

4. CONSIDERATION OF ALTERNATIVES

This Chapter provides *'a description of the reasonable alternatives (for example in terms of project design, technology, location, size and scale) studied by the person or persons who prepared the EIAR, which are relevant to the proposed development and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects'* as required by Schedule 6 of the Planning and Development Regulations, 2001-2019

The preparation of this Chapter has had regard to the Revised Guidelines on the Information to be Contained in Environmental Impact Statements (Draft), September 2017. Regard has also been had to the previous EPA Guidance, to the European Commission Impact Assessment Guidelines, 2017, and to the new EIA Directive 2014/52/EU, which states that information for the Environmental Impact Assessment Report should include:

'a description of the reasonable alternatives (for example in terms of project design, technology, location, size and scale) studied by the developer.'

The Guidelines recommend that the Developer provide:

- A description of the reasonable alternatives studied; and
- An indication of the main reasons for selecting the chosen option with regard to their environmental impacts.

The Guidelines provide that an alternative may be considered unreasonable or unfeasible if there are technological, budget, stakeholder or legal/regulatory obstacles preventing it from being carried out.

The principal rationale for the development proposal is outlined in this Chapter, to provide context for the proposed development and the selection of the proposed development site. This Chapter goes on to identify the reasonable alternatives considered in terms of size and scale, and the environmental factors considered in respect of each alternative and the main reasons for selecting the final proposed design. The identification of reasonable alternatives has been carried out in the context of the nature and scale of the development proposed being predominantly residential, together with the established regulatory context.

4.1 Rationale for the Proposed Development

Since the economic collapse in 2008 there is an ongoing under-supply of housing particularly in the main cities and larger towns. The recovery and increasing population and employment is creating a significant increase in demand for new homes to support a growing and working economy, and to address the significant level of social housing need. Under-provision of housing is one of the last significant legacies of the economic downturn to be tackled. Accelerating delivery of housing for the private, social and rented sectors is a key priority for the Government.

Construction 2020 - A Strategy for a Renewed Construction Sector and the *Social Housing Strategy 2020*, both of which were published in 2014, contain measures to address issues and constraints in the construction and development sectors and in the provision of a range of social housing outcomes, respectively. The Government's *Action Plan for Housing and Homelessness, Rebuilding Ireland*, July 2016 seeks to ramp up the delivery of housing from its current under-supply across all tenures to help individuals and families meet their housing needs.

The proposed development provides for the delivery of high-quality residential development on available, serviced and appropriately zoned lands, which will contribute towards Celbridge fulfilling its role as a Moderate Sustainable Growth Town as designated under the Kildare County Development Plan 2017-2023.

The application site has been specifically zoned for new residential development and is identified as part of a Key Development Area under the Celbridge Local Area Plan 2017-2023 (LAP). The proposed development will facilitate the sustainable growth of Celbridge in a coherent, plan-led, manner; ensuring the delivery of residential development in appropriate locations; and delivering an exemplar quality of life for its residents.

4.2 Consideration of Alternatives

4.2.1 Alternative Locations

The site is zoned 'C' 'New Residential' in the Celbridge Local Area Plan 2017-2023, 'to provide for new residential development'. The Celbridge LAP 2017-2023 was the subject of a Strategic Environmental Assessment (SEA).

The issue of alternatives is a critical function of the Strategic Environmental Assessment (SEA) process and is necessary to evaluate the likely environmental consequences of a range of alternative development strategies for a settlement within the constraints imposed by environmental conditions. The SEA for the Celbridge LAP 2017-2023 considered alternatives at an early stage of the plan making process and through an iterative process with the Local Area Plan, SEA and AA teams the most appropriate scenario was selected.

The preferred strategy of the SEA provided for the designation / zoning of the subject site, as Objective 'C' for new residential development and designating it as a Key Development Area (KDA). Section 7.3 of the SEA states that '*the environmental sensitivities of the county identified through the SEA process and CFRAM have informed the development of the KDAs and the LAP Core Strategy for Celbridge.*' The development of the site has been determined to be acceptable in principle with regard to the environmental matters considered in the SEA.

The development of the lands for residential use is consistent with the detailed framework for the KDA as detailed within the LAP, and as such, represents a plan-led development.

The site provides opportunities for the coherent integration, consolidation and sustainable development of the established town of Celbridge, as designated in the LAP, and provides opportunities for connectivity to the site's surroundings. The site and proposed development present an opportunity to deliver a substantial quantum of housing in the form of the sustainable urban expansion and consolidation of Celbridge town and thereby contribute in a sustainable manner to meet strategic planning objectives at a local and regional level.

