

# CARDIFF HENDRE LAKES

*Design & Access  
Statement*

August 2020

LLYNNOEDD HENDRE CAERDYDD  
CARDIFF HENDRE LAKES

Gwasanaethir gan Parcffordd Caerdydd  
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# 1. Introduction

## 1.1 Purpose of the document

This Design & Access Statement (DAS) has been prepared by Arup on behalf of Cardiff Parkway Developments Ltd to support planning applications to Cardiff Council and Newport City Council for the creation of the Cardiff Hendre Lakes business district and associated Cardiff Parkway railway station.

It explains evidence of the design processes which have been undertaken and the evolution of the proposal as the technical and environmental and other appraisals and surveys, along with public engagement, have informed the design.

The principal content of this statement is guided by the Town and Country Planning (Development Management Procedure) (Wales) Order 2012, which sets out requirements for the DAS. The structure of this statement is also guided by the Welsh Government's guidance document *Design & Access Statements in Wales* (2017), and Cardiff Council's own *Design and Access Statements Guidance Note* (2011) and covers the following principal matters:

- Vision and Objectives;
- The case for growth;
- The policy context that sets the framework for the proposal and presents the context within which the planning application should be determined;
- Site and surrounding context;
- Design Evolution;
- Proposed design and development parameters including movement, character, landscape, community safety, environmental sustainability;
- Proposed access arrangements, including inclusive access; and
- Phasing.

This Statement includes an exploration of the thorough site context analysis which has informed the design process, alongside an interpretation of the site's key opportunities and constraints. The site analysis was guided by the Welsh Government's guidance document *Site Context Analysis Guide: Capturing the Value of a Site* (2016).

The design proposals are explained in relation to the 5 'objectives of good design' set out in *Technical Advice Note 12* (2016), which consist of Character, Movement, Environmental Sustainability, Community Safety and Access.

A brief literature review is provided within the DAS explaining in more detail the nature of the development and providing a contextual background to the approach taken to design. This is accompanied by precedents of developments where a similar approach has been taken within the UK and beyond.

This DAS forms one component of the appraisal and justification for the proposal and should be read in conjunction with the other supporting plans and documents that include among others:

- The illustrative masterplan/parameter plan;
- The Environmental Statement and its appendices;
- The Planning Statement;
- The Pre-application Consultation Report;
- The Flood Consequences Assessment;
- The Drainage Strategy;
- The Geotechnical Desk Based Assessment;
- Heritage Desk Based Assessment;
- Arboricultural Survey; and
- The Transport Assessment.

## 1.2 The Vision

*Formed around the new Cardiff Parkway railway station and set within the exceptional landscape of the Gwent Levels, Cardiff Hendre Lakes will be a major new employment hub for the capital.*

*The vision for the development is shaped around three key themes:*

- *A step change in connectivity*
- *A hub for jobs and skills*
- *A place to thrive*



*The development  
will provide:*

- *Employment space  
accommodating around  
6,000 jobs*
- *A new community park*
- *A new rail station, with  
an estimated 800,000  
passengers p.a.*









# A step change in connectivity

Cardiff Hendre Lakes will be formed around sustainable travel with seamless access to rail, bus, walking and cycling routes. The new Cardiff Parkway station will place new businesses within walking distance of mainline rail services to major cities including Cardiff (Central), Newport, Bristol, Manchester and London.

## CONNECTING PEOPLE, THE REGION AND THE ECONOMY

Situated just seven minutes by train from Cardiff Central and Newport South Wales, the station promises to drastically cut journey times to both cities, as well as improve connectivity to other areas of Wales and the wider UK.

## ACCESS FOR LOCAL PEOPLE

Neighbouring communities will be connected to the development and the railway station by new cycle paths and walking routes. Bus facilities will make it easier for local services to call at the station and there will be parking and drop-off facilities.

## A SUSTAINABLE TRANSPORT INTERCHANGE

By providing better public transport and a new station with parking, we plan to make it as convenient as possible for people to park their cars and switch to a train. We hope that it will also help ease congestion when major events are taking place in central Cardiff, such as sporting events and concerts.



## A hub for jobs and skills

Cardiff Hendre Lakes will be home to the next generation of businesses that will play a key role in driving the Welsh economy forward. High quality streets, parks, public spaces and buildings will create an aspirational address which attracts and retain the best talent. New places and spaces for leisure activity and access to the natural environment will allow for time away from the desk.

### A CATALYST FOR GROWTH

The proposed development aims to become a catalyst for growth, contributing to the regeneration of East Cardiff and the wider Cardiff Capital Region by attracting high quality businesses and investment.

### EMPLOYMENT OPPORTUNITIES

The development has the potential to support around 6,000 jobs, as well as becoming a transport hub that helps people to access other employment opportunities across the region.

### THE CARDIFF CAPITAL REGION (CCR)

Cardiff Hendre Lakes will support the delivery of the CCR Industrial and Economic Growth Plan by providing a new home to targeted industries including:

- Compound Semi-conductor industry;
- FinTech;
- Cyber Security Analytics;
- Artificial Intelligence (AI);
- Creative economy;
- Life Sciences; and
- Transport engineering.







# A place to thrive

A significant proportion of the development will be reserved for green space. This will include:

- Key natural features of the site are retained and carefully integrated into the new development;
- The new planting and landscapes provide opportunities for people to appreciate nature and the changing seasons;
- Open spaces are inclusive and accessible to everyone
- Open water and sustainable drainage are key elements in the new landscapes; and
- Wildlife species and habitats are integrated into the overall landscape and open space character.







# Project Objectives

Six development objectives have been established that build on the Vision for Hendre Lakes. These interrelated objectives set the parameters for development and have informed the masterplan design.

The objectives will guide development at all stages of development, ensuring that the vision are retained as Hendre Lakes evolves over time.



**SHARING  
THE LANDSCAPE**



**OPPORTUNITIES  
FOR JOBS & SKILLS**



**MAKING  
EXPERIENCES**



**DRIVING  
INNOVATION**



**TRAVELLING  
SUSTAINABLY**



**CONNECTING  
PEOPLE**







## 1.3 The Illustrative Masterplan

### REWORKING THE LANDSCAPE & LIVING INFRASTRUCTURE

The Masterplan proposes a careful evolution of the man-made landscape to create a new employment hub set within a unique environment. The key features are:

- Retaining the primary reen network: Faendre Reen, Ty Ffynnon Reen and Green Lane Reen;
- Creating 'Main Park' - a new, accessible public space to connect St Mellons, Hendre Lake Park and the new development;
- A new north-south public realm spine to provide pedestrian focussed places to meet, dwell and gather, integrating high quality hard and soft landscape and sustainable urban drainage;
- East-west green fingers to create a 'green grid' integrated with new development, linking key habitat areas, managing water and defining new streets;
- A wildlife corridor with protected habitats following the alignment of retained utilities;
- Creating three distinct areas of development with a higher density cluster around Cardiff Parkway Station;
- Creating a primary point of vehicle access from Cypress Drive, with a primary vehicle route to the station which keeps traffic away from the heart of the development;
- Multiple points of access for walking and cycling to create a locally connected and permeable development. To create the optimum development proposals include a potential active travel route to the east, and the potential upgrade of the Public Right of Way, both of which will be subject to separate planning applications to Newport City Council; and
- Orientating buildings to maximise solar gain and maximise renewable energy.

Cypress Drive

Primary vehicle access point

Faendre Reen corridor

Green fingers

Public Realm Spine

Ty Ffynnon Reen corridor

Proposed Main Park

Hendre Lake Park



N↑



- St Mellons Business Park
- Heol Las
- Public Right of Way
- Green Lane Reen
- Primary vehicle route
- Proposed wildlife corridor
- Potential active travel route to east
- Station park & ride
- Proposed railway station and public transport interchange as the hub for higher density development

Fig. 1 | Illustrative site masterplan

## 1.4 The case for growth

Both Welsh and UK Government policy places substantial emphasis on the role of transport investment in delivering economic growth. The UK Government aims to ensure that strategic investment decisions help to create a balanced UK economy, in part by focusing on schemes that tackle clearly-defined problems or unlock specific opportunities.

The Welsh Government's **Economic Action Plan** identifies the importance of modern and connected infrastructure in driving productivity and growth, acting as a catalyst for regeneration and supporting economies of scale and agglomeration. The document also ratifies the Welsh Government's plan to accelerate economic growth through infrastructure investments:

*“Wales needs modern sites and premises to allow businesses to expand and grow”.*

At a local level, Cardiff Parkway railway station is being delivered in the context of the Cardiff Capital Region City Deal which will deliver £1.2bn worth of public investment. Over half the investment will be put towards the development of the South East Wales Metro.

Within this context, the Cardiff Capital Region City Deal Strategic Business Plan identifies three key regional strategic objectives:

- Prosperity and Opportunity;
- Inclusion and Equality; and
- Identity, Culture, Community and Sustainability.

The Cardiff Hendre Lakes/Cardiff Parkway proposals would positively contribute to all of these strategic objectives through providing new infrastructure in the form of the railway station and wider transport hub for the east of Cardiff, enhancing the business climate in the area through the provision of high quality, modern business space, encouraging research and development and entrepreneurship, providing a high quality environment and supporting the wider economy, for example sporting and cultural events.

Alongside these objectives, the proposals would also contribute to many of the strategic themes in the Plan, including:

- Travel across the wider City Region - a programme of strategic transport hubs will enable trips to key destinations like town centres, employment areas, hospitals and colleges to be made more easily, and by a choice of mode;
- Getting into and around the Regional City – providing a transport hub from which access could be achieved;
- Connecting neighbourhoods – with improved pedestrian and cycle links to public transport stations; and
- The provision of a balanced portfolio of employment sites to be a catalyst to attracting new business investment.

The proposals will also positively contribute to the **Cardiff Capital Region Industrial and Economic Plan**, developed to set the direction, and to identify and address the priorities facing the region. The plan sets a target to achieve 25,000 new jobs, achieve 5% increase in GVA and leverage £4bn of additional investment in the Cardiff Capital Region.

The adopted **Cardiff Local Development Plan** (CLDP) identifies the Cardiff Hendre Lakes / Cardiff Parkway site as strategic employment Site H ‘South of St Mellons Business Park’. The CLDP sets a number of key masterplanning requirements for the site including the provision of 44 ha of business land capable of accommodating up to 90,000 sqm of high quality development.

The **CLDP’s Infrastructure Plan** also identifies four key infrastructure requirements to connect the city centre with strategic sites via the implementation of new rapid transit links, which could include a new tram network or new stations on existing lines. This includes:

- Eastern Corridor – a link from the Strategic Site ‘South of St Mellons Business Park’ to the City Centre and the Strategic Site ‘Cardiff Central Enterprise Zone’

The cities of Cardiff and Newport are identified as the primary drivers of economic growth in the Cardiff Capital Region, providing 45% of the region’s employment. Given Cardiff’s prominence, over 73,000 people commute into the city every day from other parts of Wales and beyond. The largest inflows are from the Vale of Glamorgan, Rhondda Cynon Taf, Caerphilly and Newport. The interdependence between Cardiff and surrounding areas is evident from the commuting patterns of people currently employed in the St Mellons area of Cardiff (primarily the existing St Mellons business park) where more than half of those currently employed live outside the city.

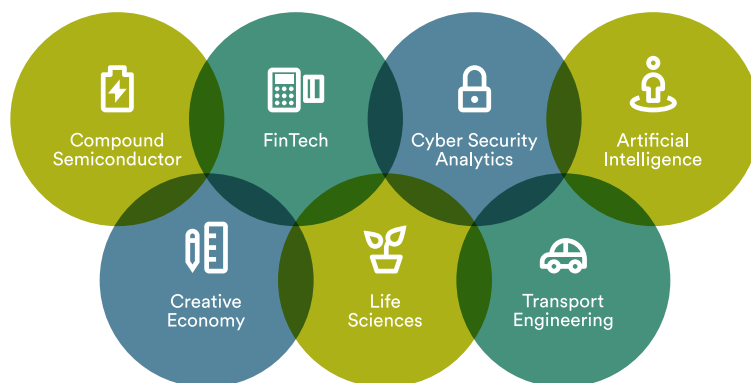


Fig. 2 | Targeted employment sectors: CCR Industrial and Economic Plan



## 1.5 Planning policy

The following section provides a summary of the broad policy context that the proposal has been shaped by and responds to. It is multi-layered from the strategic to the site-specific. An in-depth analysis of the proposal's policy alignment is provided by the accompanying Planning Statement.

### PLANNING POLICY WALES (2019)

Planning Policy Wales (PPW) (Edition 10, 2019) sets out the land use planning policies of the Welsh Government. Within the latest edition a new emphasis is given to the concept of placemaking, in conjunction with the aspiration for PPW to align more closely with the Well-being of Future Generations (Wales) Act 2015 (WBFGA).

PPW reasserts the presumption in favour of sustainable development. Within PPW, sustainable development is defined as 'the process of improving the economic, social, environmental and cultural well-being of Wales by taking action, in accordance with the sustainable development principle, aimed at achieving the Well-being Goals.'

In addition to the WBFGA, which is explored further in chapter 2, the proposals have had regard to:

- Environment (Wales) Act 2016;
- Active Travel (Wales) Act 2013; and
- Public Health (Wales) Act 2017.

National Policy in Wales reflects the legislative framework which stresses the need for sustainable practices and development. These policies are:

- Green Growth Wales Paper;
- Towards Zero Waste Strategy;
- Construction and Demolition Sector Plan;

- Taking Wales Forward and Prosperity for All;
- Prosperity for All: A Low Carbon Wales; and
- Prosperity for All: A Climate Conscious Wales.

In line with the principles of the Well-being Act, PPW is organised around four key themes; 'Strategic and Spatial Choices', 'Active and Social Places', 'Productive and Enterprising Places' and 'Distinctive and Natural Places'. The policies of most relevance to the proposed development in this case are outlined further below.

**Chapter 3 of PPW** (Strategic and Spatial Choices) focuses on placemaking and strategic development. Paragraph 3.7 sets out that 'developments should seek to maximise energy efficiency and the efficient use of other resources (including land), maximise sustainable movement, minimise the use of non-renewable resources, encourage decarbonisation and prevent the generation of waste and pollution.'

**Paragraph 3.9** sets out that 'the special characteristics of an area should be central to the design of a development. The layout, form, scale and visual appearance of a proposed development and its relationship to its surroundings are important planning considerations.'

**Paragraph 3.30** sets out the Sustainable Management of Natural Resources (SMNR) framework as outlined within the Environment (Wales) Act 2016. PPW states that, 'amongst other considerations, the planning system can contribute to the SMNR approach through ensuring resilient locational choice for infrastructure and built development, taking actions to move towards a circular economy and facilitate the transition towards economic decarbonisation'. In terms of the provision of new infrastructure, **Paragraph 3.58** states that, 'planning authorities should, in conjunction with key providers, take a strategic and long-term approach towards the



provision of infrastructure as part of plan making. This may involve collaboration between planning authorities and key infrastructure providers to ensure infrastructure provision is sustainable’.

**Chapter 4 ‘Active and Social Places’** outlines components of placemaking required to create well-connected and cohesive communities covering the following:

- Transport;
- Housing;
- Retail & commercial development;
- Community facilities; and
- Recreational spaces.

With regards to transport, it states people should have access to jobs and services through more efficient and sustainable journeys, by walking, cycling and public transport. It is also noted that land use and transport planning should be integrated, including:

- Within and between different types of transport;
- Between transport measures and land use planning;
- Between transport measures and policies to protect and improve the environment; and
- Between transport measures and policies for education, health, social inclusion and wealth creation.

In **Chapter 5, ‘Productive and Enterprising Places’**, PPW includes policy specifically relating to economic infrastructure, stating that infrastructure, be it physical, electronic or digital, plays a pivotal role in maintaining the economic well-being of Wales.’ It identifies that Development Plans should support public transport routes, including improved facilities for bus users, park & ride schemes and new railway stations. They should also identify the need for new transport interchange sites.

**Chapter 6 of PPW ‘Distinctive and Natural Places’** sets out how development should protect the special characteristics of the natural built environment including the historic environment, green infrastructure, landscape biodiversity and ecological networks. This Chapter also addresses mitigating potential polluting effects of development including air quality, impact on the soundscape and light pollution.

In transport terms, PPW seeks a transport hierarchy which aims to minimise reliance on the private car and prioritise active travel and public transport. It suggests that Local Authorities should consider the provision of new stations, emphasising the role new rail development can have in regeneration. The proposed development supports this policy objective by encouraging a modal shift away from the private car.

## THE WALES SPATIAL PLAN (2004)

The Wales Spatial Plan (WSP) sets out the planning agenda for Wales at the spatial level. Its main principle is that development should be sustainable, by improving the well-being and quality of life for Wales.

The plan recognises that in the context of responding to and mitigating the effects of climate change, the WSP encourages measures to reduce the need to travel by co-locating jobs, housing and services and changing behaviour in favour of ‘greener’ modes of travel, such as car sharing, public transport, walking and cycling. The site is located within the South-East Wales Capital Region. The objectives for this area include making better use of the existing transport infrastructure and delivering more sustainable access to jobs and services. The proposed development assists in achieving these objectives.

## **NATIONAL DEVELOPMENT FRAMEWORK (2020 TO 2040)**

The National Development Framework (NDF) is an emerging national plan which was consulted on between August and November 2019. When adopted, the plan will replace the Wales Spatial Plan and will have development plan status, making it a material consideration in the determination of a planning application. Local Development Plans (as well as Strategic Development Plans) will supplement and need to be prepared in line with it, each operating at the respective geographic scales/levels.

The NDF presents an up to date strategic spatial strategy via a strategic diagram which maps national and regional growth areas and regional and intra-urban connectivity among other features. The Cardiff Hendre Lakes and Cardiff Parkway proposal resonates strongly with 8 of the 11 NDF outcomes presented in the consultation draft which collectively form a statement of where Welsh Government wants Wales to be in 20 years' time. Through the NDF, Welsh Government will develop a Wales where people live and work in:

- Connected, inclusive and healthy places;
- Distinctive regions that tackle health and socio-economic inequality through sustainable growth;
- Places where prosperity, innovation and culture are promoted;
- Places where travel is sustainable;
- Places with world-class digital infrastructure;
- Places that sustainably manage their natural resources and reduce pollution;
- Places with biodiverse, resilient and connected ecosystems; and
- Places which are decarbonised.

It is stressed in the draft NDF that the outcomes can be achieved if the development plan system is focussed on the long-term and provides quality development in the right places for the right reasons.

The spatial strategy is underpinned and articulated through a series of key policies which in an urban context (through Policies 1 and 2) deal with the design and function of urban places, encourages more sustainable forms of development including higher densities in appropriate locations.

**Policy 8** deals with biodiversity enhancement and ecosystem resilience and in particular opportunities where strategic green infrastructure could be maximised as part of development proposals, requiring the use of nature-based solutions as a key mechanism for securing sustainable growth, ecological connectivity, social equality and public well-being. With a green (and blue) infrastructure strategy at the heart of the design evolution process, the proposal aligns clearly with this policy.

**Policies 27 and 28** deal with Cardiff and Newport and identify the vital roles they individually and collectively play in generating prosperity and well-being at a regional and national scale. The policies identify that current and future trends in housing and employment markets present a timely opportunity to focus on developing Newport and a more poly-centric approach to development in the region. The site's strategic, border location gives an opportunity to help deliver policy aspirations for both cities. The supporting narrative to Policy 27 identifies that Cardiff relies on people from across the full region. Ensuring communities around the Capital are vibrant, prosperous and connected therefore helps to support Cardiff.



**Policy 31** seeks to focus development and growth in the region to places with good active travel and public transport connectivity. It states that land in close proximity to existing and committed new mainline railway and Metro stations should be the focus for development. The NDF directs Strategic and Local Development Plans to plan growth to maximise the potential opportunities arising from better regional connectivity. The allocation of the application site was the first step, this planning application is the next in helping to realise this strategic goal.

