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EXPEDITE

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- Re-purposing brown field sites
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Reference Material

Plot 5 Land Adjacent to Pierhead Street Cardiff CF10 4AA An Ecological Survey Report By: Just Mammals June 22

Merchants Place and Cory's Building Transport Statement Client: Dukes Education Group Limited 01 July 2022 Document Reference: C22007/TS01

Cardiff Sixth Form College Framework Travel Plan Client: Dukes Education Group Limited 02 July 2022 Document Reference: C22007/TP01

DRAINAGE STATEMENT AND SAB TECHNICAL NOTE CARDIFF 6TH FORM COLLEGE (Draft) November 2022 Expedite

Cardiff Bay Plot 5, Cardiff HERITAGE ASSESSMENT produced by Ashley Davies Architects Limited for Dukes Education / Cardiff Sixth Form College in support of Planning & Listed Building Consent applications for a scheme submitted by Expedite and DWD March 2022

Pierhead Street Design and access statement November 2022 Expedite

Section 1.0

Introduction

Cardiff Sixth Form College (CSFC) is currently located in leased accommodation at Trinity Court. The College's overarching aim is to provide a permanent new home for the College's teaching space and boarding accommodation across the two chosen sites. (see Fig1.0)

CSFC intend to sensitively develop the site known as plot five. The Site is one of two sites which is currently undergoing development by Cardiff Sixth Form College:

• Site 1, the Cory's Building and 1 and 3 Bute Place, will accommodate the teaching campus Buildings for the College (Which forms part of a separate planning application)

• Site 2, in Pier head Street and subject to this Green infrastructure Statement, will deliver the boarding accommodation for students attending the College.

The brief for Plot 5 (Site 2) is to deliver architecturally well designed new build accommodation for 400 boarders; 200 GCSE students and 200 A Level students. The rooms are to be 50 twin rooms (100 students) and 300 single rooms (300 students) and will include ancillary parking and other facilities to support the education use. The college accommodation buildings will seek to maximize their development potential, whilst responding to the site constraints and wider context.

The aim at this site is to provide high quality teaching accommodation for the learners including sports facilities, amenity space, an exam hall and other ancillary facilities. The teaching accommodation will be for a

total of 500 pupils of which 400 will be boarders and 100 will be day pupils. The Applicant is also proposing an innovative designed auditorium on the roof of the new building which will add character and provide a landmark for the College.



Figure 1.0 Surounding context to site

Section 1.1 Purpose

The purpose of this document is to develop a full and achievable Green Infrastructure Statement. This strategy will form a framework for the delivery of the statement and drawings which will inform the planning process. This document aims to identify the current green infrastructure around the site and develop meaningful ways that the new proposal can enhance this whilst integrating within the tapestry of positive elements of the city.

'Green infrastructure is about multi-functional, connected green spaces that make the best use of land - at the same time providing green open space for all, helping wildlife to flourish, and delivering a wide range of economic, health and community benefits. This is as important to the city as its 'grey' infrastructure of roads, buildings and power lines (CABE 2009), and helps to address many of the social and environmental issues linked to urban life."

(Wildlife Trust Wales 2016).



Figure 1.0 Visualization of proposed building for site 2

Section 1.2 Statutory Context

The key documents which are pertinent to this Green Infrastructure Strategy are :

City of Cardiff Council Green Infrastructure Supplementary Planning Guidance (SPG) November 2017

Cardiff Biodiversity and Resilience of Ecosystems Duty Forward Plan Key Policy KP16 (LDP)

Cardiff Bay Waterfront Master plan 2015



Figure 1.2 Ecosystem diagram

Section 1.3 Background

Expedite has been commissioned by Duke Education Group to produce a Green Infrastructure Strategy (GIS) to support proposals for a new sixth form education facility at Pier head Street which will provide lodging for a significant proportion of future students in Cardiff Bay.

The site is situated between Pierhead Street and Bute Place, to the north is the Red Draon center and the A4232, the Wales Millennium Centre to the east and the Senned Crymu Building to the south. There is also a strong visual connection between the site and the Pierhead Building (along Pierhead Street).