On the basis of the foregoing, no alternative sites were considered or assessed for the purposes of preparing this EIAR, nor is it considered necessary to do so.

4.2.2 Alternative Construction Phasing

Single phased construction was considered inappropriate due to the size of the site and scale of the proposed development. A phased development is considered appropriate and will ensure the sustainable delivery of units over the lifetime of the planning permission, as applied for.

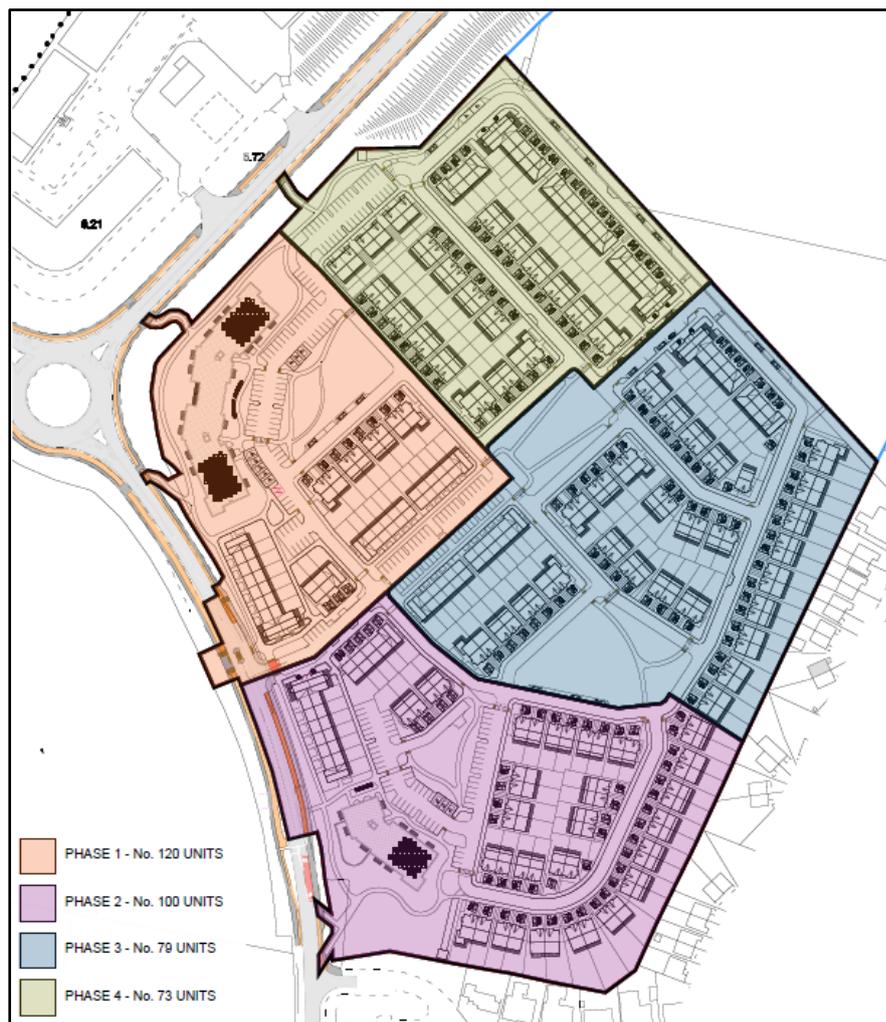
There are no services constraints that require a particular phasing programme for the proposed development. During the pre-application consultation process the KCC Drainage Division expressed a desire that *'Any phasing of the proposed development shall be aligned to the maximum extent possible with the proposed five (5) drainage catchments.'*

The drainage proposals have been revised to include four (4) drainage catchment areas within the site, as shown indicatively in Figure 4.1 below.

Figure 4.1 Proposed Drainage Catchments



The proposed Drainage Catchments, as indicated above has informed the preliminary and indicative Phasing of the proposed development which is anticipated to commence at the southern end of the site with Phase 1 corresponding roughly with Drainage Catchment Area A; Phase 2 corresponding roughly with Drainage Catchment Area D; Phase 3 corresponding roughly with Drainage Catchment Area C; and Phase 4 corresponding roughly with Drainage Catchment Area B.

Figure 4.2 Indicative Phasing Plan

4.2.3 Alternative Layouts & Designs

A number of alternative layouts for the proposed development were considered during the design and consultation stages with the Local Planning Authority prior to the principles of the proposed layout being finalised.