### TECHNICAL ADVICE NOTES

At the topic specific level, PPW is supplemented by a series of topic specific Technical Advice Notes (TANS). The following are considered relevant to the proposal:

| Technical Advice Notes (TANs)                     | Objectives   | Scheme Compliance   |
|---|--|---|
| <b>TAN 4: Retail &amp; Commercial Development</b> | Seeks to promote viable urban centres as locations of multiple activities and to improve access to them.   | The development will, by being a destination for work and travel, become a hub of broader activity.   |
| <b>TAN 5: Nature Conservation &amp; Planning</b>  | Places biodiversity conservation & enhancement at the heart of planning for sustainable development and to appropriately assess impacts on protected species/sites and to mitigate harmful impacts to ensure no overall reduction in the value of an area. | The masterplan has been informed by extensive and exhaustive surveys of the existing biodiversity resources. The proposal conserves protected species, creates new habitats, and mitigates for losses.                                      |
| <b>TAN 12: Design</b>                             | Emphasises the multi-faceted elements of good design which requires a collaborative, creative, inclusive process of problem solving and innovation – embracing sustainability, architecture, place making, public realm, landscape and infrastructure.     | This proposal embodies an approach of ‘total design’, where a truly integrated, inter-disciplinary vision for the site has realised the illustrative layout that supports the outline planning application.                                 |
| <b>TAN 15: Development &amp; Flood Risk</b>       |  | Flood modelling has been undertaken to inform a Flood Consequences Assessment which accompanies the application. This has been prepared in accordance with TAN 15 and demonstrates how the proposals meet requirements as set out in TAN15. |

## LOCAL DEVELOPMENT PLANS

At the local planning policy level, the Cardiff Local Development Plan 2006-2026 (CLDP) is the main development plan for the proposal. Given part of the wider site's location within Newport, policies of the Newport Local Development Plan 2011-2026 (NLDP) are also relevant.

| Cardiff Council Policy                              | Objectives  | Proposed Response   |
|---|---|---|
| <b>Key Policies - KP2(H), KP6, KP8, KP15</b>        | Allocates land to the south of St Mellons Business Park as a strategic employment site. As part of this allocation, essential/ enabling infrastructure is identified, which includes for the provision of a transport hub including a new rail station. Policy seeks to maximise sustainable travel and reduce car dependency, reduce carbon emissions, promote energy efficiency and not creating off site flood risk.   | The proposed development and masterplan have been prepared in alignment to the allocation in terms of the mix and quantum of development. The proposal has been developed in a truly integrated manner, with the spatial arrangement of buildings aligning to a strategic green and blue infrastructure strategy for the entire site which mitigates against flood risk, and loss of overall quality of biodiversity and sites. The strategic highway and other movement networks to and within the site have been planned to optimise usability, legibility, place-making, efficiency, air quality among others. |
| <b>Economy - EC2</b>                                | Allows for office developments to have provision for leisure, food and drink, childcare and other facilities that primarily meet local demand and don't attract significant levels of visitor traffic into the area.  | The transport interchange and also its plaza will have ancillary uses such as food and beverage to activate the spaces and cater for workers and visitors.  |
| <b>Environment – EN3, EN5, EN6, EN7, EN12, EN14</b> | Seeks to protect the character and quality of the landscape and setting of the city and requires appraisal for significant development. Seeks to protect ecological networks and features of biodiversity importance. Seeks to protect ecological networks and features of biodiversity importance. Aims to protect, enlarge, connect and manage habitats. Allows compensatory provision of comparable ecological value to ensure there is no reduction in the overall importance of the area or feature. Establishes the requirement for sustainable drainage to alleviate flood risk and for assessment in areas subject to flooding. | The masterplan has been developed around an integrated green and blue infrastructure strategy which mitigates loss and enhances overall quality of biodiversity and sites.  |



| Cardiff Council Policy     | Objectives  | Proposed Response  |
|----------------------------|---|--|
| Transport – T3, T6, T7, T9 | Supports the development of new strategic transport infrastructure, accessible rail stations, park and ride and modal interchange. Maintaining the safe and efficient operation of movement networks is sought. | Cardiff Parkway is specifically referenced in policy and the masterplan has been prepared with the benefit of widely scoped transport assessment and travel planning insights. |

| Newport City Council Policy                        | Objectives  | Proposed Response  |
|--|---|--|
| Strategic Policies – SP2, SP6, SP8, SP9, SP14, GP5 | Proposals should maximise health and wellbeing and be close to transport links, walking & cycling and other green infrastructure. Seeks to maintain the Green Belt between Cardiff and Newport and to ensure that an appreciation of the area's special landscape, environment and historic features are protected through conservation, enhancement and management of sites. Supports transport proposals where there are a range of clear benefits such as urban and economic regeneration, enhance quality of life enhancement, traffic congestion relief. | <p>The masterplan has been developed around an integrated green infrastructure strategy which mitigates loss and enhances overall quality of biodiversity and sites.</p> <p>The development will help to support new public transport proposals.</p> |
| Environment – CE8, CE9                             | Builds on the strategic policies to ensure no overall loss of the nature conservation resource and that development in the coastal area is not at risk from flooding among others.  | The masterplan has been developed around an integrated green infrastructure strategy which mitigates loss and enhances overall quality of biodiversity and sites.  |
| Transport - T1                                     | Supports proposals for the railway system.  | The proposed development is shaped around the desire to deliver a new railway station and associated infrastructure.   |







## 2. Sustainability

## 2. Sustainability

### Our ambition is for Cardiff Hendre Lakes to be a truly sustainable development

Our proposals have been guided by the WBFGA to ensure current and future generations benefit from lasting, positive change to the environment, economy and community. This will enable us to consider our global responsibilities and impact whilst positively contributing to local objectives such as improving health and well-being, minimising waste, supporting clean economic growth and promoting sustainable transport.

The recent declaration of a climate emergency by Welsh Government has reaffirmed the need for an embedded, cross-cutting approach to sustainability. Decarbonising the economy will require substantial change to the way we grow our towns and cities, the way we move around and our approach to resources. Welsh Government's ambition to achieve net zero carbon by 2050 will help to shape how the development is designed, constructed and operated.







## SHAPING THE PLAN

Using the WBFGA and the legislation outlined in section 1.5 to instruct and guide, initial concepts were developed that deliver far-reaching and cross-cutting benefits. This influenced not only the creative process but also the team's approach which involved interdisciplinary working and open dialogue with key stakeholders.

This included:

- Dialogue with key stakeholders such as Natural Resources Wales to better understand the intricate ecology and hydrology of the Gwent Levels resulting in the concept of 'living infrastructure';
- Working with partners including Cardiff Council, Network Rail and Newport County Council to expand on the initial proposition of a rail station to a major Transit Orientated Development (TOD) hub; and
- Partnership working with Welsh Government and Cardiff Capital Region to understand the potential for high value job creation.

As the design process evolved, the key themes of movement, the natural environment and socio-economics emerged which collectively formed the basis of the sustainability strategy. This section explores these themes and the explains how the Ways of working and seven Well-being Goals shaped the thinking and outcomes.



Fig. 3 | The Ways of Working and seven Well-being Goals of the Well-being of Future Generations (Wales) Act 2015



## 2.1 Movement

### SUSTAINABLE TRAVEL

#### Initial concept

The early concept as contained within the CLDP was for a campus style business park with a new rail station, park and ride facility and public transport access.

#### Agreed approach

A modal hierarchy was defined to prioritise people over private vehicles to ensure all decisions on movement were based around sustainability. Through collaboration with transport operators, Cardiff Council and the multi-disciplinary team, the initial idea for the site was expanding into a broader TOD model of development.

This means clustering higher density development around the new Cardiff Parkway Station and interchange, providing more people with direct access to mainline rail, local bus services and the wider cycle and pedestrian network. The station is also proposed to be served by South Wales Metro which aims to transform movement within the Cardiff Capital City Region through the provision of new and improved services across the public transport network.

The optimal development proposal includes new and improved active travel routes with Heol Las, which will be subject to two separate planning applications to Newport City Council. The first will be for improvements to the existing public right of way. The second is to introduce a new active travel route into the site from Heol Las, to the north of the Gas Pressure Reduction Station. As these proposals are subject to separate planning approvals the masterplan and the associated assessment work has considered situations with and without these routes.

### A People-Oriented Movement Hierarchy

#### Benefits:

- Healthier, happier people;
- Cleaner air;
- More attractive and safer streets;
- Greater social interaction and inclusion;
- Lower carbon footprint; and
- Better for the natural environment.

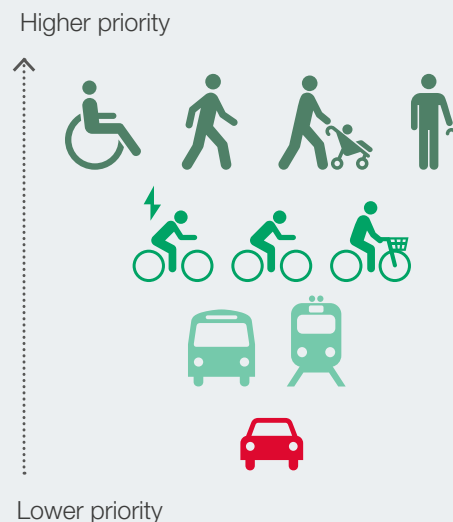


Fig. 4 | Benefits of People-Oriented Movement Hierarchy

## DESIGNING FOR ACTIVE TRAVEL

### Initial concept

The CLDP specified the need to provide high quality walking and cycling access to and from neighbouring communities including Trowbridge and St Mellons. Newport City Council (NCC) has similar aspirations to improve walking and cycling connectivity within its administrative area.

### Agreed approach

More detail the thinking was considered around sustainable travel to understand opportunities for social equality, inclusive design and community cohesion by allowing access to the site for all. This was integrated with the approach to landscape and ecology to deliver wider benefits including the improved health and well-being of the local community and future employees.

Key active travel routes within the site have been carefully directed through the proposed open spaces and public realm where buildings will be orientated to provide 'eyes on the street' to instil a sense of safety. Consideration was given to how the site can connect to wider active travel network of the Cardiff Cycleway network, as well as to Newport via the national cycle network.

The optimal masterplan identifies two opportunities for improved active travel links between the NCC administrative and the proposed development. Firstly there is an opportunity to improve the existing PROW connection over Green Lane Reen. Secondly there is an opportunity to introduce a new active travel route and crossing of Green Lane Reen north of the Gas Pressure Reduction Station. Both opportunities would improve access to the station and wider development for the communities of Castleton, Marshfield and western Newport. As these proposals are subject to separate planning approvals the masterplan and the associated assessment work has considered situations with and without these routes.

Within the site, the network of streets and spaces will be designed to support a modal hierarchy that prioritises pedestrians, cyclists and public transport through detailed design, following the principles set out

in Manual for Streets and Manual for Streets 2. Parking will be carefully managed to ensure that whilst parking is accommodated, it does not dominate the development or actively encourage people to drive.

## CHANGING TRENDS AND PATTERNS

### Initial concept

The forward thinking, altruistic approach of the WBFGA was embraced at the outset of the project. By drawing together specialists in place-making, sustainability, researchers in order to understand and plan for future needs and trends.

### Agreed approach

Thinking beyond the 'here and now' and how the next and future generations will be able to use the site led the team to a design that has an inherent degree of flexibility that can support new ways of moving around. This meant designing in flexible development plots and public realm which can support a broad range of uses and a street network that can adapt to support changing modes of transport. This was in response to emerging trends such as:

- Mobility as a Service (MaaS) which centres around the concept of the traveller not personally owning assets for transportation - be that a car, bicycle or similar. Instead users pay for the service of moving from A to B. This includes car clubs, bicycle rental, and ride-hailing services such as Uber, which already exist within Cardiff.
- Future technological developments which may lead to self-driving vehicles being a common mode of travel. This, along with other forms of MaaS, could lead to an increased number of vehicles on the road, and different patterns of traffic to those seen today. The rise of MaaS and autonomous vehicles may result in reduced need for car parking, with an associated increased need for safe and convenient pick-up/drop-off space.
- Provision will also need to be made for the charging of electric vehicles (EVs) and bicycles which becoming increasingly common.



## 2.2 The Natural Environment

### CLIMATE CHANGE

#### Initial concept

The CLDP specified the need for the raising of development plateaus and provision of flood compensation areas to the south of the railway line.

#### Proposed approach

Global temperatures are continuing to rise, with changing patterns of weather and sea level rises creating:

- Physical risks, including increased frequency and intensity of flood events, increased rainfall, and increased pressure on ecosystems from changing conditions.
- Transitional risks, including evolving legislation, policy, technology and market expectations. This could include the risk of increased costs associated with fossil fuel dependent technology.

This has meant the longer term thinking and integrated ethos of the WBFGA has driven innovation around the responses to key site challenges. This is exemplified by the approach to existing and future flood threat. Early ideas around land raising were subsequently integrated with strategies to maintain and enhance biodiversity, landscape amenity and sustainable movement to create the concept of 'living infrastructure'.

### DECARBONISATION

#### Initial concept

Resilience and global responsibility are at the centre of the challenge posed by Welsh Government's net zero carbon aspirations.

#### Proposed approach

The team evolved the early concept of a series of development parcels which collectively form a business park into a plan which has capacity for:

- An adaptable site layout which facilitates potential for on-site renewable energy production;
- Buildings which integrate renewable energy generation (where possible, on a building by building basis);
- Buildings which are energy efficient across their whole lifetime, including construction and demolition;
- Managing buildings and site-wide operations in a way which minimises energy and carbon use; and
- Maximising opportunities for circular economies of waste management through the construction and the ongoing life-cycle of the site.

### WATER AND HABITATS

#### Initial concept

The Gwent Levels are testament to human ingenuity in the management of natural systems to create and sustain a man-made landscape. Beyond the hydrological and ecological importance of the Gwent Levels, the team were mindful of the cultural importance of such a significant landscape.

#### Proposed approach

At the outset, the team sought to develop a strategy of shaping the landscape to create development without causing lasting damage to the landscape and ecology. Engagement with key stakeholders including Natural Resource Wales and the Living Levels Partnership helped the team to develop a strategy that allows for development to sit within a reworked system of water management and habitat.

As part of the concept of 'Living Infrastructure', the landscape will be reworked to ensure surface water run-off is managed through Sustainable Drainage Systems (SuDs) as part of an integrated landscape and public realm. New drainage and landscape features will aim to create a net gain in biodiversity and habitats.

## 2.3 Socio Economic

### ACCESS TO JOBS AND SERVICES

#### Initial thoughts

The area surrounding Hendre Lakes contains a number of more deprived areas, as measured by the Welsh Index of Multiple Deprivation (WIMD), including levels of employment and income. This data indicates a correlation between poor rail connectivity and levels of deprivation.

#### Agreed approach

By viewing the strategy through the lens of equality, prosperity and cohesive communities the Hendre Lakes vision has developed into a wider opportunity for socio-economic prosperity for the people of Wales. Dialogue with Cardiff Council, The Cardiff Capital Region and Welsh Government has helped rethink Hendre Lakes from a starting position of a new business park and rail station to a regionally significant development.

The proposal has been designed to encourage accessibility and connectivity to the wider city region, facilitating access to new job and skills development opportunities. In particular, the role that active travel has to play in creating resilient communities has been integral to the evolving masterplan for the site, resulting in the integration of active travel infrastructure such as cycle paths and footpaths linking with surrounding communities.

The aspiration is for Hendre Lakes to provide opportunities for training and employment for the local population during construction phases and over the lifetime of the development across a range of sectors and skill-levels.

### HEALTH & WELLBEING

#### Initial thoughts

Wales has increasing health challenges relating to obesity and an aging population. Encouraging active travel in deprived communities will help to reduce the burden the issues places on our health care systems.

#### Agreed approach

The emphasis on Health and Wellbeing within the Act has been embraced during the course of the project and has shaped the thinking of the design team. This has meant that opportunities to improve people's health and well-being have been considered as important as opportunities to improve mobility and create jobs.

For Hendre Lakes, this means prioritising active travel and encouraging physical activity through access walking and cycling networks for recreation, commuting and other travel.

Hendre Lakes will create new landscaped open spaces that are accessible to the public and within easy access of places of work, transport and existing residential communities. These will allow for work and play, encouraging people to engage with their surrounding environment whilst improving their health and well-being through activity and increased social interactions.

The development will be fully inclusive, ensuring that older people, people with disabilities and people from across the community are able to access and utilise new facilities in order to fully benefit the wider community.



## 2.4 Well Being Goals

### MEETING THE WELL-BEING GOALS

Both during the design process and upon completion of the strategy an outline performance appraisal with the Act was compiled by comparing the identified themes against the seven Well-being goals. This allowed the team to understand how the proposal through an outline planning application aligns with the goals. The summary indicates the potential positive impacts of Hendre Lakes on both the local community and the wider nation.

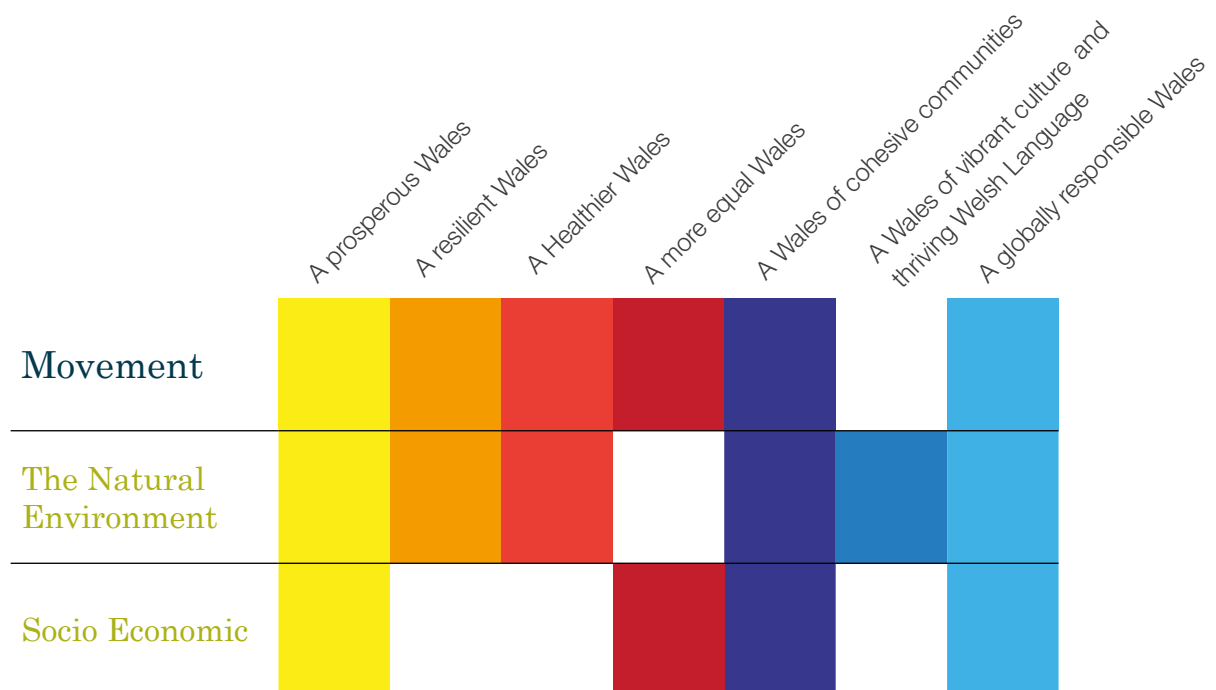


Fig. 6 | Summary performance appraisal of the scheme against the seven Well-being goals







### 3. Site and Context

# 3. Site and Context

## 3.1 Site Location

Cardiff Hendre Lakes is located on the eastern edge of Cardiff, at a key gateway to the city adjacent the Great Western Mainline railway and close to the western end of the A48(M) and M4 J29.

The proposed new station at Cardiff Hendre Lakes is located at a strategic point on the rail network, connected by mainline services to London (approx 1 hr 45 mins), Bristol (approx 45 mins) and the wider UK rail network.

Local connections will include frequent trains to Cardiff and Newport (both 7 mins) as well as a range of destinations within the wider city and city region via the proposed South Wales Metro network. Provision of a multi-modal transport interchange and station park & ride will help to make the site one of the best connected places in the Cardiff Capital Region and provide opportunities for rail travel competitive to the private car.

Travel times by car and rail to and from the site are shown in the table below.

