

## CHAPTER FOURTEEN MATERIAL ASSETS – WASTE MANAGEMENT

### 14.1 INTRODUCTION

This chapter evaluates the impacts, if any, which the proposed development may have on Material Assets as defined in Directive 2014/52/EU, the EPA Guidelines on the Information to be contained in EIAR (2022) and EPA Draft Advice Notes for EIS 2015.

This chapter has also been prepared to address the issues associated with material assets during the construction and operational phases of the proposed development as described in Chapter 2.0 (Project Description & Policy). It has been prepared in accordance with European Commissions Guidelines, Guidance on the preparation of the Environmental Impact Assessment Report (2017), the EPA Guidelines on the Information to be contained in EIAR (2022) and the EU Commission Notice on changes and extensions to projects (2021).

#### 14.1.1 Legislation and Guidance

These documents will ensure the management of wastes arising at the proposed development site in accordance with legislative requirements and best practice standards.

Waste management in Ireland is subject to EU, national and regional waste legislation and control, which defines how waste materials must be managed, transported and treated. The overarching EU legislation is the Waste Framework Directive (2008/98/EC) which is transposed into national legislation in Ireland. The cornerstone of Irish waste legislation is the Waste Management Act 1996 (as amended). European and national waste management policy is based on the concept of 'waste hierarchy', which sets out an order of preference for managing waste (prevention > preparing for reuse > recycling > recovery > disposal) (Figure 14.1).



Figure 14.1 Waste Hierarchy (Source: European Commission)

EU and Irish National waste policy also aims to contribute to the Circular Economy by extracting high-quality resources from waste as much as possible. CE is a sustainable alternative to the traditional linear (take-make-dispose) economic model, reducing waste to a minimum by reusing, repairing, refurbishing and recycling existing materials and products. (Figure 14.2).



Figure 14.2 Circular Economy (Source: Repak)

The Irish government issues policy documents which outline measures to improve waste management practices in Ireland and help the country to achieve EU targets in respect of recycling and disposal of waste. The most recent policy document, Waste Action Plan for a Circular Economy – Waste Management Policy in Ireland (WAPCE), was published in 2020 and shifts focus away from waste disposal and moves it back up the production chain. The move away from targeting national waste targets is due to the Irish and international waste context changing in the years since the launch of the previous waste management plan, A Resource Opportunity, in 2012.

One of the first actions to be taken from the WAPCE was the development of the Whole of Government Circular Economy Strategy 2022-2023 'Living More, Using Less' (2021) to set a course for Ireland to transition across all sectors and at all levels of Government toward circularity and was issued in December 2021.

The Circular Economy and Miscellaneous Provisions Act (2022) was signed into law in July 2022. The Act underpins Ireland's shift from a "take-make-waste" linear model to a more sustainable pattern of production and consumption, that retains the value of resources in our economy for as long as possible and that will to significantly reduce our greenhouse gas emissions. The Act defines Circular Economy for the first time in Irish law, incentivises the use of recycled and reusable alternatives to wasteful, single-use disposable packaging, introduces a mandatory segregation and incentivised charging regime for commercial waste, streamlines the national processes for End-of-Waste and By-Products decisions, tackling the delays which can be encountered by industry, and supporting the availability of recycled secondary raw materials in the Irish market, and tackles illegal fly-tipping and littering.

The strategy for the management of waste from the construction phase is in line with the requirements of the EPA's 'Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for Construction & Demolition Projects' (2021). The guidance documents, Best Practice Guidelines for the Preparation of Waste Management Plans for Construction and Demolition Projects and Construction and Demolition Waste Management: A Handbook for Contractors and Site Managers (FÁS & Construction Industry Federation, 2002), were also consulted in the preparation of this assessment.

There are currently no Irish guidelines on the assessment of operational waste generation, and guidance is taken from industry guidelines, plans and reports including the Southern Region Waste Management Plan 2015 – 2021, BS 5906:2005 Waste Management in Buildings – Code of Practice, the LCCC City and County of Limerick (Segregation, Storage and Presentation of Household and Commercial Waste) Bye-Laws (2019) the EPA National Waste Database Reports 1998 – 2019 and the EPA National Waste Statistics Web Resource.

## 14.2 ASSESSMENT METHODOLOGY

The assessment of the impacts of the proposed development, arising from the consumption of resources and the generation of waste materials, was carried out taking into account the methodology specified in relevant guidance documents, along with an extensive document review to assist in identifying current and future requirements for waste management; including national and regional waste policy, waste strategies, management plans, legislative requirements and relevant reports.

This chapter is based on the proposed development, as described in Chapter 2 (Project Description & Policy) and considers the following aspects:

- Legislative context;
- Construction phase (including demolition, site preparation and excavation); and
- Operational phase

A desktop study was carried out which included the following:

- Review of applicable policy and legislation which creates the legal framework for resource and waste management in Ireland;
- Description of the typical waste materials that will be generated during the construction and operational phases; and
- Identification of mitigation measures to prevent waste generation and promote management of waste in accordance with the waste hierarchy.

Estimates of waste generation during the construction and operational phases of the proposed development have been calculated and are included in Section 14.3.1 of this chapter. The waste types and estimated quantities are based on published data by the EPA in the National Waste Reports and National Waste Statistics, data recorded from similar previous developments, Irish and US EPA waste generation research as well as other available research sources.

Mitigation measures are proposed to minimise the effect of the proposed development on the environment during the construction and operational phases, to promote efficient waste segregation and to reduce the quantity of waste requiring disposal.

A detailed review of the existing ground conditions on a regional, local and site-specific scale are presented in Chapter 8.0 Land & Soils, Geology & Hydrogeology.

### 14.3 RECEIVING ENVIRONMENT

In terms of waste management, the receiving environment is in the jurisdiction of Limerick City and County Council (LCCC) as the local authority responsible for setting and administering waste management activities in the area. This is governed by the requirements set out in the Southern Region Waste Management Plan 2015-2021 and the Waste Action Plan for a circular economy – Waste Management Policy in Ireland. Currently the southern region and other regional waste management plans are under review and the Regional Waste Management Planning Offices expect to publish the final plan in 2022.

The Southern Region Waste Management Plan sets out the following targets for waste management in the region:

- A 1% reduction per annum in the quantity of household waste generated per capita over the period of the plan;
- Achieve a recycling rate of 55% of managed municipal waste by 2025; and
- Reduce to 0% the direct disposal of unprocessed residual municipal waste to landfill (from 2016 onwards) in favour of higher value pre-treatment processes and indigenous recovery practices.