The significant environmental issues and potential effects which informed the proposed layout and design, included: population demographics and housing mix / typology; biodiversity; cultural heritage; transportation and visual impact assessment. Other factors that were fundamental to informing and directing detailed design included the land use zoning objectives under the Kildare County Development Plan 2017-2023 and the detailed design brief established in Section 12.2.4 of the Celbridge Local Area Plan 2017-2023 which sets out specific framework objectives for the Crodaun KDA.

Early factors informing the detailed layout of the site include environmental constraints related to engineering factors. For example, the site falls from the west towards its eastern boundary, however, the proposed foul drainage discharge point is located adjacent to the south-west corner of the site, where ground levels are somewhat elevated above the eastern side of the site. It is therefore proposed to slightly raise existing ground levels along the eastern side of the site in order to achieve a gravity drainage solution. Alternatives would have involved constructing a foul drainage pumping station (the

preference is to avoid pumped drainage solutions where possible). The surface water drainage strategy for the proposed development also informed by the same constraints.

In this respect, the design team considered a number of options in terms of overall layout as follows:

- Design Option 1 – Layout informed by Celbridge LAP 2017-2023
- Design Option 2 – Introduction of central open space along axis route and apartments
- Design Option 3 – Interruption of central axis by alteration of central open space
- Design Option 4 – Preferred Option – Proposed Development

Design Option 1 was primarily informed by the framework / concept design in the Celbridge LAP 2017-2023 as a starting point, replicating the proposed street network with a central boulevard connecting the site with future development lands to the south east and north west. The initial scheme replicated the open space and green buffer zones as per the overall framework for the plan lands. Key design and organisational elements included green buffer zones, pocket parks and a strong central axis. This scheme provided a variety of house types to include terraced, semi-detached and detached houses of varying sizes with corner units designed to encourage passive surveillance of open spaces.

Figure 4.3 Design Option 1



This option provided for 270 units (at a density of 29.4 units/Ha) and 1.32 ha of open space. The initial layout design was informed by the central entrance road proposed by the LAP indicative layout, with secondary streets branching off to connect with the rest of the site. The protected vista of Castletown House was a key restraint in the north eastern part of the subject site and provided a focus at the termination of the central avenue.

The layout of the development was further informed by the need to connect to existing foul and surface water networks along the west and south west of the site. Existing ground levels at the east of the site were proposed to be raised to facilitate a gravity drainage solution. The road layout was informed by the specified need in the KDA design brief to have a central axis with future connection potential to integrate with the remaining KDA 4 lands across the R405 Maynooth Road. The internal alignment of the street network was governed by this and a need to consider existing site constraints including the level of existing discharge points, boundary conditions and the sites topography to ensure a network of streets was created with the primary objectives of maximising permeability and enhancing legibility.

Dwellings provided included terraced, semi-detached and detached houses, with no apartments or duplexes giving rise to issues of lack of variety in dwelling type which did not reflect the demographic of the area and had the potential for a negative impact on the local population. It was also considered that the density of the proposed development was not sufficient in meeting targets to maximise the sustainable development of appropriately zoned and serviced lands within a metropolitan area accessible by sustainable transportation modes and major employment centres, the town centre and education, community and recreational facilities.

The LAP indicative layout did not maximise the site's prominent gateway location along the R405 and R449, with potential landscape and streetscape impacts, nor did it respond appropriately to the site's natural features including the existing of hedgerows and historic field pattern with potential impacts on biodiversity and cultural heritage. This option also resulted in a poor development layout with peripheral open spaces, several cul-de-sacs affecting the permeability and connectivity creating disjointed neighbourhoods.

The arrangement of open spaces confined the direct amenity to a limited number of houses. The layout of the open space to the north-west of the site had limited passive surveillance, affecting the visual and recreational amenities of the future residents and population.

Design Option 1 also gave rise to potential impacts in terms of traffic and transport due to the poor connectivity of streets affecting permeability through the site, leading to additional traffic movements and resultant potential human health and safety impacts. The layout also failed to provide a clear hierarchy of roads and streets in accordance with the requirements of DMURS³ which constitutes current best practice in sustainable urban development and place making. Furthermore, the street layout resulted in the inefficient and unsustainable use of the land and made for poor permeability through the inclusion of cul-se-sacs.

This option was not selected for the above reasons and a number of alternative options were explored, which improved on the indicative LAP layout based on the environmental impacts and sustainable development matters identified, maintaining the core central axis but ensuring a better layout for the

³ Design Manual for Road & Streets – Department of Transport Tourism & Sport and Department of Environment, Community & Local Government

development based on increasing permeability and creating useable and accessible spaces for residents and visitors.

