

Appendix 1:

RE: Clonburris SDZ – Clonburris Phase 1A

Register Reference SDZ21A/0022

Applicant: Cairn Homes Properties Ltd

Response to Request for Additional Information - Landscape

Tabled Response to the objectives and recommendations within the Parks and Landscape Strategy (PLS) and the Biodiversity Management Plan (BMP)

Please note – within the PLS the BMP is also referenced. The comments in this response address both documents separately.

PARKS AND LANDSCAPE STRATEGY

Relevant Recommendations and Requirements

PLS Heading and Brief Outline	M&A Response
4.2 Existing Trees, Hedgerow and Vegetation Retention	Detailing of existing trees and hedges to be retained is included on Murray & Associates drawing 1723_PL_P-01 and within the Project Arborist's planning pack.
4.3 Hedgerows - Mitigation and Compensatory Measures	Compensatory native hedgerow planting has been included within the proposals. All hedges within the open spaces are native species, along with hedgerows within the residential areas. This accounts for a total of 2,458 metres of new native hedgerow. Maintenance of hedgerows is laid out in Murray and Associates Outline Landscape and Maintenance Specifications document.
4.4.4.1 Play Provision and Facilities	Play spaces for all ages are included throughout the development site in easy walking distance of all dwellings. A hierarchy of play also exists, with larger play facilities and a MUGA with the local park and smaller play spaces and natural play areas within the development. See Landscape Design Report for further information.
4.7 Surface Water and Wastewater Management	SuDS measures are present throughout the site, with the inclusion of detention basins within the open spaces and swales, SuDS tree pits and bioretion areas throughout the site. SuDS measures have been included in collaboration with the project engineers. See Murray and Associates drawing 1723_PL_P_00 for further information on SuDS.
5.0 Landscape Design of Strategic Parks 5.4 Grand Canal Park	The pNHA has been taken into account within the design of the Canal Park, with the relevant setback distances adhered to. The existing habitat has been retained along the canal bank boundary, with additional enhancement planting included to bolster the strategic green infrastructure corridor. All planting specified are native species and/or have reference to the All Ireland Pollinator Plan.

<p>6.0 Local Parks and Urban Squares 6.1 Local Parks</p>	<p>The local park has incorporated natural play spaces, a MUGA and areas for informal kick-abouts. Seating spaces have also been included. Swales have been proposed to the northern and eastern boundaries. Extensive tree planting is also proposed.</p>
<p>7.0 Strategic Routes and Green Corridors 7.1 Strategic Routes 7.2 Grand Canal Corridor 7.6 Local Links</p>	<p>Existing green infrastructure along the canal bank strategic route is retained, with additional native planting specified to enhance the strength and connection within this route. No lighting measures are proposed within the Canal Park. Discussion has taken place with Waterways Ireland regarding the retention and treatment of landscape along the Canal Park extent. Local links have been provided through the development. These take the form of grassed and planted swales, tree lines, bioretention areas and permeable paving. See Murray and Associates drawing 1723_PLL_P_00 for further information.</p>
<p>8.0 Tree Planting 8.1 Street Tree Planting</p>	<p>Street tree planting has been incorporated within the development and takes the principles and recommended species as laid out in the PLS into account. SuDS tree pits are also included where appropriate.</p>
<p>9.0 Surface Materials</p>	<p>Surface materials choices have taken the PLS into account.</p>
<p>10.0 Furniture, Fittings and Way-finding</p>	<p>The location of seating elements have been included within the landscape proposals. Further specifications of street furniture is to detailed design stage.</p>
<p>11.0 Park Boundaries</p>	<p>The local park is enclosed with a 1.8m high steel bar railing with matching gates. The Canal Park is open in nature and is not enclosed. Access from the Canal Park to the overflow stream and existing vegetation along the canal bank is restricted with a native hedgerow and chestnut pale fencing where hedgerow is not appropriate.</p>
<p>13.0 Soft Landscape</p>	<p>The inclusion of native species within open spaces is a primary concern of the planting strategy. This includes trees, woodland, hedgerow and native wildflower meadows.</p>
<p>14.0 Management and Maintenance 14.2 Hedgerow Management</p>	<p>Maintenance strategies are included within Murray and Associates Outline Landscape and Maintenance Specifications document.</p>