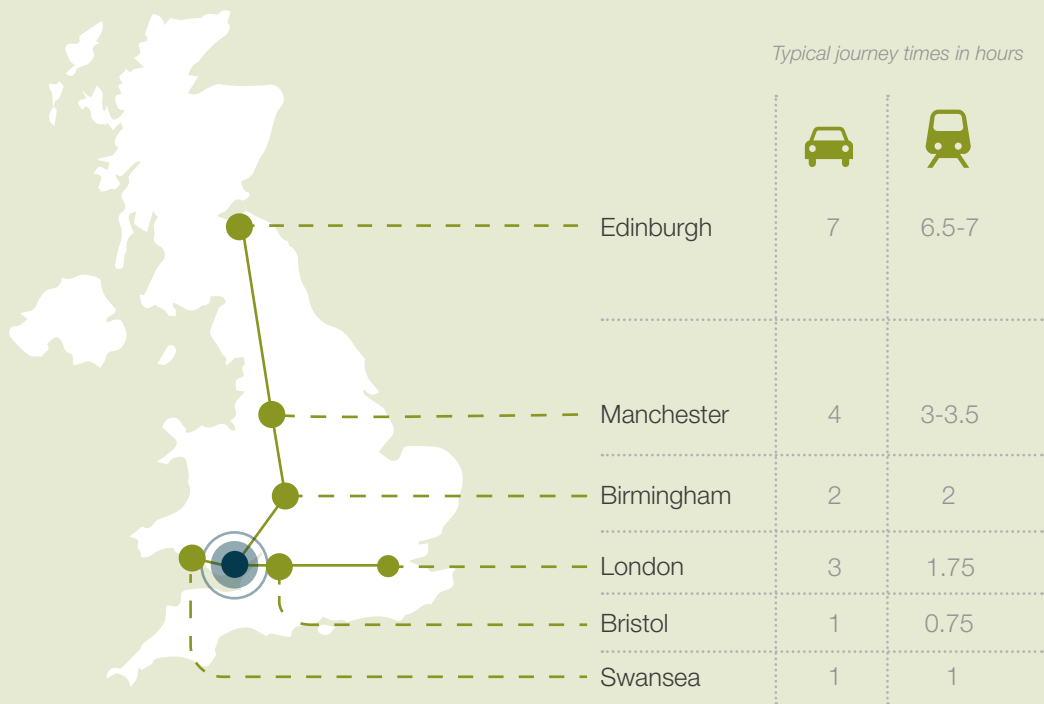
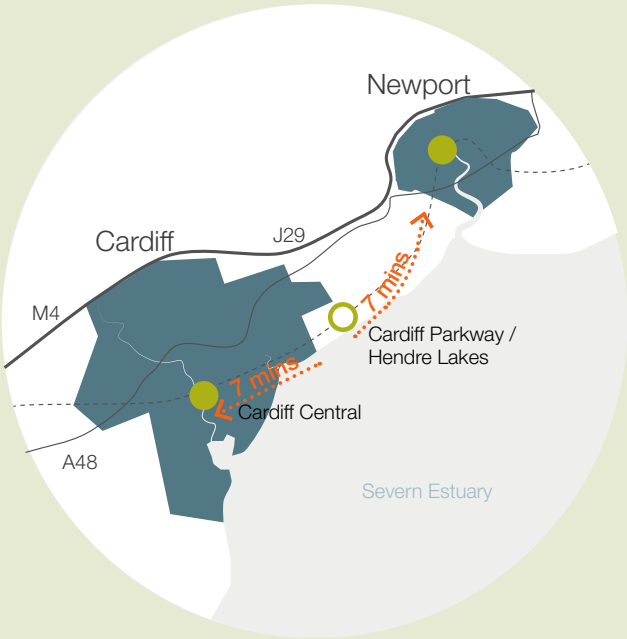


Fig. 7 | UK connections and travel times





Fig. 8 | Site Location and Context



## 3.2 Site description

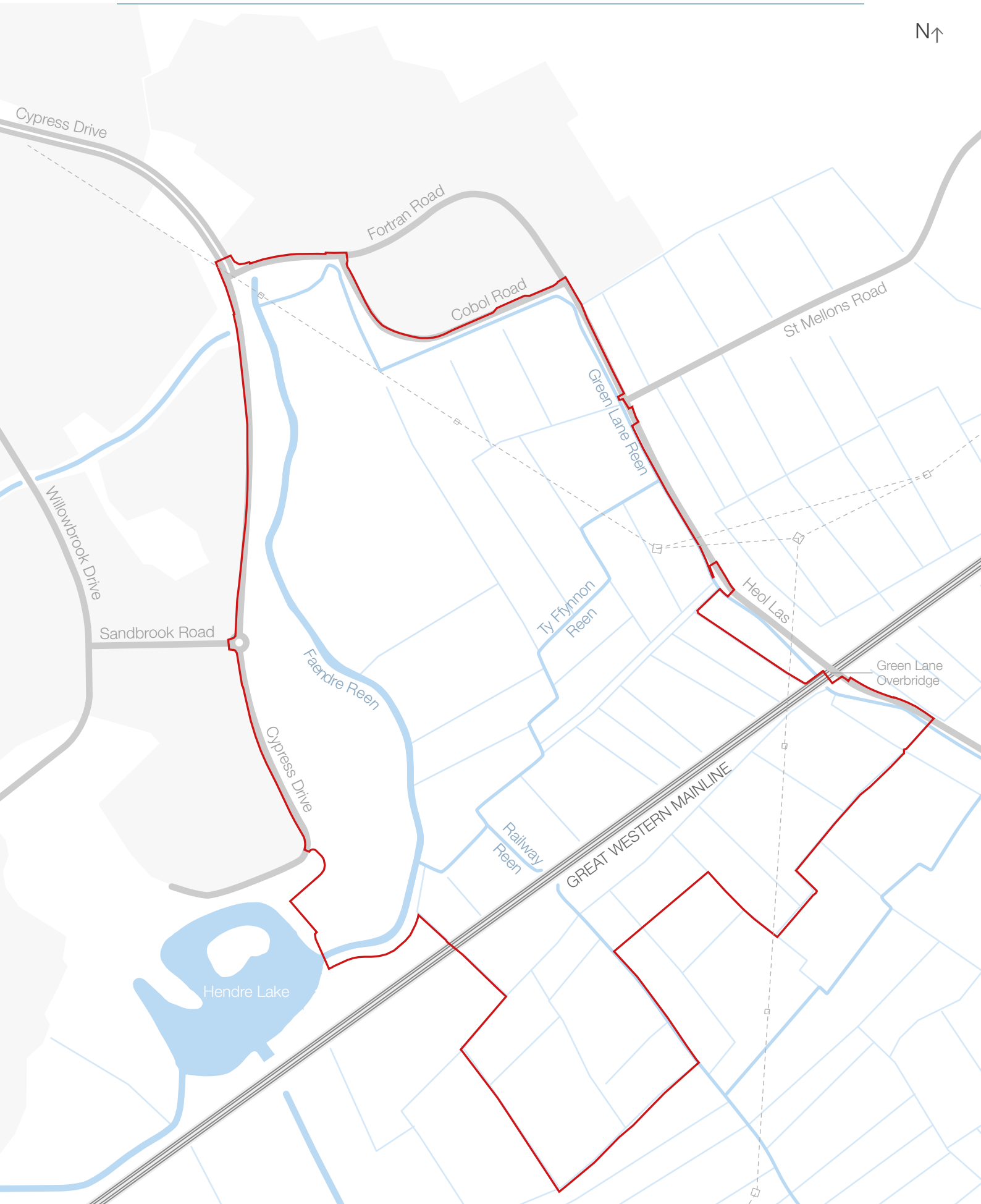
The application site area is 80ha, bisected north and south by the Great Western railway line.

The site is currently undeveloped, consisting of a mixture of agricultural land and scrub land, as well as encompassing surrounding roads and existing infrastructure related land-uses.



Fig. 9 | View south across the site toward the Severn estuary











### 3.3 Surrounding area

The Cardiff Hendre Lakes site sits at the transition point between urban Cardiff and the rural Gwent Levels. The site location is characterised by its position on the South Wales coastal plain, with views to the estuarine, coastal landscape of the Bristol Channel to the south and the hills and South Wales Valleys landscapes to the north.

The proposed development has been designed with careful consideration of its relationship with and connections to its immediate surroundings, including:

#### ST MELLONS

##### *Residential, Low Density, 2-3 Storeys*

Located directly to the west of the site, St Mellons is a residential suburb area of Cardiff consisting of low-density housing dating from the 1970s to 1990s, typically comprising of two storey detached and semi-detached houses. The area includes a number of primary schools, a local centre with a large supermarket, and a series of green space incorporating woodland and watercourses.



Fig. 10 | Views of St Mellons

## HENDRE LAKE PARK

### *Open Space, Natural Landscape*

Located on the southern edge of St Mellons and the south west of the site, Hendre Lake Park is a large green space centred around the large Hendre Lake and adjacent wetlands. The park is connected into the surround network of 'reens', including Faendre Reen which runs through the site into the Hendre Lake.



Fig. 11 | View of Hendre Lake Park

## ST MELLONS AND LINKS BUSINESS PARKS

### *Employment, Low Density, 2-3 storeys*

Early 1980-1990s office based business parks, located to the north of the site. The business parks are generally up to two storey buildings, with boundary landscaping, and car parking.



Fig. 12 | View of St Mellons Business Park



## MARSHFIELD

*Residential, Village, Low density,  
2-3 Storeys*

An established village with around 2,500 residents, located around 1km to the east of the site. The village has a historic core, including St Mary's church, a post office and convenience store, however it has extended to include areas of more modern suburban housing.



Fig. 13 | View of Marshfield

## GWENT LEVELS

*Agricultural, Rural*

Expansive, low lying landscape along the Severn Estuary, including open stretches between Chepstow, Newport, Cardiff and westwards. The area is characterised by its tight pattern of fields bound by reens and drainage ditches, and its relationship with Severn Estuary to the south. The area includes features of notable historic and ecological significance and are designated as a Site of Special Scientific Interest (SSSI).



Fig. 14 | View of Gwent Levels and Estuary

## 3.4 Topography

The site sits on the edge of the Gwent Levels, marking the transition between the expansive flat, lowland areas to the south and east, the undulating topography of St Mellons to the east and north, and hills rising to the north.

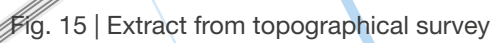
The site is largely flat with small localised level changes associated with reens, field ditches, and hedgerows. A topographical survey shows a maximum range of between 4.7m and 6.3m AOD, with no clear patterns of gradient across the site.

The flat nature of the site is reaffirmed by the topographical survey. Level changes are typically within a range of 1m across the site with changes of circa 2m present in parts of the site. Typically, higher ground is located along the Faendre Reen edge with a lower section along the southern extent of the study area.

The railway embankment is typically higher than adjacent land. The elevated track position will need to be considered as part of the wider visual impact of the new station.

Topography [survey undertaken by Landmark Surveys (Wales) Ltd, Jan 2018]





## 3.5 Climate

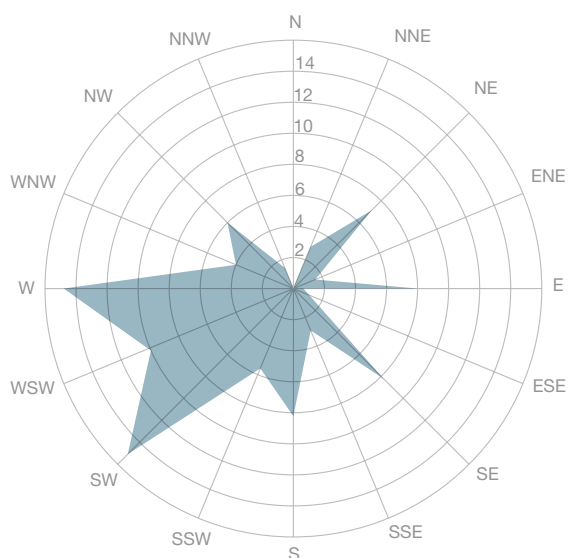
### WIND

The predominant south westerly winds and open coastal location require consideration of micro-climate wind amelioration in the layout of the site. Street layouts and building designs have a significant impact on the movement of air.

Understanding this dynamic is essential in ensuring that key areas of the public realm are comfortable to use and not rendered unusable due to persistent, turbulent air.

Average wind speeds

5.5 knots



Wind direction distribution and speed as recorded at Penylan Station between 04/2015 and 12/2017 - Source: windfinder.com.

This data is provided for illustration purposes only. On site surveys would be required to determine more detailed design.

### PRECIPITATION

South Wales experiences rainfall higher than the UK average. As a result, design will need to consider how people are sheltered from rain as they move around the site.

Sustainable Urban Drainage Systems will be a requirement. These will need to be considered as site wide strategies such as flood attenuation areas (balancing ponds), permeable paving, rain gardens and swale systems. At a building design level, green roofs, brown roofs and grey water recycling could be considered as an integral element of all building design.

#### Cardiff



148 days of rain  
1150mm of rain p.a.

#### London



109 days of rain  
557mm of rain p.a.

Average rainfall - Cardiff and London. Source; The Met Office UK.



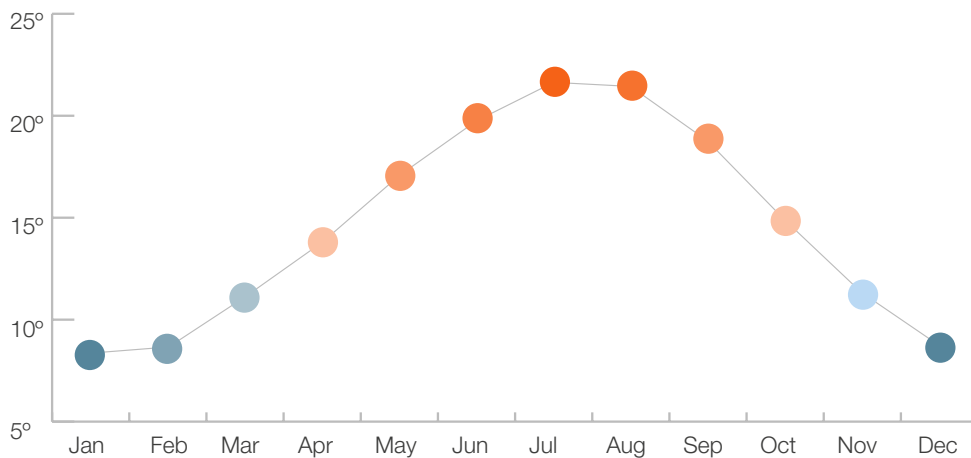
## TEMPERATURE AND SUNSHINE

The temperate climate of South Wales area means that people can use outdoor spaces throughout the year, including for active travel.

The UK generally has low average levels of sunshine, and buildings and public realm can be oriented to maximise people's access to the sun and natural daylighting.



**1549 Sunshine hours p.a.**



Average temperature and annual sunshine hours - Cardiff. Source; The Met Office UK.

Fig. 16 | Climatic information

# 3.6 Ground conditions

A Geotechnical Desk Study has been prepared for the site and the preliminary ground investigation has been undertaken.

The study shows that the majority of the site has not been subject to any major previous development. The exceptions are the main railway line which was built in the mid 19th century and the overhead electrical cables/pylons and gas governors which were formed between 1964 and 2002. The Green Lane overbridge which crosses the railway on the eastern boundary of the site has recently been reconstructed, with both bridge and approach embankments supported on piled foundations.

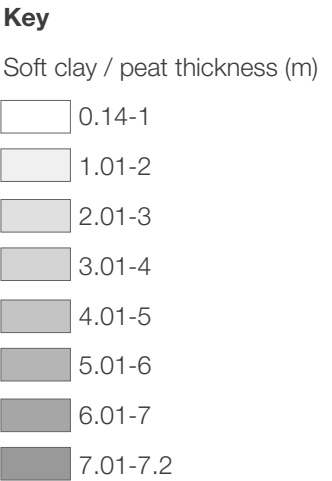
The preliminary ground investigation confirms that the site is underlain by very soft alluvium with peat bands, resting on glacial till, which in turn rests on either Mercia Mudstone or St Maughan's Group mudstone. The depth of soft alluvium and peat vary between 1m and 7m, potentially greater in areas of buried channels.

The development areas will need to be uplifted to provide a stable building platform and to minimise flood risk to acceptable levels.

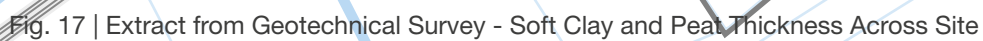
Due to the presence of soft highly compressible alluvium, any upfilling of the site could result in significant consolidation settlements, potentially ongoing over a number of months or years. The buildings are therefore likely to require piled foundations. Ground improvement and settlement acceleration measures such as surcharging and bands drains may be required to control the differential movements between the buildings and surrounding areas of raised ground.

Ground investigations (GI), including soil and groundwater sampling and chemical testing, have confirmed that there is limited potential for contamination. Monitoring has found that there is a low risk from ground gas however gas protection measures would be required.

Additional Ground Investigation will be undertaken to inform future detailed design, including more detailed understanding of the stratigraphy. This will inform foundation design and informed by the potential magnitudes and timescales for settlement of the soft ground.







## 3.7 Water resources

### 3.7.1 TIDAL AND PLUVIAL FLOODING

The Welsh Government Technical Advice Note 15 (TAN15) and Natural Resources Wales (NRW) Flood Maps show that the site is located entirely within Zone C1 and within Flood Zone 3 respectively.

These are defined as follows:

- **Zone C1:** areas within the floodplain with a 0.1% (1 in 1000 year) chance of happening or greater risk of flooding, but served by infrastructure, including flood defences.
- **Flood Zone 3:** areas that are either within the extent of flood from rivers with a 1% (1 in 100 year) chance or greater of happening in any given year or the extent of flood from sea with a 0.5% (1 in 200 year) benefiting from flood defences.

Baseline tidal flood modelling has been carried out to check the extent of flooding during 1 in 200 and 1 in 1000 year tidal flood events, taking into account 75 years of climate change. The baseline modelling demonstrates that for the 0.1% event including for 75 years of climate change, the site is predicted to flood in the south and north eastern areas of the site, as shown in Figure 19.

Consideration has also been given to the risk of flooding from pluvial sources. During high rainfall events, water held and transmitted in the reën system may overtop and spill onto the site. Baseline pluvial modelling has also been completed for 1 in 100 year pluvial event including an allowance of 25% for climate change and for the 1 in 1000 year pluvial event. The modelling demonstrates no significant out of bank flooding within the site.

To enable development to proceed in accordance with the requirements of TAN15 and as described in the FCA, a number of flood mitigation measures are proposed. Generally these include:

- The development plots and associated access roads raised to a minimum of 6.0m AOD;
- Flood control devices installed along Green Lane and Railway Reens;
- Widening of Green Lane Reen; and
- Lowering of land for flood compensation or flood conveyance.

Full details of flood risks and associated mitigation requirements are set out in the Flood Consequences Assessment.

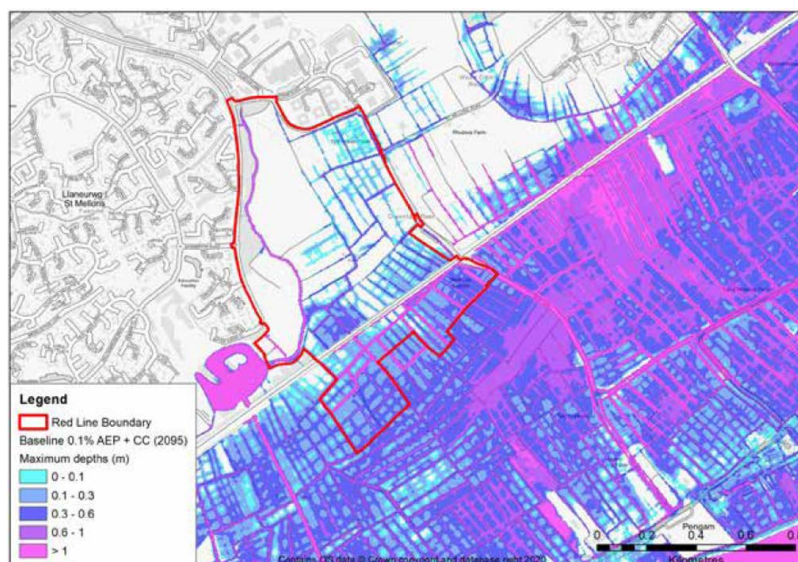


Fig. 18 | Extent of 1 in 1000 year (+75 year climate change) baseline flood



### 3.7.2 SURFACE WATER

The proposed development is located on a greenfield site with a proportion of the water falling on the site during rainfall events lost through natural processes such as infiltration, interception and evapotranspiration. The remainder ultimately discharges into the existing ree network which exists within and around the site.

Developing the site will create new impermeable areas, preventing these natural processes and therefore increasing the runoff rate and volume from the site.

The stormwater drainage strategy serving the site will treat and attenuate these flows to mitigate the impact as a result of the proposed development and meet the requirements as set out in Statutory Standards for Sustainable Drainage Systems (SuDS).

A hierarchical approach will be used to define the surface water runoff destination from the site as shown below:

- Surface water runoff is collected for use;
- Surface water runoff is infiltrated to ground;
- Surface water runoff is discharged to a surface water body;
- Surface water runoff is discharged to a surface water sewer, highway drain, or another drainage system;
- Surface water runoff is discharged to a combined sewer; and
- Surface water collection for re-use and infiltration to ground.

Ground investigation results have shown that the ground conditions have insufficient infiltration capability to discharge through infiltration. It will therefore be necessary to discharge surface water run-off generated from the proposed development at an agreed runoff rate to the existing ree network which are located around the periphery of the development.

Attenuation features will either provide storage for the runoff to be discharged at 'greenfield run-off rate', or at the mean annual flood rate, for storm events up to the 1 in 100 year storm return period including allowances for climate change. If the former of those runoff rates are taken forward then the proposals will need to consider methods for attenuating the difference between the surface water runoff volume between the pre and post development conditions for a 1 in 100 year, 6 hour storm event to 2 l/s/Ha.

The SuDS features will take various forms, from dry and ponds, to swales and bioretention systems integrated with the landscaping proposals. To ensure that the the surface water run-off can be treated, transmitted, attenuated and discharged into the existing ree network the development plots and associated access roads will need to be raised to a minimum of 6.0m AOD.




For further details refer to the Landscape Chapter 6 within the Design & Access Statement and the Drainage Strategy which also forms part of this application.

## 3.8 Services and utilities

There are some services and utilities which are buried within the site, and some which are overhead. Some of the underground services and utilities are proposed to be diverted, whilst others will remain. A summary of the constraints which have shaped the proposed development is set out below. A utilities strategy has been prepared identifying the full details of utilities on the site.

### HIGH PRESSURE GAS MAIN


A high pressure gas main crosses the site, which will not be diverted. Three areas of constraint are identified:

-  A 30m wide Wales & West Utilities (WWU) easement.
-  Health & Safety Executive (HSE) statutory consultation areas consisting of 16m wide 'inner/ middle zone'.
-  HSE statutory consultation areas consisting of an 82m wide 'outer zone', plus HSE consultation areas relating to an off-site gas main are also identified, for which the outer zone extends substantially into site.

HSE advises on which types of development are appropriate in each zone on a risk based approach, which have been respected.

### ELECTRICITY

275kV National Grid transmission lines cross the site, which will not be diverted. This presents the following constraint:

-  Overhead powerlines, pylons and associated advisory buffer zone.

National Grid discourages new buildings within the buffer zone, however other uses including the following may be appropriate:



- Green space (avoiding active recreational use such as parks);
- Footpaths and cycleways; and
- Attenuation ponds.

In addition, powerlines and pylons are visually intrusive and may have an effect on the character of development on the site.

### INTERMEDIATE PRESSURE GAS MAIN

-  Two intermediate pressure gas mains cross the site, roughly parallel with each other, and associated 6m wide easement. It is intended to divert these.

### WATER MAINS

-  Foul Rising Main crosses the site, and associated 6m wide easement. It is intended to divert this.
-  Rising main running adjacent to Cypress Drive, and associated 6m wide easement. It is intended to divert this.



