. This exercise produced illustrative maps which acted as an opportunities and constraints drawing. The children then used these cognitive maps as a guide to come up with a design for the park, fitting the active travel around other improvements and water conveyance and storage.

The children were provided with site photographs which, alongside their cognitive maps, aided their design development. By the end of the day, each group had a layout for the park along with some sketches of key elements. The groups then presented their ideas to the room, explaining their design.



fig. 66: Site walkaround



fig. 67: Collaborative cognitive mapping and design



fig. 68: Group presentations

Findings

Through the park design exercise and the sketches that the pupils created, we were able to see some of their main priorities in the design of the new park.

- St Leonard Park is seen less as a place and more as an area of green space that they pass through.
- The children like the existing play area at the east of the site, and it is well used.
- Few of the children currently use the park as a route to school, but said that they would be more inclined to do so if there were better paths and cycle routes.
- The children value the land to the south of Sidlaw View Primary School (former site of Baldragon Academy). They use it as a route through to various shops and local amenities, and all of the pupils used this land as part of their proposals.
- Play was a priority for the majority of the children, as well as having 'hang-out' spaces where they can sit and meet up with friends. They would like to see more play facilities worked into the design.
- The pupils were keen to see better habitat provision in the park, with shelter and food for birds and mammals.
- They discussed the importance of a kick-about space, and were interested in the idea of a pump track in the park.
- The children are keen to see the watercourse returned to the park, and expressed an interest in additional water features such as waterfalls.
- Many of the pupils said they would like to see more colourful planting and flowers in the park, particularly next to seating areas.

One of the key "takeaways" from the schools consultation was that the park lacks identity. Many of the pupils did not describe the site as a park, and would not choose to hang out or play there (with the exception of the play equipment at the east, near the school).



fig. 69: Example of cognitive map produced by the groups



fig. 70: Example of design proposals produced by the groups

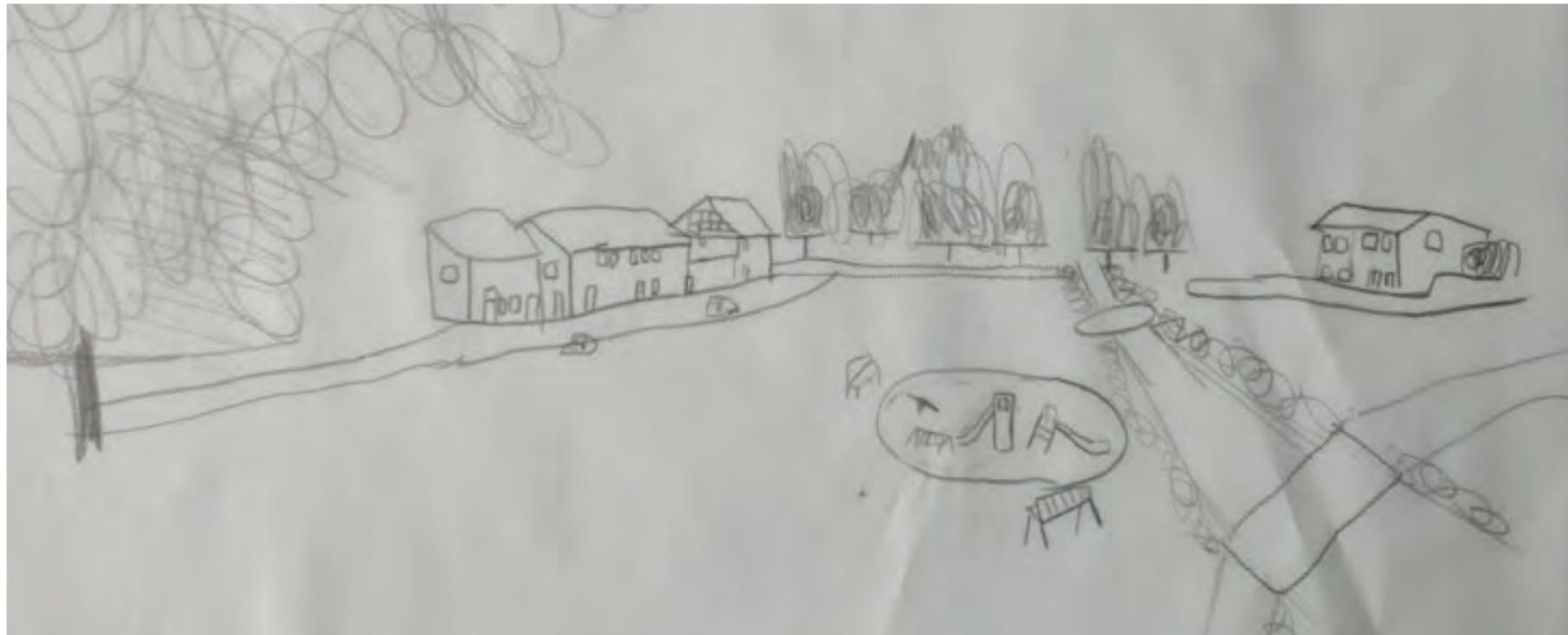


fig. 71: Design sketch of the park



fig. 72: Design sketch for a bridge in the park



fig. 73: Play uses in the park



fig. 74: A sculpture on the roundabout on Strathmartine Road

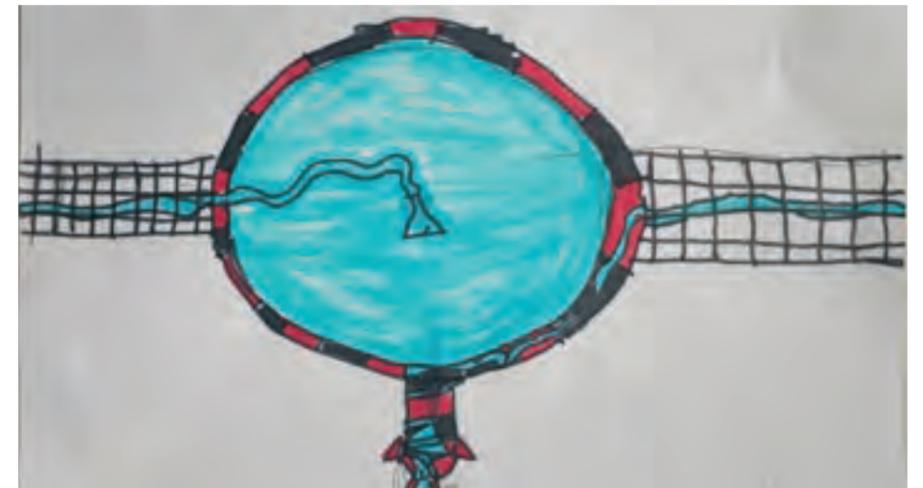


fig. 75: A waterfeature in the park



fig. 76: A boat bridge crossing

4.3 ONGOING AND FOLLOW-UP CONSULTATION

Consultation undertaken

The following consultation and engagement has also been undertaken:

ParkRun

Consultation was undertaken with a representative of the Junior ParkRun on site on August 18th 2021. For a summary of this consultation please refer to Section 6.6 on page 84.

St Andrews and St Fergus Church

Consultation was undertaken with Fr. Mark of St Leonard and St Fergus Church on 2nd September 2021. For a summary of this consultation please refer to Section 5.2, page 65.

Ongoing and follow up consultation

The following consultation is programmed or planned for the future of the project:

Junior ParkRun

Following the meeting on site a new plan with a proposed route was provided to ParkRun. Feedback is awaited on this which will be used to evolve the plan through the next stages.

St Andrews and St Fergus Church

Following the meeting on site, information is awaited from the church on their required number of car parking spaces. Design solutions for the active travel route and security at the rear of the church require developing and further consultation undertaking. Joint consultation with the Church and St Andrews RC Primary School is required to help develop safer solutions to the pick-up/drop-off parking within the car park.

St Andrews RC Primary School

Consultation with the school children, parents and teachers is required. The format for this is still to be developed in consultation with the school.

Community

Ongoing communication and consultation is required with the community to keep them informed of proposals, programme and to receive feedback and comments.



fig. 77: Consultation with St Andrews RC Primary School pupils at the public consultation event

05

OPPORTUNITY SITES

Within the Phase 1 area three key opportunity sites have been identified within the project Brief. These are:

- St Andrew's School and the Park
- St Leonard and St Fergus Church Car Park
- The roundabout on Strathmartine Road

For each of these three sites, three high level concept studies have been produced. Each study aims to address the project objectives however with a different level of aspiration, intervention and cost. These options have not been technically developed or tested however have been produced to stimulate discussion and allow a starting point for further detailed design and testing if progressed.

In addition to the above opportunities the Dundee Local Development Plan 2019 Development identifies Site H37 - Former Baldrigon Academy for redevelopment. There are opportunities here to incorporate the new conveyance route.

5.1 ST ANDREWS RC PRIMARY SCHOOL

Existing condition

Currently the School and the park are divided by St Leonard Place. St Leonard Place has 'school keep clear' zig zags at both entrances and double yellow lines preventing parking for the remainder of the street with the exception of opposite the Church. The main visitor entrance to the school and entrance to the staff car parking area are at the easterly gate whilst school pick-up occurs from the westerly gate. This gate is also believed to provide vehicular access into the grounds for maintenance.

The park opposite the school does not have a pavement and there is no formal gathering space where parents can sit and wait for children. There is an existing avenue of trees within the park. The railings around the new SUDS basin forms an awkward relationship with the school pick up area and is in the way of desire lines to the existing play park.

The church ground are used for parking however there are no marked spaces or formal circulation routes. Pedestrians and vehicles both use the same gate.



fig. 78: St Andrews RC Primary School main entrance

Project objectives

- Improve the relationship between the park and the school
- Promote sustainable travel to the school
- Enhance the sense of community
- Help attenuate and treat surface water drainage from St Leonard Place
- Improve the safety of St Leonard Place, especially at school pick-up and drop-off times.

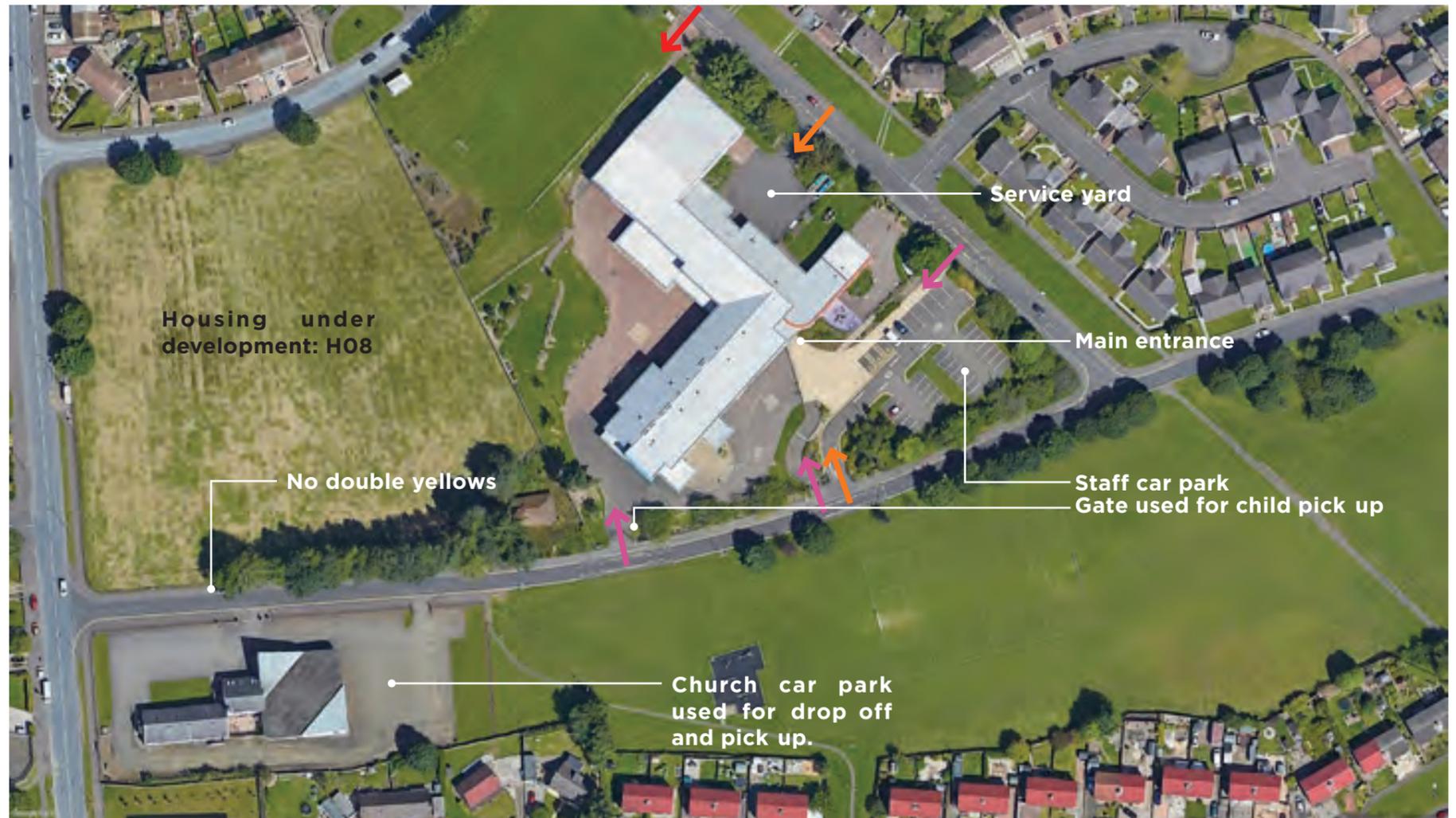


fig. 79: Aerial photo with site entrances marked.



fig. 80: The School and Church at pick-up time



fig. 81: The School and Church at pick-up time



fig. 82: Dundee Travel Active: Safer Routes to School Leaflet (excerpt)



fig. 83: St Andrew's Primary School: Option 1

Option 1

The above option looks at making minimal interventions it comprises of creating road build outs which could accommodate new rain gardens. These could act as chicanes to slow and calm traffic. A raised table crossing point could then be created which helps to link the School and the Park.



fig. 84: St Andrew's Primary School: Option 2

Option 2

The above option looks at making medium interventions. It comprises of bringing the road into the park to create a new gathering space outside the school where parents could gather to pick up children. This new space could incorporate rain gardens to help attenuate and treat surface water. The new road alignment would help to slow traffic down along this stretch of road.



fig. 85: St Andrew's Primary School: Option 3

Option 3

The above option looks at making a bigger intervention. It looks at closing St Leonard Place between the two school entrances to create a direct link into the park, with better opportunities for active travel, gathering spaces and for sustainable drainage interventions.



fig. 86: St Andrew's Primary School: Illustrative plan showing a variation of Option 1.

5.1.1 Next steps

The options opposite have been developed as high level concepts only and have not been worked out technically or tested either in relation to geometries or traffic flows and possible impacts on the wider network.

To progress the options for St Andrew's School further the following is required:

Traffic engineer

Technical input from a traffic engineer is required. This would involve:

- Technical development of road alignments and geometries ensuring technical standards are met.
- Traffic surveys to provide baseline data for assessing the impacts of changes.
- Traffic modelling to understand the impact of changes.

Consultation

Additional consultation with the School and parents is required to help develop and ensure buy in to proposals. Not all proposals may require physical interventions and consideration of staggered school start times or similar ideas may help alleviate issues.

Project and opportunity co-ordination

Through undertaking this feasibility study it has become clear that this opportunity area cannot be looked at in isolation from the St Leonard and Fergus Church opportunity. The use of the Church car park by parents at pick-up and drop-off is a key activity twice a day and parking and car movements in the area are chaotic and unsafe. There is an opportunity to bring all parties together to address this in a creative and collaborative manner which isn't possible by looking at these opportunities in isolation.

5.2 ST LEONARD AND ST FERGUS CHURCH

Existing condition

St Leonard and St Fergus Church is currently set within a landscape of predominantly asphalt surfacing to the north, east and west with a dirt track to the south. There are gulleys in the car park to the east which accept the surface run off.

There is little soft landscape around the building with the exception of a strip of land onto Macalpine Road at the west, a strip of land to the north of the hall and a strip of land bordering the park at the east. All these areas have relatively low biodiversity or aesthetic value and are comprised of mown grass.

The church is enclosed by black vertical pale railings and has brick piers to the main entrance onto St Leonard Place.

The building has some accessibility challenges and many of the doors are reached by either steps or ramps.

The building itself was built in the 1970's and now comprises of a collection of joined structures in white render. These comprise of the main church with its distinctive roof at the east, a residential property in the middle and a hall at the west.