BIODIVERSITY MANAGEMENT PLAN*Table 1: Biodiversity Objectives for Habitat Retention*

BMP Objective	M&A Response
<p>HR01 Where feasible having regard to the SDZ Masterplan proposed developments should retain habitats of ecological value that can be accommodated. Particular consideration must be given to retaining ecological features which provide connectivity between habitats (e.g. hedgerows and treelines) to promote green and blue infrastructure within the SDZ lands. Retention of townland boundary hedgerows within open space, which have high biodiversity and heritage value should be given priority.</p>	<p>The vast majority of vegetation along the Canal pNHA is to be retained. Where small areas of removal occur this is to allow for useable public open space. And is compensated for by additional native tree and hedgerow planting.</p>
<p>HR02 Where hedgerows, treelines, woodland and other semi-natural habitats are being retained within the SDZ lands, details of their management and protection should be provided in a Habitat Management Plan (HMP) to be provided to the Council by the developer alongside the planning documentation.</p>	<p>Maintenance and management strategies are included within Murray and Associates Outline Landscape and Maintenance Specifications document.</p>
<p>HR04 Development must be set back from the Grand Canal 1. All buildings must be set back 50m from the Grand Canal pNHA boundary 2. Other development (with the exception of footpaths and bridges) must be set back 30m from the Grand Canal pNHA boundary 3. Any proposed works including footpath surfacing or access points through the existing vegetation north of the existing northern tow path are to be subject to detailed discussions with South Dublin County Council and will require: - ecological surveys - arborist survey - consultation with National Parks and Wildlife Service - consultation with Waterways Ireland - site walks with relevant stakeholders, if necessary.</p>	<p>The relevant setbacks are observed within the landscape proposals. There is 1no. existing connection north of the towpath through to the site. It is proposed to retain this location, while upgrading the existing agricultural bridge with a more appropriate pedestrian/cycle friendly bridge. The required surveys and consultations will be completed prior to commencement of works.</p>
<p>HR05 Prior to any works, watercourses will be fenced off at a minimum distance of 10m from the watercourse bank in order to maintain a biodiversity protection zone of not less than 10 metres from the top of the bank.</p>	<p>Protection fences will be installed prior to commencement to protect the existing overflow stream.</p>
<p>HR07 Where other works e.g. footpath maintenance must take place within 10m of the edge of a watercourse or tributary thereof, a risk assessment should be</p>	<p>No construction works are proposed within 10 metres of an existing watercourse.</p>

<p>carried out on a case-by-case basis by a suitably qualified ecologist in order to determine if the works will require a Construction Environmental Management Plan (CEMP) outlining how pollution of watercourses during and after the construction period will be prevented and / or mitigated. If a substantial risk is identified, the CEMP must be developed in consultation with Inland Fisheries Ireland at application stage where feasible.</p>	
<p>HR08 Where meadows (labelled as Fossitt code GS2 in Figure 1) are to be retained within the areas of open space as outlined in the Parks and Landscape Strategy, particular consideration should be given to retain this habitat around other features of ecological importance such as hedgerows, water features (including attenuation ponds) and scrub. Where possible, developers are encouraged to retain meadows within their ownership boundaries</p>	<p>Areas of existing grassland are to be retained where possible within the Canal Park, in particular where the existing canal bank vegetation interfaces with the existing grassland areas. Where grassland cannot be retained additional complementary grassland meadow planting is specified.</p>
<p>Grassland and Meadow Objectives HR09 The following document should be consulted prior to the design of wildflower meadows: National Biodiversity Data Centre (2017) <i>Creation and management of a wildflower meadow. All-Ireland Pollinator Plan, How-to-Guide 4. National Biodiversity Data Centre Series no. 13</i></p>	<p>The document <i>Creation and management of a wildflower meadow. All-Ireland Pollinator Plan, How-to-Guide 4. National Biodiversity Data Centre Series no. 13</i> is to be consulted at detailed design stage and in collaboration with the project ecologist prior to specification of native meadow species.</p>
<p>Woodland and Scrub Objectives HR10 Where woodland or individual trees are being retained, the root protection zone / area must be calculated by a qualified arborist. Protective barriers must be installed to exclude construction activities from the root protection area of the woodland / trees in accordance with BS 5837</p>	<p>The project arborist (The Tree File) has proposed the required root protection zones and tree protection measures within their planning submission.</p>
<p>HR11 Particular consideration must be given to retaining woodland which provides ecological connectivity to other habitats of ecological importance. This is to strengthen the green and blue infrastructure network.</p>	<p>The vast majority of existing vegetation along the canal bank and along the Fonthill Road embankment is to be retaining.</p>
<p>Hedgerow and Treeline Objectives HR12 The Parks and Landscape Strategy indicates the retention of 7,720m of hedgerow / linear woodland habitat within the strategic open spaces - 5,200m along the canal, 520m along the Griffeen river and 2,000m of hedgerow within parks and open spaces. When final landscape designs are being prepared for open spaces, this level of retention is considered to be the minimum acceptable.</p>	<p>As part of this application there is approximately 1,038 metres of hedgerow to be removed. (An additional 320 meters is also removed within the local park and open space to the south of Apartment Block 1 – this however is part of the granted CIL application for the roads and attenuation areas). In mitigation, there is a proposed 728 metres of hedgerow within the Canal Park and a further 1,730 metres of native hedging within the residential areas, totalling 2,458 metres of new native hedgerow.</p>