The proposed site will be supported by a refurbishment and redevelopment of proposals for a new sixth form education facility located at Merchants Place and the Cory's Building site, Bute Street, Cardiff Bay. Cardiff Sixth Form College is currently located in leased accommodation at Trinity Court, 21-27 Newport Rd.

Historically the site was originally a meadow and marshland area called Sourey and was part of Cardiff's south moors until its development in the 1820's when it formed part of the docks expansion.

As identified in the supporting heritage statement for this development. The proposed development site is an undeveloped piece of hardstand used for occasional car parking, flanked by roads and buildings, and some remnants of the docks. It is finished in tarmac and surrounded by galvanised steel chain-link fencing on concrete posts.

The site possesses no discernible aesthetic or architectural value. However, whilst it contains no buildings of structures itself and no perceptible heritage, the site is just outside the Pierhead Conservation Area and very near the Mount Stuart Square Conservation Area, and this is important. The Pierhead Conservation Area Appraisal determines the wider area to be "part of Butetown's historic dock area, giving recognitionn to its historical and architectural quality".







Figure 1.6 Merchants Place & Cory's Building

Figure 1.7 Connections between sites

Section 1.4 High Level View

This document will concentrate on the existing green infrastructure around the site. Due to the constraints of the historical dense built form the proposed development can have the most meaningful impact in the following ways:

1. Sustainable Transport

One of the sites greatest assets is it's location in the centre of the busy city which provides opportunities for sustainable transport. These include walking, cycling, buses trains and car parking (as part of an integrated travel network). A key facet to the dual sites development is the ability to walk easily between the sites.

2. Water Management

A Sustainable attenuation system is being developed which will be formed from integrated cells beneth the car park on the site. This will discharge the runoff in a controlled manner into the Dock feeder.

3.Re-purposing Brown Field Sites

Careful consideration has been given to the sites historic context and high profile location within the center of top flight contemporary buildings which makes it a green infrastructure asset in its own right. The re development of the site is part of strong sustainable strategy which is breathing new life into this exciting area of Cardiff (the site is identified as requiring a signature building in the Cardiff Bay Waterfront Master Plan and this design meets this brief).

4. Biodiversity and Ecological Systems

A Phase 1 habitat survey has been undertaken on the current empty site which has identified that there is very little existing flora and fauna on the site. Carefully designed landscape interventions are proposed to aid biodiversity and improve the setting of the academy.

5. Existing Open Space

The strategy aims to utilise existing green open space to achieve integration that benefits the environment and the social wellbeing of the students and staff.



Figure 1.9 Visualisation from Waterfront Master plan.

Section 1.5 Macro /Micro

The design for the Green Infrastructure works at two levels. The macro level deals with wider broad brush ecological systems, enhancing connections to existing green assets such as the open green spaces (in particular those within walking distance see fig 2.5).

The micro level of detail takes into acount on-site strategies. These can range from the sensitive regeneration of historical brown field sites, developing buildings in keeping with the high profile historical and contemporary built form through to the planting of species of plants which will aid biodiversity. In doing so enhance existing B line patterns of pollinating insects. The development of B Lines are a clear illustration of how micro interventions influence and build to create the positive macro interventions. These aim to increase the green assets by creation of eco-habitats.



What are B-Lines?

B-Lines are an imaginative and beautiful solution to the problem of the loss of flowers and pollinators. The B-Lines are a series of 'insect pathways' running through our countryside and towns, along which we are restoring and creating a series of wildflower-rich habitat stepping stones. They link existing wildlife areas together, creating a network, like a railway, that will weave across the British landscape. This will provide large areas of brand new habitat benefiting bees and butterflies- but also a host of other wildlife.

Bugs Life



Figur2.0 Bat Meadow Bute Park

Section 1.6 Resources

As outlined in the document 'Cardiff Biodiversity and Resilience of Ecosystems Duty Forward Plan', there are a range of assets that can be identified and utilised as Green Infrastructure within this strategy. A key strategy of this document has been to identify these specific elements and explore how they can be enhanced. This process helps to identify the areas of overlap where the enhancement can aid the college staff, students, the environment and wider community going forward.