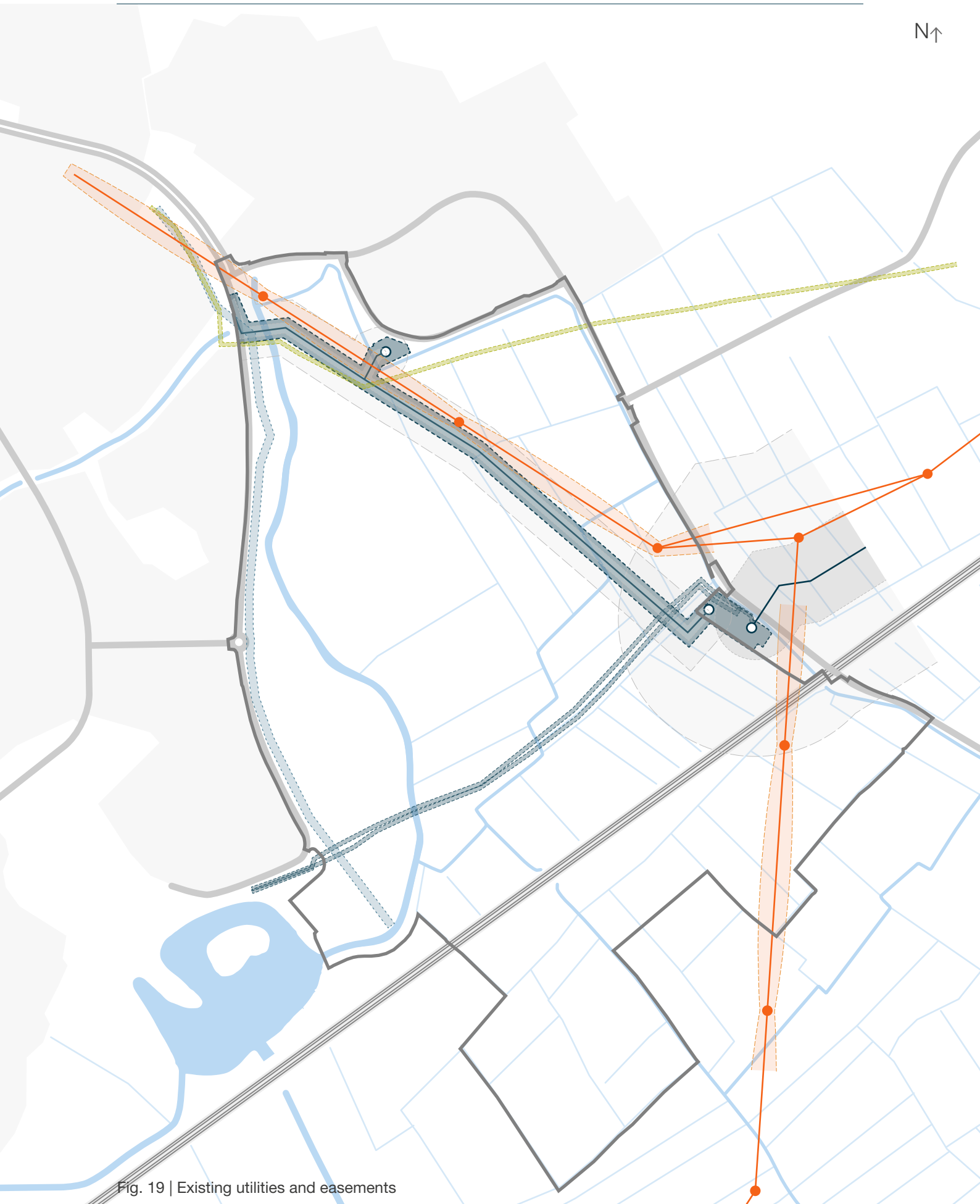


Fig. 19 | Existing utilities and easements

## 3.9 Movement

### ROAD ACCESS

The site is less than 1.5km from the A48(M), with onward access to the M4 via the A48 to the east. The site is connected to the A48(M) by Cypress Drive, which forms a dual-carriageway north of the junction with Fortran Road on the northern edge of the site.

Details relating to existing highway access and capacity on this route can be found in the accompanying Transport Assessment.

### WALKING & CYCLING

The site location is walkable on foot from St Mellons and Hendre Lake Park. Access to the site from the west is currently restricted by Cypress Drive and Faendre Reen. A Public Right of Way (St Mellons No. 4A) crosses the site from east-to-west but is currently unpassable.

A traffic-free network of footpaths exists within St Mellons allowing access to Hendre Lake Park (400m/ 5 mins walk) and St Mellons Local Centre (1.5km/ 20 mins walk).

National Cycle Network (NCN) 88 runs along Fortran Road, close to the northern edges of the site, heading eastward to Newport along St Mellons Road, joining traffic-free routes further east.

The Cardiff Cycling Strategy (2016-2026) proposes a Primary Route, cycleway 'C2', to run north from the site along Cypress Drive, providing a link to Cardiff city centre (9km / 30 - 45 mins). This route has the potential to connect with NCN88 within the proposed development site.

### PUBLIC TRANSPORT

There are several bus services operating in the local area including Routes 30, 44, 45, X5 and the X45 which combined, provide high frequency services to Newport and Cardiff.

### RAIL AND LRT

The Great Western Mainline runs through the site. The site is located approximately equidistant, 9km, between Cardiff Central Station to the west and Newport Station to the east, and is approximately 1 hour 45 minutes from London by train.

The site is identified as the location for a proposed new rail station, with potential for stopping trains on the London line and serving local rail routes.

The proposed development of 'South Wales Metro' includes possible provision of Light Rail Transit (LRT) as part of local rail service. Cardiff Parkway is identified as St Mellons Station on the South Wales Metro plan. These proposals therefore assist in facilitating the wider Metro aspirations.

Provision of a new station on the site would create potential for station park & ride facilities.

#### Key

-  Primary vehicle routes
-  Other key roads
-  Potential secondary vehicle access points
-  Primary cycling routes
-  Local walking and cycling routes
-  Public Right of Way (PRoW)
-  Existing railway line
-  Proposed station



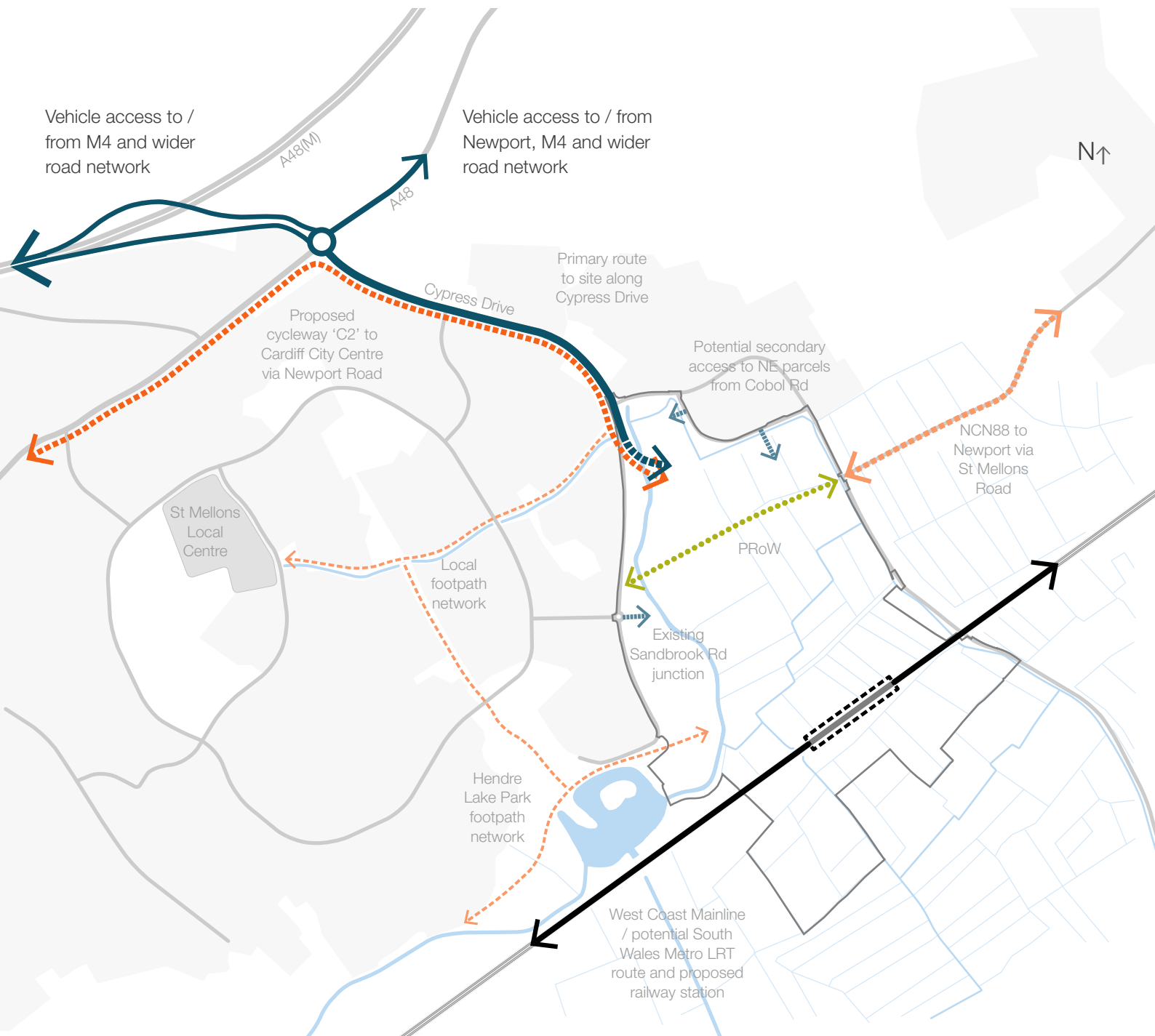


Fig. 20 | Existing access and movement

## 3.10 Ecosystems




Extensive ecological surveys have been conducted across the site and into surrounding habitats from 2017 to 2019. This included surveys for habitats and detailed species surveys for plants, terrestrial and aquatic invertebrates, herpetofauna, birds, riparian mammals, badgers, bats and dormice.

The site and surrounding habitats support populations of protected species including grass snake, barn owl, water vole, otter, bats and hazel dormice. The ecological interest is predominantly limited to the mature continuous hedgerows, primary reens and semi-improved neutral grassland particularly the area designated as a Site of Importance to Nature Conservation (SINC) north of the railway line.

Full details of the existing site-wide ecology is provided in the Environmental Statement.







### SITE SPECIFIC DESIGNATIONS

The following statutory and policy designations exist within and adjacent to the site:

-  Gwent Levels SSSI
-  Marshfield SINC
-  Hendre Lake Park SINC

### KEY HABITATS AND FEATURES

A number of features play key roles in the ecology and character of the site, contributing to the site's significance and SSSI designation. A description of these features is included in section 3.11.

-  Primary Reens
-  Secondary Reen and Field Ditches
-  Native, species-rich, intact hedge
-  Native, species-poor intact hedge
-  Native, species-poor hedge with trees
-  Native, species-poor defunct hedge

### GUIDELINES - REENS

The proposal has followed the guidance contained within the Wentloog Levels guidelines Nature Conservation and Physical Developments on the Gwent Levels. Specific guidance relevant to the reen network is as follows:

- Primary reens, 12.5m minimum offset either side; and
- Secondary Reens and Field ditches, 7m minimum offset either side.

If the infilling of a main reen or field ditch is unavoidable, either:

- The ditch should be realigned around the perimeter of the site, or
- A compensatory length should be created elsewhere in the site. These should be created between Autumn-Winter to avoid algae blooms.

Culverting should be a last resort. Lowering or fluctuation of water levels within the reens should not result from development.



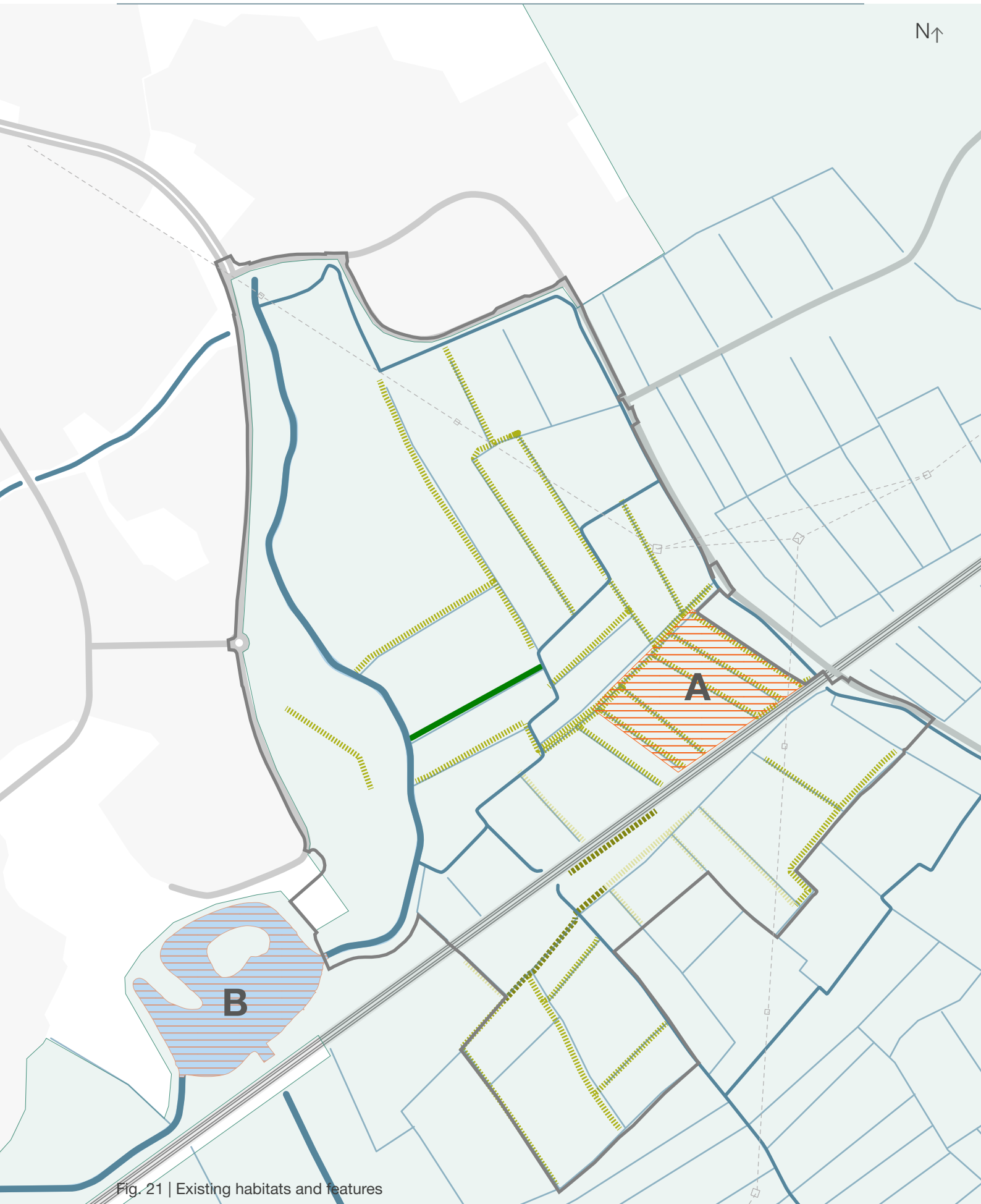


Fig. 21 | Existing habitats and features

## 3.11 Cultural Heritage & Landscape

The site is located within the The Gwent Levels Historic Landscape of Outstanding Historic Interest in Wales and SSSI.

These designations cite the importance of the area as a man-made landscape containing 'distinctive patterns of settlement, enclosure and drainage systems. These follow from successive periods of use, resulting in potential for extensive, well-preserved, buried, waterlogged, archaeological and palaeoenvironmental deposits surviving from earlier landscapes.'

The Glamorgan & Gwent Archaeological Trust (GGAT) characterisation study identifies the site as being within the 'Trowbridge' character area, on the northern edge of the designated historic landscape. The landscape is identified as being of Medieval origin, forming part of the lower-lying 'back-fen'. The area to the south and west of the site is identified within the Peterstone character area, which is likely to be of Roman origin.

The site is within a landscape area identified as being of medieval rather than Roman origin (source Glamorgan-Gwent Archaeological Trust 1999). GGAT identifies the site as being within a less significant area of the levels, which nonetheless has an important character and forms a buffer to the more sensitive landscape to the south.

Reens and field ditches form a significant part of the historic (and ecological) landscape and should be retained where possible. The site's location and geological conditions suggest a likelihood of archaeology being present.

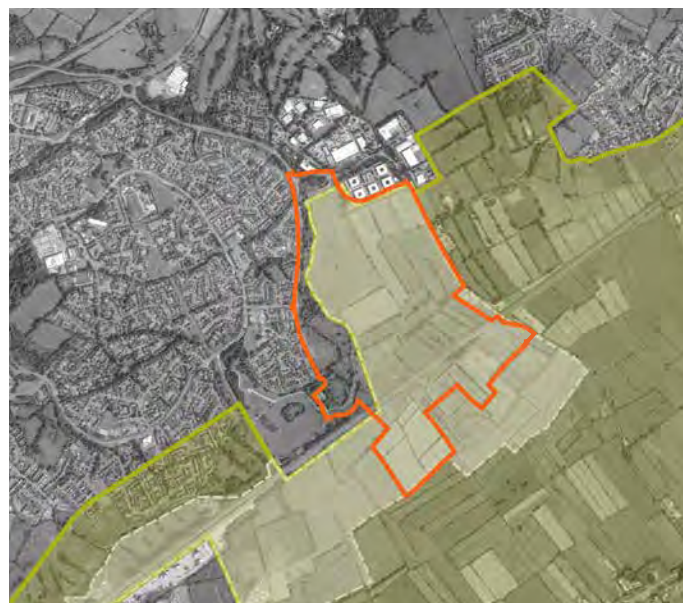


Fig. 22 | Gwent Levels Historic Landscape and extent of 'Trowbridge' character area

NB The desk based assessment reviewed information held by the Regional Historic Environment Record (HER), the National monument Record (NMR), Scheduled Monument and Listed Building information, as well as examining aerial photographs, cartographic and documentary sources.



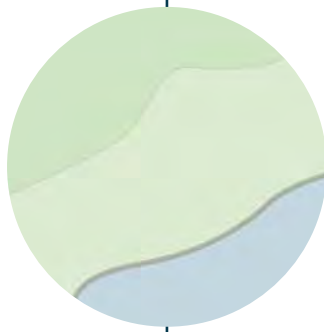
## THE EVOLVING GWENT LEVELS LANDSCAPE

The Gwent Levels have been worked, managed and maintained by people for millennia. Cardiff Hendre Lakes will continue this story through the continuing evolution of a man-made landscape.



### PRE-ROMAN Natural shoreline

Defined by intertidal estuarine zone and original shoreline.



### ROMAN & MEDIEVAL ERA Land reclamation begins

Initial sea defence construction dates back to the Roman era. Successive remodelling continues into and beyond the Medieval period. The pattern of fields and reens emerges.



### PRESENT DAY Landscape legacy

Distinct field patterns and reen system. Soil conditions means there is potential for archaeological deposits to exist.

Fig. 23 | Diagram showing evolution of Gwent Levels landscape

The Gwent Levels landscape includes a number of key features which are present on the site which are integral to both the historic landscape and SSSI designation.

## **HEDGEROWS**

Hedgerows are the main form of mature vegetation on the site, forming linear connected habitats around the boundary of fields. They are typically 10m or more in width and 5m or more in height. They are of varying quality, with most being in poor condition. The network of hedgerows is essential to creating connected corridors for local wildlife, particularly dormice, alongside other European Protected Species such as bats and barn owls. Hedgerows also help to create a visual break, screening views of buildings and reducing views of the neighbouring urban area.

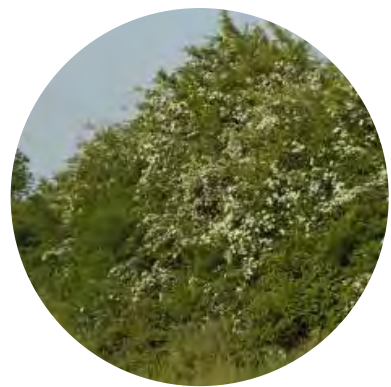


Fig. 24 | Native hedgerows

## **TREES**

Most trees within the site are within hedgerows and on the banks of the reens, with a few located in the middle of open fields.

The trees can be grouped into 'seasonal wet woodland': with Goat Willow, Crack Willow and Alder, found mainly to the immediate south of the railway line, and close to reen edges. The second group is mostly of oak in isolated woodland and scrub.



Fig. 25 | Mixed woodland and shrubs



### **SPECIES-RICH GRASSLAND**

Areas of species rich grassland, consisting of native grasses and wild flowers, typically located in areas of the site which have not been intensively grazed or improved.

Species-rich grassland is a habitat found within the site which is important for a range of local species and biodiversity interests. The fields in the south-eastern corner of the site are designated as a SINC in the Cardiff Local Development Plan.



Fig. 26 | Species rich grassland

### **REENS**

Reens are a network of historic, man-made water channels which drain the Gwent Levels landscape. They play a role in transmitting flows around the wider network, whilst field ditches help to drain water from each field into the reens.

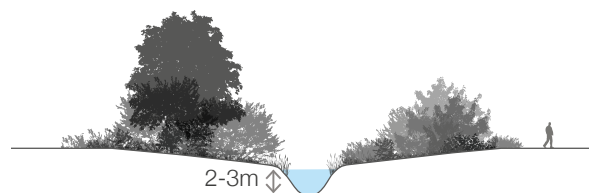
The network is central to the historic landscape character of the Gwent Levels, a designated Historic Landscape of Outstanding Historic Interest in Wales, and play an important role in the hydrological functioning of the area.