Where swales are proposed within the SDZ, the design should include native grass species to enhance biodiversity and wildlife and be in accordance with the SDCC Sustainable Drainage Systems (SuDS) Explanatory, Design and Evaluation Guide	The proposed swales and bioretention areas include native grass species. Species to be specified at detailed design stage and with reference to the SDCC Sustainable Drainage Systems (SuDS) Explanatory, Design and Evaluation Guide.
HR13 Where hedgerows and treelines are being retained, the root protection zone / area must be calculated by a qualified arborist. Protective barriers must be installed to exclude construction activities from the root protection area of the hedgerows and treelines during construction works in accordance with BS 5837.	The project arborist has included the required root protect areas and protection measures within their planning package.
HR14 Pedestrian access points to the Grand Canal must be located in areas that are sparsely vegetated and should avoid as much tree and vegetation removal as possible. Where vegetation removal is required, this should be focused on vegetation of lower ecological importance and avoid mature trees and hedgerows.	The proposed pedestrian access is at an existing access point. This existing bridge will be upgraded to allow for a new bridge to cater for pedestrians and cyclists.
HR15 Appropriate pedestrian access points to the Grand Canal are to be sensitively designed to prevent damage to adjacent vegetation.	A new pedestrian/cycle bridge is proposed to replace the existing agricultural crossing to the south-east.
HR16 Where hedgerows are proposed for retention, management measures should be set out, appropriate to their location and function, and in accordance with guidance set out in the following document: <i>The Heritage Council (2016) Conserving Hedgerows</i> . Management must also include the removal of non-native invasive species such as butterfly-bush <i>Buddleja davidii</i> 13 and filling in sparse patches with native species planting.	The management and maintenance of hedgerow is included within Murray and Associates Outline Landscape and Maintenance Specifications document.

Table 2: Biodiversity Objectives for Habitat Creation

BMP Objective	M&A Response
Native vs Non-native Planting	
HC01 Planting schedules for all areas within the lands should include predominantly native species, and non-native species should be limited to specific areas.	The planting proposals include predominantly native species throughout.