Green infrastructure elements

- Parks and Gardens*
- Allotments and orchards
- Open countryside
- Rivers, lakes, ponds and streams
- Woodland, hedgerows and scrub
- Roadside verges and street trees**
- Green roofs and walls
- School and hospital grounds**
 Cemeteries and churchyards
- Golf courses
- Sustainable Drainage Systems (SUDS)** •
- Railway embankments
- Footpaths and bridleways
- Open mosaic habitat on previously developed land (Brown field sites)**
- Historical sites *
- Headlands and set-aside areas around agricultural fields

Wider elements pertinent to the development * Elements immediately pertinent to the development **



Figure 2.1 Historic photo of site from the1960s

Section 1.7 Existing Site Conditions

At present the site is used as an overflow car park for large events based at surrounding buildings. Plot 5 is a vacant undeveloped plot so it is not protected by any listing. It is also not within a Conservation Area. However, it is located close to the boundary of the Pier head Conservation Area and very near the Mount Stuart Square Conservation Area.

The fabric of the site is completely hard in nature with any existing vegetation being of limited value along the bank of the feeder dock this is over grown by the invasive plant Cotoneaster.

There is little biodiversity or environmental quality within the site and it's greatest asset is the mature avenue of lime trees growing adjacent to the site along Pierhead Street. The site is also situated on and within the B line network of Cardiff.



Figure 2.2 B lines surrounding site in Cardiff

Section 1.8 Assessment of site and proposals

1. Sustainable Transport

As part of the development of the college, a comprehensive travel plan has been developed which forms a key part to the sustainable vision. The design for the site proposes 20 staff car parking spaces to be provided at the boarding accommodation site at Pierhead Street, which is a major reduction on the previous application on the site . The design of the site also aids better pedestrian links and permeability by tying into existing foot paths, cycleways and is located within walking distance from residential areas and provides safe easy access to its sister site being 200m apart. The site will provide facilities for 60 cycles The key objectives are set out as follows in the travel plan:

- Reduce the dependence of staff, students and visitors on travel by private car
- Promote alternative modes of travel to the car
- Promote means of travel that are beneficial to the health of staff, students and visitors to the site
- Increase awareness of the advantages of more sustainable travel
- Comply with relevant policies and guidance in terms of reducing vehicle use, vehicle emissions and congestion, and promoting sustainable travel
- Ensure that the sustainable travel objectives of the plan are reflected in the daily travel patterns of all staff, students and visitors over the long term
- Generate fewer vehicle trips than would otherwise have been the case

The benefits of this plan are as follows:

- To an individual by improving their health, reducing everyday stress and cost savings
- To the staff and students through improved access to the college and a healthier and more motivated environment
- To the community by everyone involved in the preparation and implementation of the plan demonstrating their commitment to sustainability and minimizing the impact on local residents
- To the environment through enhanced local air quality with less noise, dirt

and fumes brought about by fewer vehicular trips

- Potential road safety benefits through a reduction in vehicular traffic, which in turn can lead to an increase in dedicated infrastructure for vehicles and a reallocation of space for active travel, public transport and green spaces
- Numerous households have no regular access to private vehicles and therefore the use of public transport, cycling and walking can play a significant role in improving accessibility and reducing social exclusion thus ensuring the viability of public transport services for those that need it
- The burning of fossil fuels is widely considered to be altering the climate, with carbon dioxide emissions from transport being a key contributor. The implementation of Travel Plans can assist in reducing the adverse impact of transport on climate change
- The site lies within the vicinity of the proposed Atlantic Wharf regeneration scheme, the wider master plan will incorporate improvements delivered through the Metro which will include a new rail link between Cardiff Central, Cardiff Bay and the new St Mellon's Parkway station. The scheme will improve active travel by extending the car-free public realm areas, which will enhance pedestrian connections to as well as from the site and between the two college sites.