Design Option 2 provided for the redistribution of open spaces within the site to create more useable amenity spaces. The central axis boulevard was redesigned to incorporate open space to assist in orientation on site and provide a central focal point. Green buffer zones were included to set back the development from the R405 and retain part of the boundary hedgerow, with further pocket parks distributed to break up the streetscape. A formal square was created in the north western corner of the site through the inclusion of two apartment blocks. An improved road layout reduced the dominance of cul-se-sacs creating improved permeability. Apartments were included to add further variety in unit mix for a range of household sizes and types and to provide a more sustainable level of density.

It was estimated that this option would yield 328 units, at a gross residential density of 35.73up/h, comprising apartments, maisonettes and houses. 1.54ha (16.8% of the site area) was designated as soft landscaped open spaces.

Figure 4.4 Design Option 2



This option resulted in existing boundary hedgerows being maintained, with the site laid to sympathetically transition with the countryside, assisting in mitigating some environmental impacts associated with Design Option 1 in terms of biodiversity, visual impact and cultural heritage.

A hierarchy of streets was created enabling easy navigation through the scheme based around a central axis. Accessibility to the site was improved through the introduction of a green open space in the south western corner of the site, creating a pedestrian link with the adjoining Crodaun Forest Park neighbourhood. The central axis was retained as a key connector to other KDA lands, providing cohesion for the development of the developing neighbourhood. Furthermore, connections were created to potential future amenity lands north east of the site.

The inclusion of 2 apartment blocks improved the variety of dwellings available, providing for a greater range of household types and ensuring a more sustainable form of development by improving the density of development.

The layout provided a sustainable solution for connecting to the foul and surface water networks. However, the layout still gave rise to issues of poor road connectivity, with dead-end roads dispersed in the north, west and southern parts of the site. This would give rise to additional traffic movements and resultant potential human health and safety impact traffic concerns as well as issues of access for future residents.

Based on the foregoing future design options sought to provide for improved linkages throughout the site and further improve the range and variety of dwelling types and sizes provided.

Design Option 3 amended the centrally located open space in the central axis boulevard, removing the road from the open space previously proposed under option 2 to maximise its amenity value. Significant emphasis was placed on the need to deliver quality open spaces for future residents to provide a high level of visual, landscape and recreational amenity, and providing a legible street network.

This option was subjected to SHD pre-application consultation with An Bord Pleanála (ABP) dated 8th April 2019. The proposed scheme provided for 355 residential dwellings and a childcare facility on lands comprising approximately 9.18 hectares, approximately 13,777 sqm of which was proposed as open space. This option provided for a density of 38.5u/ha.

This layout addressed many of the environmental impacts identified in earlier options. In particular, the proposed design provided greater residential amenity through improved public open spaces and access to amenity areas and provided improved access and permeability throughout the site. Pedestrians and cyclists were also prioritised in the street network, with linkages prioritised to the R405 and existing and future developments, both residential and educational, aiming to encourage sustainable transport modes and reduce the need for car travel for residents in and around the development.

Density was increased to align with national planning policy requirements for the efficient and sustainable use of the zoned land, through the inclusion of a third apartment building. This also helped to define the north-western edge of the subject site and create a strong urban edge onto the R449 and R405.

Figure 4.5 Design Option 3

The orientation of homes afforded consideration to maximum daylight and sunlight for dwellings and amenity space to ensure high quality and useable spaces for residents and visitors. The design aimed to connect the public realm with the built form to create safe environments for users of the development.

The revised layout compromised passive surveillance of the amenity space to the north and had potential adversely impact on landscape and visual amenity by reason of rear garden boundaries forming part of the boundary to the amenity space. The building line addressing the zoned amenity lands and the alignment of the protected view corridor between Castletown and Carton Demesnes is weak and does not appropriately frame this open space and view corridor giving rise to landscape and visual impacts.

The removal of the central axial road also presented as a potential traffic hazard, creating unnecessary movements for vehicles with potential impacts on air quality and traffic safety. The road layout to facilitate the increased apartment units in the north western part of the site gave rise to reduced road connectivity also creating issues of traffic and lack of permeability.

An Bord Pleanála's consultation Opinion identified specific issues to be addressed in the documents in order for them to constitute a reasonable basis for an application for strategic housing development.

The issues stated included the layout of the proposed development particularly in relation to the treatment of the interface with Maynooth Road (R405); connectivity with adjoining lands and the provision of quality open space; and, further consideration of wastewater infrastructure constraints and surface water management for the site.