The Plan sets out the strategic targets for waste management in the region and sets a specific target for C&D waste of “70% preparing for reuse, recycling and other recovery of construction and demolition waste” (excluding natural soils and stones and hazardous wastes) to be achieved by 2020. Ireland achieved 84 per cent material recovery of such waste in 2019, and therefore surpassed the 2020 target and is currently surpassing the 2025 target. The National Waste Statistics update published by the EPA in November 2021 identifies that Ireland’s current against “Preparing for reuse and recycling of 50% by weight of household derived paper, metal, plastic & glass (includes metal and plastic estimates from household WEEE)” was met for 2020 at 51% however they are currently not in line with the 2025 target (55%).

The LCCC Limerick Development Plan 2022-2028 also sets out policies and objectives for the LCCC area which reflect those set out in the regional waste management plan.

In terms of physical waste infrastructure, LCCC no longer operates any municipal waste landfill in the area. There are a number of waste permitted and licensed facilities located in the Southern Waste Region, in the surrounding counties and over Ireland and Northern Ireland, for management of waste from the construction industry as well as municipal sources. These include soil recovery facilities, inert

C&D waste facilities, hazardous waste treatment facilities, municipal waste landfills, material recovery facilities, waste transfer stations and two waste-to-energy facilities.

However, these sites may not be available for use when required or may be limited by the waste contractor selected to service the development in the appropriate phase. In addition, there is potential for more suitably placed waste facilities or recovery facilities to become operational in the future which may be more beneficial from an environmental perspective.

The ultimate selection of waste contractors and waste facilities would be subject to appropriate selection criteria proximity, competency, capacity and serviceability.

#### 14.3.1 Site Area

The characteristics of the proposed development that are relevant in terms of waste management are primarily construction related including site clearance and topsoil stripping; and earthworks. A cut and fill exercise was undertaken for the entire masterplan site and Phase 3 based on existing site levels minus 300mm for topsoil versus the finished site levels and minus 300mm for an average imported fill build-up to roads, footpaths and slabs. Assumed bedrock level based on desktop studies and available SI information. Not included in the figures is excavation relating to the provision of attenuation areas, services and the excavation of foundations are these are considered to be typical of any construction project.

##### *Masterplan Area*

For the overall Masterplan Site, it has been determined that circa 33,500m<sup>3</sup> of subsoil material will need to be excavated to facilitate the proposed development and that imported fill of 25,500m<sup>3</sup> is required. The quantum of fill required will be reduced by reusing bedrock as Class 1 material any other existing site won materials as appropriate. Top soil stripping will result in circa 42,000m<sup>3</sup> of material although it is envisaged that circa 15,000m<sup>3</sup> of this will be reused.

##### *Subject Site*

For the Phase 3 subject site it has been determined that circa 14,000m<sup>3</sup> of subsoil material will need to be excavated to facilitate the proposed development and that imported fill of 1,200m<sup>3</sup> is required. The quantum of fill required will also be reduced by reusing bedrock as Class 1 material any other existing site won materials as appropriate. Top soil stripping will result in circa 10,500m<sup>3</sup> of material although it is envisaged that circa 4,000m<sup>3</sup> of this will be reused.

## 14.4 DESCRIPTION OF EFFECTS

Impacts on waste management will occur during both the construction and operational phases of the proposed development.

#### 14.4.1 Construction Phase

During the construction phase, waste will be produced from surplus materials such as broken or off-cuts of timber, plasterboard, concrete, tiles, bricks, etc. Waste from packaging (cardboard, plastic, timber) and oversupply of materials may also be generated. The appointed Contractor will be contractually required to ensure that oversupply of materials is kept to a minimum and opportunities for reuse of suitable materials is maximised.

There will be waste materials generated from the excavation of soil, stones, gravel and clay to facilitate site clearance, site levelling, construction of new building foundations and installation of services. It is currently envisaged that circa 25% of the subsoil cut could be reused on site thereby reducing waste generated from the development and reducing the quantum of imported fill required. Within the masterplan site it is envisaged that circa 8,375 m<sup>3</sup> of subsoil material will be reused and within the Phase 3 application site it is envisaged that circa 3,500 m<sup>3</sup> of subsoil material will be reused, thereby reducing the movement of waste from the site.

Removal and reuse / recycling / recovery / disposal of the material will be carried out in accordance with the Waste Management Act 1996 (as amended), the Waste Management (Collection Permit) Regulations 2007 (as amended) and the Waste Management (Facility Permit & Registration) Regulations 2007 (as amended). The volume of waste requiring recovery / disposal will dictate whether a Certificate of Registration (COR), permit or licence is required for the receiving facility. Alternatively, the material may be classed as by-product in accordance with Regulation 15 (By-products) (Previously Article 27 and referred to as Article 27 in this report) of European Union (Waste Directive) Regulations 2011-2020).

In order to establish the appropriate reuse, recovery and / or disposal route for the soils and stones to be removed off-site, it will first need to be classified. Waste material will initially need to be classified as hazardous or non-hazardous in accordance with the EPA publication Waste Classification – List of Waste & Determining if Waste is Hazardous or Non-Hazardous (2019).

Waste will also be generated from construction phase workers e.g. organic / food waste, dry mixed recyclables (waste paper, newspaper, plastic bottles, packaging, aluminium cans, tins and Tetra Pak cartons), mixed non-recyclables and, potentially, sewage sludge from temporary welfare facilities provided on-site during the construction phase. Waste printer / toner cartridges, waste electrical and electronic equipment (WEEE) and waste batteries may also be generated in small volumes from site offices.

Table 14.1 provides an estimate of the main waste types likely to be generated during the construction phase of the proposed Phase 3 development.

Waste Type	Tonnes	Reuse		Recycle/Recovery		Disposal	
		%	Tonnes	%	Tonnes	%	Tonnes
Mixed C&D	74	10	7	80	60	10	7
Timber	63	40	25	55	35	5	3
Plasterboard	23	30	7	60	14	10	2
Metals	18	5	1	90	16	5	1
Concrete	14	30	4	65	9	5	1
Other	34	20	7	60	20	20	7
<b>Total</b>	<b>226</b>						

Table 14.1 Estimated off-site reuse, recycle and disposal rates for construction waste

#### 14.4.2 Operational Phase

A strategy for segregation (at source), storage and collection of all wastes generated within the buildings (houses & commercial units) during the operational phase including dry mixed recyclables (DMR), organic waste and mixed non-recyclable waste (MNR) is proposed as well as a strategy for management of waste glass, batteries, WEEE, chemicals, textiles, waste cooking oil and furniture.