<p>HC02 No invasive species listed on the Third Schedule of <i>the European Communities (Birds and Natural Habitats) Regulations 2011</i> will be planted on the lands. Under the regulations, to do so would constitute an offence.</p>	No invasive species have been proposed within the development.
<p>HC03 Planting schedules should have regard to Invasive Species Ireland's <i>Amber list</i>. Planting schedules must not include species on these lists, as they may have invasive properties which would be detrimental to the overall biodiversity of the SDZ.</p>	No species on the Amber List have been included in the proposals.
<p>HC04 Where native species planting is not feasible, planting schedules should include species that provide biodiversity value (food and shelter resources) to pollinators and other fauna species. Suitable plant species can be found in the All-Ireland Pollinator Plan's <i>Pollinator Friendly Planting Code</i>.</p>	Regard is had to the All Ireland Pollinator Plan within the planting proposals.
<p>HC05 Native species should be used for formal hedging proposed within Clonburris SDZ. Suitable species include hazel <i>Corylus avellana</i>, wild privet <i>Ligustrum vulgare</i>, guelder rose <i>Viburnum opulus</i> and yew <i>Taxus baccata</i>.</p>	Native species are used for hedging throughout the development, even within the residential areas.
Wildflower meadow / Strip / Garden	
<p>HC06 Native wildflower meadows proposed within the SDZ should reflect the existing biodiversity in the area. This may be achieved in the following ways:</p> <ul style="list-style-type: none"> • Where possible and subject to season restriction, seeds may be harvested from the existing meadows (if there are no non-native invasive species present in the area) to ensure that local biodiversity is retained. • Local biodiversity may be retained by translocation. Intact turves may be removed from donor sites with a suitable excavator and incorporated into a suitable receptor site. • Seed mixes may be bought from a wildflower provider. Species known to be present in the area should be chosen for the seed mixes. Full species lists for the SDZ can be found in <i>Ecological Survey of Clonburris</i> (FERS Ltd., 2018). 	Seed mixes of wildflower meadows will be specified at detailed design stage. The proposals state that native meadow grass mixes are to contain native Irish species and be in compliance with the All-Ireland Pollinator Plan. Specific species will be specified in collaboration with the project ecologist and have reference to the species lists for the SDZ in the <i>Ecological Survey of Clonburris</i> (FERS Ltd., 2018).
<p>HC07 If seed mixes are to be bought, a perennial mix must be used to create wildflower meadows on site, rather than continually planting annuals. Even though a perennial mix meadow may be less colourful than an annual mix meadow, this is a more</p>	Seed mixes and species will be specified in collaboration with the project ecologist.

<p>cost effective approach and provides a better source of food for pollinators than an annual mix. Native Irish perennial seed mixes can be sourced from various supplies.</p>	
<p>HC08 Where wildflower meadows are being planted on site, proper ground preparation and weed elimination is integral to the successful creation of the wildflower meadow. Steps to be taken to prepare the site for sowing with wildflower are described in the following document: National Biodiversity Data Centre (2017) <i>Creation and management of a wildflower meadow. All-Ireland Pollinator Plan, How-to-Guide 4. National Biodiversity Data Centre Series no. 13.</i> These steps must be followed for the proposed wildflower meadow habitats on site.</p>	<p>Site preparation will be detailed in a full landscape specification, to be issued for agreement prior to commencement of development.</p>
<p>HC09 The following document must be consulted prior to the design of wildflower meadows: National Biodiversity Data Centre (2017) <i>Creation and management of a wildflower meadow. All-Ireland Pollinator Plan, How-to-Guide 4. National Biodiversity Data Centre Series no. 13.</i> This resource follows the principles set out in the <i>All-Ireland Pollinator Plan 2015-2020.</i></p>	<p>This document will be consulted and reference will be made to it in the full landscape specification, issued prior to commencement.</p>
<p>HC10 Factors such as soil and aspect will need to be considered in the design of wildflower meadows, as these can heavily influence the successful creation of this habitat.</p>	<p>Site investigation and analysis will occur in collaboration with the project ecologist.</p>
Green Roofs	
<p>HC11 Green roofs are recommended in the Clonburris SDZ Planning Scheme Surface Water Strategy (2017)¹⁴ for consideration within the Clonburris SDZ on appropriate apartment and commercial buildings. In addition to improving the biodiversity value of an area, they also are a recommended SuDS measure and can contribute to climate mitigation and adaptation. These advantages are all outlined as Key Principles of the Planning Scheme.</p>	<p>Green roofs are specified to Apartment Block 1.</p>
<p>HC12 All planting proposed for green roofs must be of native species and preferably species that are local to the area. Native Irish perennial seed mixes can be sourced from various suppliers.</p>	<p>Plant species will be specified in collaboration with the project ecologist. Native Irish species will be used where appropriate.</p>
<p>HC14 A plan for the maintenance of green and brown roofs must be prepared for each roof.</p>	<p>A maintenance plan will be issued for agreement prior to commencement. This is dependent on the</p>

