

ENVIRONMENTAL IMPACT ASSESSMENT REPORT

(THIS DOCUMENT ALSO CONSTITUTES AN ENVIRONMENTAL IMPACT STATEMENT)

NON-TECHNICAL SUMMARY

PROPOSED PHASE 2 RESIDENTIAL DEVELOPMENT

AT

CLAY FARM, BALLYOGAN ROAD, DUBLIN 18



In Association with:

OMP Architects | DBFL Consulting Engineers | BSM Landscape, Planning
and Environmental Consultants | Byrne Environmental Consulting Ltd |
Courtney Deery Heritage Consultancy | ARUP

September 2017

Non-Technical Summary

INTRODUCTION

This Environmental Impact Report (EIAR) has been prepared in support of a planning application for a proposed residential development and associated infrastructure on a site at Clay Farm, Ballyogan Road, Dublin 18 for Viscount Securities, the applicant.

This document is a summary of the information contained in the EIAR. For detailed information and key mitigation and remedial measures please consult the full EIAR document.

Having regard to Article 3 of the 2014 EIA Directive, and the Circular Letter PL 1/2017 of the Department of Housing, Planning, Community and Local Government, this document has been titled an Environmental Impact Assessment Report. However, this document also constitutes and fulfils the requirement of an Environmental Impact Statement (EIS) as required under and in accordance with the Planning and Development Act, 2000, as amended, (Part X); and Part 10 of the Planning and Development Regulations, 2001-2017.

Purpose of the EIAR

The objective of this EIAR is to identify and predict the likely environmental impacts of the proposed development; to describe the means and extent by which they can be reduced or ameliorated; to interpret and communicate information about the likely impacts; and to provide an input into the decision making and planning process.

The EIAR is the primary element of the Environmental Impact Assessment (EIA) process and is recognised as a key mechanism in promoting sustainable development, identifying environmental issues, and in ensuring that such issues are properly addressed within the capacity of the planning system.

The Requirements for an EIAR

Projects needing environmental impact assessment are listed in Schedule 5 of the Planning and Development Regulations 2001-2017.

Schedule 5 (Part 2) of the Planning & Development Regulations 2001 (as amended) set mandatory thresholds for each project class. Sub-section 10(b) (iii) and (iv) addresses 'Infrastructure Projects' and requires that the following class of project be subject to EIA:

- (b) (i) Construction of more than 500 dwelling units.

The development will consist of a residential development of 927 no. residential units, a neighbourhood centre containing a childcare facility with a GFA of 607 sq.m and 2 no. retail units each with a GFA of 85 sq.m, and includes the associated section of the Clay Farm Loop Road from the bridged link with Phase 1 to the south western site boundary, associated internal roads, pedestrian and cycle paths, open space, and all associated site and infrastructural works. The application site has an overall area of 20.5 hectares.

The following components are addressed in the EIAR:

- Introduction and Methodology,
- Project Description and Alternatives Examined,
- Population and Human Health,
- Archaeology, Architectural and Cultural Heritage,
- Biodiversity,
- Landscape and Visual Impact,
- Land and Soils,
- Water,
- Air Quality and Climate,
- Noise and Vibration,
- Wind,
- Material Assets,
- Interactions of the Foregoing,
- Summary of Mitigation and Monitoring Measures,

It is necessary to examine each of these sections of the environment with respect to the impacts that the proposed development may have on them.

In addition to the components required under Schedule 5 of the Planning & Development Regulations, this planning application has examined a number of additional areas (such as Traffic and Transportation and Flooding), which have helped inform the contents of this EIAR, and which are included as standalone reports with the planning application.

PROJECT DESCRIPTION AND ALTERNATIVES EXAMINED

The subject planning application is for Phase 2 of the overall development of the applicant's lands at Clay Farm, Ballyogan Road, Dublin 18. The site is bound to the south-east by Stepside Golf Club, to the south and south west by Cruagh Wood and Stepside Park and to the west by Clay Farm House and undeveloped lands.

The subject lands are known as Clay Farm, forming part of the former agricultural holding associated with Clay Farm house to the south west (located outside the Phase 1 and 2 landholding), and are located to the south and south west of the Ballyogan Road, Dublin 18.

The site is located within the administrative area of Dun Laoghaire Rathdown County Council and is therefore subject to the land use policies and objectives of the County Development Plan 2016-2022. The site is primarily zoned objective A which seeks "To protect and-or improve residential amenity", with a small area zoned objective 'F' which seeks "To preserve and provide for open space with ancillary active recreational amenities", under the Dun Laoghaire Rathdown County Development Plan 2016-2022.

The lands are located approximately 11km south of Dublin City centre and c. 1.5km from both Junction 14 and 15 of the M50. The subject site is strategically located and is served by high quality public transport and existing road infrastructure. The site is served by the Green Line LUAS, which runs along the Ballyogan Road, with two Luas stops located immediately to the west (The Gallops) and east (Leopardstown Valley) of the first phase of the development.

The Phase 1 development, which is currently under construction is located to the north of the Phase 2 lands adjacent to the Ballyogan Road. The permitted Phase 1 development comprises 163 no. houses and 262 no. apartments (a total of 425 residential units). The Phase 1 development also includes the provision of vehicular access from Ballyogan Road and the provision of the first section of the main distributor road within the overall Clay Farm development, which will subsequently link with the Phase 2 development via the provision of a bridge over the Eco Park / Ballyogan stream.

The proposal is for a residential development of 927 no. residential units, a neighbourhood centre containing a childcare facility with a GFA of 607 sq.m and 2 no. retail units each with a GFA of 85 sq.m, and includes the associated section of the clay farm loop road from the bridged link with phase 1 to the south western site boundary, associated internal roads, pedestrian and cycle paths, open space, and all associated site and infrastructural works. the application site has an overall area of 20.5 hectares.

The associated site and infrastructural works include foul and surface water drainage, attenuation tanks, open space including playgrounds, a MUGA (multi-use games area) and exercise units, landscaping, boundary walls and fences, internal roads, cyclepaths and footpaths. The application site includes the possible linear earthworks (DU026-087), a Recorded Monument, located along the northern site boundary.