Figure 2.3 Future transport development around the site s



Figure 2.5 Walking distances 5 min intervals



Figure 2.4 Cycle distances 5 min intervals

Assessment of site and proposals

2. Water Management

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At present a sustainable urban drainage design is being developed by Expedites drainage engineers. This will address the planning policy conditions and form a SAAB application . The core of the strategy will be made up of the following points

1. Surface water run off from the roof, podium and hard landscape will be collected.

This run off water will then be stored in a series of cell structures (similar to the Aqua cell illustrated) and be installed below the car park (beneath the ground floor of the carpark)

2. Surface water runoff is infiltrated to the ground

The development proposal covers the majority of red line boundary except for a very small area which is proposed to have some planting to provide a visual screen for the site. These areas are being investigated to see if they could form some bio-retention areas within the drainage scheme.

3. Surface water runoff is discharged to a surface water body

The closest surface water body is Dock feeder to the east of the site. There is a surface water sewer adopted by DCWW which passes in close proximity to the site and discharges to this location. The stored water will be slowly discharged from the retention system in a controlled manner and will not impact on the wider system. Product Datasheet

AquaCell Eco

Product description AquaCell Eco is manufactured from specially reformulated, recycled material and has been specifically designed for shallow, nontrafficked, landscaped applications. AquaCell Eco is NOT suitable for locations subject to high water tables.

Technical specification

Cat code	6LB025
Colour	Black
Dimensions	1m x 0.5m x 0.4m
Weight	7kg
Storage volume	190 litres

Maximum installation depths

lypical soil type	Soil weight kN/m ³
Over consolidated stiff clay	20
Silty sandy clay	19
oose sand and gravel	18
Medium dense sand and gravel	19
Dense sand and gravel	20

Minimum cover depths

Minimum cover depth (m)

 These values relate to installations where the groundwater is a minimum of
2. AquaCell Eco units should not be used where groundwater is present.
0.5m cover is required where a ride-on mower may be used.
Assumptions made:
Ground surface is horizontal





Void ratio	95%
Material	Recycled PP
Vertical loading	21.3 tonnes/m ² (213 kN/m ²)
Lateral loading	5.2 tonnes/m ² (52 kN/m ²)
BBA approval	Certificate 03/4018

depth of installation – to base of units (m)1		
Landscaped areas		
1.53		
1.68		
2.08		
2.35		
2.68		

Landscaped areas	
0.203	

metre below the base of the excavation.

Figure 2.6Water storage cell

Assessment of site and proposals

3.Biodiversity and ecological systems

As part of the application a Phase one habitat survey has undertaken on the site. This has identified that, in general, the site being predominantly hard in nature has proved to be of low environmental value.

The only area of existing plant growth is along the water margin of the feeder dock and the line of street trees along Pierhead Road. Neither of these areas offered much of an environment for nature to develop in.

The desire to soften and where possible screen the school from surrounding and future development formed a key factor in the brief. This has led to developing a tree planting mixture of Poplus erecta in the very narrow areas and Betula pendula and Pinus sylvestris where a greater degree of space was available. These trees are under planted with pollinating species of ground cover and bulbs to extend the offer of nectar and pollen for insects around the year.

Other opportunities for planting pollinating species have been takenwithin the ornamental grasses. Here the soft structure of the grasses form a contrast to the bold muscular design of the building. The covered walkway of the cloister will be wreathed in wisteria, winter clematis and climbing Hydrangeas. Which will be under planted with Lavandula and Thymus to increase pollinating opportunities.





Figure 3.1 Populus errecta



Figure 3.0 Pinus sylvestris



Figure 2.9 Betula pendula

Biodiversity continued...



Figure 3.4 Step planting mix

Assessment of site and proposals

4.Re-purposing historic brown field sites

As the supporting Heritage Statement identifies:

- Site 2 is not within a Conservation Area and has no listing.
- It is located close to the boundary of the Pier head Conservation Area and very near the Mount Stuart Square Conservation Area.
- No 'key views or focal points' identified are towards the site, and the only 'landmark buildings and structures' in close proximity to the site deemed to be 'key' are the Wales Millennium Centre, the Senedd, the Pier head Building and the dock and sea walls, all of which are seen as one looks away from the site. Likewise, the important 'historic fabric' is some way from the site. The proposed development site is very much part of this social, economic and symbolic heritage; as well as being in close proximity to the area's new social, cultural and political heart. However, as it stands now, the proposed development site displays none of this.
- The conservation area forms a network of green infrastructure assets and by improving the built form adjacent this area aids the overall improvement of the city. Although much as the site's historical value.