Plans should include maintenance measures such as mowing and weed removal etc. and responsibility for such management must be identified within the maintenance plan.	specification of green roof and the species chosen in collaboration with the project ecologist.
Hedgerows	See Murray & Associates drawing 1723_PL_P_01 for tree and hedge planting proposals.
HC15 The planting of hedgerows within the parks areas and along roadways is a key habitat creation objective. planting of hedgerows should also be considered in Development Areas. Species lists must be comprised of a range of native species and preferably comprised of the species already present locally. Species should include a range of trees and shrubs as well as suitable understorey planting. Full species lists for the hedgerows within Clonburris SDZ can be found in the document <i>Ecological survey of Clonburris Strategic Development Zone, Clondalkin, Co. Dublin</i> (FERS Ltd., 2018).	Native hedgerows are proposed throughout the site, in residential areas and within open spaces. In total there is 2,458 metres of native hedgerow proposed. Species proposed will have reference to the document <i>Ecological survey of Clonburris Strategic Development Zone, Clondalkin, Co. Dublin</i> (FERS Ltd., 2018).
HC16 Where hedgerow planting is proposed within the lands, the new hedgerows should take the form of a double line of native tree with shrub species. Translocation of existing hedgerows and their seed banks to new locations should be considered where feasible. Hedgerows must be correctly maintained according to the following document: <i>The Heritage Council (2016) Conserving Hedgerows</i> .	Hedgerows will include native trees where appropriate. Hedgerow maintenance will have reference to the following document: The Heritage Council (2016) Conserving Hedgerows.
HC17 Hedgerow locations must be chosen to connect features of ecological value (particularly the Griffeen River, the Grand Canal and the railway line, as well as existing hedgerows, treelines and woodland) to the ecological network in the wider landscape where possible and promote green infrastructure within the lands. This can be achieved by planting hedgerows where they do not already exist and in this way minimising the number of gaps in the hedgerow network that would affect ecological connectivity within the SDZ lands and the surrounding areas.	A native hedgerow is proposed to the majority of the length of the Canal Park. This reinforces the existing green infrastructure connection.
HC18 Where existing tree planting is present along roadsides, supplementary native understorey shrub and herbaceous planting should be considered. This would help compensate for the loss of hedgerow habitat and strengthen green and blue infrastructure within the lands.	Supplementary planting is proposed within the canal bank vegetation. It is anticipated that 20% of the existing area of vegetation within the site boundary along the Canal Park will be planted with native trees and shrubs.

<p>HC19 Where hedgerows are being retained within parkland, consideration should be given to incorporate sufficient space for hedgerows to develop into linear woodland features.</p>	<p>There is adequate room for the native hedgerow within the Canal Park to grow into a linear woodland feature.</p>
<p>Tree Planting HC20 For every tree felled within the Clonburris SDZ, a replacement tree should be planted within the SDZ. Planning proposals shall demonstrate same. This ensures compliance with South Dublin County Council's <i>Tree Management Policy</i>.</p>	<p>In total there are 54no. individual trees surveyed to be removed within the site redline. Of this number, 34no. are to be removed as part of the CIL application covering the attenuation area within the Local park and as such is not included in the above total. Additionally, 777sqm of Wood Thicket 1 and 136sqm of Wood Thicket 3 (as per Arborist's designation) is to be removed to allow for useable public open space. Individual trees within these thickets are not surveyed. In compensation there are the following numbers of trees proposed within the site: Street Trees: 328no Open Space Trees: 556no Garden Trees: 172no Woodland Bare-Root/Feathered/Standard Trees: 5592no (inc. Canal enhancement) (TOTAL NEW TREES WITH DEVELOPMENT AREA: 6558no)</p>
<p>HC21 Preferably, all tree planting (including street planting) should be of native species. Where this is not possible, tree species should be chosen with regard to the All- Ireland Pollinator Plan's <i>Pollinator Friendly Planting Code</i>.</p>	<p>Native species predominate within open spaces. Elsewhere the recommendations of the Parks and Landscape Strategy is followed.</p>
<p>HC22 Where tree planting is proposed, multi aged canopy is preferred. Semi mature specimens will be required at strategic locations. This will help compensate for the loss of mature trees across the SDZ and immediately provide nesting and feeding habitat for fauna species.</p>	<p>Tree planting proposals include a variety of sizes/tree maturity. 5% of trees within the open spaces are to be 20-25cm girth, with a further 5% of specimen ornamental trees within the development to be 30-35cm girth.</p>
<p>HC23 Tree planting must take into consideration the connectivity of existing ecological features (e.g. hedgerows, treelines, woodland, watercourses) within the SDZ lands and planting must aim to contribute towards it. This can be achieved by, for example, planting trees and/or groups of trees relatively close to each other across amenity grasslands and wildflower meadows thus providing 'stepping stones' for wildlife over open areas, and/or by planting treelines along streets and other linear features and consequently improving green infrastructure and the overall ecological connectivity within the SDZ lands.</p>	<p>Extensive tree planting is proposed throughout the site. Trees are grouped accordingly to allow for green infrastructure connectivity.</p>
<p>Swales (SuDS Measure)</p>	