Fig. 27 | Reens

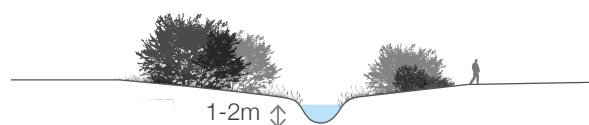
## PRIMARY REENS

The Primary Reens are the widest and deepest on site and they have the most established vegetated edges. They form part of a network of c.64km of main reens across the Gwent Levels, which the National Rivers Authority (NRA) manage. These reens are essential to the character, ecology and history of the site and are being retained wherever possible. Otters and watervoles have been identified along Faendre Reen which runs to the west boundary of the site.



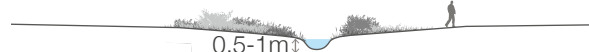
## SECONDARY REENS

This next category of reens on site form most of the boundaries between fields. Water levels in them are managed by pens, or 'stanks', structures that allow water levels to be lowered or raised using wooden planks. Small bridges which were part of drove ways criss-cross the reen network and allow continued grazing.



## FIELD DITCHES (GRIPS)

These are traditionally maintained by individual landowners and are the largest tier in the drainage network (1200km across the levels).



## SURFACE RIDGES (RIDGE AND FURROW)

The shallowest tier of the drainage network. These grips run through the fields and support taking water to the ditches and reens. They have been formed by hand digging and ploughing.



Fig. 28 | Typical reen and field ditch sections



## LANDSCAPE AND VISUAL CONTEXT

The 3km study area is primarily made up of the Wentloog Levels, a composite part of the larger Gwent Levels. The Levels form a strip of flat land between the Bristol Channel and the hills to the north. To the south and south-west, lie the Severn Estuary and the Somerset Coast beyond. The exposed tidal mudflats and salt marshes of the Estuary with its high tidal range have valued views inland to Wales, across the Estuary itself, and to the English coastline.

The Wentloog Levels are flanked by the settlements of Newport to the northeast, and of Cardiff and St Mellons to the southeast. To the north, the land rises into the Caerphilly Ridge. Of particular note are the peaks of (from west to east) Craig Llysfaen, Craig Ruperra, Coed Mawr, and Maes Arthur.

Settlement within the Levels is sparse and tends to coalesce in linear settlements, such as at Peterstone. The Levels are bisected by the Cardiff – London rail corridor and edged by the M4/A48(M) road corridor further north.

The existing character of the site reflects the historic Gwent Levels landscape, consisting of farmland reclaimed from the sea, incrementally over the past 2000 years. This is largely comprised of reclaimed grazing marsh, delineated by channels, known as ‘reens’, which have the dual purpose of draining the land and acting as stock boundaries. Faendre Reen, forming the western edge of the site, is distinctive locally for its width and more naturalised, meandering course.

The reens are commonly lined with hedgerows and hedgerow trees and form a patchwork of relatively enclosed fields. Interior field boundaries also include native hedgerows and areas of dense vegetation which visually break up the site and restrict wider views especially to the south. The larger and more open fields in the north-western area of the site are an exception to this. Historic surface ridging is also present and well preserved.

The overhead pylons are a dominant feature of the site. Consideration has been given to limiting the visual impact upon the development. The site is situated in close proximity to Hendre Lake Park and a corridor of land dense wooded vegetation on the western side of Faendre Reen.

Informed by desktop study and site visits, a Landscape and Visual Impact Assessment (LVIA) has been undertaken. Key issues include:

- The site is included within an important landscape designation, the Gwent Levels Historic Landscape of Outstanding Historic Interest (HLCA 19 Trowbridge);
- The Wales Coastal Path to the south is an important landscape receptor. Existing lines of vegetation provide partial screening from the Wales Coastal Path, however taller buildings above 3-4 storeys are likely to be visible from this receptor;
- Views from the west into the site are currently screened by the SSSI area along the east of Cypress Drive (along the alignment of the Faendre Reen);
- Distant views of the hills to the north including Mynydd Machen and Twmbalwm are experienced from the site;
- Panoramic views of the coast are likely to be afforded from a height of 3 storeys and greater from new development;
- Direct views into the site from adjoining low-lying areas are limited due to the presence of mature hedgerows and tree lines; and
- Views from users of Hendre Lake Park are considered although the intervening vegetation would provide a degree of screening.

Full details can be found within the LVIA chapter of the Environmental Statement (ES).

## 3.12 Engagement and Consultation

Throughout the process, considered and structured engagement has taken place with stakeholders including early dialogue with Cardiff Council, Newport City Council, Network Rail and Natural Resources Wales. Feedback from these and other stakeholders has helped to shape and guide the designs and development proposals.

Direct public engagement was undertaken between 20th November - 18th December 2019. During this period of consultation, the draft proposals were relayed via:

- Newsletter mailout to more than 10,000 addresses in Trowbridge, Marshfield and Old St Mellons;
- Two drop in events (in St Mellons and Marshfield) attended by over 250 people;
- Local press and interviews with coverage in Wales Online, Bristol Live, BBC Wales, Welsh Government, Wales Insider;
- Dedicated project website, with online feedback form (feedback received from over 200 people online and in hard copy);
- Social media promotion;
- Dedicated contact centre (Freephone, freepost, email);
- Email mail out to community groups, local businesses and other interest groups to promote the period of public engagement; and
- Briefings with community councils, ward councillors, AMs and MPs.

Key themes and findings are set out on page 67.



“

## WHAT THE COMMUNITY HAS TOLD US

Through an initial round of public engagement, which was held in November – December 2019, the local community raised several key issues and opportunities for Cardiff Hendre Lakes and Cardiff Parkway. These include:

### A connected transport interchange

*There was significant support for the development of a new transport interchange and Cardiff Parkway station, with people recognising the proposed development would create better transport links to Cardiff, Newport and beyond. People were also supportive of the development encouraging active travel.*



### A sustainable development

*The local community are supportive of the development being as sustainable as possible, with requests made for green energy sources, electric vehicle charging facilities and planted areas made up of native species. The community are concerned that the development could have an impact wildlife, flooding, air quality and noise.*

### Solving the traffic challenge

*The local community are worried about the potential impacts from an increase in traffic along Cypress Drive and the A48 roundabout and through neighbouring residential areas. There were concerns about nearby residential streets being used by station users for parking, rather than dedicated station parking.*



### A safe and attractive place

*The community want the development to be safe and attractive, with well-lit paths, interesting public realm, with the potential for art installations, mindfulness areas and active prevention of litter, graffiti and other vandalism. The local community also saw the development as a catalyst for improved facilities and access to Hendre Lake.*

### Job opportunities

*The local community supported the development's potential for creating jobs and providing better access to job opportunities. There was also some support for space for start up businesses and for the proposed development to engage with nearby schools and colleges.*



”



## 3.13 Constraints & opportunities summary

A summary of the key constraints is provided below:

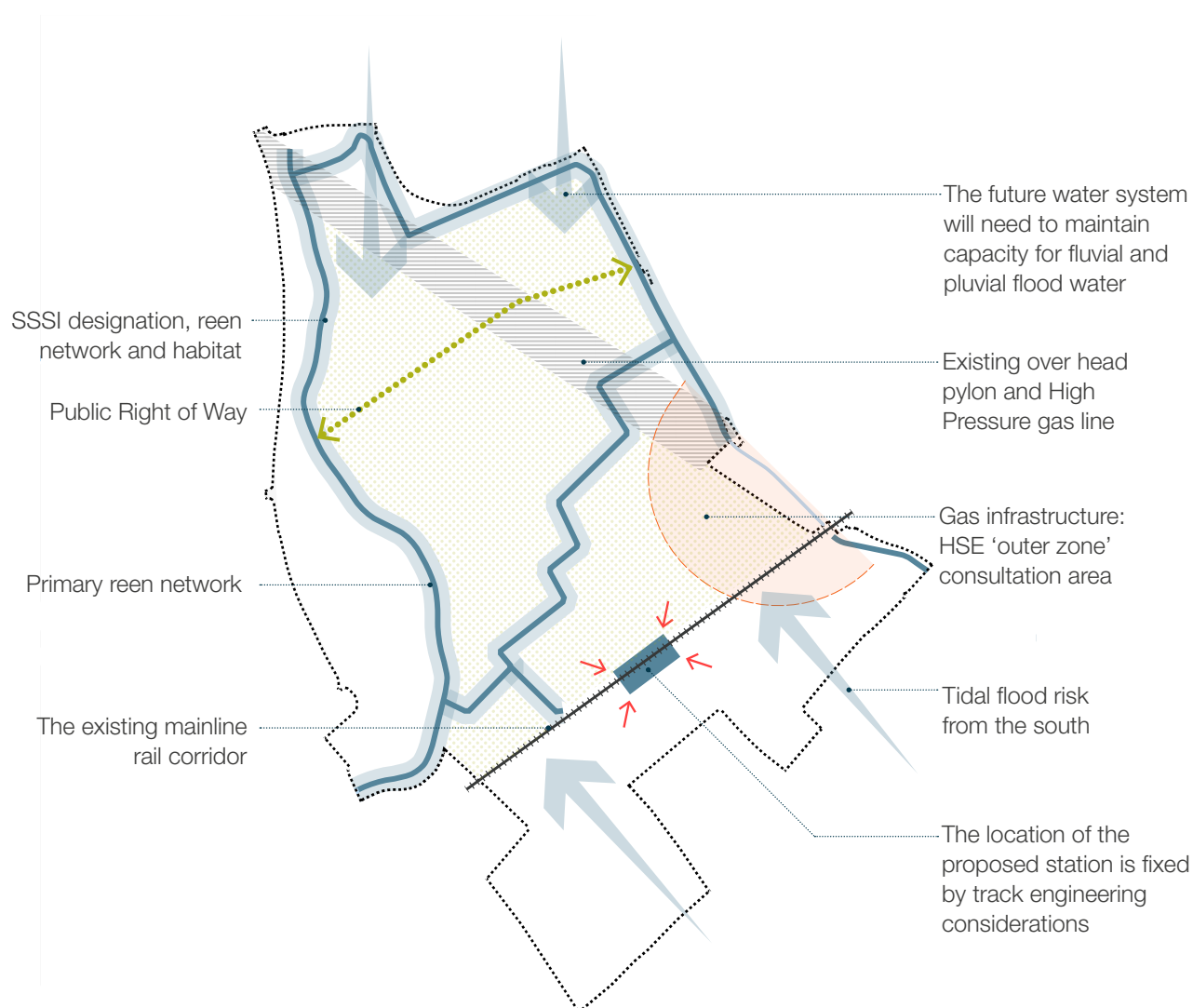


Fig. 36 | Constraints Plan

A summary of the key opportunities is provided below:

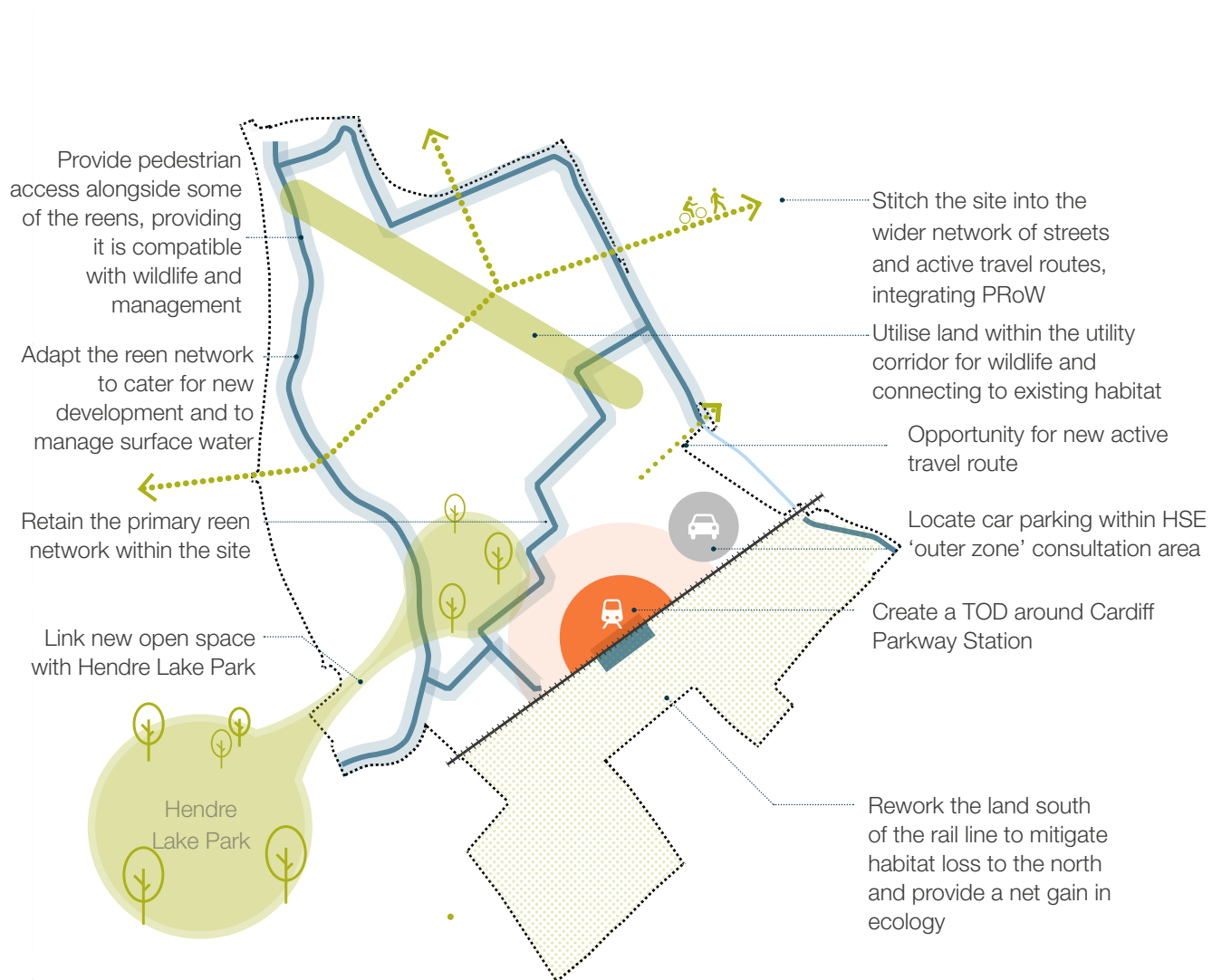


Fig. 37 | Opportunities Plan







## 4. Design evolution

## 4. Design evolution

### 4.1 Learning from global examples

In developing the strategy, comparable case studies were explored. These illustrate the changing trends in business hubs where TOD, public realm and landscape, high quality physical environments are central features. Examples of development that have positively responded to challenging wetland landscapes were also researched.



#### 1. Kings Cross, London

- High levels of connectivity via sustainable transport - rail, bus, active travel;
- High quality public realm - places to meet, gather and dwell;
- Range of employment space;
- A considered phasing and meanwhile strategy;
- Link to Central St Martins as an early on site occupier that brought young people and innovation into the early phases of development;
- Whilst the context is more urban, there are important lessons to learn from the creation of one of the UK's largest employment schemes; and
- Masterplan by Allies and Morrison and Porphyrios Associates.

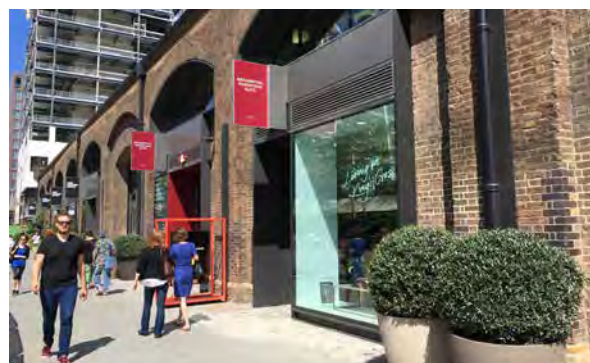


Fig. 38 | Kings Cross

## 2. Chiswick Business Park, London

- Home to some of the world's leading companies, including national, European and international headquarters;
- Car free compact pedestrian core set around a series of water bodies, parkland and other quality of communal outdoor space;
- Space for employees to rest and enjoy including an evening economy with gyms cinemas and restaurants in addition to workplaces;
- Commitment to sustainability;
- Integrated transport - proximity of rail, underground and bus; and
- Designed by Rogers Stirk Harbour & Partners in the mid 1990's.



Fig. 39 | Chiswick Business Park

## 3. Xixi Hangzhou, China

- The park stands on the outskirts of the city, which is located at one end of the world's longest artificial waterway, the Grand Canal;
- The apartment buildings sit on podiums in man-made water gardens that blend into the existing wetland landscape – the relationship between landscape, architecture and water is key to the atmosphere and character of the development; and
- The Xixi Wetland Estate was designed by David Chipperfield Architects for the Xixi National Wetland Park in 2015.



Fig. 40 | Xixi Hangzhou, China



## 4.2 Initial Studies

During the preliminary stage of design development, a number of scenarios were explored including:

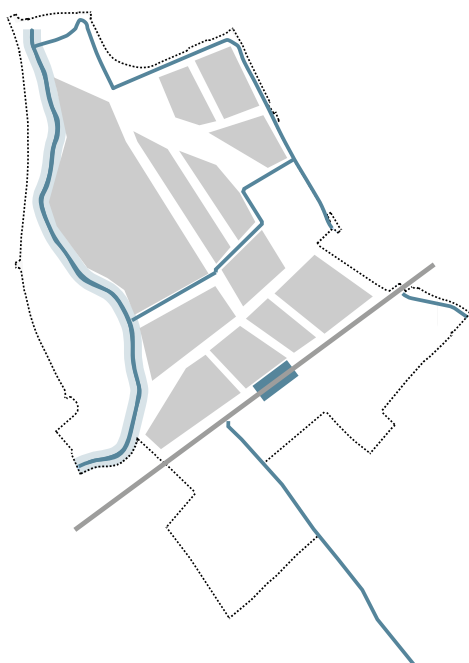
### RESTRUCTURING THE REENS

During the preliminary stage of design development a number of scenarios were explored including:

**A**

#### Making changes to the reens:

Initial studies considered moving Ty Fynnon Reen further north to create a larger unconstrained development area close to the station. This resulted in the loss of habitat and ecology in existing reen banks.



**B**

#### Working with the existing reen network: Preferred Option

Retaining the primary reen network but relocating secondary reens to deliver viable development plots and a degree of flexibility in the future layout of the site. Reprovision of secondary reens within an integrated landscape strategy south of the railway line, in line with the site allocation. This approach allow retention of key features of the SSSI and historic landscape, along with key habitat areas.

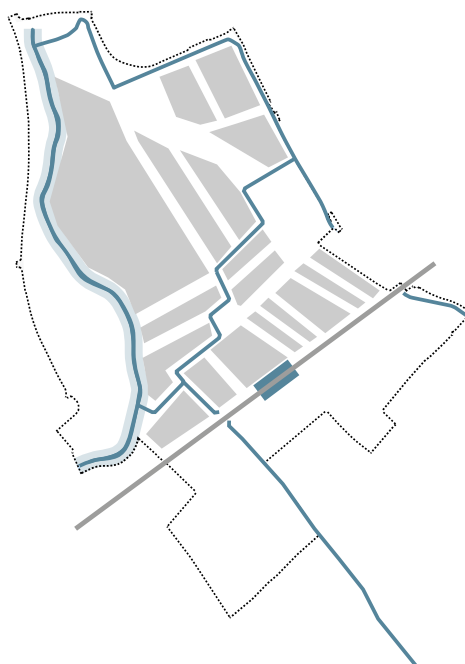


Fig. 41 | Initial studies: Site Structure

## HABITAT CONNECTIVITY

Following consultation with NRW, the team looked at means of creating a site wide habitat strategy. This considered two main options:

**A**

### A network of habitat areas:

This included green bridges over the rail line to connect with habitats to the south. This was demonstrated to be too costly and would have involved creating a structure over the main rail line. This structure would create a safety risk and require agreement from Network Rail. This was considered unviable and not taken further.



**B**

### A contiguous habitat for wildlife: Preferred Option

Create and maintain a continuous connected habitat within the northern area of the site (forming an 'inverted V'), along the utility corridor and linking with the existing habitat within the land to the west of the site under ownership of Cardiff Council. This was considered to be a preferable solution for enhancing ecology within and surrounding the site.