The sensitive redevelopment of this prominent site will help improve the area as a whole and will help to deliver the wider regeneration of the Cardiff Bay Water Front.



Figure 3.5 Waterfront Master plan

Assessment of Site and Proposals

5.Existing Open Green Space & Public Realm

Cardiff has historically been known as the 'Green City' and the area of the site does have a large number of green and public open spaces (see fig 4.0) These have been identified in the Transport Statement as being within easy walking distance from the college which aims to utilise. Through this approach the green spaces will benefit from visual policing and active use bringing them to life and help limit anti social behavior.

Areas of incidental green space and avenues of tree planting which form a green network around the site. These are highlighted in the Green Infrastructure Strategy (see fig 4.0). Visually, the avenue of multistem silver birch in the grounds of the Red Dragon Centre formed a strong design statement which complimented the proposed architecture of the new college building (in particular the bold white vertical lines formed by the proposed Cloisters)

The limitations of the proposed site and the college's requirements mean that there is very little opportunity to create green space within the site it self. However, we have maximized opportunities where they do exist to increase soft landscaped areas and biodiversity.

A bold use of tree planting along the northern boundary of the site with small densely planted groups of trees will increase native planting, biodiversity and screen the site.

The planting design has adapted the concept of the single species non native silver birch (as planted in the Dragon centre) to include the native Betula pendula. This is proposed to be dencely planted to give the desired aesthetic. Also within the planting a small percentage of Pinus sylvestris has been introduced as a climax species, so improving the longevity of the treessplanted. In areas where the site is very limited in space the species Populus errecta Tremula proposed. This species has a tight errect form and has a similar architectural aesthetic to those desired by the Betula pendula. The species also benefits from having a strong cultural association to water and provides calming movement in its leaves when disturbed by wind.

This planting will help visually screen the site form the hotel and car park, which are adjacent to the site. Planting will also visually link the site to the land adjacent to the dock feeder (this can not be physically linked due to the safety issues associated to children and water) but a tangible visual link is proposed with an avenue of Betula pendula. The trees will be under planted with bold drifts of pollinating species of around cover plants to enhance the sites location within the B lines in the city. Grasses and other pollinating species are proposed to be planted on the dramatic steps proposed within the built form, creating a soft foil to this bold architectural statement.



Figure 3.6 Precedent image of stepped area and planting



Figure 3.7 Crocus pollinating species



Figure 3.8 Ajugan pollinating species





Figure 3.9 Cyclamen pollinating species



Figure 4.0 Green Infrastructure Master plan

1.9 Conclusion

When considering this development in relation to the wider impact on green infrastructure we have measured its success in light of the following

- The existing green infrastructure on the development and the potential impacts upon it have been adequately considered
- The benefits of green infrastructure are reconciled with benefits of the development
- Green infrastructure is integrated into proposals (see fig 4.0)
- Opportunities for enhancement of green infrastructure, for the benefit of the community, have been taken as far as is reasonably possible

These have been achieved by

- Extensive surveys and design have established the existing green infrastructure resources and how to improve and nurture them, in particular an exemplar Heritage Statement, visionary Transport Statement and striking architecture propose sound approaches and investment in the future of the site and Cardiff
- Assessments which establish the mitigation measures of the proposed scheme upon drainage and wider water management. Likewise, the impact on the ecology has been identified and suitable mitigation measures undertaken, these include planting of species of trees and pollinating plants to join and extend existing green infrastructure around the site. This is particularly impressive considering the size of the site and the required brief to be delivered.
- We anticipate that this strategy will form part of a pre-application process and by doing so limit the need for numerous planning conditions
- Through careful consideration to the site's history and other assets, IE. the students, Cardiff Sixth Form College is showing a clear de-

sire to invest in the Green infrastructure and is capitalizing on the best the site has to offer. It is also creating a range of landscaped areas which will provide biodiversity and provision of nectar and pollen for migrating insects and provide an asset for the students to benefit from both aesthetically and their mental health

Ensuring that management arrangements for green infrastructure will be • in place before development commences



Figure 4.1 Visualisation of completed development





EXPEDITE