<p>HC28 Where swales are proposed within the SDZ, the design should include native grass species to enhance biodiversity and wildlife and be in accordance with the SDCC Sustainable Drainage Systems (SuDS) Explanatory, Design and Evaluation Guide.</p>	<p>Native grass species are proposed within the swales and bioretention areas. Inclusion of further native species will be included as advised by Project Ecologist and in accordance with SDZ documentation and the SDCC Sustainable Drainage Systems (SuDS) Explanatory, Design and Evaluation Guide. This will be to detailed design stage and agreed prior to commencement.</p>
<p>Pond (SuDS Measure) HC30 New wetlands should be created with biodiversity in mind. Detention and attenuation ponds/ basins should have shallow, gently sloping areas to create suitable habitat for amphibians and other fauna. Details to be in accordance with the SDCC Sustainable Drainage Systems (SuDS) Explanatory, Design and Evaluation Guide (when available)</p>	<p>Both detention basins within the open spaces include low areas within the basins that allow for the creation of a 'wet' habitat. Banks are gently sloped where possible. Due to the size and available space for the detention basins there are certain areas where the gradient is a maximum of 1:3. Details of the construction of the detention basins are to the consulting engineer's specifications.</p>
<p>HC31 New wetlands should connect to other features of ecological interest within the lands such as meadows and hedgerows. This is to strengthen the biodiversity value of the lands and improve green and blue infrastructure. Details to be in accordance with the SDCC Sustainable Drainage Systems (SuDS) Explanatory, Design and Evaluation Guide (when available).</p>	<p>There are no wetlands proposed within the development lands.</p>
<p>Watercourses HC39 Inland Fisheries Ireland and Waterways Ireland must be consulted on any within the biodiversity protection zones (within 10m) of the Griffeen River and the Grand Canal prior to works.</p>	<p>Waterways Ireland have been engaged with prior to lodgement of planning, welcoming the retention of the canal bank vegetation and accepting the measures to limit access to the overflow stream, with native hedging and chestnut paling. Inland Fisheries will be consulted prior to commencement.</p>
<p>Grand Canal (including pNHA) HC40 Any proposed planting along and adjacent to the Grand Canal must take into consideration measures for the protection of existing habitats by including an appropriate set-back distance from the pNHA boundary to facilitate protected species, biodiversity, and a fully functioning green and blue infrastructure network. This distance is dependent on the ecological feature (e.g. bat tree roost, rare flora) in question and should be assessed on a case-by-case basis by a suitably qualified ecologist.</p>	<p>The proposed setback distances as proscribed within the SDZ document are followed. All planting within these setback areas along the Grand Canal is specified to enhance the existing strategic corridor and provide additional biodiversity and habitats.</p>
<p>HC41 Planting schedules along the boundary of the Grand Canal pNHA must have regard to the habitat creation recommendations provided above.</p>	<p>The proposed planting measures take into account the habitat creation measures where possible.</p>

<p>HC42 Planting along the boundary of the Grand Canal pNHA should take into consideration management requirements of proposed species in the planting schedules and prevent their encroachment into the habitats of the pNHA.</p>	<p>Planting specified along this boundary is similar and complementary to the existing vegetation within the Canal pNHA and as such it is not anticipated that there will be harmful encroachment. Indeed, the existing vegetation will be enhanced with additional native vegetation that aims to blend seamlessly with the existing conditions along the pNHA boundary.</p>
<p>HC43 A permission should be sought from Waterways Ireland if any proposed works require access to the Grand Canal footpath.</p>	<p>The existing access point from the canal towpath to the south-east will be utilised for a greenway connection from the canal to the link road junction on Fonthill Road. Works will be required to upgrade the existing bridge crossing. In initial discussions with Waterways Ireland this issue has been raised with no adverse comments. A full method statement and ecological survey etc will be carried out and agreed prior to commencement.</p>