The proposed development comprises the second phase of the overall development of the applicant's c. 34 ha landholding at this location.

Alternatives Examined

This chapter also includes a summary of alternatives which were considered for the proposed development of the subject lands. These options were considered as the scheme progressed and the key considerations and amendments to the design having regard to the key environmental issues pertaining to the lands are summarised in this section of the EIAR.

Figure 1: Site Layout Plan for Proposed Residential Development



POPULATION AND HUMAN HEALTH

The 2014 EIA Directive (2014/52/EU) has updated the list of topics to be addressed in an EIAR and has replaced 'Human Beings' with 'Population and Human Health'. This chapter also meets the requirement for assessment of 'Human Beings', as set out in Schedule 6 of the Regulations.

Population (human beings) and Human Health is a broad ranging topic and addresses the existence, activities and wellbeing of people as groups or 'populations'. While most developments by people will affect other people, this EIAR document concentrates on those topics which are manifested in the environment, such as new land uses, more buildings or greater emissions.

- Economic Activity;
- Social Patterns;
- Land-Use & Settlement Patterns;
- Employment; and
- Health & Safety.

The proposed development will result in a generally positive alteration to the existing undeveloped green-field site in terms of the provision of residential units and significant areas of open space to serve the growing need for quality housing in the Dublin area in accordance with the planning policy framework provided by the Dun Laoghaire Rathdown County Development Plan 2016-2022. The proposed development will precipitate long term and positive impacts in respect of the health of future occupants. The proposed development will bring about an increase in population in the wider area, which has experienced strong population growth during the 2011-2016 intercensal period.

The implementation of the range of remedial and mitigation measures included throughout this EIAR document are likely to have the impact of limiting any likely adverse environmental impacts of the construction and operational phase of the proposed development on population and human health.

ARCHAEOLOGY, ARCHITECTURAL AND CULTURAL HERITAGE

The archaeological, architectural and cultural heritage assessment of the development of Clay Farm Phase 2 lands examines the potential significance and sensitivity of the existing archaeological and cultural heritage environment, and evaluates the likely and significant impacts of the proposed development on this environment. Ameliorative (remedial or reductive) measures are proposed where necessary to safeguard any monuments, features or finds of antiquity or features of local cultural heritage interest that are identified during the course of the present study. The assessment involved a desk study, field inspection, licenced geophysical survey and licenced archaeological test trenches within the proposed development area.

Summary Receiving Environment

The proposed development site is located in the townland and parish of Kilgobbin, within the barony of Rathdown. A number of archaeological sites are recorded within the vicinity of the application area, including the flat cemetery (DU026-123) and standing stone at Kilgobbin Cottage and the early medieval ecclesiastical settlement at Kilgobbin Church to the southwest, the cluster of sites recorded around the medieval Kilgobbin Castle (DU026-121/DU025-017) to the west/southwest, and to the northeast, the ecclesiastical remains north of

Jamestown House (DU026-004). Excavations in Kilgobbin and the surrounding townlands have revealed extensive sites from the Bronze Age onwards and have proved the high level of archaeological potential in this area.

There are no protected structures, or structures in the National Inventory of Architectural Heritage recorded within or immediately adjacent to the proposed development site. The nearest protected structures are within Kilgobbin Village to the west.

Linear earthwork DU026-087 is located along the north western boundary of the proposed development and DU026-115, also a linear earthwork is in close proximity to the eastern boundary of the proposed development site; together these earthworks are believed to form part of the Pale Boundary, the continuation of which is likely to travel along the line of the large upstanding tree-topped field boundary running east-west between the Phase 1 and 2 development lands. This boundary runs through the permitted Phase 1 open space zoned lands which occupy the flat, level valley of the Ballyogan Stream.

A geophysical survey and archaeological test excavation was carried out across the Phase 2 lands. Archaeological activity was identified in two areas (Area 2 and Area 3). In Area 2 a cluster of four pits, one of which yielded a rim sherd of Late Bronze Age pottery was uncovered along with a single pit containing charcoal and burnt bone and a spread of charcoal rich soil. It is possible that these features may belong to a larger concentration of activity. In Area 3, located in the southeast of the development area, a substantial curvilinear ditch which extends beyond the development area to the southeast was identified. A section excavated across the ditch was 3.05m wide x 1.15m deep and contained eight fills, most of which contained animal bones.

There are no protected structures within or in close proximity to the proposed development. Two structures of architectural heritage interest, Kilgobbin Cottage and Clay Farm, lie just outside the proposed Phase 2 development lands, and are not within the applicant's ownership. The associated walled access laneway to the houses (with its tight bend) are also of local cultural heritage merit and have an inherent historical character. Both properties and the laneway will not be impacted by the proposed development.

Impacts

The recorded section of the Pale boundary, the possible continuation of the boundary and the Ballyogan Stream are located within the greenfield open space for the proposed development (measuring c. 400m east to west). The extension of the permitted Phase 1 Ecopark into the northern portion of the Phase 2 lands will preserve in situ the line of the Pale Ditch boundary (DU026-087) and its probable continuation running at least 400m east-west between development Phases 1 and 2.

The bridge carrying the proposed loop road over Ballyogan Stream between Phases 1 and 2 will have a significant direct impact a 47.2m of the possible line of the Pale Ditch.

Archaeological Area 2 comprises a cluster of pits and a charcoal spread and may belong to a larger concentration of activity. Phase 2 development will have a significant direct impact on these features and any features which may be associated with them.

Archaeological Area 3 comprises a substantial curvilinear ditch which extends beyond the development area to the southeast. Given the extent and nature of the site, the development was designed to avoid the site and preserve it in situ within an open space. There will be no direct impact on this feature.

Given the clustering of archaeological sites and monuments in the area around the proposed development, it is possible that further archaeological material, like that found in neighbouring developments, could be revealed within the proposed development area during the topsoil stripping phase of the development.