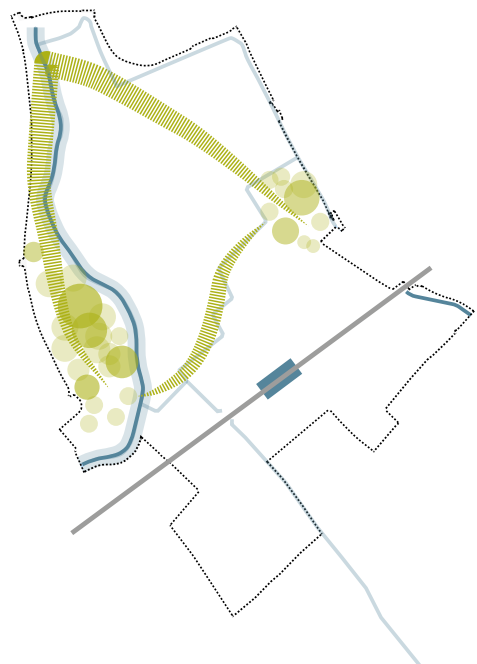


Fig. 42 | Initial studies: Habitat Connectivity

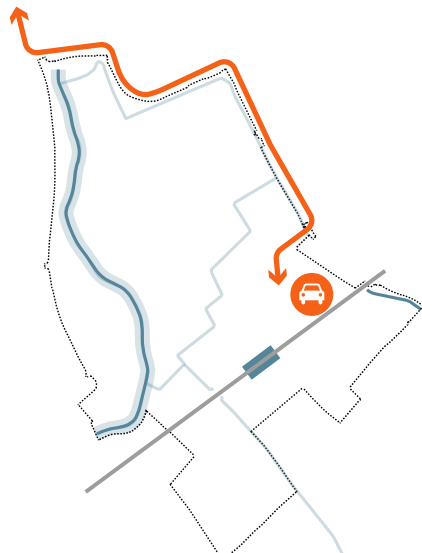
## PRIMARY ACCESS

Multiple options were considered for the location of the primary access point and the alignment of the main access route to the new station. These included:

**A**

### Access from the East:

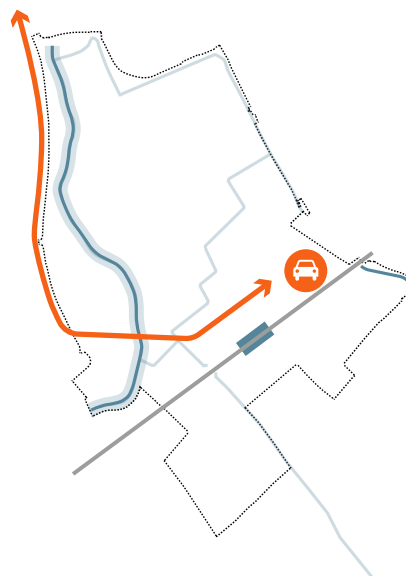
Improving highways and lanes on the northern and eastern edges of the site to bring traffic in from Heol Las directly to the station park & ride, avoiding the development.



**B**

### Access from the West:

Improving or realigning Cypress Drive to bring traffic in from west directly to the station zone. Traffic is routed through the site but avoids the main development areas. This could impact ecology west of Faendre Reen.



**C**

### Access from the North: Preferred Option

Route enters the site in the north western corner and is aligned through the site, however traffic is routed through station area. This route minimises impact on ecology.

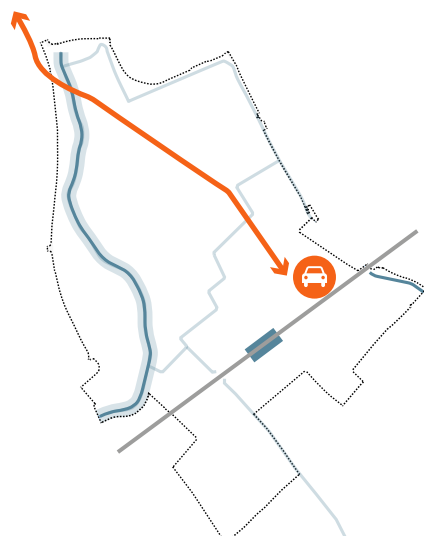


Fig. 43 | Initial studies: Access



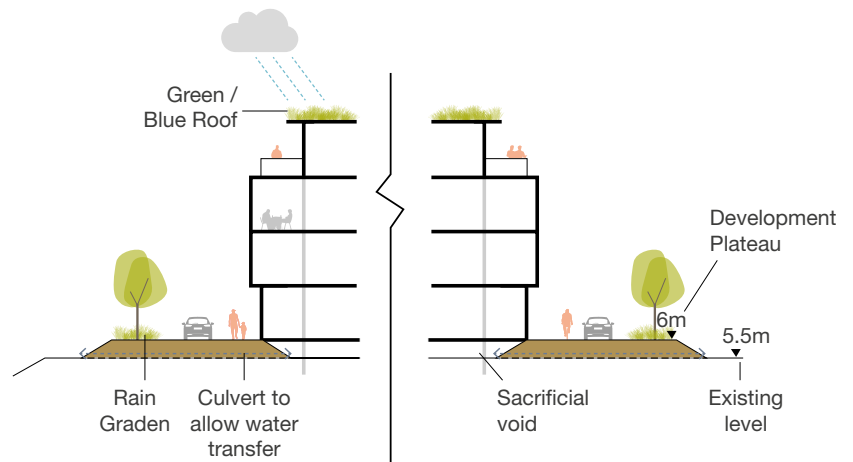
## FLOOD & DRAINAGE

The iterative process of designing the development included assessing a range of options for managing flood risk and surface water. This process included assessing how to limit the volumes of aggregates required to allow the development to be constructed. The options assessed included:

**A**

### Sacrificial voids

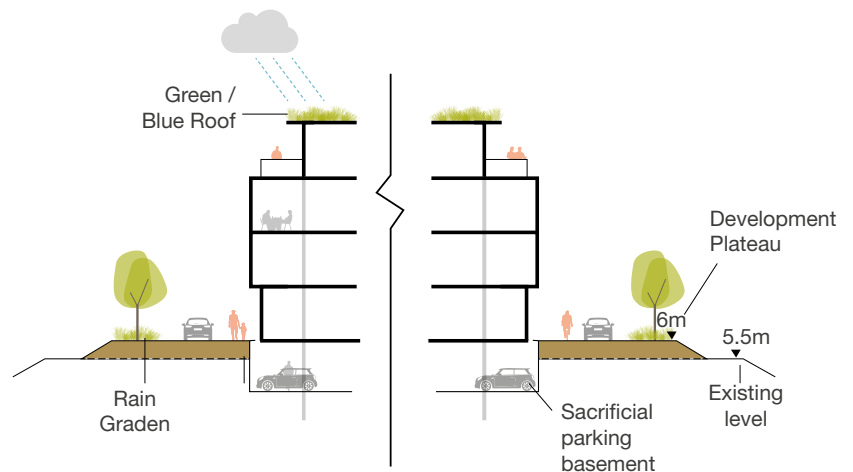
Land raised to protect access routes from flooding. Buildings ground floor level elevated with sacrificial voids beneath to accommodate flood water. Discounted as it resulted in more import of fill than initially thought, requires the pumping of stormwater flows, is less flexible and does not meet TAN 15 requirements.



**B**

### Sacrificial basement parking:

As per option A, with larger voids to provide basement car parking which can accommodate flood water. Discounted as it resulted in more import of fill than initially thought, requires the pumping of stormwater flows, is less flexible and does not meet TAN 15 requirements.



**C**

### Raised plateaux: Preferred Option

Access, buildings and public realm all on raised development plateaux, to allow future flexibility to located buildings and achieve a more resilient storm drainage strategy.

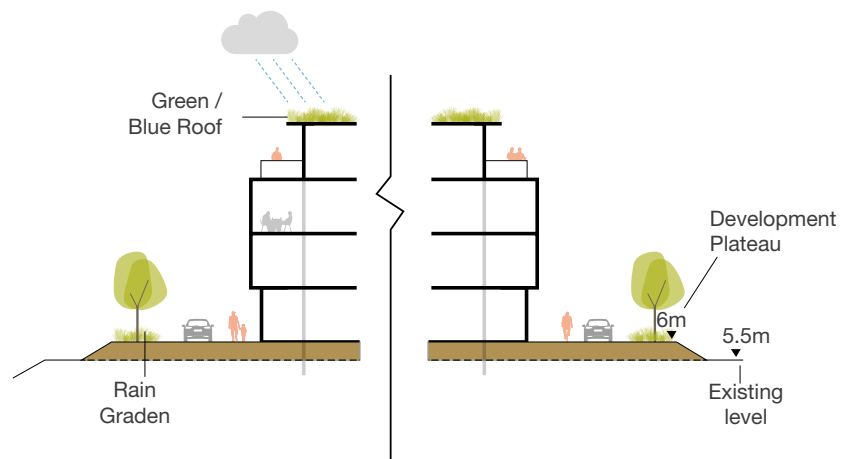


Fig. 44 | Initial studies: Flooding

## 4.3 Masterplan Anatomy

### PRIMARY INFRASTRUCTURE

- 1 Retaining the services and utilities within a landscaped corridor.
- 2 Retaining the existing primary reen corridor with potential to reconfigure or relocate existing field ditched.
- 3 Retaining the habitat area to the west of Faendre Reen.



### REWORKING THE LANDSCAPE

- 1 Protected habitat along the services/utility corridor, connecting with the land west of Faendre Reen to form an inverted 'v'.
- 2 New, accessible public park to connect St Mellons and existing Hendre Lake Park landscape.
- 3 New north-south public realm spine to support pedestrian movement and place sustainable drainage at the heart of the developments character.
- 4 New 'east-west' public realm 'spine', providing pedestrian access and sustainable drainage as central components to the character of the proposed development.





### GETTING TO AND FROM THE SITE

- ① Multiple opportunities for connections for active travel that link to the existing network. The optimal masterplan includes works within NCC which will be subject to separate planning applications. The masterplan has therefore considered alternatives should these not be secured through the planning process.
- ② A direct route for vehicles to access the site and the station which avoids the main areas of the development.
- ③ A central public realm spine to and east-west routes to support pedestrian and cycling access and movement.



### DEVELOPMENT SET IN THE LANDSCAPE

- ① Integrating development plots within the new green grid and public realm spine.
- ② Orientating building to maximise solar gain.
- ③ Creating three distinct areas of development with a higher density cluster around Cardiff Parkway.

Fig. 45 | Design Concept diagrams



## 4.4 The Masterplan Concept

Drawing on the conclusions from the design development and feedback from early engagement sessions with key stakeholders, the masterplan concept was developed.

The diagram opposite shows the key elements of the emerging approach that set the stage for further evolution of the masterplan principles and the illustrative proposals. The key elements of the concept masterplan include:

- 1 Retaining the primary reen network within and surrounding the site.
- 2 The retention of the utility corridor, creation of an inverted 'v' landscape area, and co-location of the habitat mitigation.
- 3 The creation of 3 'areas' of development set around the primary reens and wildlife corridor.
- 4 Blocks orientated to maximise solar gain and views to the Faendre Reen corridor.
- 5 A focal space around the station and collocated interchange.
- 6 Primary access from the north via Cypress Drive to allow for a largely car-free core. Main station parking and vehicle access located to east of station.

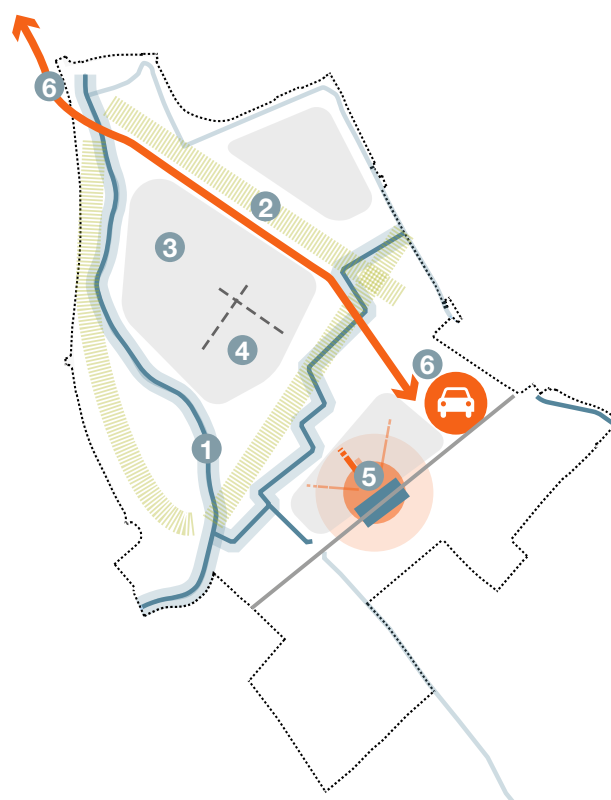


Fig. 46 | The key masterplan concepts



Fig. 47 | Illustrative Masterplan



## 4.5 Character

The masterplan proposes four distinct character areas that reflect and respond to the context of the site, proximity to the new railway station and relationship with surrounding areas.

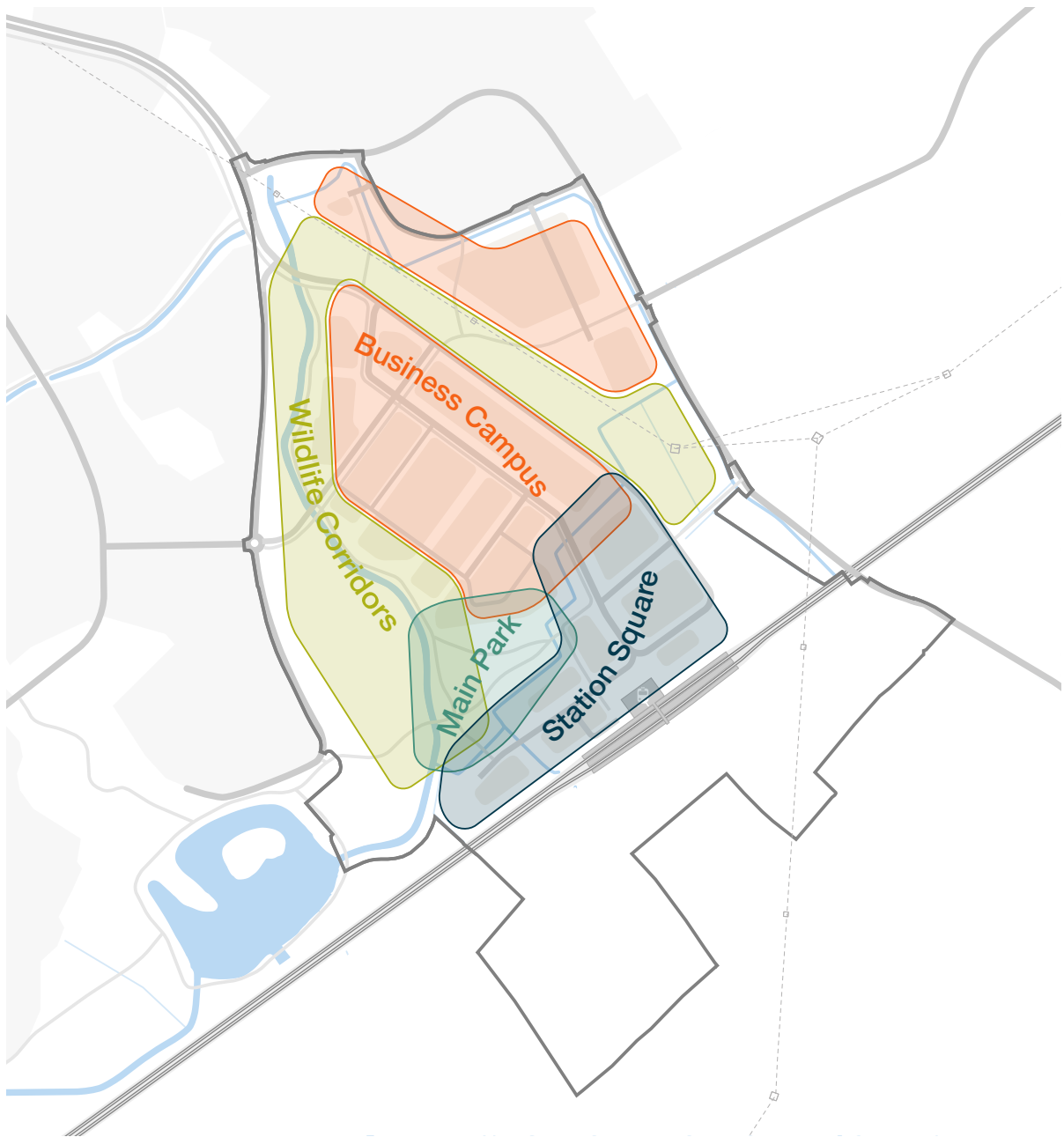


Fig. 48 | Character area visualisations





### Station Square

The main point of arrival and departure for people coming to Cardiff Hendre Lakes by rail and bus, focussed around the new railway station and interchange.

Surrounding development will be concentrated here with taller buildings and a more urban character reflecting the importance of this area. The heart of this will be a bustling square framed with active ground floors and amenities to support life beyond the desk and to animate this key space.



### Business Campus

The heart of the development, focussed around a high quality, vibrant public realm spine which helps pedestrians and cyclists move through the site, and integrates the development with surrounding areas.

The Business Campus will be a key address for new business, framed by new buildings. Its character focusses around a central linear water feature that creates a distinctive and attractive environment for people to spend time.



### Main Park

A significant new open space for the local residents, visitors and business community, connecting people with the natural environment of the Gwent Levels. The park contrasts the Station Square area by creating an open, green landscape.

It will provide a vital recreational resource for people to meet, walk over lunch, for children to play and for events, as well as contributing to habitat creation and sustainable water management.



### Wildlife Corridors

Green corridors following Faendre Reen and the existing utilities corridor. These areas will create a series of connected habitat rich spaces. New paths to create recreational routes for walking and cycling will allow people to experience nature as they move through the site.

Lower scale buildings will be set within this landscape, sensitively integrated with the green character of the surroundings.



# Station Square

## A SENSE OF ARRIVAL

A new station building and public square will create an immediate first and last impression.

## THE STATION AS A PLACE

Cafes, restaurants and other local amenities will frame a bustling public square, the heart of which will be the new Cardiff Parkway Station.

## SEAMLESS TRAVEL

Sustainable transport will be made convenient by locating rail, buses, taxis, bike storage and station park & ride within easy walking distance of one another.



Fig. 49 | Illustration of proposed station and public square



### **AN EMPLOYMENT CLUSTER**

Taller buildings will be concentrated around the station and interchange to create a focus for workplaces in the most connected part of the proposed development.

### **REFLECTING THE LEVELS**

Water features and planting will be carefully incorporated into the public square to manage surface water using the same techniques that have sustained the Gwent Levels.





# Business Campus

## PLACES FOR PEOPLE

A focus on pedestrians by routing the primary access for cars and other vehicles to the site periphery, high quality spaces and streets can be created within the proposed development to allow people to meet and gather.

## STREET LIFE

Transparent ground floors and front doors facing the streets will help create a sense of liveliness, make people feel safe and allow workers to collaborate both inside and outside of the office.





### **FLEXIBLE BUILDINGS AND PLOTS**

Blocks that allow a range of appropriate building types to support businesses of varying sizes. This will help start-up and SME's to thrive, as well as supporting established larger companies.

### **PRESERVING THE PRIMARY REENS**

The key elements of the historic reen network are retained and interwoven within the landscape of Cardiff Hendre Lakes.

### **LIVING INFRASTRUCTURE**

Reflecting the wider Gwent Levels, water management, habitat creation, amenity space and site character are defined by the integrated green and blue infrastructure approach.





# Wildlife Corridors

## WORKING WITH NATURE

New buildings placed within the landscape and not imposed upon it. Buildings will be set back to create a sense of openness. The natural character of the Faendre reen will be preserved for future generations.

## A PLACE FOR WELL-BEING

New walking and cycling routes will allow the local community and workers to access the natural environment for fresh air and time away from the desk.



Fig. 50 | Illustration of Faendre Reen Corridor



### **A DIFFERENT ENVIRONMENT**

Facilitating choice for a range of potential needs, the naturalistic areas of the site will provide a markedly different working environment to the Station area and Central spine.

### **LINKING GREEN SPACES**

Streets are aligned to create direct views to the Faendre Reen from deep within the site.





# Main Park

## A PLACE FOR EVERYONE

An invaluable new, green amenity space for the local community, visitors, day-to-day workers, the young and the old.

## ACCESSIBLE OPEN SPACE

Bringing the Gwent Levels to people by allowing unfettered access to the Ty Ffynnon reen.

## AN EVER-CHANGING LANDSCAPE

A park that continually changes throughout the seasons. A multi-purpose landscape that is allowed to flood during storm conditions as part of a carefully choreographed water system.

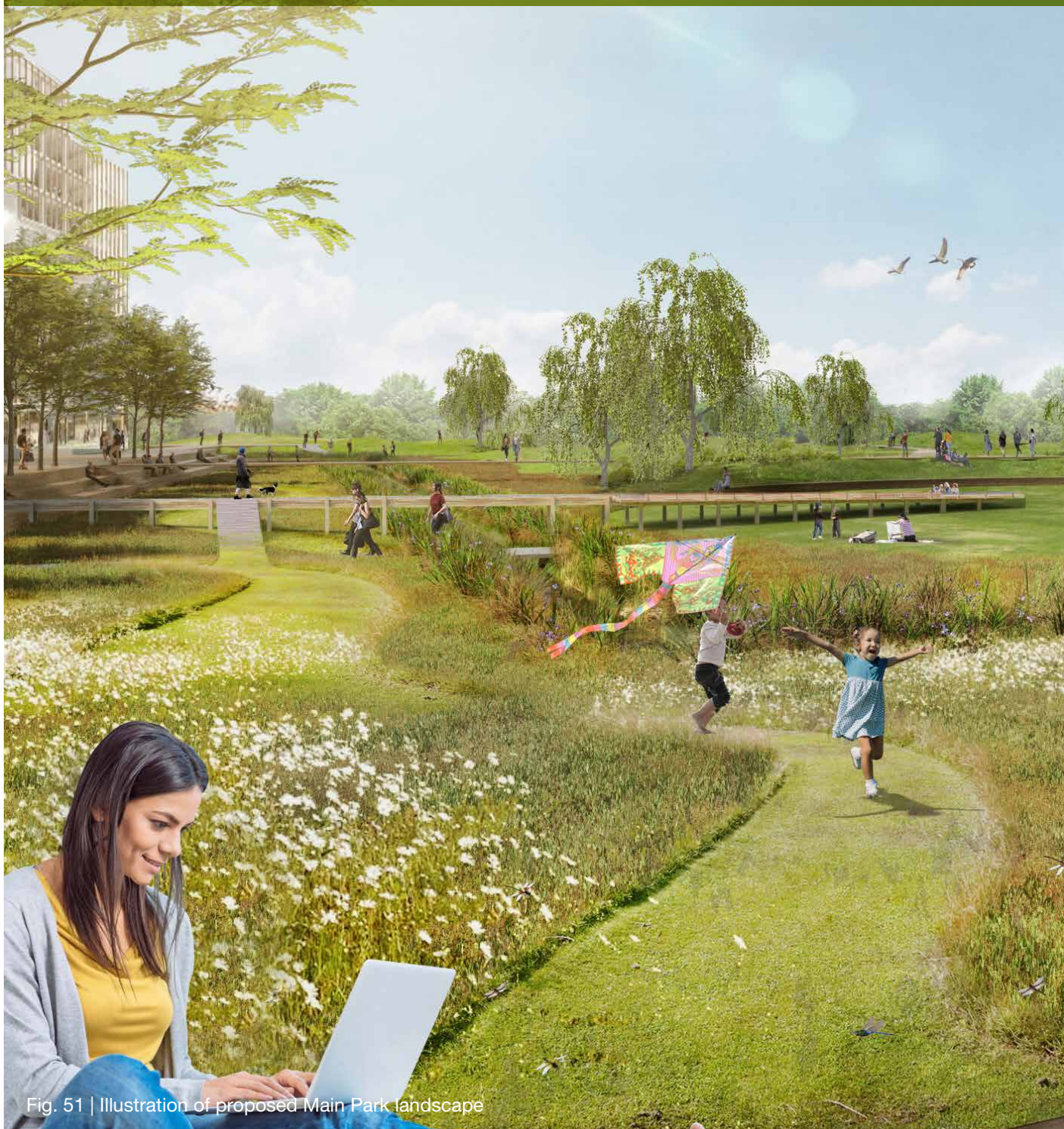


Fig. 51 | Illustration of proposed Main Park landscape



### **WORKING OUTSIDE**

Taking advantage of ever increasing levels of digital connectivity to allow people to work within the park.