We believe there are around 74 car parking spaces currently provided within the church grounds on the asphalt surfacing (based on 2.5m x 5m spaces and 6m aisle) however these are all informal with no line marking and so actual efficiency may be less than this. Additionally we are aware that some informal parking also occurs on the dirt track at the rear of the church.

The church grounds are also used by St Andrews RC Primary School parents for drop off as part of the schools 'Park and Stride' scheme.

The culvert accommodating the burn is aligned south of the church and is close to the surface at this point.

Project objectives

- Improve water treatment and storage within church grounds
- Reveal start of conveyance route channel
- Improve frontages to St Leonard Road and Macalpine Road
- Improve appearance of church grounds
- Improve accessibility of church grounds
- Improve habitat connectivity through church grounds
- Improve active travel links to Macalpine Road
- Improve the relationship of the church with the park
- Review the relationship between the School and the Church in relation to pick up and drop off and improve safety.



fig. 87: St Leonard and Fergus Church from Macalpine Road



fig. 88: Annotated aerial image of St Leonard and Fergus Church



fig. 89: Church car park at School pick-up time



fig. 90: Church grounds



fig. 91: Church car park when empty



fig. 92: St Leonard Place



fig. 93: The Church interface with the park



fig. 94: The rear of the Church

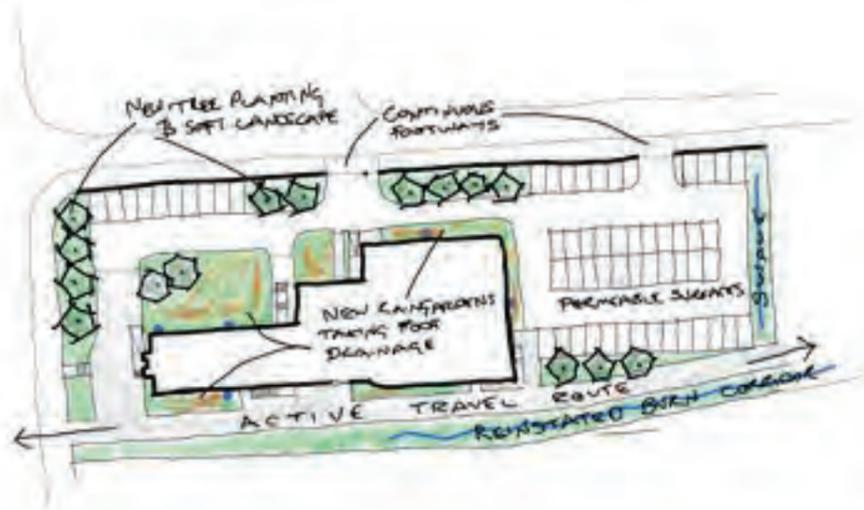


fig. 95: St Leonard and St Fergus Church: Option 1

Option 1

The above option provides 56 car parking spaces. The sketch layout looks to achieve the following:

- Create a new active travel route away from the road at the south of the church which could connect directly to a new crossing on Macalpine Road and connecting to the path to the west.
- Reveal the new conveyance route through the church grounds.
- Provide tree planting and a hedge to St Leonard Place.
- Create new rain gardens at the base of the building taking the drainage from the roof and softening the appearance of the church.
- Using permeable surfaces within the car park to help treat and slow down surface water run off.
- Include a swale at the east of the car park which could connect to the new conveyance route.

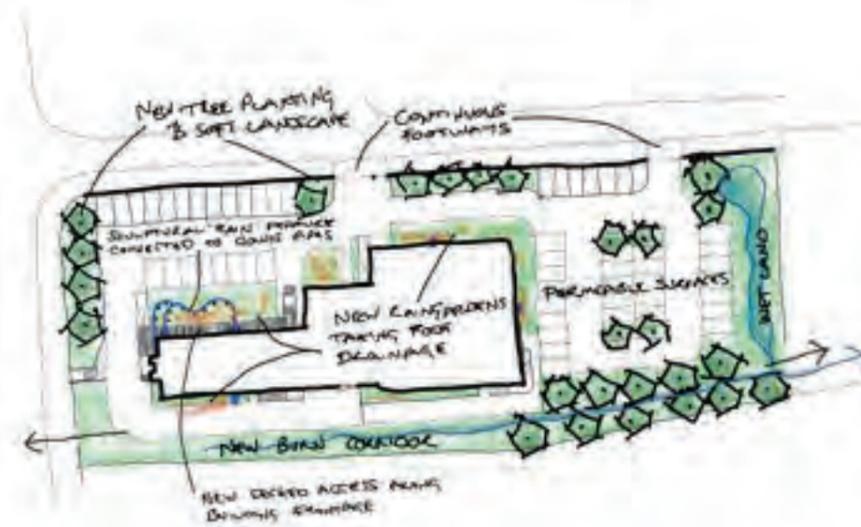


fig. 96: St Leonard and St Fergus Church: Option 2

Option 2

The above option provides 53 car parking spaces. The sketch layout looks to achieve the following:

- Reveal the new conveyance route through the church grounds.
- Provide tree planting and a hedge to St Leonard Place.
- Create new rain gardens at the base of the building taking the drainage from the roof and softening the appearance of the church.
- Provide a sculptural element to the hall which takes water from the roof and into a new rain garden.
- Provides a new decked walkway between the hall entrances over the rain garden.
- Using permeable surfaces within the car park to help treat and slow down surface water run off.
- Include a small wetland at the east of the car park which could connect to the new conveyance route.

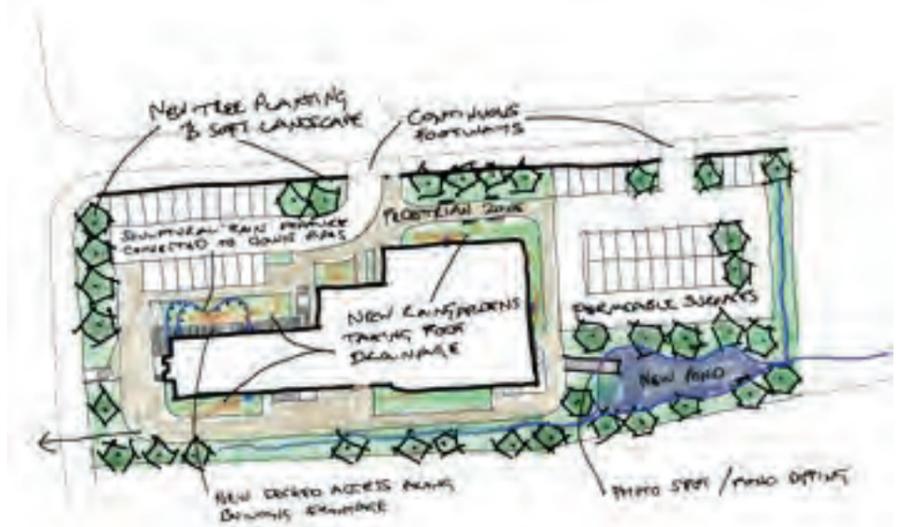


fig. 97: St Leonard and St Fergus Church: Option 3

Option 3

The above option provides 45 car parking spaces. The sketch layout looks to achieve the following:

- Reveal the new conveyance route through the church grounds.
- Provide tree planting and a hedge to St Leonard Place.
- Create new rain gardens at the base of the building taking the drainage from the roof and softening the appearance of the church.
- Provide a sculptural element to the hall which takes water from the roof and into a new rain garden.
- Provides a new decked walkway between the hall entrances over the rain garden.
- Using permeable surfaces within the car park to help treat and slow down surface water run off.
- Include a small pond and boardwalk at the south east of the car park which could connect to the new conveyance route.
- Create a pedestrian zone and gardens around the perimeter of the church by separating the two areas of car parking.
- The pond and new landscape could create a photo-opportunity location eg for weddings.

The plan below illustrates how a version of Option 1 could link with the wider park design and particularly the school entrance. This option illustrates 52 car parking spaces and includes the active travel route to the south of the church.



fig. 98: Illustrative plan of St Leonard and St Fergus Church based on Option 1



fig. 99: Illustrative montage of St Leonard and St Fergus Church based on Option 3



The montage on this page aims to illustrate how proposals around the church could soften and improve the appearance of the church whilst benefiting biodiversity and storm water management and diversifying the use of the Church grounds. Signage shown on the church could help it more visibly address the park.

Consultation

The information on these pages was discussed with Father Mark of St Leonard and St Fergus Church on the 2nd of September. The following list sets out some of the key points of the meeting:

- There is a general desire by the Church to improve the appearance and setting of the Church to create a more welcoming place. Fr. Mark was positive about concepts presented.
- The Church will celebrate its 50th Anniversary in 2025 and so there is an opportunity for improvements to be made to tie in with this event.
- The church is keen to see softening of the area through planting. Currently the ground maintenance is carried out by a gardener. In the future scheme low maintenance planting options would be preferred.
- There were initial reservations about an active travel route running to the rear of the church due to concerns about antisocial behaviour/vandalism. The route was not ruled out however and the possibility of segregating the route with a fence or similar to provide some security/privacy to the church house was discussed. In this situation it was suggested that the land may be handed over so it did not become a maintenance burden to the Church. Additionally car access is required to the rear of the property and this should be maintained (this could be limited to one side only).
- The Church grounds are used for pick-up and drop-off for the School however this is chaotic and dangerous. Fr. Mark has not had sight of any formal written agreement between the Church and School for use of the car park. Discussions regarding changes to the car park were had including a possible one way system for the future carpark and the ability to close off the upper section of the car park. The Church are possibly open to handing over some of the lower car park if this isn't required for Church parking.
- Once the parish are happy with the proposals, the Diocese must also agree.

Next steps

- The Church will review its parking requirements and provide feedback to Scottish Water design team.
- Fr. Mark to discuss use of car park for School drop off/pick up with J Neeson Headteacher.
- Fr. Mark to discuss proposals with Parish Council and feedback
- Fr. Mark to discuss outline proposals with Diocese.
- Scottish Water design team to review possible layouts for the rear of the Church allowing active travel, security, car access.
- A follow up meeting to discuss pick up/drop off with Church/School/DCC will be required following Fr Mark/J Neeson meeting.

5.3 ROUNDABOUT ON STRATHMARTINE RD

Existing condition

The roundabout is currently difficult to cross by pedestrians in all directions due to the lack of crossing facilities. The street pattern is complicated in this area and routes are not legible making navigation of the roundabout more difficult.

Pavements are generally quite narrow and feel mean when compared with the extent of space given over to vehicles.

There is an open space to the north of the roundabout however this currently feels unconnected to the park due to the tightly spaced larch trees which run down Cox Street and the timber fence.

There is a row of shops and a pub on Strathmartine Road however getting to these from the park is difficult due to the roundabout.

There is a shared use cycle path which comes up the south side of Balgowan Avenue however this throws cyclists back onto the carriageway at the roundabout.

Most cycle accidents happen at roundabouts and it would be difficult to encourage this as part of a safe route to school without positive interventions.

Project objectives

- Improve pedestrian and cyclist connectivity and access across the roundabout generally.
- Incorporate an active travel route which connects across the park.
- Incorporate the conveyance route and water storage.
- Improve the sense of place.
- Improve habitat and habitat connectivity.
- Improve wayfinding.



fig. 100: The roundabout on Strathmartine Road from St Leonard Place



fig. 101: Aerial image of the roundabout on Strathmartine Road



fig. 102: Roundabout from St Leonard Park



fig. 103: Roundabout looking towards St Leonard Park



fig. 104: Roundabout: Option 1

Option 1

The above option looks to reconfigure the roundabout into two cross roads. This creates a better connection between the two park areas which would assist connectivity of both active travel and habitat. It also allows a route for the conveyance route which sits centrally within the park.



fig. 105: Roundabout: Option 2

Option 2

The above option retains the roundabout however creates a new active travel route to the north of the roundabout. This option takes the new conveyance route through the roundabout. This option is not preferred due to the following factors:

- Difficulties of maintenance
- Existing services
- Existing topography



fig. 106: Roundabout: Option 3

Option 3

The above option retains the roundabout however creates a new active travel route and conveyance route to the north of the roundabout.



5.3.1 Next steps

The options opposite have been developed as high level concepts only and have not been worked out technically or tested either in relation to geometries or traffic flows and possible impacts on the wider network.

To progress the options for the roundabout on Strathmartine Road further, technical input from a traffic engineer is required. This would involve:

- Technical development of road alignments and geometries ensuring technical standards are met.
- Traffic surveys to provide baseline data for assessing the impacts of changes.
- Traffic modelling to understand the impact of changes.

Scale 1:1000 @ A3
 0m 10m 20m 30m 40m 50m

fig. 107: Roundabout on Strathmartine Road: Variation of Option 1 which avoids crossroads and retains closer geometries to the existing roundabout.

06

ILLUSTRATIVE PARK DESIGN

This chapter illustrates the feasibility design produced for St Leonard Park. It is not a final design however illustrates how St Leonard Park could be transformed through the introduction of a new watercourse, water storage, active travel routes, path network, habitat creation and additional play opportunities. The plan is intended as a starting point from which further development, testing and detailed design will be required.

This chapter describes the park design strategy and provides further explanation of the following:

- Path networks
- Cycle route
- Water conveyance routes
- Water storage principles
- Habitat creation
- Topography
- Cut and fill
- Tree removal and retention
- Hard landscape, Public Art and Interpretation
- Lighting
- Utilities
- Maintenance

6.1 PARK VISION

The impacts of climate change are becoming rapidly apparent. Mitigation, adaptation and sequestration of effects will become ever more pressing as we face longer drier, hotter conditions matched with events of severe precipitation. Coupled with this we face a biodiversity crisis as our climate changes and the effects of man on the environment become ever more apparent.

This project is about water, nature and people. It is an exciting opportunity to lead by example in demonstrating what could be achieved by retrofitting sustainable drainage into the existing park. Multi-functional benefits can be achieved which not only mitigate and adapt against the changing climate but which improve the sense of place, make sustainable travel attractive, enrich biodiversity, offer recreation and enhance the wider blue-green network across north Dundee and the Ardler link.

The words opposite summarise the key elements of the vision for the park.

The feasibility design work undertaken has aimed to strike an appropriate balance in prioritising these complementary and competing aims in a spatial design which can be reviewed and developed in response to both client and community feedback.



EXERCISE
WALK
WETLAND
MEET
BIODIVERSITY
WATER STORAGE
ACTIVE TRAVEL
COMMUNITY
CYCLE
SIT
RELAX
CONVEYANCE
MULTIFUNCTIONAL

FLOOD PREVENTION
WATER
NATURE
PEOPLE
WATER TREATMENT

RECREATION
PLAY

GROWING
WATER
MAINTAINED
SPORTS
CONNECTED
PLACE
SAFE
SCHOOLS
NATURAL SYSTEMS
RUN
WILDLIFE
CLIMATE RESILIENCE

6.2 DESIGN DEVELOPMENT

The indicative design for St Leonard Park has been developed through several design options and iterations and has been informed by site visits, desktop study, a review of precedents, public consultation and workshops with the design team. The sketches and working plans below illustrate some of this design development.