Recommendations

It is recommended that an area measuring 47.2m east–west x 15m north–south and centred on the probable line of the Pale boundary and the features uncovered in Area 2 be archaeologically excavated under licence to the Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs (DAHRRGA) in advance of development and preserved by record. The former line of the boundary at this location will be marked in the bridge structure

The enclosure ditch in Area 3 will be preserved in situ within a green space in the development. A buffer of 10m beyond the outer edge of the ditch in order to protect any features that may be associated with the enclosure is recommended. It is further recommended that this site be protected from construction activities by way of fencing.

Given the rich archaeological assemblage in the surrounding area, it is recommended that all topsoil stripping for the proposed development be archaeologically monitored with provision made to deal with any archaeological features that may be uncovered. In the event that archaeological remains are uncovered works will cease in that area pending a decision on how best to deal with the remains. The National Monuments Section will advise on whether preservation in situ or preservation by record is the most suitable means of mitigation.

All mitigation requirements will be subject to approval by the DAHRRGA and the planning authority.

BIODIVERSITY (FLORA AND FAUNA)

An appraisal of the likely effects on biodiversity (flora and fauna) arising out of the proposed development of Clay Farm Phase 2 was undertaken. Measures to mitigate the potential impacts on defined key ecological receptors are proposed. The assessment involved a desk study and field surveys by suitably qualified ecologists including specialists in botany, breeding birds and mammal ecology. The methodologies used to determine the value of ecological resources, to characterise impacts of proposed development and to assess the significance of impacts and any residual effects are in accordance with the *NRA Guidelines for Assessment of Ecological Impacts of National Road Schemes* (NRA/TII, 2009). This methodology is consistent with the *Guidelines for Ecological Impact Assessment in the United Kingdom and Ireland – Terrestrial, Freshwater and Coastal* ('the CIEEM Guidelines', CIEEM, January 2016).

Screening for Appropriate Assessment under the EU Habitats and Birds Directives, included as a standalone report with the application, has concluded that there will be no risk of significant negative effects on any European site as a result of the proposed project, either alone or in combination with other plans or project, in that regard, the Appropriate Assessment Process – preparation of a Natura Impact Statement – is not required.

The Phase 2 lands are currently in agricultural use and consist of a number of large fields, divided by mature hedgerows. Drainage ditches are present along some of the field boundaries. In places the fields are beginning to show signs of encroaching scrub. The land is elevated, and slopes gradually down from south to north. The Phase 2 and Phase 1 lands are separated by tree-lined ridge, up to 2m high in places, located south of

Ballyogan Stream. This area, which forms an integral part of the proposed Phase 1 Ecopark, contains a number of significant ecological features.

The substantial tree lines and hedgerows that form the field boundaries, both within the site and along the boundary, are the main ecological feature on the Clay Farm Phase 2 site. These areas are of Local Importance (Higher Value), in accordance with the ecological resource valuations presented in the NRA *Guidelines for Assessment of Ecological Impacts of National Road Schemes* (NRA/TII, 2009 (Rev.2)). They are considered to be sensitive ecological receptors and, as confirmed by the hedgerow appraisal carried out, a number of the boundary and internal hedgerows are classified as Heritage Hedgerows, of high significance. The agricultural fields that dominate Clay Farm Phase 2 are of Local Importance (Lower Value) and are not considered to be sensitive ecological receptors. The section of the Ecopark through which it is proposed to construct the bridge includes an area of unmanaged species rich wet grassland, as well as a section of the woodland corridor associated with Ballyogan Stream and the stream itself, and a section of mature tree line in the vicinity of the Pale Ditch. This area is of Local Importance (Higher Value). This section of the site is considered to be a sensitive ecological receptor.

No features of significance for roosting bats are present within the Phase 2 lands, however the site is of significance for commuting and foraging bats. The larger hedgerows and tree lines within and around the site are all of importance for nesting birds. The site is Local Importance (Higher Value) for bats and breeding birds and these species are considered to be sensitive ecological receptors. The ridge that separates the Phase 1 and Phase 2 lands is occupied by a number of active and inactive badger setts, including a highly active multiple entrance main sett. Although no evidence of otters has been recorded on the site, the species is well known from the wider area and is likely to utilise Ballyogan Stream, at least occasionally. The site is therefore considered to be of Local Importance (Higher Value) for badgers and otters, which are considered to be sensitive ecological receptors. Deer (Sika deer) activity has also been recorded on numerous occasions on the Phase 2 land during the course of the ecological surveys undertaken since 2014. The site is of Local Importance (Lower Value) for deer, which are not considered to be sensitive ecological receptors. Common (viviparous) lizard, common frog, smooth newt, butterflies and moths are considered to be sensitive ecological receptors, however in each case the Clay Farm Phase 2 site is of no more than Local Importance (Lower Value).

The development of Clay Farm Phase 2 will involve the removal of the agricultural fields as well as the majority of the internal hedgerows and tree lines and associated verges and drainage ditches. The overall loss of the mature hedgerows and tree lines represents a significant impact at the local level. However, the significant hedgerows and tree lines that form the boundary of the site will be retained and a sensitive, ecologically-based landscape plan will be implemented. This includes the retention and protection of the south eastern boundary hedgerow with the public golf course.

The retention and protection of the boundary hedgerows, and key sections of internal hedgerows, will ensure that the existing ecological connectivity provided by the most significant hedgerows and tree lines will be retained. In addition, a setback with no development and incorporating dense and ecologically sensitive planting, including, for example, holly and hawthorn, will be provided in the vicinity of the Ecopark in the northern part of the Phase 2 area abutting the Ecopark, to provide protection for local fauna.

No impacts are expected on roosting bats, as it is not expected that any features of significant potential for roosting bats will be removed. The loss of a proportion of the hedgerows and tree lines on the site will result in impacts on commuting and foraging bats, however it is not expected that these impacts will be significant, particularly in view of the fact that most of the tree lines and hedgerows that form the boundary of the site will be retained, as will the connectivity towards and along the Ballyogan Stream and Ecopark. The lighting designed

for the bridge will incorporate baffles to significantly reduce light spill from the bridge into the Ecopark. There are no roosts known within the site and therefore illumination would only affect commuting and feeding rather than roosting. At worst, lighting associated with the proposed development would be a permanent slightly negative impact.