### **SOMEWHERE TO PLAY AND LEARN**

An expanse of open space for children to play unhindered by cars. A place to experience nature first hand and understand the uniqueness of the Levels.

### **A MOSAIC OF HABITAT**

Careful planning and management of local ecosystems to provide a long term home to the precious wildlife of the Gwent Levels.









## 5. Site design and access

# 5. Site design and access

## 5.1 Parameter: Extent of development

The extent of new development will be limited to the development area identified on the parameter plan, totalling some **30 ha**.

All new buildings will be located within this area. No development is proposed to take place outside this area, with the exception of access roads, active travel routes, open spaces, habitat mitigation areas and other infrastructure/engineering works required to facilitate the development.

Proposed development areas will include provision of raised plateaux. Proposed ground levels will ensure that developed areas are flood free during a 1 in 200 year tidal flood event event and 1 in 100 year pluvial

flood event. Depth of flooding will not exceed 0.6m during 1 in 1000 year flood events. This will also ensure that requirements for surface and foul water drainage are met. Full details are provided in the Flood Consequences Assessment and Environmental Statement.

South of the railway line works are required associated with constructing the necessary additional embankments, infrastructure and access road for the railway station. In addition works will take place associated with the creation of new habitats and flood storage and the management of existing habitats.


## 5.2 Parameter: Use and Quantum

The proposed total floor space within the development is up to **90,000 sq m** GFA\*.

The planning application proposes B1, B2, B8 Employment/Office development throughout, alongside ancillary uses. Any other potential land-uses on the site will form part of future planning applications.

\* GFA = Gross Floor Area. GFA represent the usable floorspace of a building, excluding external walls and circulation areas.

**Key**

 Development Area / B1, B2, B8 uses



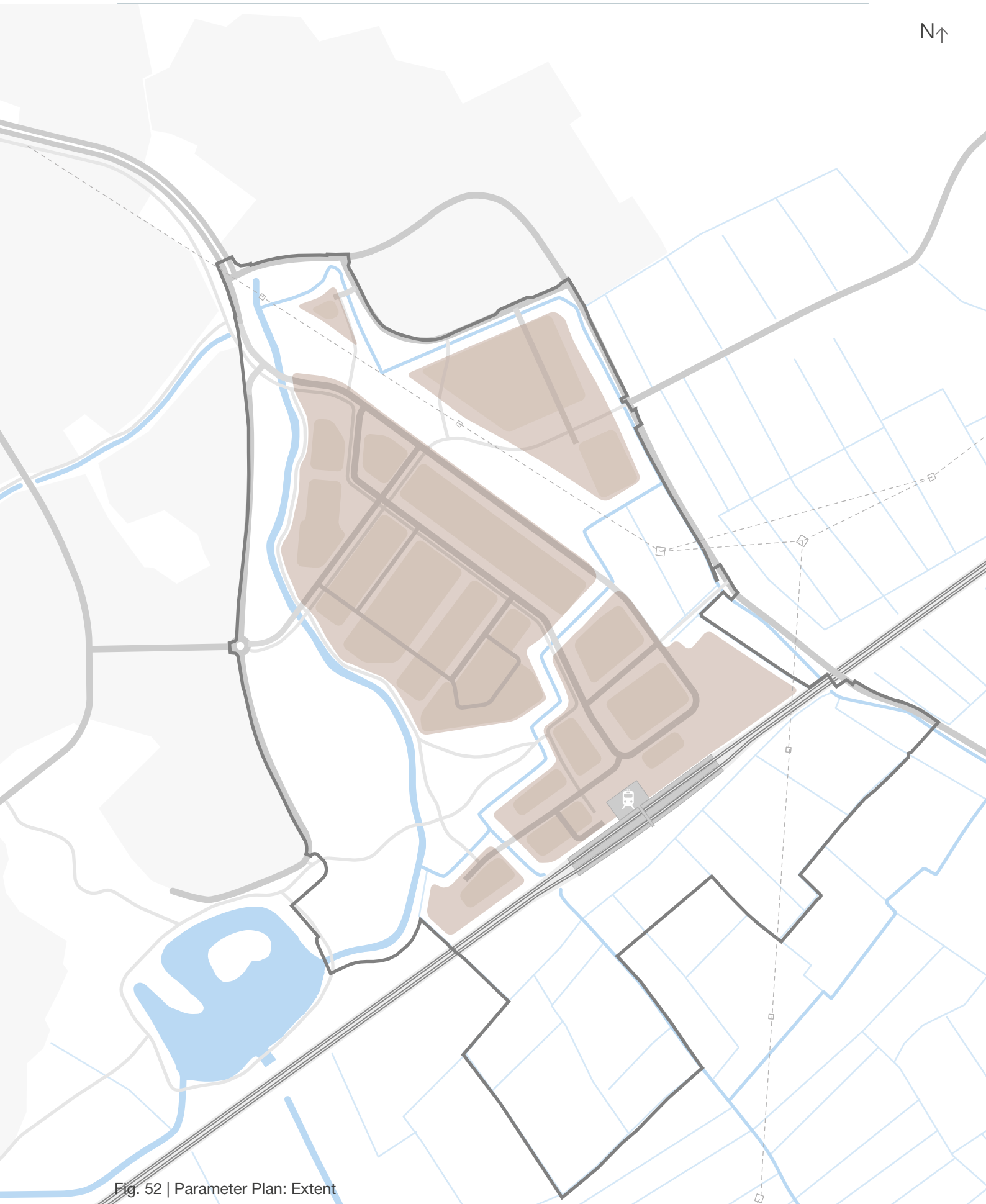





Fig. 52 | Parameter Plan: Extent

# 5.3 Parameter: Primary access points

Figure 42 shows the proposed location of the primary vehicle and pedestrian access points into the site: Cypress Drive, Cobol Road and Heol Las. Additional access will be provided for emergency vehicles.

## VEHICLE ACCESS

Vehicle access to the site will be provided as follows:

-  A new junction on Cypress Drive will in the north eastern corner of the site will provide vehicular and other access into the site. The junction will afford priority to vehicles entering the site.
-  A secondary vehicle access point will be provided from the west, from an enhanced junction with Cypress Drive/Sandbrook Road. This will be reserved for emergency access and public transport.
-  Two new junctions on Cobol Road will provide vehicular and other access into the north east corner of the site.

## ACTIVE TRAVEL

Access routes for pedestrians and cyclists (subject to obtaining all necessary and rights for PROW) will be provided to create connections to:








-  Cypress Drive in the NE corner of the site, and onward connections via the proposed Primary Cycle Route 'C2', linking paths into St Mellons.
-  Sandbrook Road, and onward footpath routes linking to St Mellons.
-  Hendre Lake Park in the south western corner of the site.
-  St Mellons and Business Parks to the north of the site, via the street network (two access points)
-  St Mellons Road to the east of the site, and onward connections via National Cycle Network route NCN88. Works in NCC subject to separate planning application.
-  Heol Las, in the south eastern corner of the site, and onward access to the rural lane network (subject to permissive rights agreement with land owner). Works in NCC subject to separate planning application.
-  The existing Public Right of Way will be realigned within the development, retaining access points at similar locations on the eastern and western boundaries of the site.



Fig. 53 | Parameter Plan: Primary Access Points



## 5.4 Parameter: Landscape areas

Some of the areas identified on the parameter plan are proposed to be set aside to provide the landscape setting for the proposed development, and the ecological mitigation.

The design and construction of new cycle routes, footpaths and public realm will have regard to these landscapes, so that specific features are protected and enhanced.

### **A** **A Wildlife corridor**

A ecologically rich corridor abundant with native habitats for dormice, woodlands, wet woodlands, following the alignment of the overhead powerlines and high pressure gas mains.

### **B** **Main Park**

An open space in the heart of the development, providing amenity to users, flood alleviation, sustainable drainage and habitat mitigation.

### **C** **Southern Mitigation Area**

An area to be set aside for new habitats to compensate and mitigate for proposed changes to the field ditch and hedgerow network and other habitats to the north of the site.

### **D** **Reen offset areas**

Strips of land on both banks of retained reens in the northern area of the site, which are safeguarded from built development, protecting reens and associated habitats as key elements of the SSSI, and providing access for management. (12.5m wide)

The agricultural land south of the railway line will be managed to provide ecological and landscape benefits. The open space west of Faendre Reen will be managed to provide access, ecological and landscape benefits.

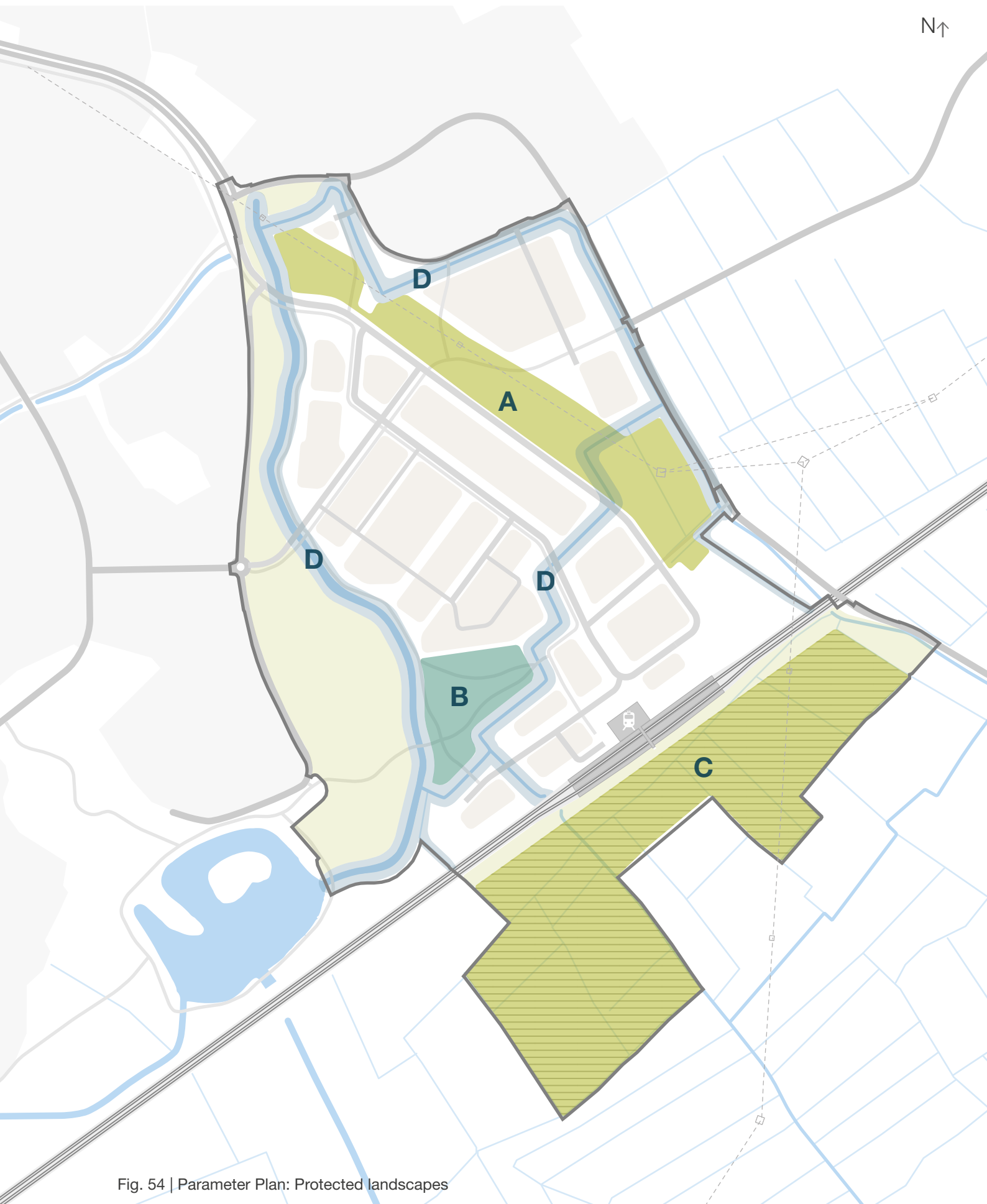


Fig. 54 | Parameter Plan: Protected landscapes

## 5.5 Parameter: Heights

The design approach to the distribution of heights concentrates taller buildings around the station to optimise the benefits of proximity to station and interchange facilities and contribute to the vibrancy of the Station Square.

Building heights will need to be tested though the detailed design stages to demonstrate how overshadowing of reens has been minimised as shading has an adverse impact on reen wildlife habitats.

Moving north from the station building heights will reduce with taller elements aligned to key sight lines and public spaces to assist with wayfinding.

The heights of new buildings will be limited to the following range:

 **STATION ZONE**  
*up to 15 storeys*

 **MAIN AREA**  
*up to 12 storeys*

 **NORTHERN PARCELS**  
*up to 6 storeys*

Maximum floor-to-floor height is 4m.  
Please see LVIA chapter of environmental statement for additional details.

Maximum height parameters do not represent intended average height of buildings within each block. Net total size of buildings will be limited by total amount of proposed floor area within the development.



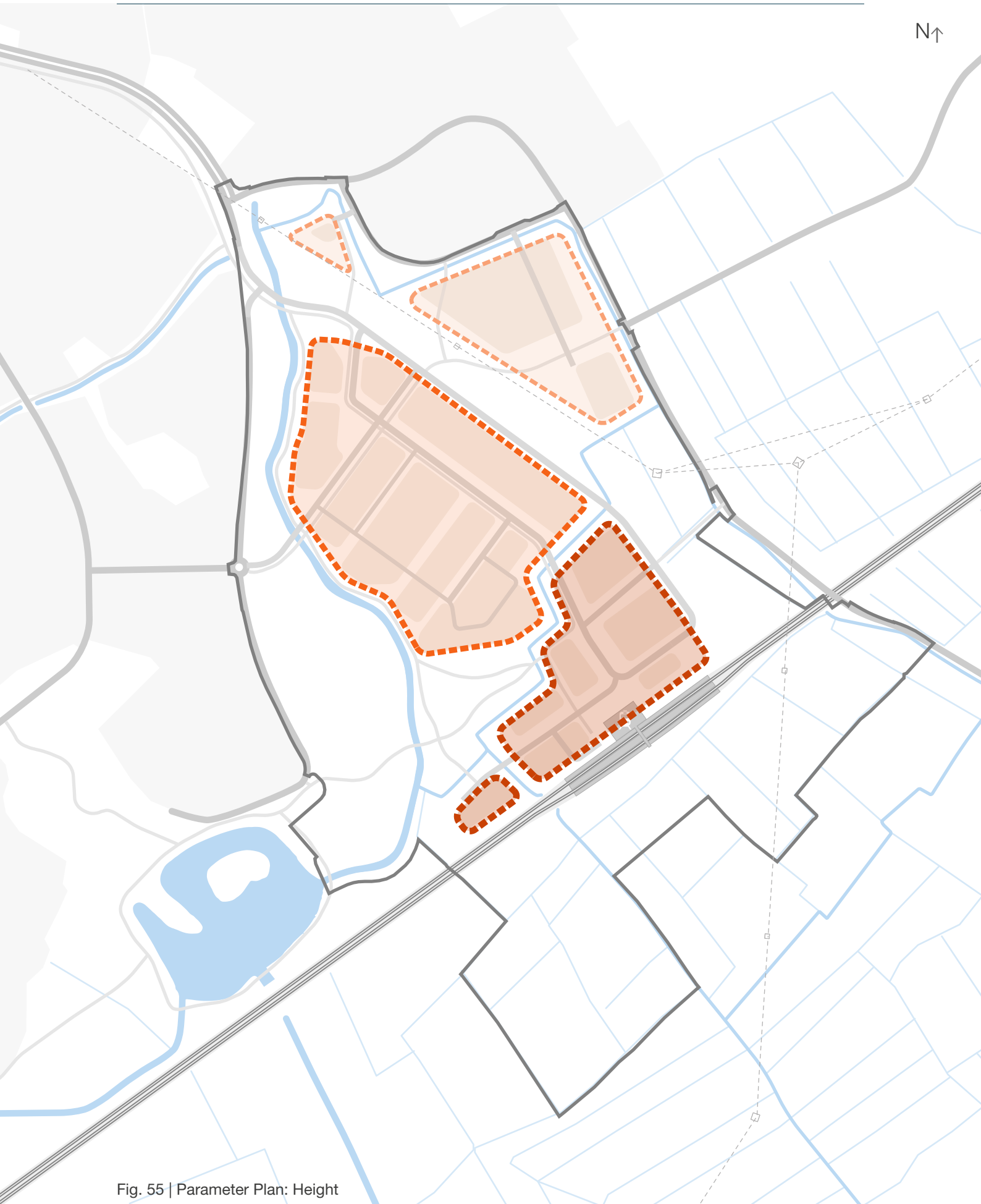


Fig. 55 | Parameter Plan: Height

## 5.6 Parameter: Movement

### 5.6.1 THE MOVEMENT HIERARCHY

The layout of the site, and the design of the streets and active travel network, will create an inclusive place which prioritises walking and cycling as the primary means of movement to, from and within the site. Proposals will follow the principles set out in Manual for Streets, Manual for Streets 2, PPW.

The network of streets will be direct and legible, providing easy navigation within the site and connections to the surrounding area. Public spaces at key points within the movement network will help to support site legibility.

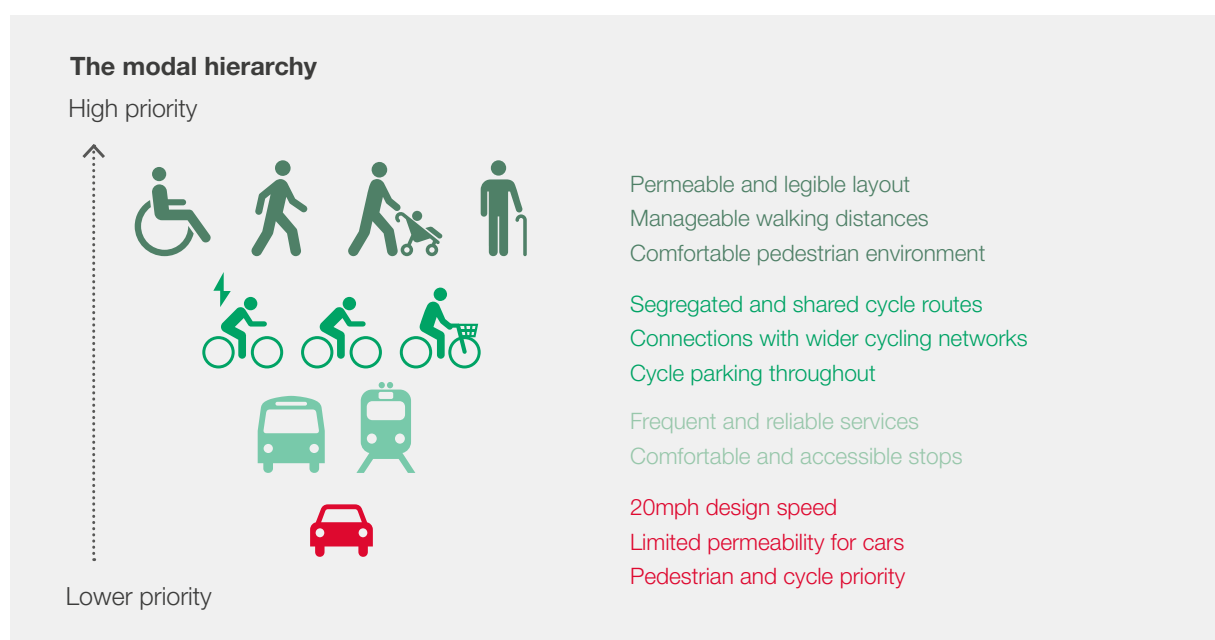
The design speed of streets will be **20mph or lower** throughout the site, making them safer and easier to cross for pedestrians of all ages and abilities. This could include a range of speed management features such as raised tables, pinch-points, pedestrian priority crossings and textured surface materials.