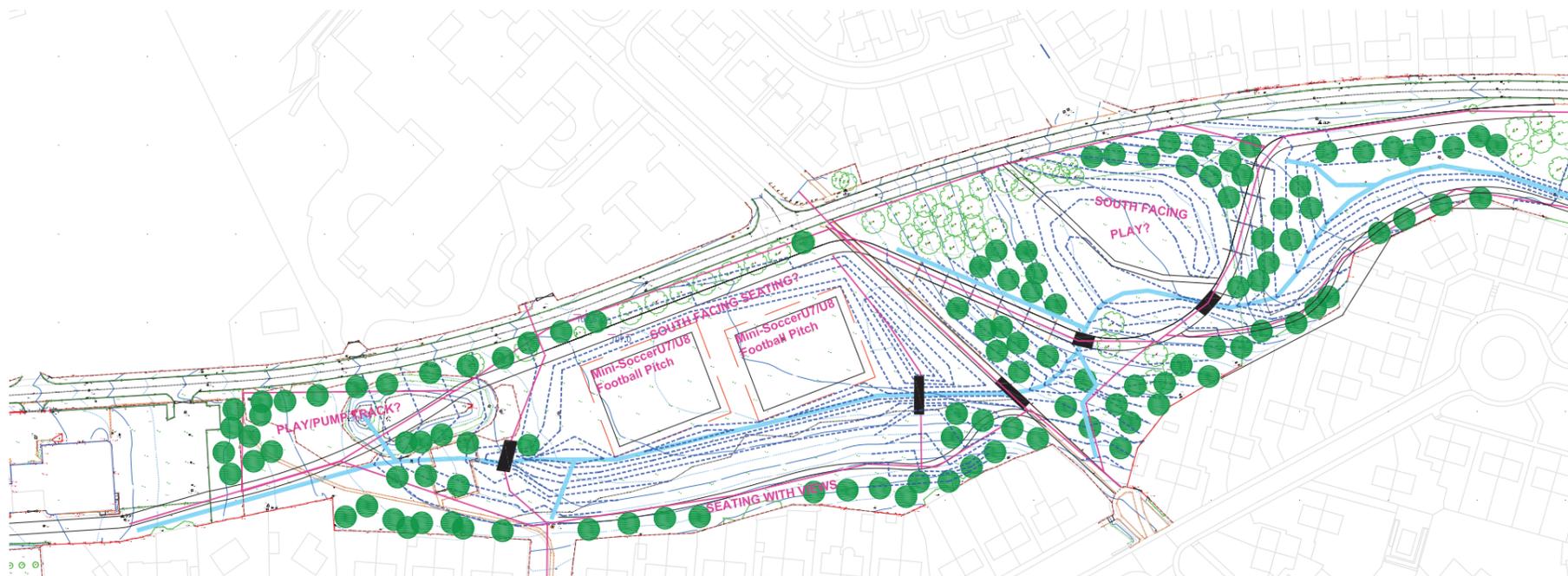
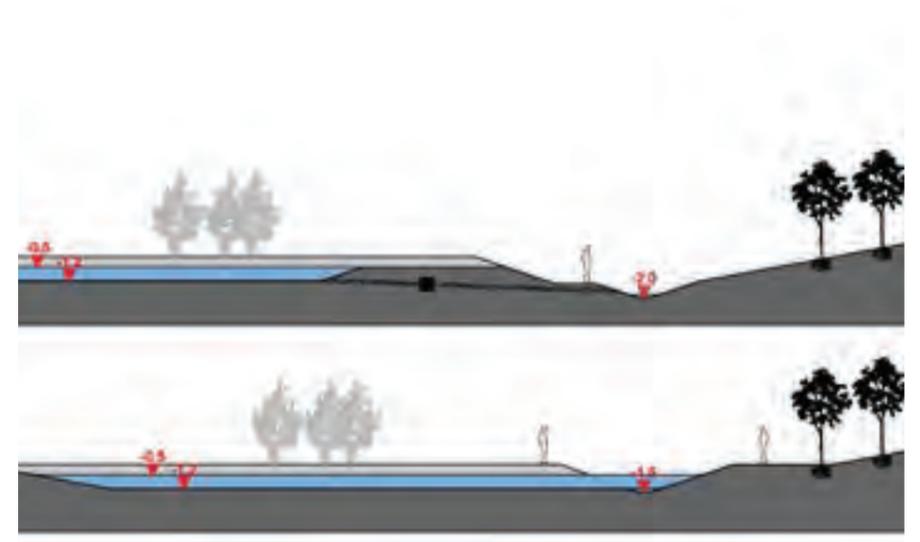


fig. 108: Exploratory design studies

6.3 PARK FEASIBILITY DESIGN

Feasibility design

The design that follows has been developed as a response to the brief using the information available. It is not a final design however illustrates how St Leonard Park could be transformed through the introduction of a new watercourse, water storage, active travel routes, path network, habitat creation and additional play opportunities.

The plan is intended as a starting point from which further development, testing and detailed design will be required. This will need to include;

- development of the hydrology and water storage strategy
- Further exploration of the design requirements for habitat creation within the proposed water storage and conveyance elements
- costing
- checking, testing and modelling of road alterations
- production of detailed levels information
- review of earth work cut and fill
- detailed review of utility implications
- further public consultation and engagement
- ongoing CDM review
- discussion of appropriate maintenance regimes that are associated with habitats, greenspaces and water-features to be created.

Where appropriate the illustrative design identifies where areas require further refinement and where alternative options or strategies could be developed as the project evolves.



fig. 109: Montage location





fig. 110: Montage of St Leonard Park

Park uses

The indicative design below indicates where uses could be located within the park. Some of these facilities have been located specifically due to associations with adjacent uses, place making or topography considerations. Other uses are more flexible and could be moved around as the design progresses. The aim has been to create a park that has something for everyone. A park that everyone is invested in, has a reason to visit and feels proud of.

The location or number of facilities are not fixed. Within the general structure of the park there are opportunities to add or remove uses as appropriate depending on project opportunities and constraints.

1. Pump track - Accessible for all ages and abilities with uses including scooters, skateboards, rollerskates/blades, bikes and wheelchairs.
2. Play park - A new play park, including accessible equipment and opportunities to play and learn.
3. Chess tables - An opportunity to play in the park.
4. Viewing terraces - A spot to watch the game.
5. Football pitches - Sizes based on 2no. Mini soccer U7/U8 pitches
6. Viewing area - with views to the north
7. Outdoor fitness/gym
8. Amphitheatre
9. Sledging/ball chasing hill
10. Picnic area and beach
11. Nature area
12. Table tennis, boules, chess and seating
13. Water feature
14. Board walk and nature area
15. Potential sculpture/artwork
16. Existing play park
17. Orchard
18. New play park
19. Riparian corridor

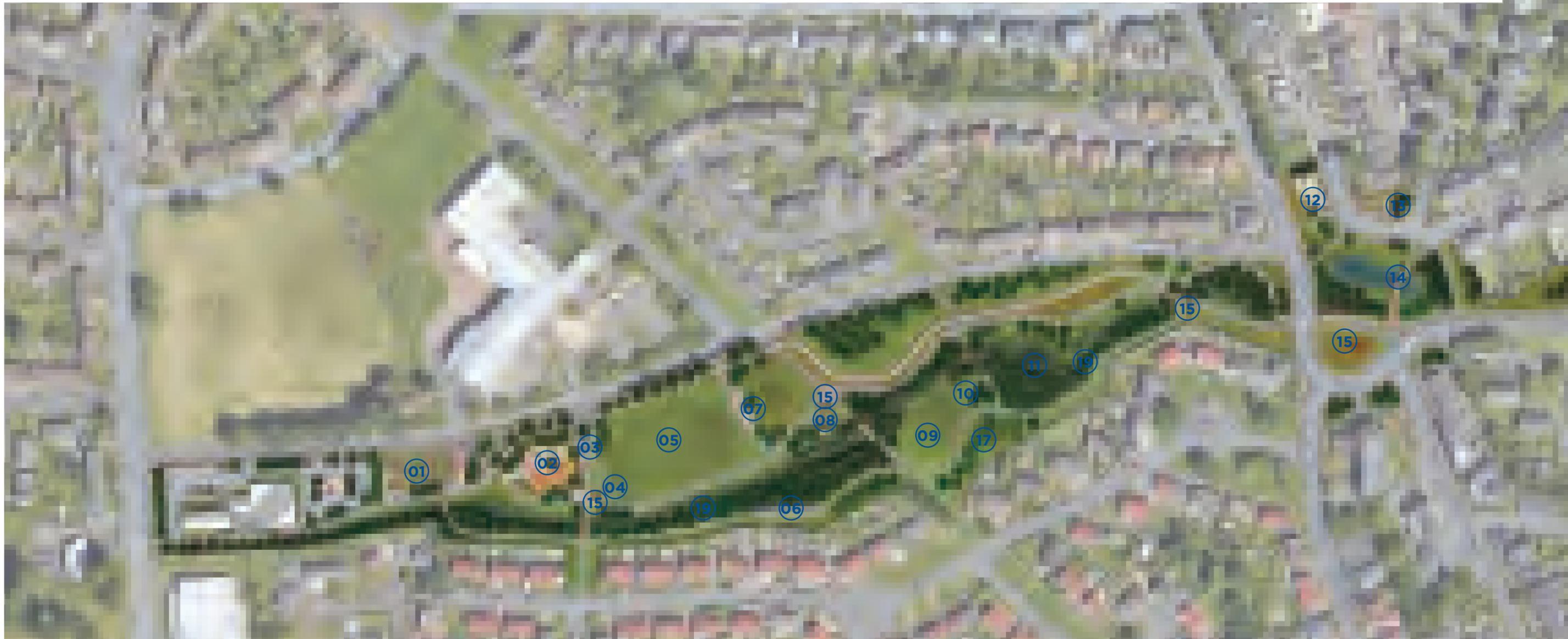


fig. 111: Illustrative plan



Scale 1:2000 @ A3
0m 20m 40m 60m 80m 100m

6.4 PATH NETWORKS

The indicative design below indicates a new path network through the park. The paths have been colour coded to refer to primary, secondary and tertiary paths. Generally the design considers the primary routes as the most important, with the secondary and tertiary following on. As additional design options for the park a stripped back design could be developed which omits some or all of these secondary and tertiary paths or allows for the implementation these at a later stage.

The key design parameters of each are described below.

Primary paths

These are considered the most important paths through the site and generally link destinations or access points and follow desire lines. It is suggested that these are a minimum of 3m wide and that this should increase to a minimum of 4m wide where they either become a shared surface with cycle use or where they are to be used for maintenance access. Generally these paths should be well surfaced and have accessible gradients wherever this is feasible.

Secondary paths

Generally these paths have been designed to allow round trips, circular running routes or additional connectivity within the park. It is suggested that these are typically a minimum of 2m wide. Again these should be well surfaced and have accessible gradients wherever possible but not in all cases.

Tertiary paths

Generally these paths have been designed to allow shortcuts or access to areas with steeper topography. It is suggested that these paths are typically a minimum of 1.5m wide. These paths would not necessarily have accessible gradients.

Potential controlled crossings

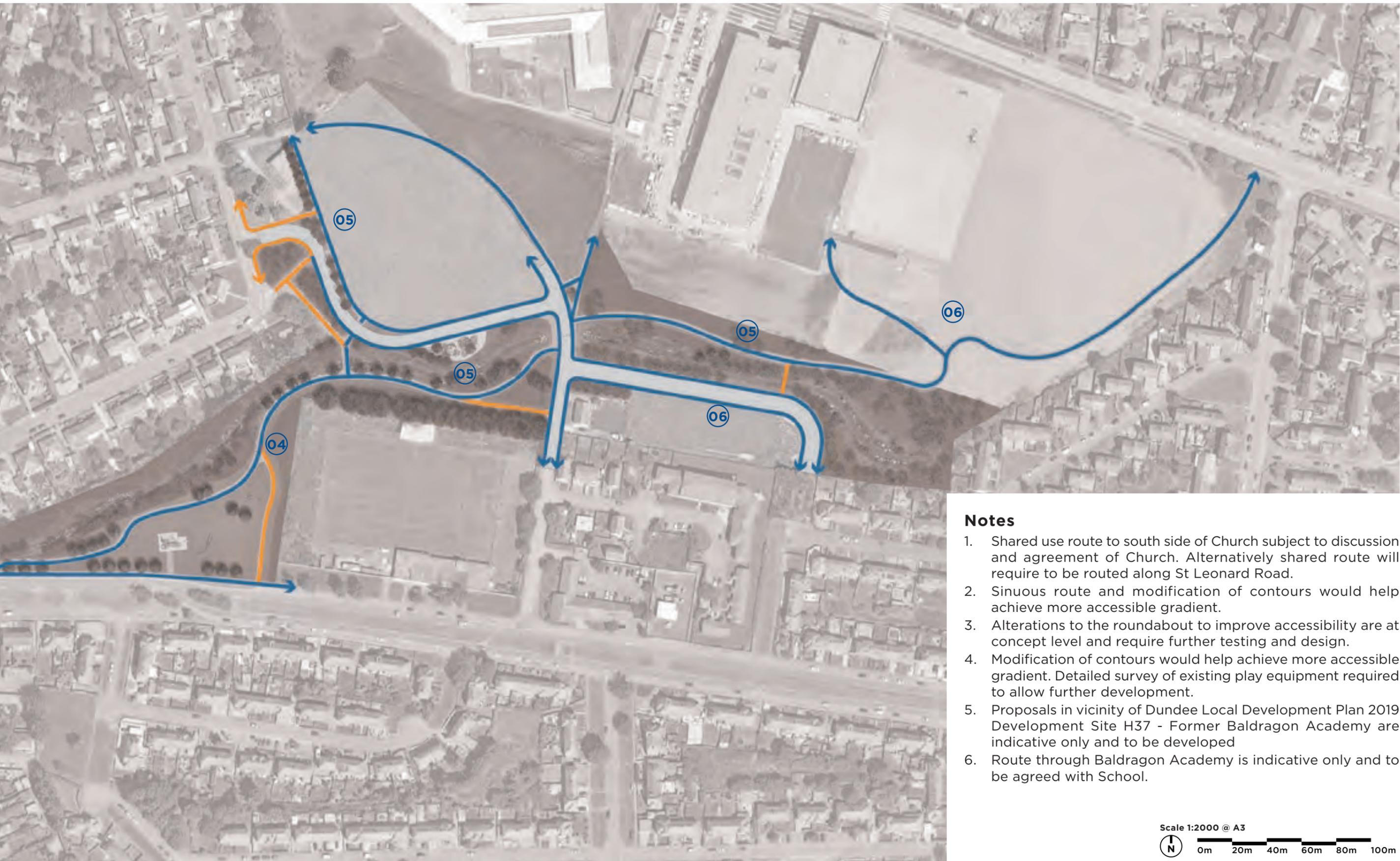
A number of potential controlled crossings have been suggested to assist pedestrian movement across key junctions. What form these crossings take (e.g. zebra or signalised) will require further analysis and traffic engineer/road department input. In some locations these crossings should also facilitate the movement of cyclists, these are highlighted on the following page.

Paths

-  Primary paths
-  Secondary paths
-  Tertiary paths
-  Potential controlled crossing points

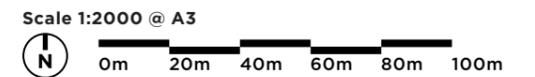


fig. 112: Path network diagram



Notes

1. Shared use route to south side of Church subject to discussion and agreement of Church. Alternatively shared route will require to be routed along St Leonard Road.
2. Sinuous route and modification of contours would help achieve more accessible gradient.
3. Alterations to the roundabout to improve accessibility are at concept level and require further testing and design.
4. Modification of contours would help achieve more accessible gradient. Detailed survey of existing play equipment required to allow further development.
5. Proposals in vicinity of Dundee Local Development Plan 2019 Development Site H37 - Former Baldragon Academy are indicative only and to be developed
6. Route through Baldragon Academy is indicative only and to be agreed with School.



6.5 CYCLE ROUTE

Cycling by Design 2021 notes that Detached or remote cycle tracks have the potential to provide attractive facilities in more urban situations where they can be used to connect facilities between neighbourhoods, through parks and that these cycle tracks often provide the best recreational and family-friendly routes in urban areas.

The design below indicates a potential new remote cycle route and connections through the park. The path has been colour coded to where this is proposed as a segregated cycleway and where this would be a shared route.

Generally segregated cycleways have been proposed where there is space and where these are considered appropriate either due to the gradient of the route or proximity to busier areas of the park.

Shared use paths have been proposed either where there are space constraints or where potential conflicts between pedestrians and cyclists are anticipated to be lower.

As additional design options, an option could be developed which removes all the segregated cycleway in favour of shared use paths. This would have the benefit of reducing hard landscaping within the park in favour of more soft landscape, however safety and the potential conflicts between pedestrians and cyclists must be fully considered.

The key design parameters of the shared use paths and segregated cycleways are described on the following page.

Potential controlled crossings

A number of potential controlled crossings have been suggested to assist cycle movement across key junctions. What form these crossings take (e.g. zebra or signalised) will require further analysis and traffic engineer/road department input.