Table 3: Biodiversity Objectives for Birds

<p>Bi05 Consideration should be given to installing nest boxes within the parks and development zones. Nest boxes designed to accommodate a range of different species should be installed including boxes for raptors, large birds, small birds etc.</p>	<p>Nest boxes will be installed throughout the open spaces. The appropriate specifications for the various species will be agreed in collaboration with the project ecologist and issued for agreement prior to commencement.</p>
<p>Bi07 The parks onsite should be managed to retain suitable foraging habitat for barn owl. A network of rough grassland habitat, particularly that is associated with wetland habitat should be retained throughout the parks.</p>	<p>Areas of rough grassland habitats are proposed throughout the Canal Park.</p>

Table 4: Biodiversity Objectives for Bats

<p>Ba01 Where buildings are to be demolished/ refurbished or trees with suitability for bats are to be removed within the lands, bat surveys must be carried out at the appropriate time of year by a suitably qualified ecologist to assess whether roosting bats are present (at least 2 surveys separated by a minimum of a week carried out between May and August). If bat roosts are confirmed within the lands (either in trees or buildings), the roost should be retained wherever possible. Should retention of any bat roost not be possible, then in order for a derogation licence to be granted there must have been no reasonable alternative, the loss of the roost must not affect the</p>	<p>With regards to providing bat friendly tree planting measures and replacement roost opportunities consultation with a suitably qualified ecologist will further inform the planting strategy at detailed design stage. It is considered that the current planting (large groups, linear planting areas and the retention of the canal bank vegetation) provide good roost opportunities.</p>
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conservation status of the species. In all cases it is strongly recommended that loss of bat roosts is offset by providing replacement roost opportunities. All recommendations for mitigation should be adapted to the species and the function of the roost.	
Ba03 Lighting on the northern Grand Canal bank (towpath & 30m buffer) should be avoided ,and all lighting along the canal should be minimised. It is recommended that the design ,and operation of the artificial lighting on the southern tow path is reviewed by SDCC in consultation with a suitably qualified ecologist.	There is no lighting proposed within the Canal Park.
Ba04 Any developments located close to a known bat roost or ecological corridor should consider incorporating enhancement measures into the design. Appropriate measures may include installing bat boxes onto buildings, planting hedgerows, pond creation and planting of night-scented flowers.	Native hedgerows and linear groups of trees are proposed within the Canal Park.
Biodiversity Objectives for Mammals	
Overarching Objectives M02 A 10m riparian habitat buffer zone will be provided around existing and proposed rivers, streams and wetland habitat where space allows to maintain commuting and foraging routes for otter. Exceptions to the 10m buffer zone will apply where required to provide for road crossings, services and landscaping features.	A minimum of a 10m buffer is provided to existing watercourses.

Table 6: Biodiversity Objectives for Invertebrates

Biodiversity Objectives for Invertebrates Overarching Objectives	
I01 Grassland / meadow habitat retained or created throughout the lands should be managed to keep important foodplants of the invertebrate species recorded (<i>Poa</i> spp., <i>Agrostis</i> spp., <i>Lolium</i> spp., <i>Urtica dioica</i> , <i>Cirsium</i> spp., <i>Lotus corniculatus</i> , <i>Lotus pedunculatus</i> , <i>Senecio jacobaea</i> , <i>Centaurea nigra</i> , <i>Rubus fruticosus</i> agg., <i>Dipsacus fullonum</i> etc.).	The management of grassland/meadow habitat is referenced in the Murray and Associates Outline Landscape and Maintenance Specifications document.
I02 Installation of ‘insect hotels’ should be considered throughout the site. Insect hotels can include solitary bee bricks that can be built into buildings, purpose built ‘insect houses’ or standing deadwood. The creation of earth banks or bare ground free from vegetation should be considered to provide nesting habitat for solitary bees. These	Insect hotels will be specified to detailed design stage. Full details of the structures will be issued for agreement prior to commencement.