The proposed development will give rise to additional waste generation arising from an increase in population in the area.

The handling of waste within the site will be through a bin management system, with the location of bins serving apartments provided within dedicated waste storage areas (WSA's) identified on the drawings and bins serving houses located within their curtilage. As required, the residents and tenants will need to bring these segregated wastes from their units to their allocated Waste Storage Areas (WSAs).

It is an objective to ensure that the proposed development contributes to the targets outlined in the Southern Region Waste Management Plan 2015 – 2021, Waste Action Plan for a Circular Economy – Waste Management Policy in Ireland and the LCCC “City and County of Limerick (Segregation, Storage and Presentation of Household and Commercial Waste) Bye-Laws (2019)”.

#### 14.4.3 Cumulative Impacts

As has been identified in the receiving environment section cumulative development primarily relate to the Masterplan Site along with existing development already built and in operation. These have all contributed to characterisation of the baseline environment. As such any further environmental impacts that the proposed development may have in addition to these already constructed and operational, have been assessed in the preceding sections of this chapter.

#### Construction Phase

There are existing residential and commercial developments close by, along with the planning permission granted for Phase 1 although currently on third party appeal to An Bord Pleanála. In a worst-case scenario, multiple developments in the area could be developed concurrently or overlap in the construction phase, including construction of the Coonagh – Kinockalisheen Road.

Due to the high number of waste contractors in the LCC region, as provided from the National Waste Collection Permit Office and the EPA, there would be sufficient contractors available to handle waste generated from a large number of these sites simultaneously, if required. Similar waste materials would be generated by all of the developments.

Other developments in the area will be required to manage waste in compliance with national and local legislation, policies and plans which will mitigate against any potential cumulative effects associated with waste generation and waste management. As such the cumulative effect will be short-term, imperceptible and neutral.

#### Operational Phase

There are existing residential and commercial developments close by, along with the potential development arising from the Masterplan Site, as discussed above. All of the current and potential developments will generate similar waste types during their operational phases. Authorised waste contractors will be required to collect waste materials segregated, at a minimum, into recyclables, organic waste and non-recyclables. An increased density of development in the area is likely improve the efficiencies of waste collections in the area.

Other developments in the area will be required to manage waste in compliance with national and local legislation, policies and plans which will mitigate any potential cumulative impacts associated with waste generation and waste management. As such the cumulative effect will be long-term, imperceptible and neutral.

### **14.5 LIKELIHOOD OF SIGNIFICANT EFFECTS**

This section details the potential waste effects associated with the proposed development.

#### **14.5.1 Do-Nothing Impact**

If the proposed development were not to go ahead (i.e. in the Do-Nothing scenario) there would be no excavation or construction or operational waste generated at this site. There would, therefore, be a neutral effect on the environment in terms of waste.

The site is zoned for development, and it is likely that in the absence of this subject proposal that a development of a similar nature would be progressed on the site that accords with national and regional policies and therefore the likely effects would be similar to this proposal.

#### **14.5.2 Construction Phase**

The proposed development will generate a range of non-hazardous and hazardous waste materials during site excavation and construction. General housekeeping and packaging will also generate waste materials, as well as typical municipal wastes generated by construction employees, including food waste. Waste materials will be required to be temporarily stored in the construction site compound or adjacent to it, on-site pending collection by a waste contractor. If waste material is not managed and stored correctly, it is likely to lead to litter or pollution issues at the development site and in adjacent areas. The indirect effect of litter and pollution issues is the presence of vermin, impacts on local



biodiversity and the potential for downstream impacts on proximate watercourses and designated sites in areas affected. In the absence of mitigation, the effect on the local and regional environment is likely to be short-term, significant and negative.

The use of non-permitted waste contractors or unauthorised waste facilities could give rise to inappropriate management of waste, resulting in indirect negative environmental impacts, including pollution. It is essential that all waste materials are dealt with in accordance with regional and national legislation, as outlined previously, and that time and resources are dedicated to ensuring efficient waste management practices. In the absence of mitigation, the effect on the local and regional environment is likely to be long-term, significant and negative.

Wastes arising will need to be taken to suitably registered / permitted / licenced waste facilities for processing and segregation, reuse, recycling, recovery, and / or disposal, as appropriate. There are numerous licensed waste facilities in the Southern Region which can accept hazardous and non-hazardous waste materials, and acceptance of waste from the development site would be in line with daily activities at these facilities. At present, there is sufficient capacity for the acceptance of the likely C&D waste arisings at facilities in the region. The majority of construction materials are either recyclable or recoverable. However, in the absence of mitigation, the effect on the local and regional environment is likely to be short-term, significant and negative.

There is a quantity of material which will need to be excavated to facilitate the proposed development. A detailed review of the existing ground conditions on a regional, local site-specific scale are presented in Chapter 8.0 Land & Soils, Geology & Hydrogeology. The project engineers have estimated the quantity of excavated material that will be generated to be circa 10,500m<sup>3</sup> of topsoil, circa 25,000m<sup>3</sup> of clay/gravel and circa 4,400m<sup>3</sup> of bedrock. It is currently envisaged that all the excavated bedrock, circa 4,000m<sup>3</sup> of topsoil and circa 6,000m<sup>3</sup> of the clay/gravel will retained and reused on site. The remainder of the topsoil (circa 6,500m<sup>3</sup>), and clay/gravel excavated (circa 19,000m<sup>3</sup>), will be reused on site where possible but it is currently anticipated that it will require removal offsite for reuse, recovery and/or disposal. If material is removed off-site, it could be reused as a by-product (and not as a waste). If this is done, it will be done in accordance with Regulation 15 (By-products) (Previously Article 27 and referred to as Article 27 in this report) of European Union (Waste Directive) Regulations 2011-2020, which requires that certain conditions are met and that by-product notifications are made to the EPA via their online notification form. Excavated material will not be removed from site until approval from the EPA has been received. The potential to reuse material as a by-product will be confirmed during the course of the excavation works, with the objective of eliminating any unnecessary disposal of material. It is envisaged that c 20,000m<sup>3</sup> of selected imported fill as hardocre will be required for under building ground floor slabs, roads, paths and services excavations as well as for use within the attenuation storage and infiltration areas.