Cycle routes

-  Segregated cycle route
-  Shared surface
-  Controlled cycle crossing
-  Uncontrolled cycle crossing

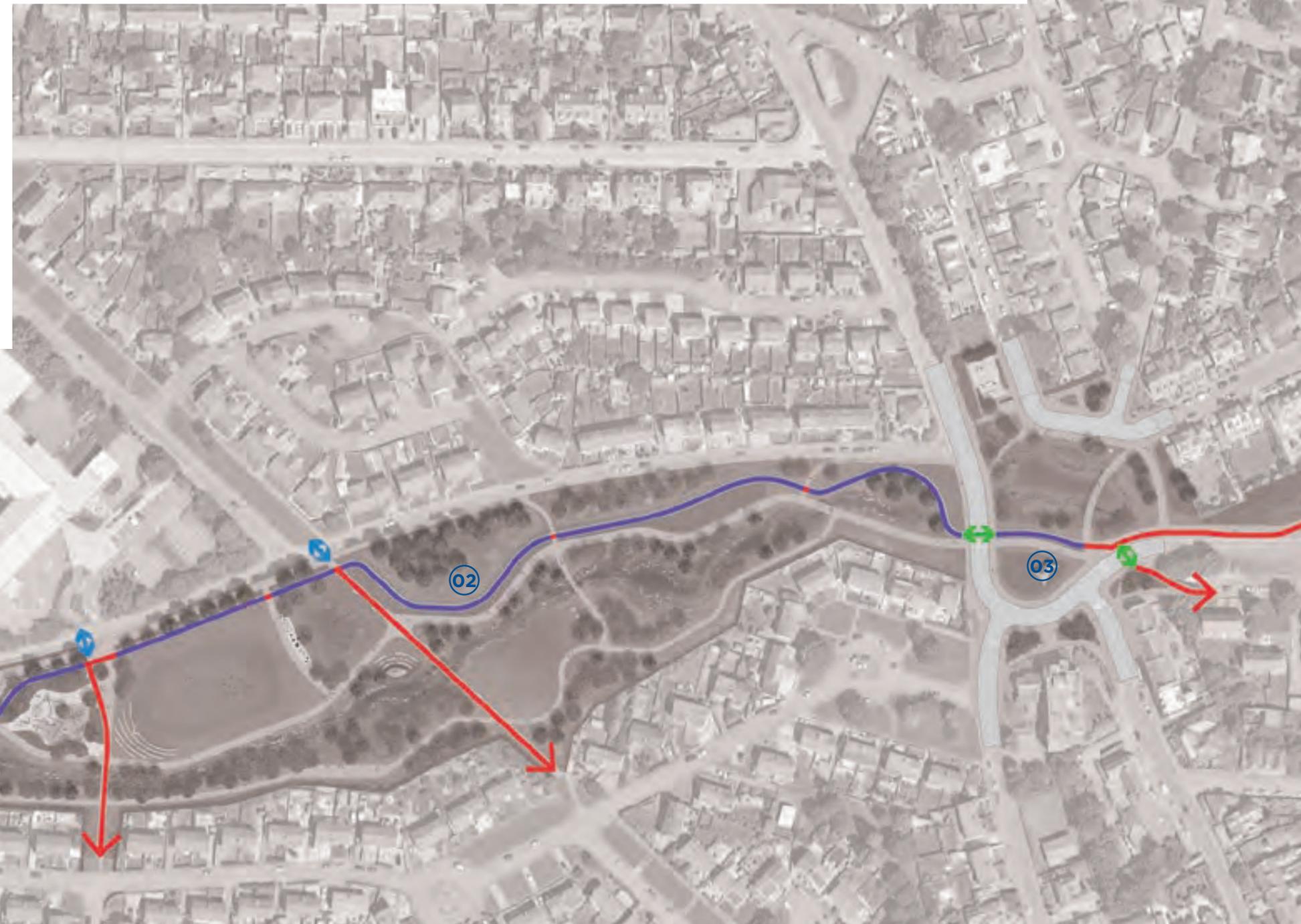
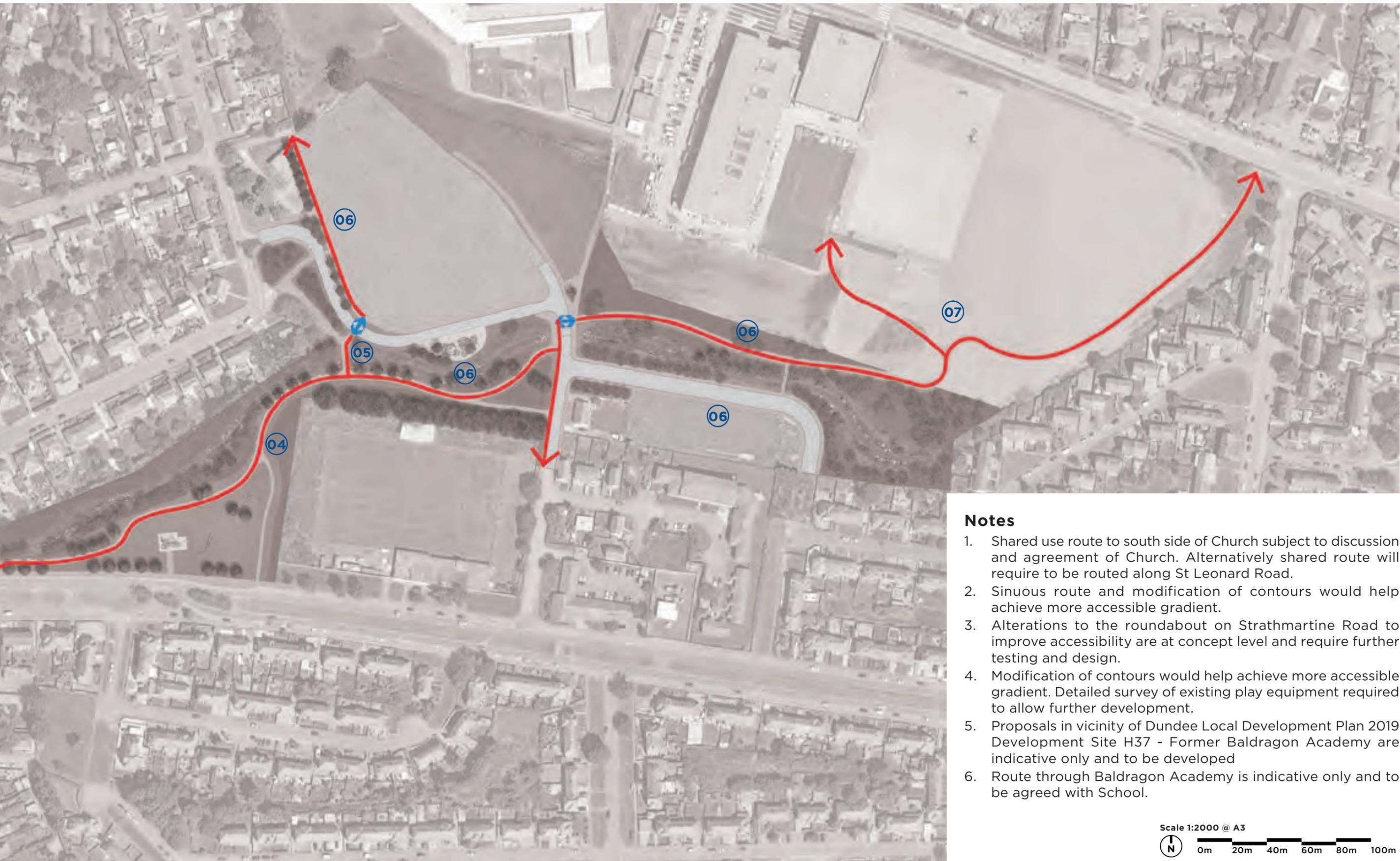
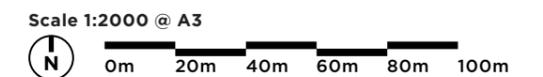


fig. 113: Cycle network diagram



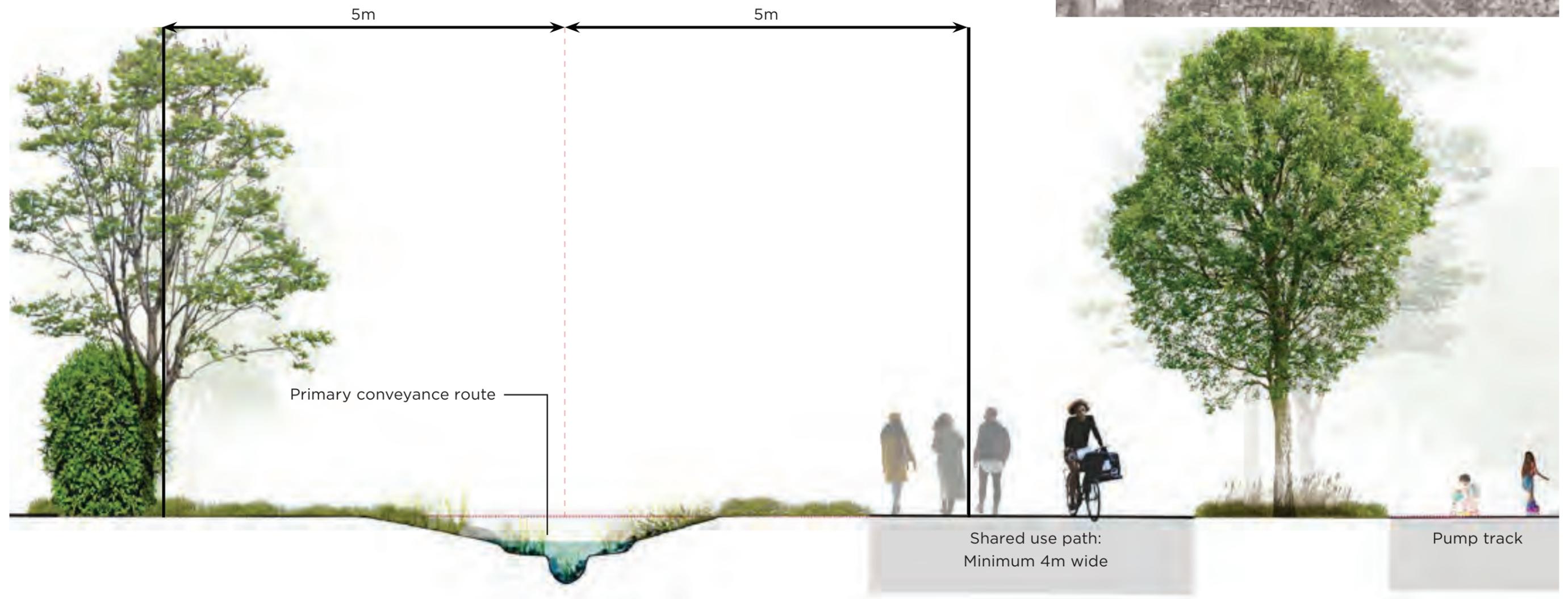
Notes

1. Shared use route to south side of Church subject to discussion and agreement of Church. Alternatively shared route will require to be routed along St Leonard Road.
2. Sinuous route and modification of contours would help achieve more accessible gradient.
3. Alterations to the roundabout on Strathmartine Road to improve accessibility are at concept level and require further testing and design.
4. Modification of contours would help achieve more accessible gradient. Detailed survey of existing play equipment required to allow further development.
5. Proposals in vicinity of Dundee Local Development Plan 2019 Development Site H37 - Former Baldragon Academy are indicative only and to be developed
6. Route through Baldragon Academy is indicative only and to be agreed with School.



Shared use path

These should be a minimum of 4m wide (following Cycling by Design 2021 recommendations based on two-way, less than 300 cycles per hour peak [per direction]). Generally these paths should be well surfaced and have shallow gradients. Adjacent features which could reduce the effective width of the path should be avoided. Appropriate signage should be included to ensure all users are aware of the shared nature of the path and are respectful of other users. Shared use paths should double to allow maintenance access.



Section 1

Scale 1:50 @ A3

0m 0.5m 1.0m 1.5m 2.0m 2.5m

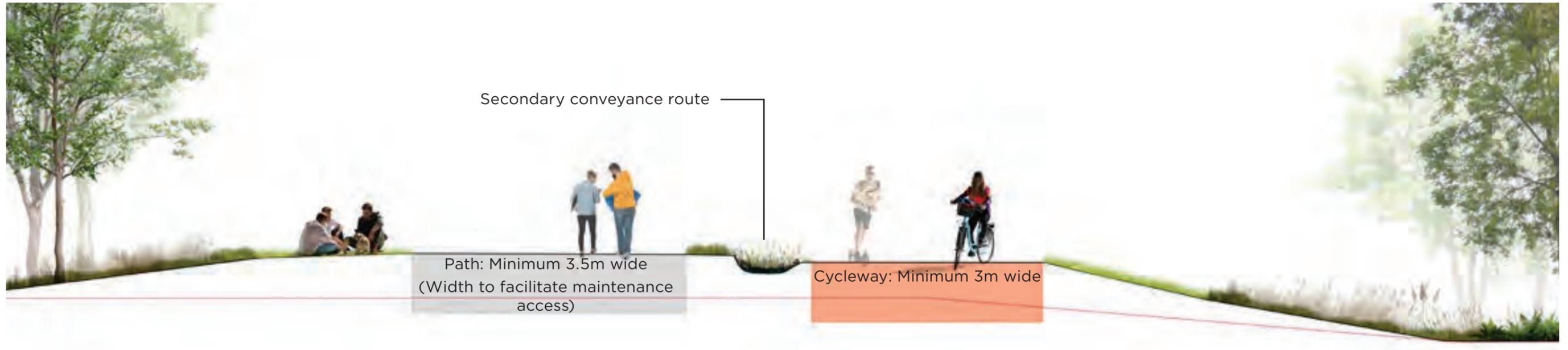
fig. 114: Section through shared use path

Segregated cycleway

Generally these paths have been suggested as bi-directional routes and should be a minimum of 3m wide (following Cycling by Design 2021 recommendations based on two-way, less than 300 cycles per hour peak [per direction]). Appropriate surfacing and signage should be considered to make it clear that these routes are for cyclists. Adjacent features which could reduce the effective width of the path should be avoided.

Segregated path

Where the cycleway and pedestrian routes are separated it is suggested that the main path route is a minimum of 3.5m wide to allow the use of this for maintenance vehicles.



Scale 1:50 @ A3
0m 0.5m 1.0m 1.5m 2.0m 2.5m

fig. 115: Section through segregated path and cycleway



Scale 1:50 @ A3
0m 0.5m 1.0m 1.5m 2.0m 2.5m

fig. 116: Section through segregated path and cycleway

6.6 RUNNING IN THE PARK

The diagrams opposite illustrate 500m, 1km and 1.5km loops within the park. These were developed for initial discussion with a representative of the ParkRun. These initial routes avoided the southern edge of the park as the slopes here are steeper.

Junior ParkRun

Junior ParkRun has (pre pandemic) been held every Sunday on the existing park and follows a 2km route. Currently the distance is made up of two large laps and one small anti-clockwise lap of the park, starting and finishing between the play park and the football pitch.

The existing route requires around 7 marshalls and the placing of bollards to mark the course. Existing features including lamp posts, trees, topography and lighting are also used to help mark the course and orientate the children, with names such as 'The bog of doom' and 'Cupcake ridge' being used to help describe the course.

The following points were raised during consultation with Junior ParkRun:

- Currently it is difficult to describe a meeting place for the run, ParkRun have a flag but a recognisable meeting point within the park would be useful.
- Equipment is required for the run which is brought by volunteers in cars who generally park on St Leonard Road.
- Most participants are driven however there is an aim to encourage more local children to participate and walk or cycle to the park.
- Generally the gradient of paths is not too much of a concern and all the slopes in the park are currently used. Steps should be avoided.
- Routes that don't overlap are preferred as these require fewer marshalls
- Two loops of 1km would be preferred as this makes organisation simpler.
- Consideration of start/end point should consider visibility of the entire course, shelter and seating for parents, and proximity to play park so that this can be used.
- Generally surfacing would be a benefit however icy paths in winter are a concern.
- Marking distances on paths could be a nice additional extra however isn't required for ParkRun.
- Where paths are adjacent to roads a verge would be preferred.
- It would be preferred to keep the runners within the body of the park rather than the edges.

ParkRun

The adult ParkRun is 5km and is currently well established in Dundee. There is no current intention to have an adult ParkRun in St Leonard Park.