<p>should be created facing southwards. Detailed instructions for the creation of wild pollinator nesting habitat can be found in the following document: National Biodiversity Data Centre (2016) <i>Creating wild pollinator nesting habitat. All-Ireland pollinator plan, How-to-guide 1. National Biodiversity Data Centre Series no. 5.</i></p>	
<p>I03 Planting throughout the site should focus on native species that provide food for pollinators. Where this is not possible, species included in ornamental planting lists should be chosen with pollinators in mind. A range of plants that produce pollen and nectar throughout the year should be chosen. A list of suitable species that provide food for pollinators can be found in the All-Ireland Pollinator Plan's <i>Pollinator Friendly Planting Code</i>.</p>	<p>A large range of native species is included within the planting proposals. Where native planting is not specified, reference is had to the All-Ireland Pollinator Plan.</p>

Table 14: Suggested biodiversity measures for Clonburris South West

Typology Biodiversity Measures	
Retention of treelines and enhancement of treelines	Tree lines are retained where possible. This is along the canal boundary and the Fonthill Road boundary. Retention of trees within the site is not deemed possible due to the required street network and residential layout as proscribed in the SDZ document.
Retention, enhancement and creation of hedgerows	Additional native hedges are proposed throughout the development. The retention of hedges within the site is not deemed possible due to the required street network and residential layout as proscribed in the SDZ document.
Retention, enhancement and creation of woodland (pockets in park, near railway line and Grand Canal and around other water features)	Additional native woodland areas are proposed within the Canal Park. The existing canal bank vegetation is also enhanced with additional native woodland planting.
Planting of native flowering and fruiting tree species	Flowering and fruiting species are proposed throughout the development.
Creation of long-flowering wildflower meadows (areas in parkland)	Wildflower meadows are proposed throughout the open spaces. Native species to be specified in collaboration with the project ecologist and be in compliance with the All-Ireland Pollinator Plan. Species to be agreed at detailed design stage and prior to commencement.
Herbaceous pollinator-friendly planting (urban planters, areas of annual bedding)	Swales will contain certain pollinator-friendly planting species, as will areas managed by a future management company, mainly in the homezone areas and apartment surrounds. Areas taken in charge will have limited species rich areas due to the management requirements of SDCC. Full details to be specified at detailed design stage.

Creation and enhancement of ponds, swales and other water retention features	Swales, bioretention planting areas and detention basins are proposed within the development.
Addition of bird and bat boxes on trees	Bird and bat boxes are to be included on appropriate trees and to project ecologist's specification.
Sensitive lighting design and innovative lighting (e.g. red light) for the protection of bats	Lighting is not proposed within the Canal Park. Elsewhere, lighting proposals are to be reviewed by the project ecologist.
Addition of leaf litter and log piles, earth banks and bee and bug Hotels	Insect hotels to be included at appropriate locations to detailed design stage.
1B Local Park	
Retention of treelines and enhancement of treelines <ul style="list-style-type: none"> • Retention, enhancement and creation of hedgerows • Retention, enhancement and creation of woodland (pockets in park, near railway line and Grand Canal and around other water features) • Planting of native flowering and fruiting tree species • Creation of short-flowering species rich grassland (roadside verges, pavement verges) • Creation of long-flowering wildflower meadows (areas in parkland) • Herbaceous pollinator-friendly planting (urban planters, areas of annual bedding) • Creation and enhancement of ponds, swales and other water retention features • Addition of bird and bat boxes on trees • Addition of leaf litter and log piles, earth banks and bee and bug Hotels 	The large-scale retention and enhancement of existing vegetation within the Local Park is made difficult due to the required size of the below-ground attenuation area and above ground detention basin. The further requirement that the Local Park acts as a well-used public open space also limits the retention of existing vegetation. Where planting is proposed there is a variety of topologies: native tree planting, wildflower meadows, grassland and low 'wet' areas within the detention basins. Bird and bat boxes are to be included, along with insect hotels at appropriate locations.
1E(i) Grand Canal 1E(iii) Fonthill Embankment	
<ul style="list-style-type: none"> • Retention, enhancement and creation of hedgerows • Retention of treelines and enhancement of treelines • Retention and enhancement of existing scrub habitat • Creation of short-flowering species rich grassland (roadside verges, pavement verges) • Creation of long-flowering wildflower meadows (railway verges, roadside verges, pavement verges, canal towpath) • Sensitive lighting design and innovative lighting (e.g. red light) for the protection of bats 	The retention of the existing vegetation within the Canal Park and along the Fonthill Road embankment is of prime importance and has been a major focus of the landscape proposals. Small areas of Woodland Thickets 1 and 3 are proposed to be removed to allow for useable public open space. This is compensated for by the inclusion of additional native woodland planting, native wildflower meadows and the enhancement of the existing vegetation along the canal bank. There are no lighting proposals within the Canal Park.