The badger setts recorded to the north of the Clay Farm Phase 2 proposed development area will be retained. Given the locations of the setts, as well as the proposed buffer zone between the development area and the setts, and the topography in the northern part of the site (sloping steeply down to the ridge line), it is not considered likely that any direct impacts to badger setts will occur, and it will not be necessary to temporarily or permanently close any badger setts. Therefore a licence to disturb badgers, will not be required. No impacts are expected on otters as a result of the proposed development, and access along the Ballyogan Stream corridor will be maintained during the construction phase and beyond.

The loss of the hedgerows and tree lines on the site will result in impacts at the local level on nesting birds, however it is not expected that these impacts will be significant, particularly in view of the fact that the habitat areas associated with the Ballyogan Stream and the Ecopark to the north will be retained, and enhanced, and the boundary hedgerows and tree lines will also be retained. It is not expected that impacts on any other species groups will be significant, and the open space provided as part of the proposed development, as well as the Ecopark adjacent to Clay Farm Phase 2 will incorporate features suitable for use by amphibians, reptiles, butterflies and moths.

Both the construction and operational phases of the proposed development at Clay Farm Phase 2 could have impacts on water quality in the Ballyogan Stream and beyond. However, all construction works will proceed in line with the recommendations and guidance provided in the Construction and Environmental Management Plan for the residential development and the bridge, as well as the Fisheries Protection/Construction Method Statement. Contamination of water from foul water, hydrocarbons, silt or other pollutants will not be allowed. Provided that site facilities are correctly designed and proper working procedures are strictly adhered to, no impacts on existing watercourses are expected, either during the construction or operation of the proposed development.

In order to mitigate habitat loss, and in order to maximise the biodiversity value of the retained habitat and to ensure that habitat connectivity in the wider area is maintained, significant new planting will be incorporated into the landscape design for the proposed development. This planting will, wherever possible, comprise an appropriate mixture of native trees and shrubs, preferably of local provenance, and including species attractive to pollinators. In particular, the significant areas of open space that form part of the Phase 2 development will be planted and managed in a way that maximises the biodiversity value of these areas.

All site clearance and landscaping works will comply with current legislative requirements and best practice. In particular, trees to be retained will be treated in accordance with British Standard BS5837:2012 'Trees in Relation to Design, Demolition and Construction' – Recommendations, with protective fencing being installed around all trees and hedgerows to be retained, prior to commencement of development. All planting plans and landscaping proposals will further ensure that no invasive species are introduced, either deliberately or inadvertently, to the site.

A Habitat Management Plan (HMP) has been developed. All works will comply with the requirements of the HMP, particularly in relation to reinstating the grassland habitat within the Ecopark post-construction (on removal of the temporary hardstanding area associated with the construction of the bridge), and maintaining the bankside habitat in the vicinity of the proposed bridge. Bat and bird (swift) boxes will be erected, with advice

from a suitably qualified ecologist, as part of the development. All new lighting for the proposed development at Clay Farm Phase 2 will be designed and constructed taking account of the recommendations of Bat Conservation Ireland (2010). Together with the Construction Management Plan and the Fisheries Protection/Construction Method Statement, Best Practice measures, where relevant based on the Irish Fisheries document 'Guidelines on Protection of Fisheries During Construction Works In and Adjacent to Waters' and the CIRIA Guidelines: Control of Water Pollution from Linear Construction Projects: Technical Guidance (C648) (CIRIA, 2006) will be adopted.

Overall, with the exception of the permanent residual impact of the hedgerow loss, although the proposed development may have a temporary significant negative impact at the local level, this impact will fully mitigated over time to be negligible.

LANDSCAPE AND VISUAL IMPACT

Introduction

This section comprises an assessment of the likely effects on the landscape and visual environment of the proposed construction of Phase 2 of a residential development at Clay Farm, Ballyogan Road, Dublin 18. The permitted Phase 1 area of Clay Farm, which is located immediately north of the Phase 2 site, is currently under construction in accordance with grant of permission (An Bord Pleanála Ref.: PL06D.246601).

The Phase 2 application is for a ten-year permission development comprising 927 residential units, a childcare facility, 2 retail/commercial units and associated infrastructural and landscape works including a bridged link road across the Ballyogan Stream to Phase 1, and c. 6.2 hectares of open space on a site area of c. 20.5 hectares. The overall Phase 1 and Phase 2 landholding at Clay Farm is c. 34 hectares of which c. 13.3 hectares is reserved for proposed open space, including c. 6.0 hectares within the valley of the Ballyogan Stream, which adjoins the Phase 2 site and which is to be developed as an Ecopark under the Phase 1 grant of permission.

A series of Photomontages was prepared to illustrate the physical and visual character of the proposed development as viewed from surrounding locations (refer Appendix 6.1 - Photomontage Report).

Existing Receiving Environment

The undeveloped Phase 2 lands at Clay Farm lie south / southwest of the Ballyogan Stream and south, southwest of the Phase 1 lands. The section of the Ballyogan Stream valley to the north of the Phase 2 lands is to be developed as a c.6 hectare (ha.) open space and Ecopark as part of the Phase 1 grant of permission.

Carrickmines ESB Electrical Transformer Substation lies to the northeast. The former Ballyogan landfill is a prominent raised landform located to the immediate east of site. The tree-lined Stepside Public Golf Course is located to the southeast, south of the site.

Existing residential development is located at Cruagh Wood and Stepside Park to the immediate south, southwest of the site, and 2 residential properties (including Clay Farm House), lie to the west. The remainder of the lands to the west are undeveloped farmland and the boundary with the Clay Farm Phase 2 site is defined by a mature tree-line located outside of the site boundary.