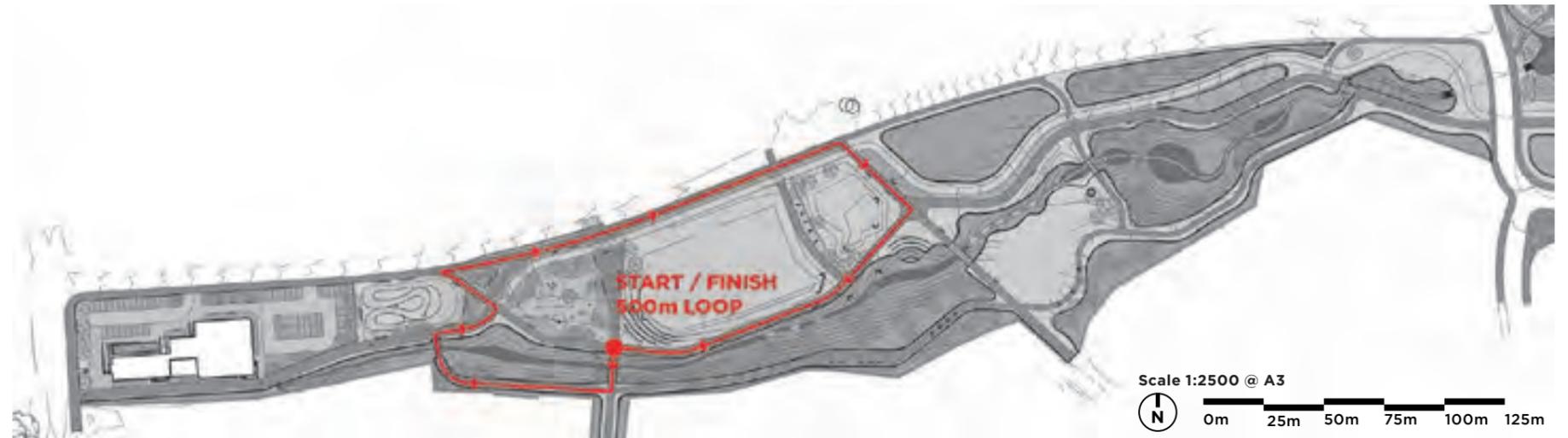


fig. 117: Potential 500m loop

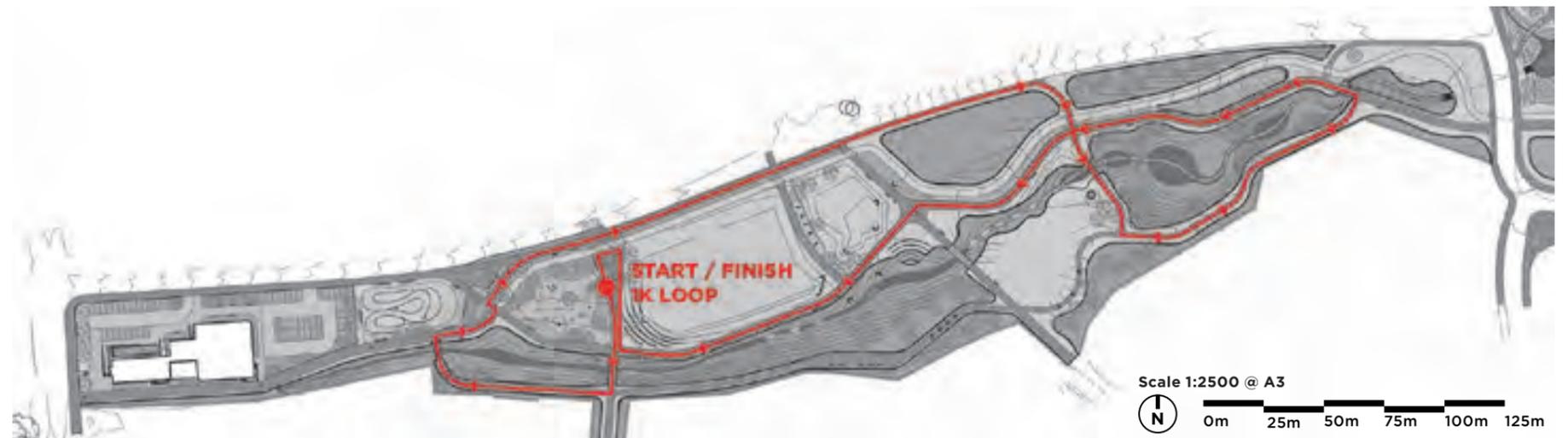


fig. 118: Potential 1000m loop



fig. 119: Potential 1500m loop

Preferred route

Following consultation with ParkRun the plan below achieves a 1km loop which avoids the park edges and does not double back or cross itself. The gradients on the southern half of the site will be steeper however this was not raised as a concern by ParkRun. Two positions for a start point are suggested. Option A is closer to the play park however would not have full visibility of the route. Option B is located in line with St Leonard Road where the topography changes and so would have better visibility of the full course and would be closer for bringing equipment to. Whichever position is selected as the start point should inform the design with the following considerations:

- Seating
- Shelter
- Cycle parking
- Adequate gathering space
- Finish/start line
- Possible public art to help create an obvious meeting point



fig. 120: 1000m loop developed after consultation with Junior ParkRun

6.7 WATER CONVEYANCE ROUTES

The primary conveyance route

In order to remove surface water from the combined sewer a primary conveyance route is required through the park. This is also a key opportunity to improve habitat and biodiversity, and create character within the park.

The conveyance route is to be above ground as much as possible and is to contribute to the treatment of water. In the west the route will start at the existing culvert south of the Church and to the east it will flow into the existing culvert which runs along the edge of the Baldragon Academy.

The invert levels of the conveyance route will need to ensure it can tie into the existing culverts, pass under or over existing services and pass below streets in culverted sections where necessary.

It is not yet fully understood whether the conveyance route will have water all year or only at certain times and the volumes and resultant sizes required for this route are also yet to be determined. As the project develops, a better understanding of this will be needed to ensure an appropriate and functional design which has an attractive appearance throughout the year and contributes to habitat creation within the park.

As mentioned above the primary conveyance route will contribute to the ecological improvement of the park. Where possible a minimum 5m corridor has been defined either side of the conveyance route and it is intended that this area helps reinforce the habitat creation. These aims are set out later in the document.

Line of a secondary conveyance route

An additional conveyance route has been shown within the park separating the segregated cycleway and path. This could provide a swale to treat run off from these surfaces. It could also take overflow water from water storage areas and provide additional treatment to this before it reaches the main conveyance route. This is intended as a smaller feature than the primary conveyance route and it would not have a 5m corridor either side.

Swale

A potential swale has been indicated along St Leonard Place. The design of this however creates challenges if a path is also to be installed as the land the additional conveyance route and path take could require the removal of existing trees.

Line of the Primary Conveyance Route

The design below indicates a potential line of the new conveyance route and associated 5m corridor either side. The key considerations in the positioning of this are indicated on the plan below and are as follows:

1. Beginning the conveyance route at the existing culvert to the south of the church. An appropriate distance of the new conveyance route from buildings and property boundaries is required.
2. Positioning the conveyance route to the south of the football pitch and to the north of the existing slope. These two constraints and additional path provision create a narrow corridor for the conveyance route in this area.
3. It is understood that the conveyance route will need to pass below the existing water main. Appropriate space for slopes will be required to the south and north.
4. Line of the conveyance route has been located to the south of the existing sewer.
5. Line of the conveyance route crosses existing sewer and runs to north side, providing greater opportunity for positioning culvert below road.
6. Culvert required below road. It may not be possible to retain all existing trees here.
7. Conveyance route is culverted through pinch point between properties and road.
8. Conveyance route to avoid services and provide appropriate distance to property boundaries.
9. Conveyance route to pass centrally between property boundaries. Existing trees will require removal.
10. Line of conveyance route requires co-ordination with H37 housing site and access.
11. Conveyance route to connect to existing culvert.



fig. 121: Plan showing water conveyance routes and 5m offset from primary conveyance route.



6.8 BRIDGES, BOARDWALKS AND CULVERTS

The new conveyance route and water storage elements will become defining new features in the park. To enable the flow of both water and people, new structures including bridges, boardwalks and culverts will be required. The design of these elements will be fundamentally important to helping create a rich character and enhance the experience of using the park.

Culverts and headwalls

Culverts and headwalls will be required within the park and are indicated on the plan. These can have a considerable visual effect and can reduce the attractiveness of the park if not carefully designed. The design and aesthetic of these should be considered as a priority to ensure that:

- They are well sited, of an appropriate scale and visually unobtrusive.
- Are considered in terms of materiality and colour etc.
- They avoid an overly engineered appearance whilst being robust and fit for purpose.
- Are safe and easy to maintain.
- Consider any ecological requirements with regard to the movement of species.

Bridges and boardwalks

Bridges will be essential to provide accessible routes across the park. These should have a consistent appearance which helps link the character of the whole park. The bridges should be robust and easy to maintain. Where bridges are located on shared routes these should have the appropriate height balustrade for cycles. Other crossing types such as stepping stones could also be considered where appropriate to help provide informal play however these should be in addition to the formal bridges.



fig. 122: The design of bridges can facilitate connections, add character and provide new viewpoints of the park.

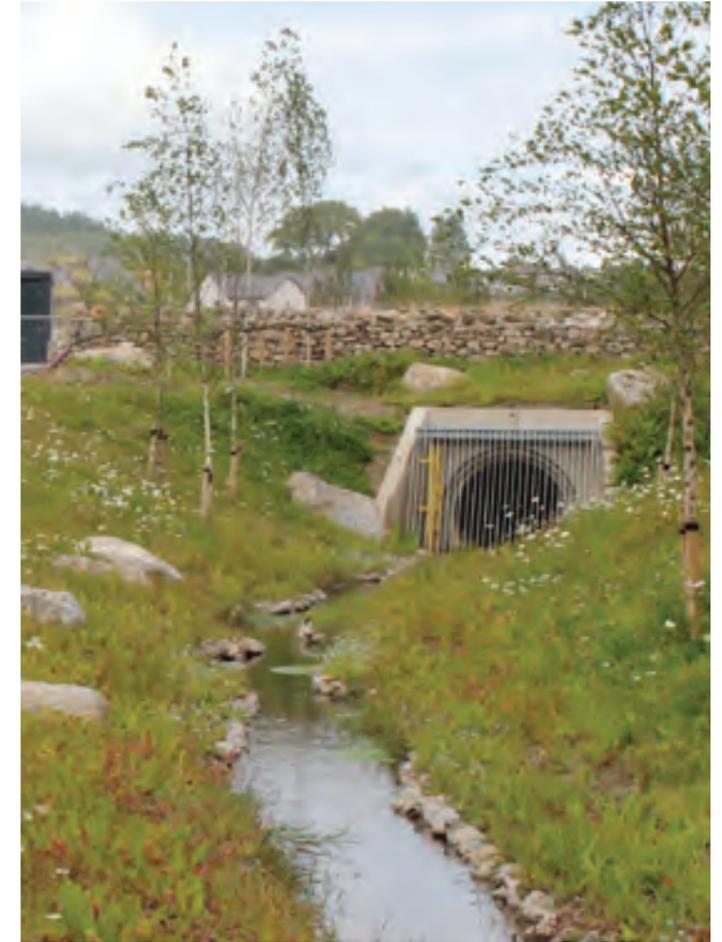


fig. 123: The design of culverts and headwalls should be carefully considered to avoid a municipal engineered appearance whilst ensuring safety, proper functioning and ease of maintenance.



fig. 124: Culverts, headwalls, bridges and boardwalks

6.9 WATER STORAGE PRINCIPLES

Water Storage

The water storage volume requirements within the park are currently being developed and tested by the project engineers however a quantum of 12,500m³ has been suggested for a peak event. Through initial studies it seems that this quantum could be challenging to achieve whilst retaining park functionality and appropriate water depths. The diagrams on these pages were early studies which looked to review what could be accommodated within the park, where, what the design constraints to this would be from a park design perspective, and where further testing or investigation may be required as the designs develop.

The following are key considerations that should be taken into account as the design of these storage areas progresses:

Park use

The functionality of the park should be retained as much as possible and safe access retained even in times of peak flooding. It may be appropriate for specific areas (such as the football pitch) to flood in extreme events however it is suggested that the path network should not be liable to flooding. This is due to both accessibility, maintenance and health and safety considerations.

Habitat creation

The development of water storage typologies within the park should consider habitat creation as a primary aim. These habitats could include permanent water, permanent wetland and temporary wetland. The habitats should be connected by either the primary conveyance route or other means.

Relationship to conveyance routes

Areas of storage will require their levels to be set in association with the levels of the new conveyance route. The conveyance route will have specific challenges to overcome which will determine its invert level, such as:

- Connecting to existing culverts
- Passing over/under existing utilities
- Passing under roads

These constraints will therefore also be a key factor in setting the invert levels of storage areas. How these invert levels relate to the existing topography will determine the size of the storage features possible.

Cut and fill

It would be best to achieve as near as possible a balance to cut and fill on the site. This however will affect the amount of storage as generally it will be necessary to excavate areas in order to create the storage (and the route of the new conveyance route). There will be limited places that this excavated material can be reused within the proposed park landform without compromising usable space or compromising accessible path gradients and connectivity.

Existing slope

The existing ground is generally sloping from west to east. There are some areas of flatter ground where creating areas of storage could be easier to accommodate however across all areas storage will require cutting into the slope and therefore there will generally be a larger land-take required on the west to accommodate the level changes

Ground conditions

No investigation of ground conditions has currently been carried out. Proposals to excavate areas to form storage should be reviewed against possible challenges such as existing bedrock or contamination which could make excavation difficult or costly.

Gradients

Gradients within the park should ensure safety and safe maintenance. Maximum slopes of 1:3 should be used. To ensure a suitable aesthetic and character however there should be variation in gradients to avoid an engineered appearance. Gradients and profiles created should consider habitat creation and accommodate ecological functionality.

Health and safety

All areas of proposed storage should be designed and reviewed against best practice and with consideration of health and safety in relation to construction, maintenance and use. Key elements that require consideration include:

- Frequency of flooding
- Depth of water
- Bank gradients
- Natural surveillance
- Education and interpretation
- Safety equipment

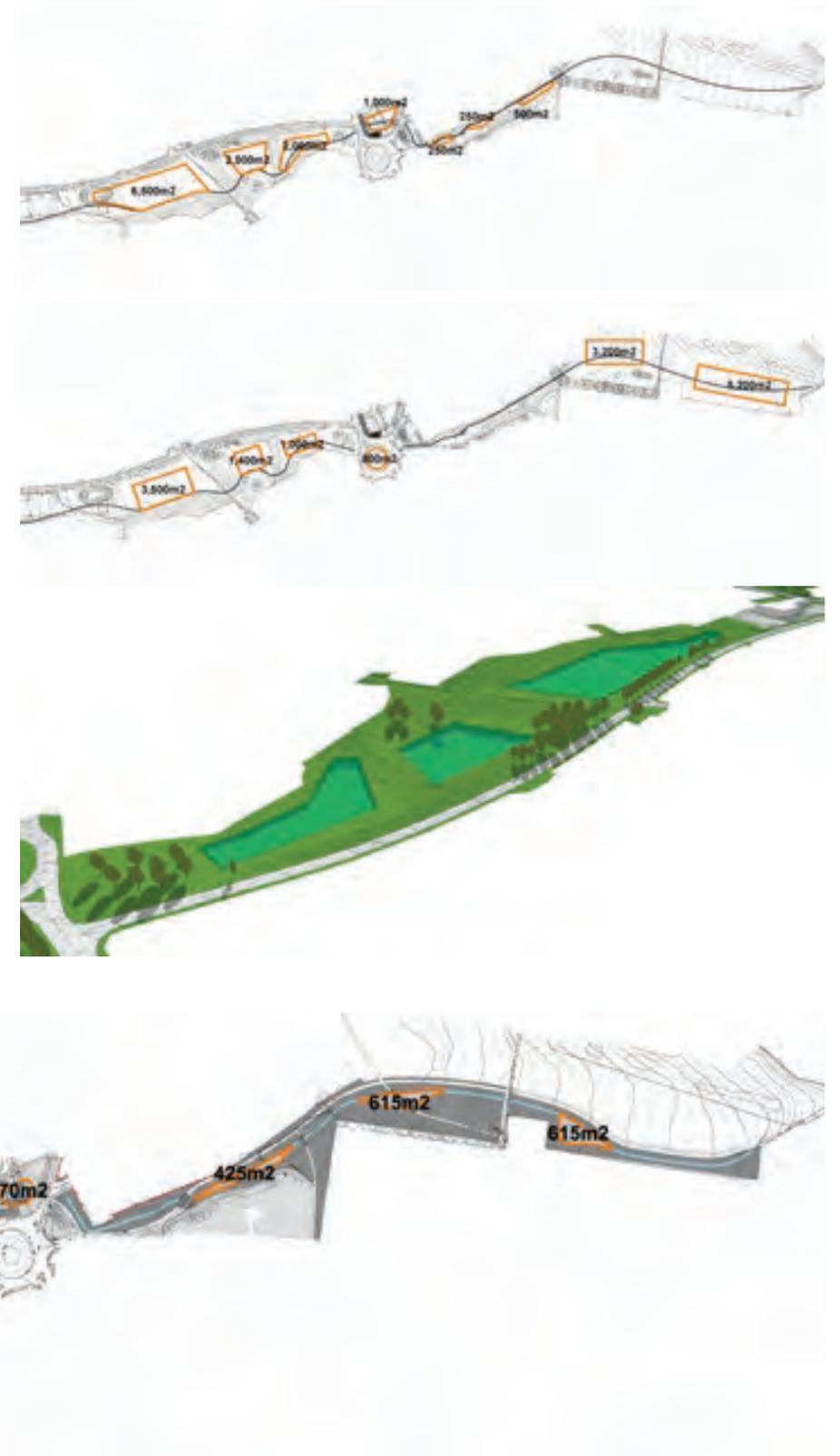


fig. 125: Exploratory studies for water storage

6.10 INDICATIVE WATER STORAGE

Indicative water storage

The plan below illustrates an area (in green) of approximately 8,790m² where it is suggested storage of water could occur. The conveyance route itself would also have capacity to accommodate water however no quantification of this has currently been undertaken. For the sake of this feasibility design stage the areas in green below have been roughly set out so that their perimeter follows a single contour. Within this area, the contours which would be required to form the depth of the storage (and appropriate bank gradients) would need to be accommodated meaning that even if all these areas had a depth of 1m the actual volume of storage would be less than 8,790m³.