Correct classification and segregation of the excavated material is required to ensure that any potentially contaminated materials are identified and handled in a way that will not impact negatively on workers as well as on water and soil environments, both on and off-site. However, in the absence of mitigation, the effect on the local and regional environment is likely to be short-term, significant and negative.

### 14.5.3 Operational Phase

The potential impacts on the environment of improper, or a lack of, waste management during the operational phase would be a diversion from the priorities of the waste hierarchy which would lead to small volumes of waste being sent unnecessarily to landfill. In the absence of mitigation, the effect on the local and regional environment is likely to be indirect, long-term, significant and negative.

The nature of the development means the generation of waste materials during the operational phase is unavoidable. Networks of waste collection, treatment, recovery and disposal infrastructure are in place in the region to manage waste efficiently from this type of development. Waste that is not suitable for recycling is can be sent for energy recovery. There are also facilities in the region for segregation of municipal recyclables which is typically exported for conversion in recycled products (e.g. paper mills and glass recycling).

If waste material is not managed and stored correctly, it is likely to lead to litter or pollution issues at the development site and in adjacent areas. The knock-on effect of litter issues is the presence of vermin in affected areas. However, in the absence of mitigation, the effect on the local and regional environment is likely to be indirect, long-term, significant and negative.

Waste contractors will be required to service the proposed development on a scheduled basis to remove waste. The use of non-permitted waste contractors or unauthorised facilities could give rise to inappropriate management of waste and result in negative environmental impacts or pollution. It is essential that all waste materials are dealt with in accordance with regional and national legislation, as outlined previously, and that time and resources are dedicated to ensuring efficient waste management practices. However, in the absence of mitigation, the effect on the local and regional environment is likely to be long-term, significant and negative.

## 14.6 REMEDIAL AND MITIGATION MEASURES

The concept of the 'waste hierarchy' is employed when considering all mitigation measures. The waste hierarchy states that the preferred option for waste management is prevention and minimisation of waste, followed by preparing for reuse and recycling / recovery, energy recovery (i.e. incineration) and, least favoured of all, disposal.

### 14.6.1 Construction Phase

The following mitigation measures will be implemented during the construction phase of the proposed development:

#### 14.6.1.1 Mitigation by Avoidance / Design

WM CONST 1 - Cut and fill on the site has been minimised through the design process. . The quantum of fill required on site shall be reduced by reusing bedrock as Class 1 material any other existing site won materials as appropriate.

#### 166.1.2 Mitigation by Prevention

WM CONST 2 - Prior to commencement, the appointed Contractor(s) will be required to prepare a Resource Waste Management Plan (RWMP) in agreement with LCCC, detailing specific measures to minimise waste generation and resource consumption, and provide details of the proposed waste contractors and destinations of each waste stream. The Contractor will be required to fully implement the RWMP throughout the duration of the proposed construction phase.

WM CONST 3 - A Resource Manager will be appointed by the main Contractor(s) to ensure effective management of waste during the demolition, excavation and construction works. All construction staff will be provided with training regarding the waste management procedures.

WM CONST 4 - Building materials will be chosen with an aim to 'design out waste'. On-site segregation of waste materials will be carried out to increase opportunities for off-site reuse, recycling and recovery. The following waste types, at a minimum, will be segregated:

- Concrete rubble (including ceramics, tiles and bricks);
- Plasterboard;
- Metals;
- Glass; and
- Timber.

#### 14.6.1.3 Mitigation by Reduction

WM CONST 5 - A quantity of soil, stone, gravel and clay will need to be excavated to facilitate the proposed development. Correct classification and segregation of the excavated material is required to ensure that any potentially contaminated materials are identified and handled in a way that will not impact negatively on workers as well as on water and soil environments, both on and off-site.

WM CONST 6 - Left over materials (e.g. timber off-cuts, broken concrete blocks / bricks) and any suitable construction materials shall be re-used on-site, where possible; (alternatively, the waste will be sorted for recycling, recovery or disposal).

WM CONST 7 - All waste materials will be stored in skips or other suitable receptacles in designated areas of the site. Any hazardous wastes generated (such as chemicals, solvents, glues, fuels, oils) will also be segregated and will be stored in appropriate receptacles (in suitably bunded areas, where required).

WM CONST 8 - All waste leaving site will be reused, recycled or recovered, where possible, to avoid material designated for disposal and will be transported by suitably permitted contractors and taken to suitably registered, permitted or licenced facilities.

WM CONST 9 - All waste leaving the site will be recorded and copies of relevant documentation maintained. If any of the material is to be reused on another site as by-product (and not as a waste), this will be done in accordance with Article 27 of the EC (Waste Directive) Regulations (2011). EPA approval will be obtained prior to moving material as a by-product. However, it is not currently anticipated that Article 27 will be used.

### 14.6.2 Operational Phase

The following mitigation measures will be implemented during the operational phase of the proposed development:

#### 14.6.2.1 Mitigation by Avoidance / Design

No mitigation proposed

#### 14.6.2.2 Mitigation by Prevention

No mitigation proposed

#### 14.6.2.3 Mitigation by Reduction

RES & WM OPER 1: All waste materials will be stored in colour coded bins or other suitable receptacles in designated, easily accessible locations. Bins will be clearly identified with the approved waste type to ensure there is no cross contamination of waste materials.

RES & WM OPER 2: All waste collected from the development will be reused, recycled or recovered where possible, with the exception of those waste streams where appropriate facilities are currently not available.

RES & WM OPER 3: All waste leaving the site will be transported by suitable permitted contractors and taken to suitably registered, permitted or licensed facilities.

## 14.7 RESIDUAL IMPACTS

The implementation of the mitigation measures outlined in Section 14.6 will ensure that targeted rates of reuse, recovery and recycling are achieved at the site of the proposed development during the construction and operational phases. It will also ensure that EU, national and regional legislative waste requirements with regard to waste are met and that associated targets for the management of waste are achieved.

### 14.7.1 Construction Phase

A carefully planned approach to waste management as set out in Section 14.6.1 of this chapter, and adherence to the RWMP the construction phase will ensure that the predicted effect on the environment will be short-term, imperceptible and neutral.

### 14.7.2 Operational Phase

When the mitigation measures are implemented and a high rate of reuse, recycling and recovery is achieved, the predicted impact of the operational phase on the environment will be long-term, imperceptible and neutral.