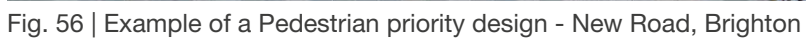
Wayfinding signage will be introduced within the site to assist with promoting active travel as a primary means of movement, highlighting key routes, destinations and journey times.

Street ‘furniture’ and other infrastructure which is needed to support active travel, including cycle parking and benches, will be provided.

Cycle hub facilities will be provided adjacent to the railway station, including cycle parking for up to 100 bikes.

There is the opportunity for ‘Nextbike’ or similar facilities to be provided within the development. This could include docking stations close to the railway station and at other locations within the development.







## 5.6.2 STREET HIERARCHY

In order to provide access throughout the site for all modes of travel, a hierarchy of streets is proposed. All streets will have a **20mph or lower** design speed, and support ease of movement and crossing of carriageways for pedestrians and cyclists:

### Primary Access Roads

A key vehicle route for accessing the station park & ride and for service vehicles, avoiding the key central areas of the site. Following the alignment of the wildlife corridor, with parkland along one side and a tree lines, boulevard character.

### Secondary Streets

Additional vehicle routes into the site providing access resilience to the main areas of the development and station. With the potential for these to have the character of 'Green Streets'.

### Tertiary Streets

An interconnecting network of streets providing access to all plots within the site, providing pedestrian access with the potential for these to have the character of 'Green Streets'.

### Main Spine

Lightly trafficked street providing access through the key public realm spine of the site. Non-standard carriageway design and materials to encourage low traffic speeds and pedestrian and cycling priority, with higher quality hardscape treatment and tree lined, boulevard character with spaces to sit and dwell.

Similar public realm treatment could be applied to tertiary streets closer to the new station, where pedestrian volume is likely to be highest.

Vehicle access to the proposed station will include the following car parking provision:



### Pick-up / Drop Off Area

Pick-up / drop off loop and temporary waiting bay with approximately 12 short stay and 30 accessible parking spaces.



### Station Park & Ride

Approximately 600 space car park (up to 650 total including short stay spaces).

Car parking for other land-uses will be provided on plot and/or in shared car parking areas, subject to the requirements of each development parcel and Cardiff Council Guidance.

A limited amount of short-stay parking will provided on street.

Consideration will be given to the role of parking provision in promoting sustainable modes of travel to the site and discouraging private cars as primary means of access. This will include providing EV charging points, and supporting a transition away from petrol and diesel cars.

Full details of access and car parking provision can be found within the Transport Assessment.

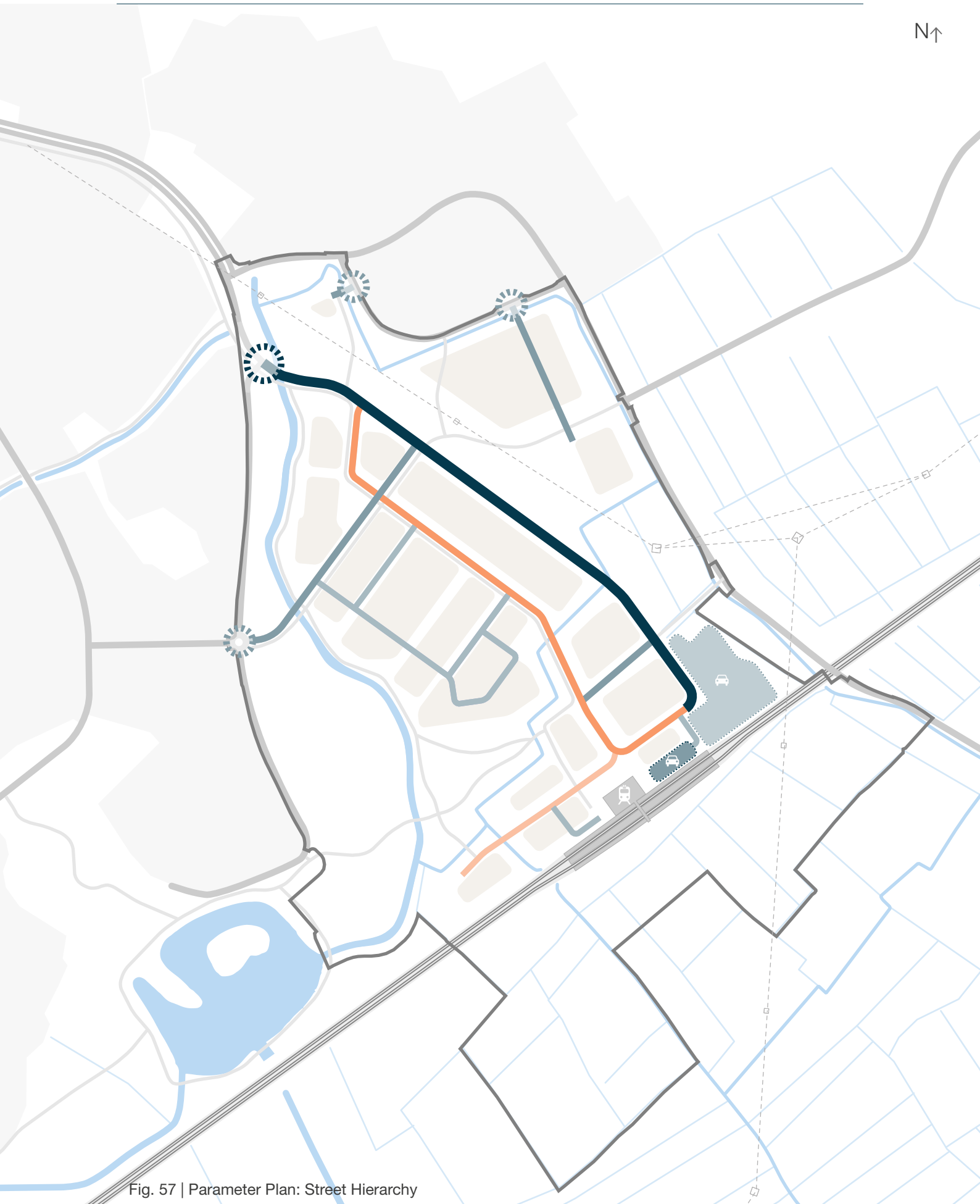
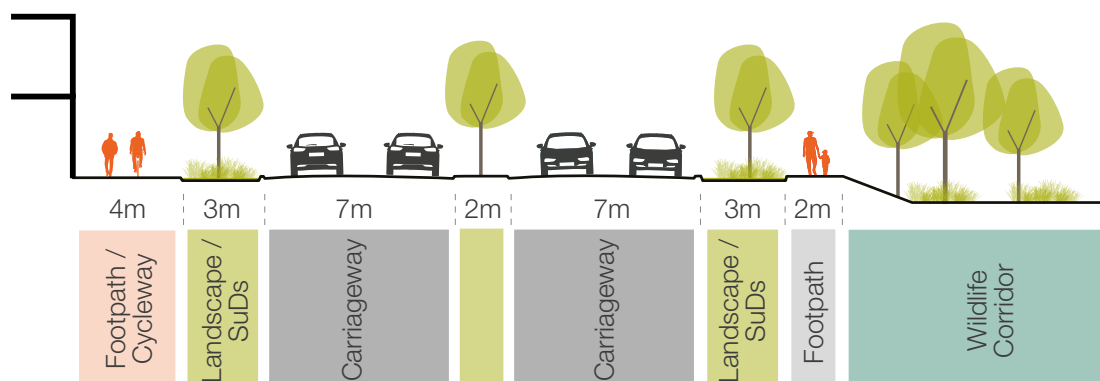


Fig. 57 | Parameter Plan: Street Hierarchy

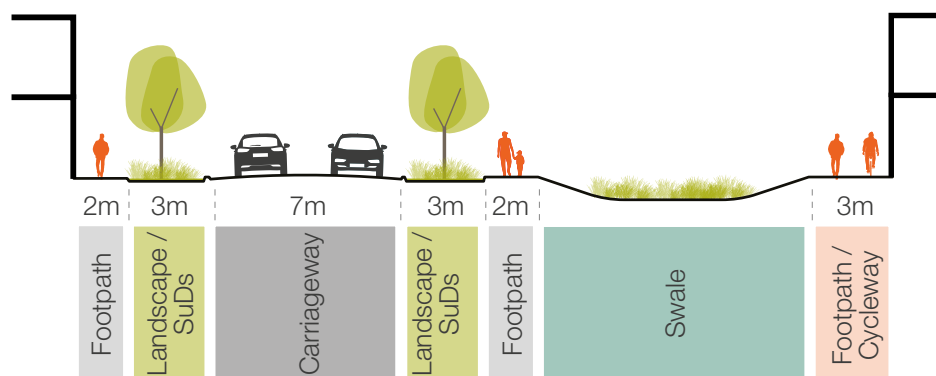
### Primary Access Road: A Green Parkside Boulevard

- Carriageway 7m wide. Dual Carriageway in key sections;
- 2m wide footpath on eastern side, 4m shared footpath / cycleway cycle lane routes on western side;
- Landscape and SuDs as integral part of street;
- Formal pedestrian/cycle crossings to be provided where active travel routes cross the primary access road; and
- Road follows alignment of adjacent wildlife corridor.



### Secondary Streets: East-West Green Links

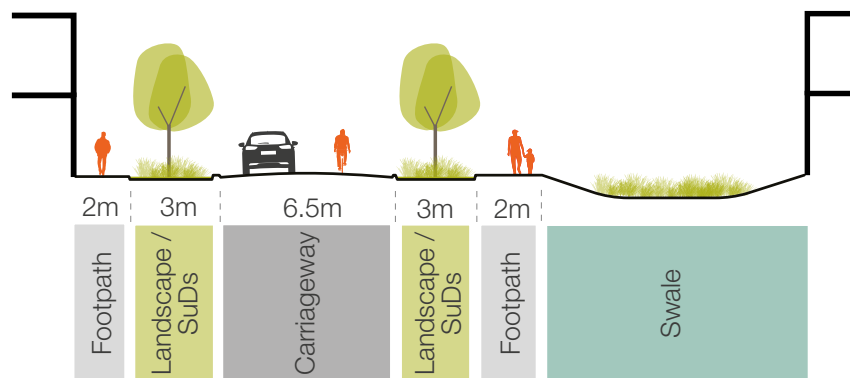
- Carriageway 7m wide;
- Footpaths 2m either side, plus 3-4m wide footpath cycleway incorporated into wider streetscape where Public Right of Way is aligned with street;
- Landscape and SuDs as integral part of street;
- Informal pedestrian/cycle crossings to be provided where active travel routes cross the secondary roads. Design will facilitate safe and convenient crossing for pedestrians along the length of the road; and
- East-west secondary street forms part of 'Green Streets' landscape character. See Chapter 6 for more information.





### Tertiary Streets: For Walking and Dwelling

- Carriageway 6.5m wide;
- Footpaths 2m wide either side. Low traffic speed and volume facilitate on street cycling;
- Landscape and SuDs as integral part of street;
- Informal pedestrian/cycle crossings to be provided where active travel routes cross the secondary roads. The design will facilitate safe and convenient crossing for pedestrians along the length of the road; and
- East-west tertiary streets forms part of 'Green Streets' landscape character. See Chapter 6 for more information.



### Main Spine: High Quality Public Realm Street

- Carriageway between 5.5 and 6.5m, see above;
- Footpaths 2m either side, plus 3-4m wide segregated cycle route;
- Landscape and SuDs as integral part of street, including wider pedestrian space on eastern side; and
- Streets will include non-standard design and materials, facilitating very low traffic speed, pedestrian/cycle priority and safe crossing for pedestrians along the length of the street.

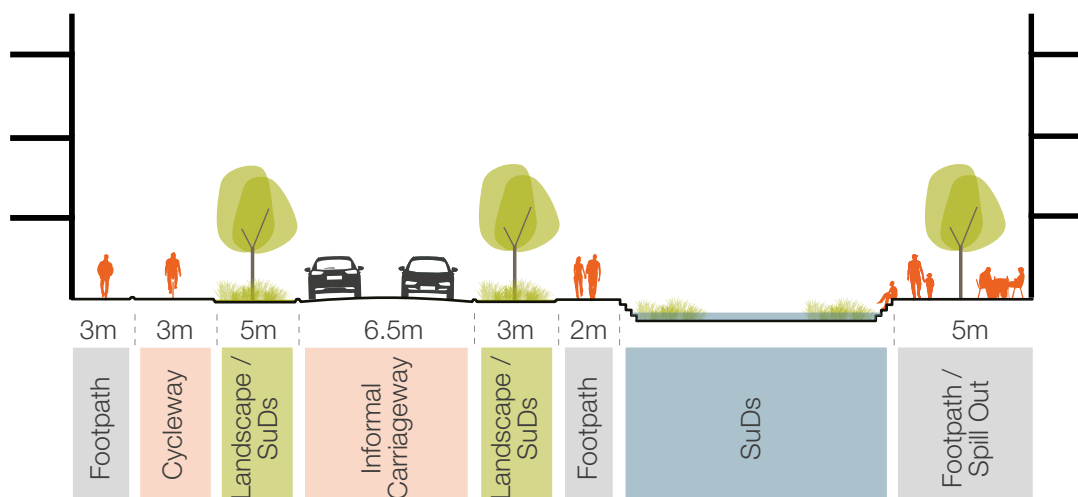


Fig. 58 | Typical street cross sections

### 5.6.3 ACTIVE TRAVEL ROUTES

The development will be permeated by an integrated network of traffic-free paths for walking and cycling, providing access to all parts and the site and onward connections to surrounding streets, footpaths and cycle routes.

#### ●●●●● Primary Cycle Route

3-4m wide segregated cycle path, with a hard surface.

Forms part of city-wide network connecting Cardiff city centre and eastern suburbs with the proposed station via proposed cycleway 'C2'.

#### ●●●●● Key Shared Routes

3-4m wide segregated path shared by pedestrians and cyclists, with a hard surface.

A network providing routes around the site and connections to the wider footpath/cycleway network. Public Right of Way will be diverted and incorporated to provide onward connections to Hendre Lake Park and the National Cycle Network route NCN88 (subject to agreement).

#### ●●●●● Recreational Shared Routes

3m wide segregated path shared by pedestrians and cyclists, gravel (or similar) surface.

Opportunity to create and extended network of footpaths around the edges of the development, typically within naturalised landscape areas including the Faendre Reen corridor, facilitating circular recreational walks around the site (connections subject to agreement with third-party land owners).

#### → Cardiff Cycleway 'C2'

A proposed section of Cardiff cycleway network linking the site to Cardiff city centre via segregated cycle paths.

#### → National Cycle Network route NCN88

An unsegregated cycle route extending eastward along St Mellons Road to Newport and beyond.



#### Cycle Hub

The station/interchange will include a dedicated cycle hub with 100 secure cycle parking, a Next Bike docking station with capacity for 30 bikes, and associated facilities.

In addition to the defined Active Travel network, all streets will include integrated footpaths of at least 2m in width. The street network will have a design speed of 20mph or lower, facilitating safer on-street cycling and supporting a safer and more comfortable pedestrian environment.

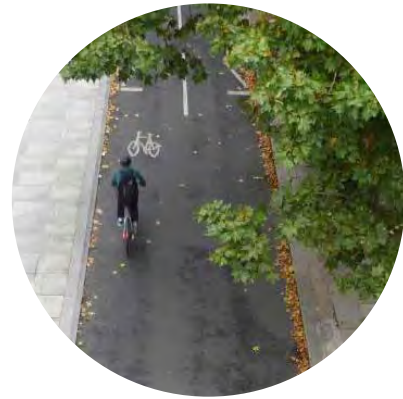




Fig. 59 | Parameter Plan: The Active Travel Network



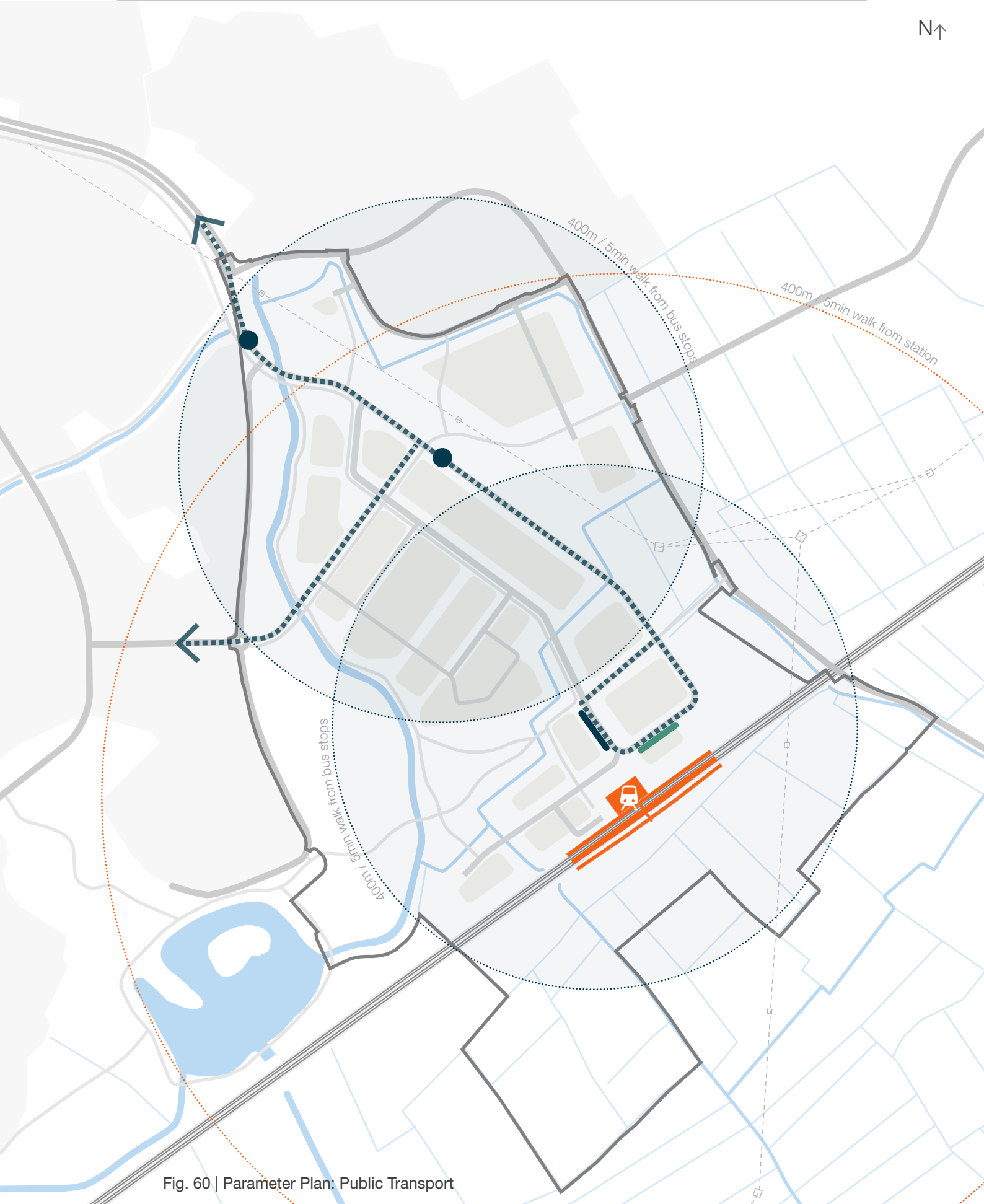







Fig. 60 | Parameter Plan: Public Transport

5.6.4 PUBLIC TRANSPORT

ACCESSIBILITY

The development will be focussed around a new mainline railway station and public transport interchange. This will include a 600 space station park & ride facility, providing excellent access by public transport to surrounding areas, Cardiff city centre, locations within the Cardiff Capital Region, and beyond.

The ambition for the frequency of public transport includes:

-  8 trains per hour west bound to Cardiff Central including 1 London service.
-  8 trains per hour east bound, including 1 London service.
-  4 buses per hour west bound to Cardiff city centre via St Mellons.
-  4 buses per hour west bound to Cardiff city centre via Newport Road.
-  Additional bus services to locations in north east Cardiff.

The majority of the proposed development falls within 800m (ten minutes walk) of the new station and interchange, making access to the new development by public transport convenient and easy. Development density and active uses are focussed on and area within 400m / five minutes walk of the station, ensure exceptional accessibility to these locations.

Buses will access the site via either Cypress Drive in the north western corner of the site, or Sandbrook Road. Additional bus stops could be provided in the north of the site subject the detailed development layout and requirements of service providers.

DESIGN

The new station will open onto a high quality public space framed by new buildings and active ground floor uses, creating a positive arrival experience.


The proposed transport interchange, including rail, taxi, bus and station park & ride within 100m/2 minutes walk of each other, will be connected by high quality public realm and well-considered wayfinding signage. Bus and taxi shelters will be well signed, distinctive and attractive.

Cycling infrastructure and facilities at the station will support multi-modal car-free trips, for users arriving or departing the site by public transport. This will potentially be supported by dock-based cycle hire providing onward access around the site for people arriving by train and bus.


The station park & ride will include attractive, direct and well-lit routes from the station, and will include a high quality landscape. A pick-up drop-off point within 50m of the station will increase the range of options for convenient multi-modal trips.

Live arrival/departure information for bus and rail will be provided at key locations within the interchange and station park & ride, with the potential to extend this to wayfinding signs and build receptions throughout the development.


Key




Propose railway station




Interchange taxi rank



Interchange bus stop



Other potential bus stops



Bus Routes (indicative)