The proposals illustrated here would require considerable earthworks in order to create the storage areas. The cut and fill which would be required for this is detailed later in the document however it should be noted that currently this does not balance and would require the removal of material from site. This should be reviewed as the project develops.

It is anticipated that there will be considerable design development as the project progresses and water storage requirements and modelling is developed and so no actual depth of water storage has been defined for the various areas at this stage. Instead the below sets out the size of these areas, and sets out thoughts regarding additional uses, how they could be controlled, suggests a frequency of flooding and provides initial thoughts on where these could overflow to if required. In developing and refining the design requirements for water storage habitat creation and the safety of park users and maintenance workers must be key considerations.

Area A

- **Area:** 715m²
- **Additional use:** Habitat area
- **Control:** Throttling of conveyance route channel at bridge to the south
- **Flooding Frequency:** Regular
- **Overflow:** Through pipe to area B

Area B

- **Area:** 2525m²
- **Additional use:** Recreation (playing field)
- **Control:** Pipe to Basin C or return to conveyance route channel
- **Flooding Frequency:** Rare
- **Overflow:** Over path to south into conveyance route channel

Area C

- **Area:** 520m²
- **Additional use:** Habitat area / Additional water storage and treatment (potential treatment of St Leonard Place and new development surface water).
- **Control:** Pipe to secondary conveyance route
- **Flooding Frequency:** Intermediate
- **Overflow:** Over path to south into conveyance route channel

Area D

- **Area:** 430m²
- **Additional use:** Habitat area/Recreation (potentially including amphitheatre and stage)
- **Control:** Throttling of conveyance route channel at bridge to the south
- **Flooding Frequency:** Intermediate
- **Overflow:** Conveyance route channel



fig. 126: Indicative water storage diagram

Area E

- **Area:** 145m²,
- **Additional use:** Recreation (pebble beach)
- **Control:** Throttling of conveyance route channel at bridge to the south
- **Flooding Frequency:** Rare
- **Overflow:** Conveyance route channel

Area F

- **Area:** 170m²
- **Additional use:** Habitat area
- **Control:** Throttling of conveyance route valley
- **Flooding Frequency:** Frequent
- **Overflow:** Conveyance route channel

Area G

- **Area:** 1055m²
- **Additional use:** Habitat area
- **Control:** throttling of conveyance route valley
- **Flooding Frequency:** Frequent
- **Overflow:** Conveyance route channel

Area H

- **Area:** 690m²
- **Additional use:** Habitat area
- **Control:** Hydrobrake at culvert
- **Flooding Frequency:** Frequent
- **Overflow:** No overflow. Potentially modify contours to allow backing up into Area G if required

Area I

- **Area:** 990m²
- **Additional use:** Habitat area
- **Control:** Hydrobrake at culvert
- **Flooding Frequency:** Rare
- **Overflow:** No overflow. Potentially modify contours to allow backing up into Conveyance Swale parallel to Cox Street if required

Area J

- **Area:** 1550m²
- **Additional use:** Habitat area
- **Control:** Hydrobrake at culvert
- **Flooding Frequency:** Frequent
- **Overflow:** No overflow



6.11 HABITAT CREATION

The Opportunity

St. Leonard Park is currently typical of suburban parkland, it contains some trees, consisting of both native and ornamental species set in a predominance of mown amenity grassland. This landscape is relatively easy to maintain but is costly and lacking in both biodiversity and visual interest.

The proposals provide an opportunity for significant improvement to biodiversity through both habitat creation and improving the connectivity of habitats (both within the site and through out the wider area).

Four main strands to habitat creation are proposed, these are:

1. The new conveyance route, wetland and open water habitats created as part of the drainage solution will create a connected series of new water habitats.
2. In association with the new conveyance route a connected Riparian corridor through the site of a minimum width of 5m will be created wherever possible. The creation of this riparian woodland habitat must however be balanced with the function of the park for the local community, particularly in relation to passive surveillance of the water environment, creating an attractive and safe space and providing opportunities for recreation. It is therefore proposed that the riparian woodland is limited to a single side of the new conveyance route for the majority of its length.
3. The conversion of existing areas of amenity grass into meadow or wildflower meadow with parkland trees.
4. The creation of new fruiting hedgerows to the rear boundaries of existing properties creating linear habitats.

Key Principles

There are some fundamental principles which will need to be applied in developing, delivering, and maintaining the re-engineered and multi-functional new landscape in order for the habitat improvements to be successful, these are:

Connectivity

The park is a linear space extending almost 1.5km. Connectivity of the habitats created must be a key aim for the project. This applies both within the site and also in relation to the connections to the wider area. Any proposed redesign of the roundabout should also aim to promote connectivity of this habitat by a reduction in the number of road crossings along the corridor if possible.

Community buy in

Initial community consultation showed the following support:

- 75% of respondents to the questionnaire were in favour of bringing wetland habitats into the park.
- 84% would like to see more trees and shrubs.
- 56% were in favour of changing mown grass into meadow.
- 69% would like to see areas for community growing and harvesting

As the project progresses it will be important to continue engagement with the community to ensure that this support is maintained and nurtured. This process will include promoting understanding of the habitat creation and enhancement aims, managing expectations of the park appearance, and being clear on the maintenance operations and frequency of these.

In terms of design, where possible, wilder areas should be 'framed' within neater designed or maintained elements of landscape to help promote their acceptance by the community and avoid the impression of neglected or unmaintained spaces.



fig. 127: Planting typologies

Maximising Potential

The redesign of the park offers an opportunity to introduce a new range of habitats. The development of these should be carefully considered to maximise habitat opportunities through all stages of design and at all scales.

These improvements should also be maximised in terms of their potential benefits to the community. This could include creating visual interest and celebrating seasonal change, enhancing identity, creating a variety of structured spaces through which to explore the park and creating a richness to spaces and features such as riffles and pools along the conveyance route or hibernaculums within naturally planted areas.

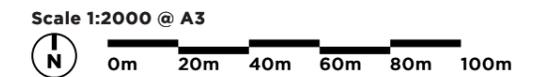
Species selection and source

Planting selection should be native species where possible, and planting should be sourced within Scotland and the UK. Preference should be given to species which can offer high levels of carbon sequestration, support biodiversity, be resilient to changing temperatures and the changing local water environment and be robust against disease. Whilst trees are important in terms of sequestration, temperature cooling and water management, grassland diversity is also critical in offering alternative habitats which complement tree and woodland areas.



Planting typologies (see over page for detail)

-  Riparian tree planting corridor with understorey
-  Parkland tree planting in meadow
-  Species rich amenity grassland
-  Formal park planting
-  Fruit and foraging
-  Primary Conveyance Route
-  5m corridor associated with Primary Conveyance Route
-  Riffles and pools
-  Open water
-  Permanent wetland
-  Temporary wetland



Planting typologies

An indicative set of habitat types is set out on these pages (approximate areas for each are marked up on the plan on the previous page), with some typical plant species to demonstrate what the character might be; this isn't intended to be exhaustive and will be further developed at detailed stage. Some planting, e.g. pollinators, will be woven through the whole extent of the park at detailed design stage when there will be cross checks made on final selections for habitat benefit, seasonal interest, extent of seasonal benefit, ease of delivery and maintenance and long-term resilience. The overall visual effect should be coherent, and structured. Some species could be used in a variety of forms e.g. as small trees, shrubs or in multi-stemmed or feathered formats. The Pollinator Strategy for Scotland 2017-2027 aims to address the serious implications of the loss of habitat and diversity of pollinators and one way to redress this is through the provision of habitats. Pollinator Corridors will be woven throughout the extent of the park with pollinator plants within each of the mixes and adapted to each of the habitat types; pollinators require extensive, connected habitats consisting of native and flower-rich species. Appropriate management measures will be required, and these could be captured within a Site Biodiversity Action plan. All of the planting mixes will encourage biodiversity and hence will improve wildlife potential.



Riparian tree planting corridor with understorey

The creation of the Primary Conveyance Route is an ideal opportunity for habitat creation. A minimum 5m corridor either side of the conveyance route is illustrated (the recommended buffer width for streams up to 1m wide) in which area habitat creation and nature will be prioritised.

Riparian woodland planting is proposed primarily to a single bank of the conveyance route only, with the aim of providing a connected ecological corridor through the park. This riparian planting will create shade and light across the water which will promote species diversity. It is proposed that this riparian corridor is limited to a single side of the conveyance route to ensure passive surveillance of the water elements within the park and to allow park users to appreciate the benefits of seeing and hearing the water.

Close to the conveyance route, species could include alder, white willow, Downy birch and marginal planting.

Dundee is the only city in the UK with a stable red squirrel population. Through this riparian planting the St. Mary's scheme will create "green" links between Camperdown Country Park/ Templeton Woods in the west and Baldovan Woods in the east. Planting along this corridor should therefore also aim to future proof red squirrel habitat by extending and protecting seasonal food source supply through the following species selection: Pine spp, Douglas Fir, Wych Elm, Yew, Bird Cherry, Blackthorn and Hawthorn.

To avoid vandalism of trees these should be specified at a minimum of extra heavy standards (16-18cm girth minimum) or as whip planting within fenced off areas.



Parkland tree planting in meadow

Tree planting throughout the remainder of the park will fulfil an important role in creating structure, providing shelter and shade, defining spaces and assisting orientation.

Tree planting will also contribute to biodiversity and habitat creation and the aim should be to predominantly plant in larger groups of native trees of the same species. Where possible these should be connected to other tree planting to maximise habitat connectivity.

Ornamental species can however be used in key locations to add additional colour and form and are useful when used to aid orientation and legibility. One of the most memorable features of the park as it currently stands is the flowering cherries. Any stand alone specimens within the park could be ornamental species.

Species and form selection should be appropriate to the scale of the spaces and design intent, also considering views within and through the park and passive surveillance of water environments. Differing effects can be achieved through varying the forms of the same varieties, further benefits for habitat creation can be achieved through underplanting and this should be considered where appropriate to the park design intent.

To avoid vandalism of trees ensure tree planting is a minimum specification of extra heavy standards (16-18cm girth minimum).



Species rich amenity grassland

These areas will be designed primarily as amenity areas for sports and recreation. These areas may however also be designed to contain flooding during extreme conditions. Hard wearing, species rich grassland which allows regular and prolonged wear will take precedence in these areas.



Formal park planting

The park is intended as multi-functional and will include a number of formal and informal recreational uses as well as passive use of the space. Within these more designed settings the planting may be formal but will still adopt basic principles of native and locally sourced planting where possible. Planting material can still adopt a more naturalistic form within a formally designed framework rather than a more sterile traditional approach to parkland design. The flowering season can be extended by the use of bulb planting; careful use of colour can provide the visual cue to link spaces together.

Fruit and foraging

An orchard is proposed along the southern edge of the park on higher ground and close to an area with a mix of activity. This could offer a mix of apple, pear and plum with a mix of eating and cooking and juice production: hiring an apple press every year for example. This proposal should be developed with the community alongside other opportunities such as edible hedgerows underplanted with herb rich grassland. There are specialist suppliers for Scottish Heritage fruit species; many ancient pear varieties, for example, originated in Dundee. These offer good education opportunities.

Most foraging species are also important pollinator corridor species: e.g. Blackthorn, Elder, Thyme and Wild Strawberry.

Primary Conveyance Route

Edge condition

It may be appropriate for the Primary Conveyance Route to have different edge conditions depending on its location and adjacent park character. In most areas this will be a natural vegetated banking promoting habitat creation however it could also be formed from boulders, more formal designed elements or coir rolls where appropriate, particularly where there is a more direct interface with the park and the opportunities for access and informal play.

Bed condition

It may be appropriate for the Primary Conveyance Route to have different bed conditions (either vegetated or pebbles) depending on habitat aims, location, channel gradient, adjacent park character, opportunities for informal play and water treatment requirements. This should be developed in more detail as flow rates and volumes are determined.

Cascades and riffles and pools

Indicative locations for cascades and riffles and pools have been indicated on the plan. These can help to aerate water, improve its quality and create additional habitat opportunities. The positions of cascades and riffles and pools should be carefully considered through detailed design to get their maximum benefit. This includes the opportunity to provide interest, sound, and animation to the corridor.



Water and Wetland habitats

As the water storage strategy develops within the park the consideration of habitat creation will be a fundamental consideration. Understanding the depths of water and frequencies and durations of flooding will be necessary in order to develop appropriate planting plans and habitats.

Open water

Indicative water body locations have been indicated on the plan on the previous page. This aims to increase habitat opportunities and add visual interest to the park. These have generally been located in the storage areas designated for habitat creation. These areas should be designed with a depth to allow open water to be maintained.

Permanent wetland

Different wetland habitats could be created within the park. It is anticipated that these would be located in the areas of water storage which are designed with habitat rather than recreation biases.

The anticipated permanent wetland areas are shown on the plan on the previous page. These areas will experience regular or frequent flooding. Habitats should include wet meadow mix grassland and tree and shrub species which can tolerate regular wet conditions, similar to the riparian edge planting.

Temporary wetland

The anticipated temporary wetland areas are shown on the plan on the previous page. These areas will experience an intermediate level of flooding, so will experience both wet and dry conditions. A mix of grassland types can be used according to how the space is intended as regular use, with an appropriate native mix of shrubs around the features. This may include rain garden channels and swales.

6.12 TOPOGRAPHY

Earthworks

As outlined previously to create the new conveyance route and storage areas considerable earthworks will be required. The below diagrams highlight the existing and indicative landform developed as part of the feasibility report. The cut and fill implications of this are set out in a later section and will require further development as the project progresses.

Elevation existing and proposed

The diagram below illustrates the existing elevation of the park.



fig. 128: Existing elevation

The diagram below illustrates the proposed elevation of the park. The main alterations are the lowering of ground level where the conveyance route and water storage areas are located.



fig. 129: Proposed elevation

Slope existing and proposed

The diagram below illustrates the existing slope of the park.



fig. 130: Existing slope

The diagram below illustrates the proposed slopes of the park. As can be seen the main alterations are the steeper slopes required to the conveyance route and water storage areas. This also highlights the importance of bridges to allow accessible routes across the park.

The new accessible route created through the eastern section of St Leonard Park is also visible.



fig. 131: Proposed slope

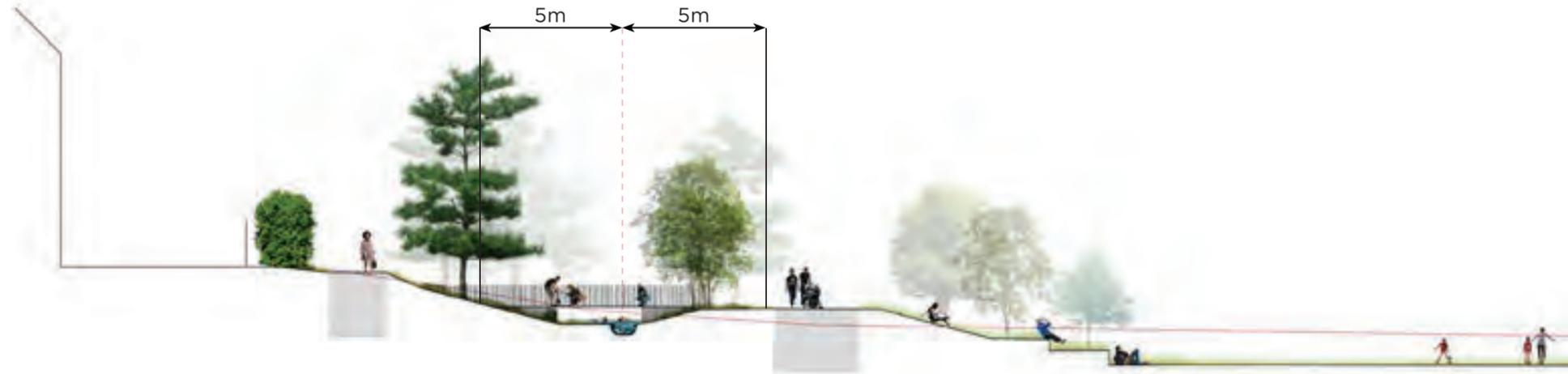
6.13 SECTIONS

Section 1

Section 1 illustrates the new conveyance route cut in slightly to the existing slope on the south of the park. On the north side of the conveyance route the levels are built up slightly to allow an accessible route (1:20 gradient) which connects to the bridge shown in the background and which connects through to Lauderdale Avenue.