## 14.8 MONITORING

The management of waste during the construction phase will be monitored by the Contactor's appointed Resource Manager to ensure compliance with the above-listed mitigation measures, and relevant waste management legislation and local authority requirements, including maintenance of waste documentation.

### 14.8.1 Construction Phase

The objective of setting targets for waste management is only achieved if the actual waste generation volumes are calculated and compared. This is particularly important during the excavation and construction works, where there is a potential for waste management objectives to become secondary to other objectives, i.e. progress and meeting construction schedule targets. A Resource Manager shall be appointed, who will have responsibility for monitoring the actual waste volumes being generated and ensuring that contractors and sub-contractors are segregating waste as required. Where targets are not being met, the Resource Manager will identify the reasons for this and work to resolve any issues. Recording of waste generation during the construction phase of the proposed development will enable better management of waste contractor requirements and identify trends. The data should be maintained to advise on future developments.

## 14.9 REFERENCES

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Environmental Protection Agency Act 1992 as amended.

Litter Pollution Act 1997 (S.I. No. 12 of 1997) as amended.

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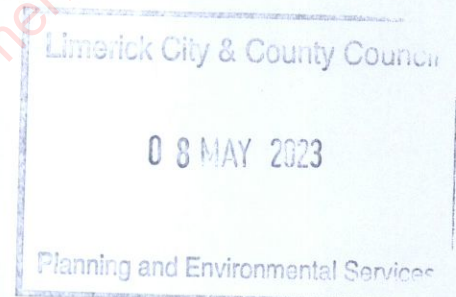
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## CHAPTER FIFTEEN CULTURAL HERITAGE

### 15.1 INTRODUCTION

This chapter of the Environmental Impact Assessment Report (EIAR) covers the cultural heritage assessment of the proposed development as described in Chapter 2.0. UNESCO define the term 'Cultural Heritage' as encompassing several aspects of tangible assets (*immovable*: archaeological sites and monuments, architectural heritage buildings; *movable*: artefacts; and *underwater*: shipwrecks and ruins) and intangible assets (e.g. folklore, oral tradition and language).

The chapter is accompanied by the following Appendices:

- 15.1 Photographic Record
- 15.2 Cultural Heritage Inventories
- 15.3 Figures
- 15.4 Previous Excavations.

The proposed development site (Phase 3) is part of a phased development proposal for a large greenfield area or Masterplan Site (MS). This MS is divided into seven different phases of delivery as detailed in Table 1.1 in Chapter 1.0 Introduction. The overall MS layout which illustrates the indicative layout of the subject site and adjoining lands in the ownership of the applicant is displayed on Figure 1.0 in Chapter 1.0 and full details of the proposed development phases are given in Chapter 2.0.

The study area takes a holistic approach and examines the wider MS area whilst focusing on any areas of significance within the proposed development site.

#### 15.1.1 Relevant Guidance

The guidelines relevant to the assessment include the *Architectural Heritage Protection: Guidelines for Planning Authorities* (Department of Arts, Heritage and Gaeltacht 2011) and the *Framework and Principles for the Protection of Archaeological Heritage* (Department of Arts, Heritage, Gaeltacht and the Islands 1999). The assessment was also informed by the Environmental Protection Agency (EPA 2022) *Guidelines for Information to be Contained in EIAR* and the International Council on Monuments and Sites (ICOMOS 2011) *Guidance on Heritage Impact Assessments for Cultural World Heritage Properties*.

### 15.2 ASSESSMENT METHODOLOGY

The assessment was based on a programme of desktop research combined with a field survey of the MS in addition to advance archaeological testing of the Phase 1, Phase 2, Phase 3, Phase 4 and Neighborhood Centre areas and geophysical surveys of the Phase 2 and Phase 5 (northern portion) areas. These programmes of site investigations were carried out in order to identify any previously unrecorded features of archaeological, architectural, or cultural heritage significance likely to be impacted by the proposed development. The recorded and potential cultural heritage resource within a

study area encompassing the lands comprising the MS and surrounding lands extending for 1km in all directions, was assessed in order to compile a comprehensive cultural heritage context for the area.

The following presents an overview of the assessment studies and the methodology applied to determine the nature and significance of potential impacts on the cultural heritage resource.

### 15.2.1 Desktop Study

Documentary research on the recorded and potential cultural heritage resource within the study area was carried out in order to identify any recorded archaeological, architectural and other cultural heritage sites and features. This information has provided an insight into the diachronic development of the study area over time and also assisted in an evaluation of the potential presence of hitherto unrecorded cultural heritage sites or features within the proposed development site.

The principal sources reviewed for the assessment of the recorded archaeological resource were the Sites and Monuments Record (SMR) and the Record of Monuments and Places (RMP) maintained by the Department of Housing, Local Government and Heritage. The current Record of Protected Structures (RPS) and structures listed in the National Inventory of Architectural Heritage (NIAH) were reviewed in order to assess the designated architectural heritage resource within the study area.

Other sources consulted as part of the assessment included the following:

- *Development Plans*: The current *Limerick Development Plan 2022-2028* (adopted 17 June 2022) and *Clare County Development plan 2017-2023* (as varied) were consulted as part of this assessment. These publications identify buildings listed in the Record of Protected Structures and outline the respective Council's policies for the protection of the archaeological and architectural heritage resources.
- *Limerick Heritage Plan*: The Limerick Heritage Plan 2017-2030 is a non-statutory document that 'is intended to outline broad aims and objectives for the future development, protection, promotion, and maintenance of a very unique and valuable resource, that is, Limerick's heritage'.
- *Database of Irish Excavation Reports*: The Database of Irish Excavation Reports contains summary accounts of all archaeological excavations carried out in Ireland (North and South) from 1970 to present. Current data was accessed via [www.excavations.ie](http://www.excavations.ie) in February 2023 and relevant entries are presented in **Appendix 15.4**.
- *Literary Sources*: Various published literary sources were consulted in order to assess the archaeological, historical, architectural heritage and folklore record of the study area and these are listed in Section 15.9 of this chapter.
- *Archaeological Survey of Ireland*: While there is no published archaeological inventory for counties Limerick or Clare, the National Monuments Service's online Historical Environment Viewer ([www.archaeology.ie](http://www.archaeology.ie)) presents inventory descriptions compiled by the Archaeological Survey of Ireland for a range of known archaeological sites within the county. All available inventory entries for sites located within the study area are included within **Appendix 15.2**.
- *Historic Maps*: The detail on historic maps sources can indicate the presence of past settlement patterns, including features of archaeological and architectural heritage significance that no longer have any surface expression. Available cartographic sources dating from the seventeenth-century onward were reviewed and relevant extracts are presented in **Appendix 15.3**.