Residential development is the dominant feature of the wider hinterland. To the south and southwest existing and emerging development at Stepside Park and Cruagh Manor links to the Enniskerry Road and Stepside Village. While open lands remain to the west, these are zoned for residential use and the link from Stepside Park in the southwest to developments at Castle Court and Elmfield to the northwest. Extensive residential development is located at Glencairn and Glenbourne north of Ballyogan Road and residential development at Clay Farm Phase 1 is also under construction south of Ballyogan Road and immediately north of the Phase 2 site. The LUAS Green Line runs along Ballyogan Road on the northern boundary of the Phase 1 lands.

The overall landholding at Clay Farm is zoned for residential and open space use. Permitted development is already under construction on Phase 1 lands to the north of the Phase 2 site. Lands zoned open space within Phase 1 are being developed as open space and include an Ecopark. All of the Phase 2 lands are zoned for residential development.

At present the site is laid out in grassland fields divided by hawthorn, blackthorn and bramble dominated hedgerows with some ash and sycamore trees. Mature trees and tree-lines define the northern boundary, which is contiguous with the permitted Phase 1 development area, the western boundary with similar undeveloped lands, and the southern boundary with Stepside Public Golf Course.

There is an objective to protect and preserve trees associated with the open space (Phase 1 Ecopark) along the northern boundary of the site and also along - but outside of – the western boundary of the site.

Lands along Ballyogan Stream corridor to the immediate north within Phase 1 are zoned for open space and these are being developed as a c. 6 ha. Ecopark within Corridor 6 of Green Infrastructure Strategy for the County. A bridged link across the Ecopark between Phase 1 and Phase 2 is included in the proposed application. This link is part of an objective to provide for a planned 'Loop Road' through the Clay Farm lands and other lands in the area. Part of this this loop road is under construction within the permitted Phase 1 lands.

Sensitivity and significance in terms of landscape and visual relates to the areas of open space zoning; the corridor of the Ballyogan Stream (proposed Ecopark (Phase 1), protection of trees and hedgerows on the northern and western boundary of the site as well as on boundary with Stepside Public Golf Course, and protection of the *Pale Boundary* / tree-lined feature, which runs along the interface boundary between the Phase 2 and Phase 1 lands. The lands are also open in views from Cruagh Wood and Stepside Park to the south and from 2 detached residential properties (including Clay Farm House) located to the southwest of the site.

Within the context of the site, it is considered that general development areas are neither especially sensitive nor significant in landscape and visual terms.

Characteristics of the Proposed Development

In outline terms the proposed development will involve:

- Phased development of the site in 3 sub-phases
- Site establishment, including provision of compounds, removal of trees and hedgerows; site works, stripping of soils and alterations of levels; stockpiling of soil for reinstatement / new landscape works
- Construction of the bridged link for the loop road and section of loop road through the site; construction of the new development of 2 and 3-storey residential units and neighbourhood centre, including 4-storey blocks of apartments with a 6-storey element at the loop road bridge crossing.

- Provision of infrastructure for surface water, drainage, services etc.
- Finishing, including new boundaries, landscape works, footpaths cycleways, play, planting, etc.

In terms of landscape the overall design objective was to develop a connected landscape structure across the overall Clay Farm landholding as initiated under the Phase 1 Development. This includes a connected and functional open space strategy that provides for a Northern Open Space of c. 2.8 ha; a Central Open Space Spine of c. 1.65 ha., with an Archaeology Park based on a local site of cultural heritage; a Pocket Park to the south of the development; a public plaza; and a range of other public and semi-public open spaces. In totals c.6.2ha of open space (or c. 30.5%) is provided for in the Phase 2.

In addition to the open space proposed under Phase 2, a further c. 7.1 hectares of open space, including a c. 6 ha. Ecopark, is to be provided as open space within the Phase 1 lands. In total c. 40% or c. 13.3 hectares of the overall Clay Farm landholding is to be allocated to open space.

Potential Impact of the Proposed Development

The development will involve the construction of a significant new residential development, including roads, open spaces and supporting infrastructure on currently undeveloped lands south of the Ballyogan Stream valley.

Potential landscape and visual effects arise from:

- Site establishment, provision of site compounds, hoarding, etc.; removal of trees, hedgerows and vegetation, including for the proposed bridge; loss of existing open landscape / visual character;
- Soil stripping, stockpiling and earthworks; materials import and export and general construction traffic movement on site;
- General construction activity on a sub-phase by sub-phase basis over a period of up to 10 years and construction of the bridge requiring craning-in of sections of the structure;
- Provision of services and infrastructure, including a section of the loop road, and surface water attenuation;
- Emergence of new residential development, including 3 to 6-storey apartment blocks and completion and occupation of the development on a phased basis
- Provision of lighting, footpaths and cycleways, and provision of landscape measures and planting.

Avoidance, Remedial and Mitigation Measures

Significant consideration has been given to avoiding landscape and visual effects in the design and layout of the scheme as a whole, including in the approach to the architectural, engineering and landscape layouts. As such, the scheme includes for significant landscape and visual mitigation inherent within the proposed development. This includes allocating c. 6.2 ha – or c. 30.5% - of the Phase 2 site area as high-quality open space, connected via pedestrian and cycle routes to the Phase 1 Ecopark, and the provision of significant additional planting throughout the site.

The EIA Report includes for specific landscape and visual mitigation measures in relation to:

- Protection of Trees and Hedgerows during construction
- Protection of Open Space during construction
- Provision of Open Space, Play and Landscape Proposals
- The Phase 1 Ecopark
- Provision of Planting Plans
- Maintenance

Predicted Impacts of the Proposed Development

Changes arising from the construction stage of the Phase 2 development will have a locally moderate negative landscape and visual effect. While each subsequent sub-phase of development will continue to have a locally moderate negative landscape effect, visual effects from later sub-phases of development will be reduced both on foot of the initial works/sub-phase and because later sub-phases are more distant from existing residential development and viewing opportunities.