To the north of this path the levels step down in either grass banks or formal terraces to provide a viewing area over the flat football/grass area which also doubles as an area for water storage in extreme events.

To the north of the flat grass area the levels slope up to a new segregated cycleway which is separated from a new pavement by the line of existing trees.



Section 1

Scale 1:200 @ A3

0m 2m 4m 6m 8m 10m

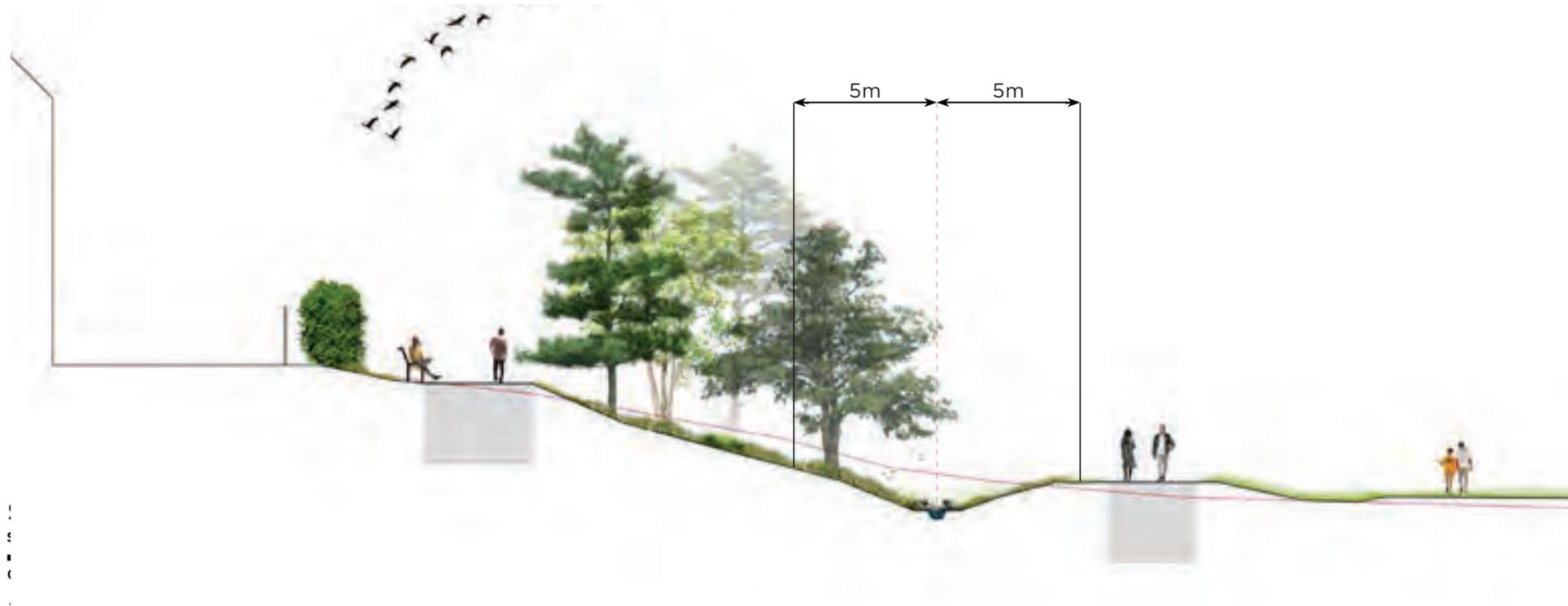
fig. 132: Section 1 through St Leonard Park

Section 2

Section 2 illustrates the new conveyance route cut in slightly to the existing slope on the south of the park. At the top of this slope is a new path and viewing area which will allow views out to the Sidlaw Hills.

On the north side of the conveyance route the levels closely resemble the existing however are adjusted to create the opportunity for water storage in extreme events on the football pitch.

To the north of the flat grass area a new segregated cycleway is separated from a new pavement by the line of existing trees.

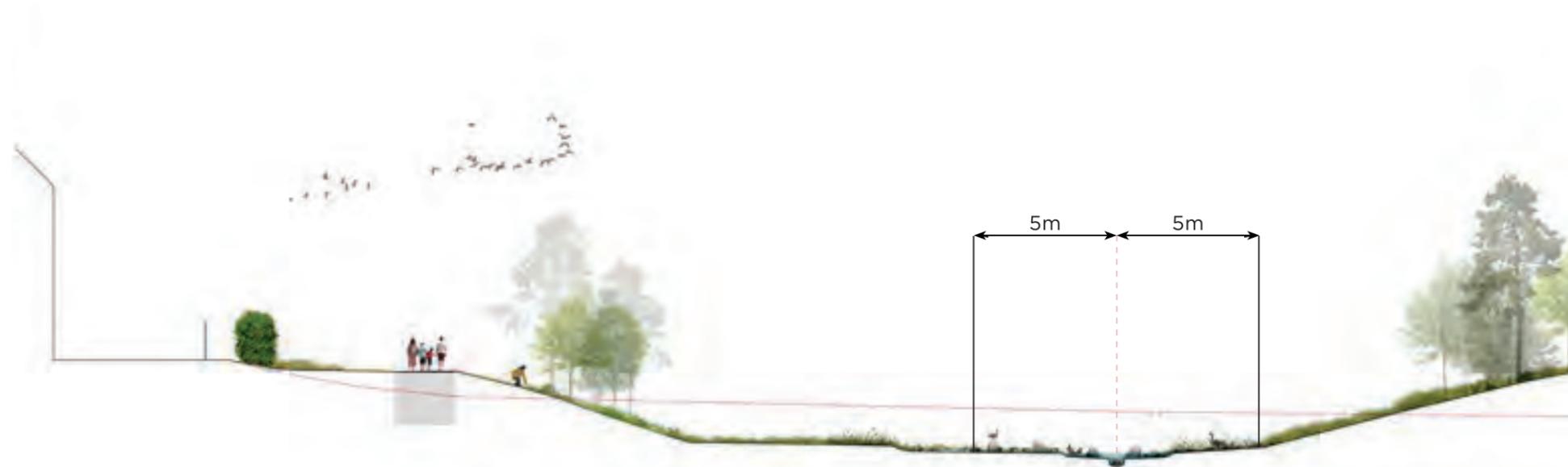




Section 3

Section 3 illustrates the new conveyance route cut into the existing landform to create a valley with opportunities for the creation of wetlands, ponds and water storage. A new path on the north side of the park ensures this new nature resource can be appreciated from all sides and explored.

To the north of the valley the landform has been built up which helps the creation of an accessible gradient (1:20) along the route of the path and segregated cycleway.



Section 3

Scale 1:200 @ A3

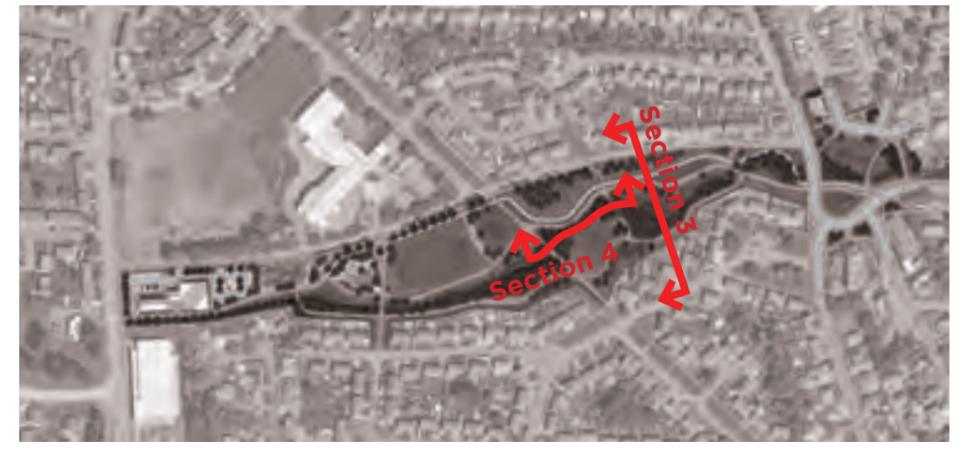


fig. 134: Section 3 through St Leonard Park

Section 3

Section 4 illustrates an indicative section along the length of the conveyance route. This begins to look at how the landform and bridges could interact with cascades, riffles and pools, wetlands and ponds and begin to create a rich and diverse set of habitats which also bring sound and animation to the park.





6.14 CUT AND FILL

The below illustrates where areas are cut, where areas are filled and where areas are left unchanged from existing contours in the design illustrated. This shows that the design is currently not balanced and would require the removal of approximately 16,800m³ of material from the site. This would have cost and sustainability implications.

Through the next design stages it will be important to reduce the requirement to remove material from site however it must be accepted that through creating a new conveyance route and areas to store water, getting this number to zero may not be feasible and some removal of material will be required. An appropriate strategy for this should be developed.

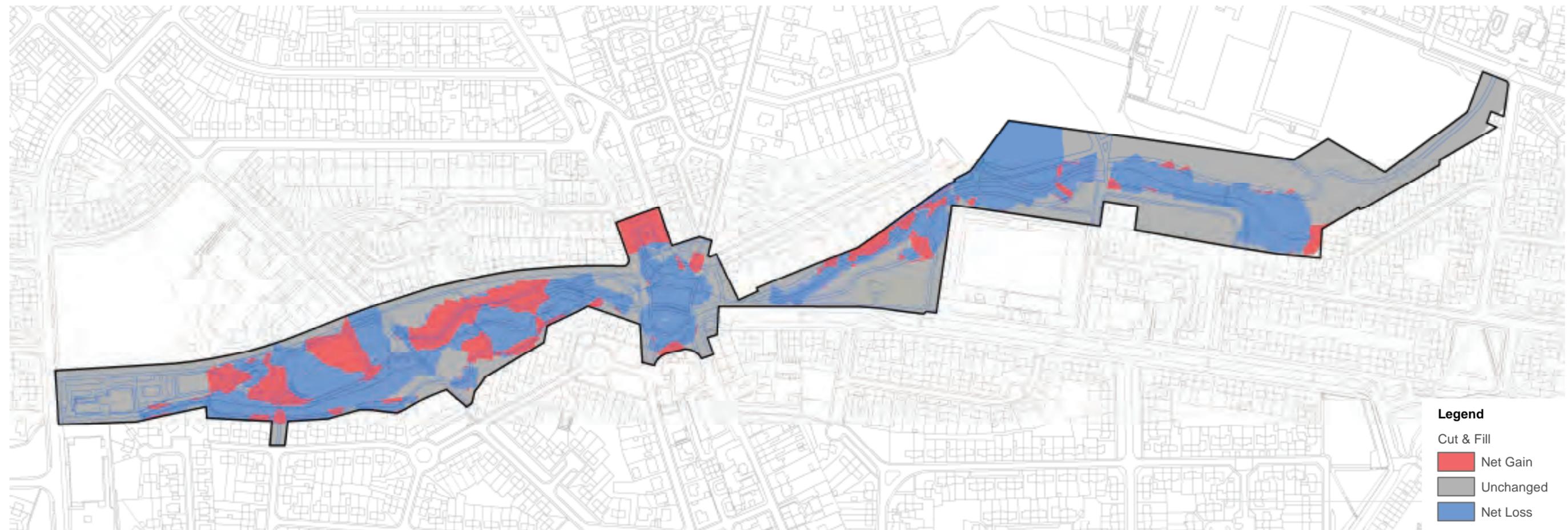


fig. 136: Cut and fill diagram

6.15 TREE REMOVAL AND RETENTION

A detailed tree survey has not yet been undertaken however this would be prudent to undertake for the next stage of the project. In order to create the new conveyance route and storage, modification of landform will be required. If existing trees are retained this will add constraints to the adjustments that are possible to levels.

The plan below indicates initial thoughts on retention and removal of trees. This is yet to be informed by a detailed tree survey which would provide additional information in relation to quality, life expectancy and retention value of trees.

Trees with a Tree Preservation Order (areas illustrated opposite) should also be reviewed in association with the Tree Survey. There should be a presumption of retention of these unless there are strong arboricultural or design reasons for their removal. Any removal of trees would need to go through the appropriate approval processes.

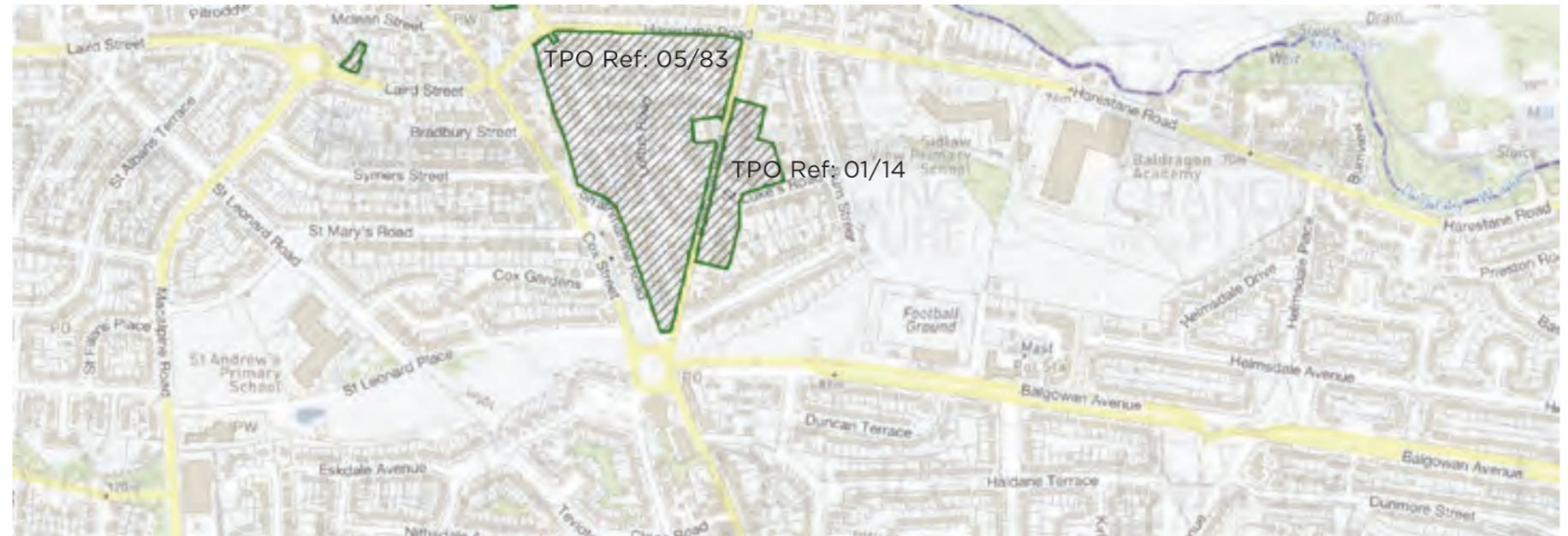


fig. 138: Excerpt of Council TPO plan



fig. 137: Existing trees

6.16 HARD LANDSCAPE, PUBLIC ART AND INTERPRETATION

Materials

Hard landscape materials have not been developed in detail at this stage in the project however these should be specified to be fit for purpose and ensure longevity and ease of maintenance.

Surfacing

Surfacing throughout the park will require to provide a suitable surface for walking, running, wheeling and rolling. As such a smooth bound surface is most likely to be suitable.

Opportunities for the use of products with sustainable credentials or high recycled content should be investigated.

Street furniture

Street furniture should be robust and well constructed. Furniture should consider modularity and smart disassembly. This would allow parts to be easily replaced and the natural materials can be reused or recycled.

Public Art

There are several potential opportunities for public art throughout the new park, these could be of varying scale. The below sets out some key opportunities of how public art could contribute to the function of the park:

- Add character identity, landmarks, and meeting points.
- Assist with interpretation of drainage system and water storage.
- Contribute to play opportunities.
- Change the character of some of the park boundaries or create gateways.
- Help with wayfinding through the park.
- Form a finish line for the ParkRun

Interpretation

It will be important that appropriate interpretation is provided throughout the park. This should look to address the following aims:

- Make the park welcoming to all
- Contribute to the identity of the park
- Encourage pride in the park and a sense of ownership
- Explain the park drainage, including highlighting risks and safety associated with the system
- Explain the biodiversity and ecology of the park and how this relates to its management

6.17 LIGHTING

Existing Lighting

There is currently lighting within the park to the two existing surfaced paths highlighted below.



fig. 141: Existing park lighting

Suggested Lighting

The below diagram illustrates suggested lighting of routes and spaces within the park.



fig. 142: Suggested park lighting

6.18 UTILITIES

The below illustrates Scottish Water's water main and waste water network overlaid on the proposed plan. Also overlain are the existing manholes and access taken from the topographical survey (increased in size for legibility).