- *Aerial/Satellite Imagery*: A review of available online aerial and satellite images of the study area was undertaken in order to ascertain if any traces of unrecorded archaeological sites were visible and to review the extent of development within the study area during recent decades and relevant extracts are presented in **Appendix 15.3**.
- *LiDAR Imagery*: The proposed development is within the coverage area of Office of Public Works (OPW) LiDAR data which has been published online by the Geological Survey Ireland. This form of imagery has the potential to reveal the presence of archaeological sites with low surface expressions and was reviewed as part of the assessment.
- *Irish Heritage Council: Heritage Map Viewer*: This online mapping source ([www.heritagemaps.ie](http://www.heritagemaps.ie)) is a spatial data viewer which collates various cultural heritage datasets sourced from, among others, the National Monuments Service, National Museum of Ireland, local authorities, the Royal Academy of Ireland and the Office of Public Works.
- *National Museum of Ireland Topographical Files*: These files comprise a written and digital database which records known information in relation to the discovery locations of Irish archaeological artefacts, including those held in the museum's collection. The files are archived in the museum's premises in Kildare Street, Dublin and were inspected as part of the desktop study. The archive contains one recorded artefact from the townland of Clonconane, a stone line sinker (NMI Reg. No. 1967:69) recovered during drainage work of marshy ground. The exact find location is unknown.
- *Irish National Folklore Collection*: Transcribed material from the National Folklore Collection archive has been digitised and published online at [www.duchas.ie](http://www.duchas.ie).
- *Placenames Database of Ireland*: This online database ([www.logainm.ie](http://www.logainm.ie)) provides a comprehensive management system for data, archival records and place names research conducted by the State.
- *UNESCO designated World Heritage Sites and Tentative List*: There are two World Heritage Sites in Ireland (Brú na Bóinne and Sceilg Mhichíl) and a number of other significant sites are included in a Tentative List that has been put forward by Ireland for consideration in 2022<sup>1</sup>. None of these are located within the environs of the proposed development.
- *Evolutionary Study Report on the Maritime, Military and Industrial Heritage of Limerick City and County*: This is an EU funded study of the maritime, military and industrial heritage of the shoreline of the Shannon Estuary from the border with Co. Kerry upriver to the border with Co. Tipperary undertaken by Limerick City & County Council. A review of the locations of heritage features recorded by this project was carried out as part of the assessment.

### 15.2.2 Site Inspection

A field survey of the MS was carried out to assess potential impacts on recorded heritage assets within or immediately adjacent to the proposed development site and to assess the site in terms of modern land use, vegetation cover and the potential for the presence of previously unrecorded archaeological sites or structures of architectural heritage interest. The field survey results are described within Section 15.3.3.6 of this chapter and extracts from the photographic record are presented in **Appendix 15.1**.

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<sup>1</sup><https://www.worldheritageireland.ie/news/news-single-view/article/ministers-announce-new-world-heritage-tentative-list-for-ireland/?cHash=376a52892e7c00bd7825a9d98fe89068>

### 15.2.3 Archaeological Investigations

A programme of archaeological testing was undertaken across the proposed Phase 3 development site in January 2023. The archaeological testing (under licence 23E0018) comprised the excavation and evaluation of 32 no. of machine excavated test trenches with a combined length of 1418m. A small number of potential archaeological features were identified at the northern portion of the site (see Section 15.3.3.7 below for details).

### 15.2.4 Methodology for Assessment of Impacts

The methodology used for the assessment of potential impacts has been informed by the Environmental Protection Agency (EPA 2022) *Guidelines for Information to be Contained in EIAR*, in accordance EIA requirements of codified EU Directive 2011/92/EU as amended by EU Directive 2014/52/EU, per current Planning Legislation, concerning EIA assessment: Planning and Development Act, 2000 (as amended) (Part X) and in Part 10 of the Planning and Development Regulations, 2001 (as amended).

The *Magnitude of Effect* is based on the degree of change, incorporating any mitigation measures, and is based on a consideration of the character, duration, probability and consequences (Table 15.1). The magnitude can be negative or positive and is ranked without regard to the value of the asset according to the following scale: High; Medium; Low and Negligible. The descriptions of magnitudes presented in Table 15.1 is based on guidance published in *Guidance on Heritage Impact Assessments for Cultural World Heritage Properties* (ICOMOS 2011, 16-7).

Magnitude	Description
<b>High</b>	Most or all key archaeological or architectural materials affected such that the resource is totally altered Comprehensive changes to setting Changes to most or all key historic landscape elements, parcels or components; extreme visual effects; fundamental changes to use or access; resulting in total change to historic landscape character Major changes to area that affect Intangible Cultural Heritage activities or associations or visual links and cultural appreciation
<b>Medium</b>	Changes to many key archaeological or historic building materials/elements such that the resource is clearly/significantly modified. Considerable changes to setting that affect the character of the archaeological asset. Changes to the setting of a historic building, such that it is significantly modified. Change to many key historic landscape elements, parcels or components, visual change to many key aspects of the historic landscape, considerable changes to use or access, resulting in moderate changes to historic landscape character. Considerable changes to area that affect the Intangible Cultural Heritage activities or associations or visual links and cultural appreciation.
<b>Low</b>	Changes to key archaeological materials/historic building elements, such that the resource is slightly altered/slightly different. Slight changes to setting of an archaeological monument. Change to setting of a historic building, such that it is noticeably changed. Change to few key historic landscape elements, parcels or components; slight visual changes to few key aspects of historic landscape; slight changes to use or access; resulting in limited change to historic landscape character Changes to area that affect the Intangible Cultural Heritage activities or associations or visual links and cultural appreciation.
<b>Negligible</b>	Very minor changes to key archaeological materials or setting. Slight changes to historic building elements or setting that hardly affect it.

Magnitude	Description
	Very minor changes to key historic landscape elements, parcels or components; virtually unchanged visual effects; very slight changes to use or access; Very minor changes to area that affect the Intangible Cultural Heritage activities or associations or visual links and cultural appreciation.