Post construction the scheme as a whole will make a significant and positive contribution to the emerging residential character of the wider area. In particular, the proposed open space network with connections to surrounding areas and to the Phase 1 Ecopark will make a significant and positive contribution to the emerging landscape character and to amenity and recreational opportunities.

In general, the layout proposes houses to the south, where the Phase 2 development adjoins existing residential areas. Taller elements, including the apartment blocks and Neighbourhood centre are appropriately located to the north of the site, at a distance from existing residential development and where topography allows for overlooking of the Ecopark.

The construction of the proposed bridge link loop road over the Ballyogan Stream will give rise to localised moderate landscape impact and removal of vegetation both in linking into the Phase 1 development at the northern end and the main Phase 2 site to the south of the valley. While the bridge and associated traffic will be a prominent feature with the eastern end of the Ecopark, it has been designed to maintain pedestrian and cycle movement beneath the structure and the bridge will also offer an excellent vantage for viewing over the park of the Ecopark corridor.

The lighting throughout the scheme has been designed to use cut-off LED lighting to reduce the potential for light spill effect.

Residual Impacts

With the incorporation of the mitigation measures and with establishment of the emerging high-quality development, including open spaces and links to Phase 1 Ecopark, it is considered that the proposed Phase 2 development will have a positive residual effect on the landscape and visual environment of the area.

In particular, the nature and extent of the proposed open space network and its integration with the Ecological Corridor of the Ballyogan Stream (i.e. the Ecopark) and onwards to the Phase 1 development is significant and positive. Given the network of connections to both planned and proposed open spaces (with playgrounds and play opportunities) and to existing open spaces in the wider environment, the development will make a significant contribution to realising both development opportunities, local amenity and recreational objectives in the area.

Monitoring

Monitoring of landscape-related works is an integral aspect of the proposed scheme, this includes monitoring of site development works; construction works, tree and hedgerow protection, landscape finishing and implementation, and aftercare of landscape measures.

LAND AND SOILS

This chapter was prepared by DBFL Consulting Engineers. The Land and Soils section of the EIAR is based on site investigations carried out on the subject lands in 2008 and 2016. The site investigations comprised twenty trial pits, thirty-two boreholes and thirty-five CBR tests, the results of which were described in interpretive reports. The bedrock Geology Map produced by the Geological Survey of Ireland (GSI) was also consulted.

From the observed boreholes and trial pits, upper deposits of clay were discovered, this clay was underlain by sandy gravel in several locations. Solid bedrock was determined between approximately 3.8m and 7m and consists of strong grey brown granite.

It is anticipated that the development site works and excavation proposals will not be deep enough to impact the underlying bedrock geology during the construction phase. However, for the proposed roadbridge (see further forward), piling works will be required supported off the bedrock.

It is therefore considered that the greatest impact of the construction will arise from the extensive stripping and wide scale excavation of soils and sub-soils to prepare and construct the development. The main volume of excavation will be from the planned basements and undercroft car-parking to be constructed as part of the proposed apartment buildings to the north of the site near to the Ballyogan Stream, in addition, excavation will be necessary for the proposed underground surface water attenuation systems. Reusable excavated soils and rock will be retained on-site for backfilling or drainage purposes to reduce the total volume of imported material. It is anticipated that the impact on soils arising from the construction phase will be short term and moderate.

The potential likely and significant impact on hydrogeology during the construction phase is considered to be short term, temporary and moderate without mitigation measures in place. There is unlikely to be any significant impact on hydrogeology from the operation phase of the proposed development.

On completion of the construction phase, no further impacts on the soil environment are envisaged except for the possibility during operation phase of contamination of soil from foul water effluent or oil/chemical spills. In this regard, the worst-case scenario for the site during operational phase is one of effluent & pollutants from sewers or drains discharging into the ground, contaminating the soil and geological substrate. The likelihood of this scenario is very low however, as all pipe lines will be constructed to best practice standards and will be tested prior to connection to existing lives sewer. Furthermore, any work in the vicinity of sewers and drains will be monitored for breakages in the pipeline.

WATER

This chapter was prepared by DBFL Consulting Engineers. The water chapter considers foul and surface water drainage, surface water ditches and watercourses and potable water supply.

This chapter is based on the following sources and reports:

- Site Visit
- Site Investigation Report
- Geological Survey of Ireland (GSI) online maps and databases
- ECFRAMS Flood Mapping from OPW
- EPA online maps and databases
- Topographical Survey
- SSFRA (Site Specific Flood Risk assessment, Revision 'A') prepared by DBFL Consulting Engineers
- A technical report entitled 'Hydraulic Analysis of Future Bridge for Phase 2', by DBFL Consulting Engineers
- Calculation sheets for foul and surface water drainage and watermains by DBFL Consulting Engineers
- Local authority record drawings

All drainage (surface and foul) and water supply will be provided in accordance with the requirements of Dun Laoghaire-Rathdown County Council and in particular with the following:

- Greater Dublin Regional Code of Practice for Drainage Works
- Greater Dublin Strategic Drainage Study (GDSDS)
- Planning System and Flood Risk Management Guidelines
- Building Regulations (Part H)
- Irish Water Standard Details and Codes of Practice for Water and Wastewater Infrastructure
- CIRIA SuDS manual C753 (2015).

This chapter also encompasses knowledge obtained from site visits, drainage and water services record information received from Irish Water, Local Authority and as-built information from Phase 1. Additionally, information from the EPA and GSI websites has been utilised. DBFL met with the DLRCC Planners and Drainage personnel for pre-planning meetings and all comments have been incorporated into the proposed design.

The proposed development is located to the south of the existing phase 1 development, currently under construction. The site is currently undeveloped, however, some water infrastructure is being constructed in Phase 1 to service the Phase 2 lands.

The main freshwater watercourse within the vicinity of the proposed development site is the Ballyogan Stream which runs through the future Valley Park separating the Phase 1 site (currently under construction) and the Phase 2 future development lands.

Foul water drainage from the northern part of the development under consideration (Phase 2) would discharge to the existing 525mm diameter sewer adjacent to the Ballyogan Stream. Two southern catchments will drain to the existing 375mm diameter foul sewer along the south-eastern boundary of the site.