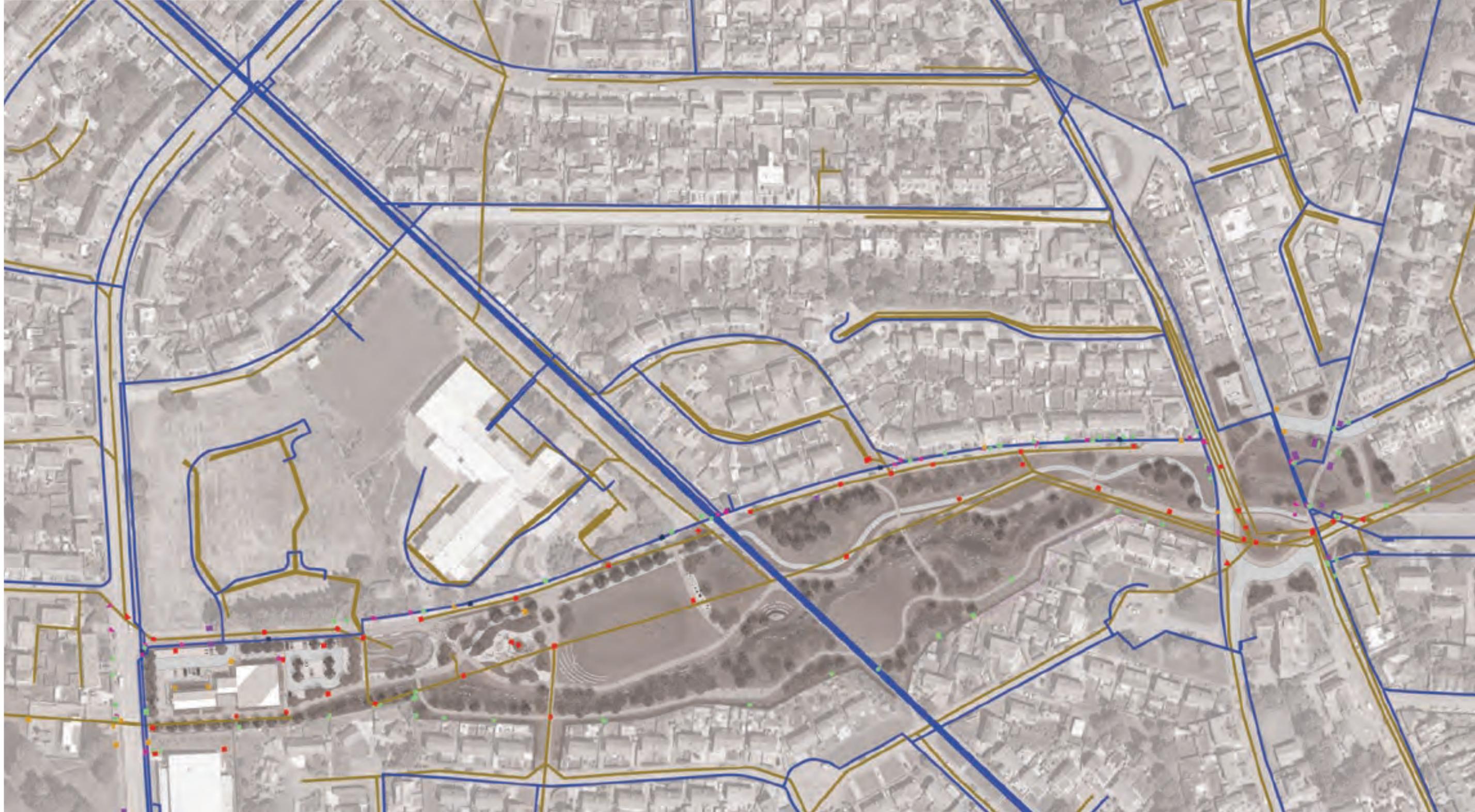


fig. 143: Co-ordination with existing utilities



6.19 MAINTENANCE

Who maintains the park?

Understanding the maintenance requirements of the park and agreeing who will maintain what elements is a fundamental part of a successful park. It was also a key topic raised at public consultation and is very important to the community. Maintenance is crucial to this project and needs to be addressed and negotiated very early on, to get buy in to maintenance regimes and plans that might be different to the usual.

There are three main groups involved in the park who could contribute to maintenance:

Dundee City Council

Dundee City Council are currently responsible for the maintenance of the park. This includes grass cutting and litter collection.

Scottish Water

Scottish Water currently have no maintenance responsibility for the park however some assets run under the park. By separating the surface water from the combined sewer and introducing a new conveyance route and storage through the park there will be a requirement that this drainage system is maintained.

The Public

Volunteers have collected rubbish before the Junior ParkRun on several occasions however there is currently little other public involvement in the maintenance of the park. There is possibly an opportunity to get more community involvement in the park through a 'friends of' group or similar.

It is anticipated that there will be a shared surface water drainage maintenance agreement formed between Dundee City Council and Scottish Water with a split of responsibilities. Typically this allocates maintenance of above ground elements to Dundee City Council and below ground to Scottish Water.

Management and maintenance objectives

The following describes the overriding aims of the management and maintenance of the park.

- To ensure public safety through appropriate surveys and maintenance operations.
- To maintain an appropriate appearance to the park which is generally attractive and tidy but allows for nature and is understood and appreciated by its users.
- To promote biodiversity and habitat.
- To reduce the potential for antisocial behaviour through active management.
- To ensure the drainage system functions as required.
- To ensure areas are available for recreational uses.
- To ensure appropriate management to promote good form, stem colour, flowering etc. of vegetation as appropriate.
- To ensure good plant health.

It is acknowledged that the tasks below which suggest an indicative list of actions required to maintain the park may indicate a potential increase in management. For example winter gritting and snow clearing of paths is not currently undertaken within parks by the Council and is dependent on an assigned priority system. Icy paths were an item specifically raised during consultation with the Junior ParkRun however and so we have retained this item for discussion as the maintenance plan for the park develops.

Equally the management of the park for sustainable drainage or habitat improvement is not currently a major consideration within the current maintenance regime of the park however this will be required to maintain the new park appropriately.

Maintenance of pipes, culverts and water storage areas

Detailed maintenance requirements for the drainage system elements will require to be developed alongside the drainage strategy as this progresses with consideration of ease of operation and health and safety. This is expected to include:

- Checking inlet and outlet structures
- Removing any items which may block flows
- Checking sediment accumulation levels and removing if necessary
- Addressing any bank erosion
- General maintenance of the appearance and vegetation

Maintenance of hard landscape

Hard landscape should be maintained to ensure a safe environment, prevent further deterioration and maintain a high quality landscape which the community can take pride in. In particular the following maintenance could be considered:

- Snow and ice clearance from paths in winter
- Leaf removal from paths
- Litter removal
- Regular bin emptying
- Safety audits of play equipment and surfacing
- Maintenance of lighting

Maintenance of soft landscape

The park soft landscape is intended to be low maintenance however this will still require regular input. Soft landscape should be maintained to meet the management and maintenance objectives. The following sets out general actions for different soft landscape typologies:

Trees

During establishment check staking monthly. Once established and for existing trees undertake annual surveys to ensure tree safety and for presence of any pest/disease.

Wildflower

Once established, cut in sections from the end of July, leaving several days between each area to encourage diversity. Cutting will be weather dependent however aim to complete cutting of all areas by the end of August at the latest. Leave arisings for a few days to allow seed to drop and then remove.

Hedges

Mixed hedges to the site boundaries, prune in late summer/early autumn following flowering/fruitleting and bird nesting.

Amenity grass

Amenity grass should be cut once every fortnight during the growing season with arisings removed.

Bulbs

Areas of amenity grass with naturalised spring bulb planting should not be mowed until the foliage dies back naturally.

Maintenance of habitats

As the management and maintenance strategy is developed consideration of habitat maintenance and preservation should be a key priority within this process to ensure these requirements are integrated. This will require particular focus on the following activities:

- Desilting and maintenance of SUDS features
- Cutting of meadow and wildflower areas
- Cutting of hedges

Discouraging anti-social behaviour

Antisocial behaviour was raised at consultation as an issue. This included vandalism, burnt bins, broken glass and dirt bikes. Although this may not be entirely possible to address through the park design alone it should be recognised and appropriate measures taken to minimise its occurrence. This could include:

- Ensuring community buy in to the proposals - particularly through engagement with schools and youth groups.
- Ensure appropriate passive surveillance over the park.
- Provide activities for all ages.
- Ensure all elements are robust, vandal proof and easily repairable or replaced.
- Ensure bins are emptied at regular intervals.
- Consider use of edge treatments to discourage motorbike access.
- Provide enhanced opportunities for the use of motorbikes elsewhere.
- To avoid vandalism of trees ensure tree planting is either extra heavy standards (16-18cm girth minimum) or whip planting within fenced off areas, initially limiting the areas that people can access.

Landscape and Habitat Management Plan (LHMP)

Preparing a LHMP to which all parties help shape and sign up to would be one option for the future maintenance of the park and the drainage assets.

07

CDM RISK REGISTER

The following CDM risk register has been produced to identify and communicate risks to health and safety during construction, use and maintenance and to ensure that these are communicated and can be eliminated, reduced or controlled as the project progresses.

7.1 RISK REGISTER

Risk No.	Design element	Risk	Who may be harmed?	Measures to reduce risk
01	Permanent open water	Danger of drowning	<ul style="list-style-type: none"> • People/animals entering the water to try swimming • People/animals skating on ice. 	<ul style="list-style-type: none"> • Education and interpretation • Ensure shallow gradients to allow easy escape • Ensure passive surveillance • Review need for rescue equipment at appropriate design stage
02	Wetland	Danger of drowning	<ul style="list-style-type: none"> • People/animals entering wetland areas. 	<ul style="list-style-type: none"> • Education and interpretation • Ensure shallow gradients to allow easy escape • Ensure passive surveillance • Review need for rescue equipment at appropriate design stage
03	Temporary flooding	Danger of drowning	<ul style="list-style-type: none"> • People/animals entering flooded areas 	<ul style="list-style-type: none"> • Education and interpretation • Ensure shallow gradients to allow easy escape • Ensure passive surveillance • Avoid flooding routes and paths
04	Falls from height	Injury from fall	<ul style="list-style-type: none"> • People/cyclists using bridges • People/maintenance operatives in close proximity to culverts. 	<ul style="list-style-type: none"> • Ensure appropriate height balustrades for expected uses.
05	Planting species	Danger of poisoning or illness from uninformed foraging	<ul style="list-style-type: none"> • Residents encouraged to forage within the park may pick plants which could be harmful without knowledge of the plant such as Rowan Berries (unsafe to eat raw) or Rose Hips (hair inside the hip are an irritant) or Yew (poisonous). 	<ul style="list-style-type: none"> • Education and interpretation • Avoid species with high toxicity (eg Yew)
06	Slopes	Danger of grass cutting machinery toppling over		<ul style="list-style-type: none"> • Ensure maximum 1:3 slopes and appropriate maintenance methodologies
07	Road crossings	Accidents at road crossings		<ul style="list-style-type: none"> • Ensure desire lines and visibility at crossings are considered as designs progress
08	Cyclist and pedestrian conflicts	Collisions		<ul style="list-style-type: none"> • Ensure interactions between cyclists and pedestrians are considered as designs progress. • Ensure speeds are controlled where interactions occur • Ensure appropriate widths • Ensure appropriate visibility
09	Antisocial behaviour	Vandalism, fire, broken glass, threatening or abusive behaviour		<ul style="list-style-type: none"> • Ensure adequate lighting and passive surveillance as designs progress. • Engage with community to help create sense of ownership and pride in the park

08

SUMMARY

The following section provides a summary of the document and suggested next steps and considerations for the project.

8.1 SUMMARY

This document has reviewed the existing site conditions, opportunities and constraints. It has recorded the consultation that has been undertaken with the community to date, and it has developed feasibility designs which can be used to begin to test, discuss and develop the park design in more detail.



8.2 NEXT STEPS

Information required and why

Tree survey

In order to understand the condition of existing trees and their Root Protection Area to help develop detailed proposals and support the planning application a tree survey should be undertaken.

Traffic surveys

In order to allow proposals around the roundabout and St Andrews RC Primary School to be developed and tested traffic surveys would be required. The extents of these should be agreed between the transport engineer and Dundee City Council.

Trial pits

It may be prudent to undertake trial pits in locations to confirm positions and depths of existing services where these are critical to the park design, e.g. the water main that crosses the park or services around the roundabout.

Ecology survey

In order to support the planning application an ecological survey will be required.

Design

The key areas for further design development are believed to be as follows:

St Leonard and Fergus Church/St Andrews RC Primary School

Developing options which look at the church car park, St Andrews School and the park design holistically and in consultation with all parties to improve drop off and safety. Decisions relating to traffic should include congestion planning, not just congestion reduction. Reducing congestion prevents people from thinking about better alternatives to driving.

St Leonard and Fergus Church Active Travel Route

Developing options which look to provide an active travel route, security for the church and residential access to the rear of the church.

Roundabout on Strathmartine Road

Collaborative design with a transport engineer to develop options which meet the project aims and are technically deliverable.

Drainage strategy and water storage

Collaborative design with the engineering team, using feasibility design as a starting point, to develop and refine conveyance routes and storage. This process should also look to obtain specialist input to ensure the design delivers effective habitat creation.

Cut and fill strategy

In association with the above drainage work and resulting landform alterations, the cut and fill requirements of the project should be determined and appropriate cost allowance made within the cost plan.

Masterplan of Opportunity Site H37

Design in association with Dundee City Council to agree masterplan principles for opportunity site H37 which can showcase best practice for draining surface water without automatic discharge into the combined sewer.

Consultation

The following sets out key areas of future consultation required:

St Andrews and St Fergus Church

Following the meeting on site, information is awaited from the church on their required number of car parking spaces. Design solutions for the active travel route and security at the rear of the church require developing and further consultation undertaking.

Joint consultation with the Church and St Andrews RC Primary School is required to help develop safer solutions to the pick-up/drop-off parking within the car park.

St Andrews RC Primary School

Consultation with the school children, parents and teachers is required. The format for this is still to be developed in consultation with the school.

Community

Ongoing communication and consultation is required with the community to keep them informed of proposals, programme and to receive feedback and comments.

Costing and Funding

Production of an outline cost plan for the park would enable an idea of budget for the park to be developed. This would allow developing designs to be tracked against this and to keep control of these. It would also give an understanding of what level of funding the project requires. Investigating sources of funding and available funding would help inform the designs and ensure that the park is deliverable and that the aspiration can be delivered.

Approvals

Roads

Any proposed amendments to the public road would require road construction consent.

Planning

The works are likely to be varied in nature potentially including reprofiling of land, creation of water features, remodelling of roundabout, new paths and lighting and more. These extend beyond what DCC or Scottish Water can undertake as permitted development. Planning permission is therefore required.

The site exceeds 2 hectares in area and so the development will be classed as a Major development. This means that additional pre-application community consultation is required in advance of submitting the planning application.

The current recommendation for the type of application to be submitted is for a Detailed planning application however this approach should be reviewed as the project develops. For fee calculation of the planning application the works should be classified as 'Other operations on land'.

Environmental Impact Assessment

The proposal is considered to be a Schedule 2 development. The project will therefore require to go through the EIA screening process. This is to formally determine whether or not an Environmental Impact Assessment is required or not.

SEPA

It is understood that the conveyance route running through the park will be treated as a drainage system rather than a watercourse. This allows the conveyance system to be used for the treatment of water.

Programme

The following outlines the programme which was set out at the public consultation event.

- High level design: August 2022
- Consult on proposed design solutions: Autumn 2022
- Start detailed design work: Winter 2022
- Start work on site: Autumn 2023
- Completion: Summer 2025

This is a challenging programme, particularly for elements such as the roundabout where depending upon the solution progressed several things will require to be set in motion including traffic surveys and modelling, statutory approvals, utility diversions etc.

Maintenance

Consideration of maintenance will be paralleled with detailed design as this is intrinsic to the success of the park. Whilst the aim is that will be a low maintenance landscape there will still be a burden especially through the establishment stage. Discussions with the relevant officers at Dundee City Council will be required as well as with the community to seek ways in which costs can be kept low whilst not prejudicing the quality of outcomes. The maintenance of habitats may also require specialist input to ensure objectives are met.

Phasing

As a drainage project it is understood that the preference would be to start construction from the lowest point and work back upstream however developing a detailed phasing strategy for the construction of the park may be useful to allow an understanding of how the project would be delivered. This could allow some areas to progress quicker than other more complex areas, for example around the roundabout.

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