**Table 15.1** Magnitudes of Effect on Cultural Heritage Assets

### Value Assessment

While various legal designations exist for elements of the Irish cultural heritage resource (see Section 15.3.2), there are currently no formal criteria for grading the values of individual elements of this resource. The National Inventory of Architectural Heritage (NIAH) does apply a ranking system (Local, Regional and National) to structures included in that inventory and, while these rankings do not confer a graduated level of protection they have been utilised as a value indicator for NIAH-listed structures for the purpose of assessment.

Given the absence of formal criteria the evaluations used in this assessment have been informed by guidelines presented in the *Guidance on Heritage Impact Assessments for Cultural World Heritage Properties* (ICOMOS 2011). The evaluation of the values of cultural heritage assets is, therefore, not intended as definitive but rather as an indicator which contributes to a wider judgment based the individual circumstances of each asset. The application of values included a consideration of their legal designations (e.g., National Monuments), condition / preservation; historical significance, group value, rarity, visibility in the landscape, fragility/vulnerability and amenity value on a case-by-case basis. It is noted that archaeological monuments, whether extant or levelled, have the potential to possess sub-surface attributes, such as artefacts, human burials or other archaeological remains, that may possess values that cannot be discerned without recourse to archaeological excavation but are unlikely to be affected in the absence of direct negative impacts. The value of all known or potential assets that may be impacted by development are ranked according to the following scale as defined by ICOMOS: Very High; High; Medium; Low, Negligible, Unknown (Table 15.2). The values assigned to relevant cultural heritage assets within the area were determined following the completion of the desktop research combined with subsequent site inspections and are outlined in Section 15.3.3.8.

Value	Description
<b>Very High</b>	World Heritage Sites (including Tentative List properties) Sites, buildings or landscapes of acknowledged international importance Intangible associations with individuals or innovations of global significance
<b>High</b>	Nationally designated sites, buildings and landscapes of significant quality, rarity, preservation and importance Undesignated assets of the quality and importance to be designated Assets that can contribute significantly to acknowledged national research objectives Archaeological Landscapes with significant group value Intangible associations with individuals or innovations of national significance
<b>Medium</b>	Designated or undesignated assets that can contribute significantly to regional research objectives, including buildings that can be shown to have exceptional qualities in their fabric or historical associations

Value	Description
	Conservation Areas and historic townscapes containing buildings that contribute significantly to its historic character Intangible associations with individuals or innovations of regional significance
<b>Low</b>	Assets compromised by poor preservation and/or poor survival of contextual associations Assets of limited value, but with potential to contribute to local research objectives Historic Townscape or built-up areas of limited historic integrity in their buildings and settings Intangible associations with individuals or innovations of local significance
<b>Negligible</b>	Assets with very little or no surviving archaeological interest Landscapes little or no significant historical interest Buildings or urban areas of no architectural or historical note; buildings of an intrusive character
<b>Unknown</b>	Assets whose importance has not been ascertained
<b>Potential</b>	Buildings with some hidden (i.e., inaccessible) potential for historic significance

Table 15.2 Indicative Factors for Assessing the Value of Cultural Heritage Assets

The *Significance of Effects* is assessed based on a consideration of the Magnitude of the Impact (graded from High to Negligible, based on a consideration of character, duration, probability and consequences) combined with the Value (graded from High to Negligible, based on a consideration of significance/sensitivity) of the cultural heritage asset. The Significance of Effects can be described as Profound, Very Significant, Significant, Moderate, Slight, Not Significant or Imperceptible (Table 15.3 and Table 15.4).

Significance	Description
<b>Imperceptible</b>	An effect capable of measurement but without significant consequences
<b>Not Significant</b>	An effect which causes noticeable changes in the character of the environment but without significant consequences
<b>Slight</b>	An effect which causes noticeable changes in the character of the environment but without affecting its sensitivities
<b>Moderate</b>	An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends
<b>Significant</b>	An effect which, by its character, magnitude, duration or intensity alters a sensitive aspect of the environment
<b>Very Significant</b>	An effect which, by its character, magnitude, duration or intensity significantly alters most of a sensitive aspect of the environment
<b>Profound</b>	An effect which obliterates sensitive characteristics

Table 15.3 Significance of Effects (per EPA EIAR Guidelines 2022)

<b>Magnitude of Impact</b>	<b>High</b>	Not Significant/ Slight	Moderate/ Significant	Significant/ Very Significant	Very Significant/ Profound
	<b>Medium</b>	Not Significant	Slight	Moderate/ Significant	Significant/ Very significant
	<b>Low</b>	Not Significant/ Imperceptible	Slight/ Not Significant	Slight	Moderate
	<b>Negligible</b>	Imperceptible	Not Significant/ Imperceptible	Not Significant/ Slight	Slight
		<b>Negligible</b>	<b>Low</b>	<b>Medium</b>	<b>High</b>
<b>Value/Sensitivity of the Asset</b>					

Table 15.4 Significance of Effects Matrix (after EPA EIAR Guidelines 2022)

### 15.3 RECEIVING ENVIRONMENT

#### 15.3.1 Site Area Description

The proposed MS comprises a parcel of agricultural land in the townland of Clonconane, County Limerick, close to the County Clare border and approximately 3.5km from Limerick City centre. The site, which is located to the north and south of the Old Cratloe Road is bounded to the north by a mature hedge and to the east by modern housing. A map regression study suggests that its location comprised undeveloped agricultural land from the mid-seventeenth century until the mid-twentieth century. Aerial photographic images show that much of the site was part of a golf course in 1995 but had reverted back to agricultural usage by around 2000 and has mostly been used for grazing since then. Parallel east to west orientated linear trends evident in LiDAR images and on some aerial imagery suggest that the site have been used for tillage in the past and some of the landscaped features associated with the former golf course also retain surface expression. The site comprises portions of fields of moderate to good quality, undulating pastoral land. There is one recorded archaeological monument located within the Masterplan area. This is a children's burial ground LI005-007----, which comprises an overgrown area of approximate 20m diameter defined by a sub-circular earthen bank. This archaeological monument is outside the Phase 3 site, however, a portion of the Phase 3 redline boundary encroaches within the *Zone of Notification* (ZoN) surrounding the monument.