Design Option 4 is the proposed development and incorporates the design changes that respond to the pre-application consultation opinion issued by An Bord Pleanála, and potential environmental impacts identified in the earlier options.

Figure 4.6 Design Option 4



The proposed development provides for 372 residential dwellings, a childcare facility and all associated site services. The principal amendments to the proposed layout and mix of units include the following:

- The apartment blocks have been reconfigured and distributed through the site to create a strong urban edge at the south west and north west corners, improving the connection to the Maynooth Road, and addressing potential landscape and visual impacts. Terraces have been introduced

along Maynooth Road, bookended by three-storey units, to further enhance and strengthen the urban edge at this location.

- The strong building line on the northern part of the site addressing the future amenity area and the alignment of the protected view corridor between Castletown and Carton Demesnes appropriately frames this open space and view corridor and addresses potential visual and landscape impacts.
- Green spaces and pocket parks have been located to ensure maximum visual and recreational amenity for future residents and providing orientational benefits.
- The layout has been adjusted to ensure maximum accessibility and permeability throughout the site, with the introduction of home zones and removal of cul-de-sacs to minimise traffic movements to improve air quality, sustainability, and traffic safety.
- Access to the future potential amenity space is maintained and protected, with the site layout designed to maximise legible access in the future.
- The total number of units has increased from 355 units to 372 units facilitated by the amendments to the layout, unit mix, and street alignments to ensure full permeability across the site, providing for a more sustainable form of development.

This layout and unit mix addresses many of the environmental impacts identified in earlier options. The developable site area⁴ measures approximately 9.18 ha resulting in a net residential density of approximately 40.5 u/ha for design Option 4 which maximises the sites sustainable development potential. The proposed development has been chosen as it is considered to be the most efficient and sustainable design in terms of environmental effects as it represents the sustainable use of zoned lands in a manner consistent with regulatory and legal requirements.

Based on a comparison of the environmental effects, as described for each Option above, together with the regulatory requirements of national policy, the Kildare County Development Plan 2017-2023 and the Celbridge Local Area Plan 2017-2023, the proposed development is considered to represent the most appropriate development, for the following reasons:

- The proposed development reflects the established pattern of development in the area while also providing a range of housing typologies suitable for the demographic of the area.
- The provision of feature buildings along the Maynooth Road form a strong urban edge while also respecting the established pattern of development to the south and east of the site. The strong building line on the northern part of the site addressing the alignment of the protected view corridor between Castletown and Carton Demesnes appropriately frames this open space and view corridor. This approach appropriately addresses visual, landscape and amenity impacts.
- The proposed development ensures the efficient use of land through well designed roads and streets which reduce potential traffic and transport impacts and hazards and reduce the amount of land designated for such purposes to maximise sustainable development on the site.

⁴ Excluding the areas owned by Kildare County Council (0.232ha) for which consent has been given for its inclusion in the application and lands zoned Objective F (0.136ha).

- The proposed development enjoys a high degree of permeability, resulting in a well-connected neighbourhood with strong connections to future development lands which will have positive impacts on population and human health.

4.2.4 Alternative Mitigation Measures

The mitigation measures outlined in this EIAR, where appropriate, have been developed by competent experts relevant to the aspect of the environment under consideration and represent best practice with a view to avoiding or otherwise minimising potential impacts on the environment.

There are no predicted residual impacts once mitigation measures have been successfully applied and as such, alternative mitigation is not considered necessary.

4.2.5 “Do Nothing” Alternative

A ‘do-nothing’ scenario is considered an inappropriate and unsustainable approach that would result in the inefficient use of a strategically located and serviced landbank of zoned residential lands. A ‘do nothing’ scenario would also frustrate the delivery of the strategic planning objectives for the area and the region.

With the mitigation measures proposed in this EIAR and having regard to the findings that no significant effects on the environment are expected with such measures in place, the comparative environmental effects are not considered sufficient to rule out the proposed development.

4.3 Conclusion

The proposed development provides for new residential development on lands zoned for residential use under the Kildare County Development Plan 2017-2023 and the Celbridge Local Area Plan 2017-2023, both of which were subject to the SEA processes. As such, consideration of alternative sites for residential development was not considered necessary.

During the design process, the layout and design of the proposed development evolved in response to architectural, landscape and environmental requirements and several options of the site layout and alternative designs were considered. Any difficulties from an architectural, landscape or environmental perspective were assessed and, where necessary, addressed through design/layout alteration.