The additional flow generated during the operational phase of the development can be catered for by the existing foul sewer outfall, this has been confirmed by Irish Water.

A pre-application enquiry was made to Irish Water in Winter 2016 and a response was received from Irish Water in February 2017 stating that *“subject to a valid connection agreement being put in place, a proposed connection to the Irish Water network can be facilitated.”*

The impact of the proposed development on the public foul sewerage system will be to increase the quantity of wastewater discharging to Shanganagh Wastewater Treatment Works for treatment and disposal. The potential impact of the proposed development on the local foul sewerage network during the construction phase of the development would be short term and minimal. The potential impact from the operational phase of the development is therefore likely to be long term and minimal.

All foul drainage infrastructure will be design and constructed in accordance with Irish Water Standard details and specifications.

Surface water drainage for the development lands is designed in accordance with the Greater Dublin Strategic Drainage Study (GSDS) and is modelled in WINDES/WINDAP software using the Modified Rational Method.

The development will be carried out using the “separate system” method of drainage i.e. separate foul drainage and surface water drainage systems. Surface water will be collected and discharged via a mixture of traditional and Sustainable Urban Drainage Systems (SuDS) to the Ballyogan Stream. SuDS features are incorporated into the design where possible.

SUDS features to be incorporated into the design will include the following:-

- Private car-parking areas will be drained through permeable pavements
- Roads and paved areas will be drained to bioretention areas and swales
- Green roofs will cover a minimum of 60% of apartment building areas
- Attenuation will be provided in geocellular systems underground
- Long-term storage will be provided in a detention basin

Surface water will be collected by a system of SuDS features, gullies, pipes and manholes and will be directed to underground attenuation systems located beneath landscaped and public car-parking areas. These attention systems will likely take the form of a ‘stormtech’ geocellular systems to be designed in accordance with the GSDS. The peak flow from the site will be controlled using hydrobrakes and will discharge to the existing Ballyogan Stream to the north of the development.

An existing land drain/ditch running north to south through the centre of the site will be diverted and culverted under the proposed loop road. The remaining open ditch will be diverted and will be used for conveyance of upstream flows and will provided a water quality and amenity function for the site. Another existing field drain on the south-eastern boundary of the site will be maintained for its length.

All habitable buildings and critical infrastructure will be located in Flood Zone C i.e. outside the 0.1%AEP (1 in 1000 year) as identified by the recently finalised ECFRAMS mapping of the Ballyogan Stream produced by the OPW. A Site Specific Flood Risk Assessment (SSFRA) has been prepared to comply with current planning legislation, in particular the recommendations of “The Planning System & Flood Risk Management - Guidelines for Planning Authorities”. The SSFRA report clarifies the site’s flood zone category and presents information

which would facilitate an informed decision of the planning application in the context of flood risk. The report also outlines appropriate flood risk mitigation and management measures for any residual flood risk.

The potential impact on surface water from the development is likely to be short-term and low, provided suitable mitigation measures are put in place and maintained during the construction phase and the SUDS features are maintained during the operational phase.

The completed development will result in a permanent change to the existing natural surface water processes on the current greenfield site. The potential impact from the construction phase on surface water is likely to be short term and low. The potential impact from the operational phase on surface water is likely to be long term and low.

New watermain infrastructure will be provided within the site to serve the needs of the development, the proposed watermain will connect to a 200mm diameter main currently being constructed in the phase 1 lands. This watermain will traverse the proposed road bridge spanning the Ballyogan Stream and floodplain to connect to the Phase 2 lands.

Water supply will be in accordance with the requirements of Irish Water.

The impact of the operational phase of the proposed development on the public water supply is to increase the demand on the existing supply. The potential impact of the proposed development on the public water supply network is likely to be long term and low. A pre-application enquiry was made to Irish Water in Winter 2016 and a response was received from Irish Water in February 2017 stating that *“a proposed connection to the Irish Water network can be facilitated. In order to accommodate the proposed connection, works are required to link the 2 no. 300mm watermains on Ballyogan Road and the R117. A PRV (pressure reducing valve) will also be required at the location. Irish Water does not currently have any plans to carry out the works required to provide the necessary upgrade and capacity. ... Irish Water may require you to provide a contribution of a relevant portion of the costs for the required upgrades.”*

Road Bridge Over Ballyogan Stream

As part of the Phase 2 works it is necessary to bridge over the Ballyogan stream and its floodplain which run through the Valley Park, along the south of the Phase 1 lands and separates the Phase 1 subject site and the Phase 2 future development lands. This concrete bridge will include a road with footpaths and cycletracks on both sides and will be a quadruple span bridge perpendicular to the stream constructed with abutments and 3 sets of vertical piers supporting precast bridge beams.

As part of the phase 1 application, a hydraulic analysis of the impact of a future road bridge over the Ballyogan stream and associated floodplain was undertaken and it was determined that the introduction of the future bridge between Phase 1 and Phase 2 would cause minimal decrease in flow and storage volume within the flood plain (0.1% AEP for draft ECFRAMS). Therefore, the installation of the future Phase 2 bridge and the ancillary works to the channel are not considered to cause any negative impact of the Ballyogan Stream flow and flood plain storage.

AIR QUALITY AND CLIMATE

Byrne Environmental Consulting Ltd have assessed the potential air quality and climatic impacts that the Clay Farm Phase 2 development may have on the receiving environment during the construction and operational phases of the project. The assessment includes a comprehensive description of the existing air quality in the vicinity of the subject site, a description and assessment of how construction activities and the operation of the development may impact existing air quality and climate, the mitigation measures that will be implemented to control and minimise the impact that the development may have on local ambient air quality and finally to demonstrate how the development shall be constructed and operated in an environmentally sustainable manner.

In terms of the existing baseline air quality environment, site specific baseline data and data available from similar environments indicates that levels of nitrogen dioxide (NO₂), carbon monoxide (CO), sulphur dioxide (SO₂) particulate matter less than 10 microns (PM₁₀) and less than 2.5 microns (PM_{2.5}) and benzene are well below the National and European Union (EU) ambient air quality standards. Predicted levels of traffic generated air pollutants will not exceed the ambient air quality standards and the impact of the development in terms of ambient levels of NO₂, PM₁₀, PM_{2.5}, CO, SO₂ and Benzene is deemed imperceptible.

The construction phase of the development has the potential to generate short term fugitive dust emissions and diesel engine exhaust emissions associated with construction vehicles and plant however these emissions will be controlled by appropriate mitigation techniques and through the implementation of a construction phase air quality management and monitoring plan throughout the duration of the construction phase.

The operational phase the development will see the operation of modern, well insulated thermally efficient buildings in which energy efficiency shall be achieved by implementing sustainable features into the developments buildings and infrastructure design.

National air quality standards shall not be adversely affected as a result of the short term construction phase or the long term operational phase, thus ensuring that the potential for adverse impacts on human health is imperceptible.

The heating of the development shall be provided by natural gas which is a less polluting fuel source than traditional fossil fuels such as oil and coal. In relation to the construction phase, a dust minimisation and monitoring plan has been prepared as construction activities are likely to generate short term fugitive dust emissions. Emissions from traffic-derived pollutants have focused on improvements in both engine technology, exhaust technology and fuel quality with vehicles over recent years.

Road traffic would be expected to be the dominant source of greenhouse gas emissions associated with the development. Vehicles will give rise to CO₂ and N₂O emissions in the region of the proposed development. EPA guidance states that a development may have an influence on global climate where it represents “a significant proportion of the national contribution to greenhouse gases”. Greenhouse gas emissions as a result of the development will be insignificant in terms of national CO₂ emissions and therefore, it is concluded that the impact of the proposed development on climate will be imperceptible.

NOISE AND VIBRATION

Byrne Environmental Consulting Ltd have assessed the potential noise and vibrational impacts that the proposed Clay Farm Phase 2 development may have on the receiving environment during the construction and operational phases of the proposed development. The assessment includes a comprehensive description of the existing ambient baseline noise climate in the vicinity of the subject site, a description of how construction activities may impact the ambient noise climate and finally, the mitigation measures that shall be implemented to control and minimise the impact that the development may have on existing ambient noise levels.

Ambient noise levels in the vicinity of the site shall temporarily increase during the construction phase, however noise levels shall be controlled and minimised through the implementation of noise and vibration mitigation measures and by the implementation of a Construction Phase Noise Management Plan. The operational phase of the development will not have an adverse or unacceptable impact on the noise climate or any adverse vibrational impact at any receptor located in the vicinity of the site.

The existing baseline noise climate has been assessed at the site over the course of typical daytime and night time periods. The principal sources of existing noise experienced at the site include transport noise from road traffic on the Ballyogan road and from local road traffic within adjacent residential estates, the Luas tram line and noise from the ESB Transformer Station.

The noise impact assessment has considered the potential outward impacts associated with the construction and operational phases of the proposed development on its surrounding environment. The assessment has also assessed the inward impact of the surrounding environment on the proposed development in order to ensure that suitable internal noise levels can be achieved across the site within the residential dwellings.

During the operational phase, the outward noise impact to the surrounding environment will be limited to additional traffic on surrounding roads. The impact assessment has concluded that additional traffic from the proposed development will have an imperceptible to slight impact on the surrounding noise environment.

Internal noise levels within the proposed residential dwellings across the site have been assessed with regard to the existing noise levels measured during the baseline noise surveys. Sound insulation performance values for glazing, walls, roofs and ventilation systems have been specified as part of the assessment in order to ensure acceptable internal noise levels are achieved during both daytime and night time periods throughout the development site.

MATERIAL ASSETS

Material Assets considers physical resources in the environment which may be of human or natural origin. The objective of the assessment is to ensure that these assets are used in a sustainable manner, so that they will be available for future generations, after the delivery of the proposed development.

In accordance with the 2017 Draft EPA Guidelines on the Information to be Contained in Environmental Impact Assessment Reports, "*Material assets can now be taken to mean built services and infrastructure*". Material assets of a natural origin are dealt with comprehensively within the other chapters of the Environmental Impact Assessment Report.

This chapter considers the key aspects relating to material assets of a human origin of the proposed development site and the surrounding area, namely traffic infrastructure, potable water supply, wastewater discharge, electricity and gas supply.

The Material Assets chapter describes existing services to the application site and describes the predicted impacts which the development may have on these services and recommends mitigation measures. The proposed development will have a positive impact on the existing urban environment by creating high quality residential units to respond to current housing need and to cater for the needs of a growing population on residential zoned lands, adjacent to two Luas stops and also including significant open space provision. Traffic movements associated with the proposed development are likely to have a long-term and neutral impact on the operation of the local road network as demonstrated in the standalone Traffic and Transport Assessment (prepared by DBFL Consulting Engineers) being implemented. This chapter concludes that there is unlikely to be any significant adverse impacts on material assets as a result of the proposed development during the construction or operational phase of the development.

INTERACTIONS BETWEEN ENVIRONMENTAL FACTORS

The purpose of this chapter of the EIAR is to draw attention to significant interaction and interdependencies in the existing environment. John Spain Associates in preparing and co-ordinating this EIAR ensured that each of the specialist consultants liaised with each other and dealt with the likely interactions between effects predicted as a result of the proposed development during the preparation of the proposals for the subject site and this ensures that mitigation measures are incorporated into the design process. This approach is considered to meet with the requirements of Part X of the Planning and Development Act 2000, as amended, and Part 10, and schedules 5, 6 and 7 of the Planning and Development Regulations 2001-2017. The detail in relation to interactions between environmental factors is covered in each chapter of the EIAR.

SUMMARY OF EIA MITIGATION AND MONITORING MEASURES

This chapter provides a summary of all the mitigation and monitoring measures proposed throughout the EIAR document for ease of reference for the consent authority and all other interested parties.