#### 15.3.2 Legal and Planning Context

This section presents a concise summary of the legal and planning policy frameworks relevant to this assessment in order to provide a context for the statutory protection assigned to the cultural heritage resource. The management and protection of cultural heritage in Ireland is achieved through a framework of national laws and policies which are in accordance with the provisions of the Valetta Treaty (1995) (formally the European Convention on the Protection of the Archaeological Heritage, 1992) ratified by Ireland in 1997; the Granada Convention (1985) (formally the European Convention on the Protection of Architectural Heritage), ratified by Ireland in 1997; and the UNESCO Convention for the Safeguarding of the Intangible Cultural Heritage, 2003, ratified by Ireland in 2015. The locations of World Heritage Sites (Ireland) and the Tentative List of World Heritage Sites submitted by the Irish State to UNESCO were reviewed and none are located within the environs of the study area.

The National Monuments Service (NMS), which is currently based in the Department of Housing, Local Government and Heritage, is responsible for the protection and promotion of Ireland's archaeological heritage.

The national legal statutes and guidelines relevant to this assessment include:

- National Monuments Acts 1930 (as amended)
- Heritage Act 1995 (as amended)
- National Cultural Institutions Act 1997
- The Architectural Heritage (National Inventory) and Historic Monuments (Misc) Provisions Act 1999
- Planning and Development Act 2000 (as amended)
- Department of Arts, Heritage and Gaeltacht 2011 *Architectural Heritage Protection: Guidelines for Planning Authorities*.
- Department of Arts, Heritage, Gaeltacht and the Islands 1999 *Framework and Principles for the Protection of Archaeological Heritage*

#### *Relevant Legislation and Planning Policies*

The National Monuments Act 1930 and its Amendments, the Heritage Act 1995 and relevant provisions of the National Cultural Institutions Act 1997 are the primary means of ensuring the satisfactory protection of archaeological remains. There are a number of mechanisms under the National Monuments Acts that are applied to secure the protection of archaeological monuments. These include the designation of National Monument status for sites of national significance, the Register of Historic Monuments (RHM), the Record of Monuments and Places (RMP), the Sites and Monuments Record (SMR), and the placing of Preservation Orders and Temporary Preservation Orders on endangered sites.

Section 2 of the National Monuments Act, 1930 defines a National Monument as 'a monument or the remains of a monument, the preservation of which is a matter of national importance'. The State may acquire or assume guardianship of examples through agreement with landowners or under compulsory orders. Archaeological sites within the ownership of local authorities are also deemed to be National Monuments. The prior written consent of the Minister is required for any works at, or in proximity to, a National Monument or at sites which are subject to a Preservation Order. There are no National Monuments in State Care or sites assigned Preservation Orders located within the study area.

The RMP was established under Section 12(1) of the National Monuments (Amendment) Act, 1994 and was based on the earlier SMR and RHM. It comprises lists and maps of all known archaeological monuments and places for each county in the State and all listed archaeological sites receive statutory protection under the National Monuments Act 1994. No works can be undertaken at their locations or within their surrounding Zones of Notification without providing two months advance notice to the NMS. There is one recorded archaeological site located within the boundary of the proposed development site (Masterplan area) which comprises a children's burial ground (LI005-007---) which will be preserved *in situ*. Additionally, some portions of the proposed development site encroach into the archaeological *Zone of Notification* (ZoN) which surrounds a settlement cluster (LI005-039---) (**Table 15.5** and **Figure 15.3**). Neither of these sites are National Monuments in State Care or are included in the current list of monuments that have been assigned Preservation Orders.

The *Limerick Development Plan 2022-2028* (adopted 17 June 2022) includes the following relevant objectives in relation to the protection of the archaeological resource within the county:

**Objective EH O36 Preservation of the Archaeological Heritage** *It is an objective of the Council to seek the preservation of all known sites and features of historical and archaeological interest. This is to include all the sites listed in the Record of Monuments and Places as established under Section 12 of the National Monuments (Amendment) Act 1994. The preferred option is preservation in situ, or at a minimum preservation by record.*

**Objective EH O37 Preservation of unrecorded/newly discovered Archaeological Heritage** *It is an objective of the Council to protect and preserve the preservation in situ (or at a minimum by record) of all sites and features of historical and archaeological interest, discovered subsequent to the publication of the Record of Monuments and Places.*

**Objective EH O39 Protection of the setting of Archaeological Monuments** *It is an objective of the Council to ensure that no development shall have a negative impact on the character or setting of an archaeological monument.*

**Objective EH O40 Proper procedures during the planning process** *It is an objective of the Council to:*

- a) *Ensure early engagement at preplanning stage is undertaken with the Local Authority Archaeologist to promote the 'preservation in situ' of archaeological remains and settings in development.*
- b) *Adopt a policy of archaeological monitoring of developments where the scale and nature of such developments may, in the opinion of the Planning Authority, have a negative impact on previously unknown archaeological features/ artefacts.*
- c) *Require the preparation of an Archaeological Heritage Assessment in cases where it is deemed that Archaeological Heritage would be affected by a proposed development (due to their location, size or nature). The report shall be prepared by a suitably qualified archaeologist on the archaeological implications, if any, of the proposed development either prior to a decision on a planning application or prior to commencement of development on site.*

**Objective EH O43 Industrial Archaeology** *It is an objective of the Council to:* a) *Seek the preservation of buildings and infrastructure associated with former industrial sites;*

b) *Ensure detailed recording of these remains; promote knowledge and interpretation of these sites among the general public;*

c) *Support the work of the Interreg Atlantic Coast Area project, (MMIAH) The recovery and valorisation of Maritime Military and Industrial Heritage.*

**Objective EH O45 Raise public awareness and encourage active participation** *It is an objective of the Council to generally raise public awareness of the archaeological and historic heritage and to assist and encourage active participation by the public, following consultation with National Monuments Service, in the conservation, consolidation and presentation of landmark sites, where this is appropriate and subject to available resources.*

**Objective EH O46 Heritage Plan 2017-2030** *It is an objective of the Council to support the archaeological objectives in the Heritage Plan.*

**Objective EH O48 Assessment and Recognition of Archaeological Landscapes** *It is an objective of the Council to designate archaeological landscapes as part of an ongoing appraisal for Historic Landscape Characterisation of Limerick.*

**Objective EH O49 Climate Change Sectoral Adaptation Plan for Built and Archaeological Heritage** It is an objective of the Council to support the Climate Change Sectoral Adaptation Plan for Built and Archaeological Heritage 2019, as published by the Department of Culture, Heritage and the Gaeltacht and any subsequent guidance or plans for dealing with climate change and archaeological heritage. The Council shall seek to:

- Promote awareness and the appropriate adaptation of Ireland's built and archaeological heritage to deal with the effects of climate change;
- Identify the built and archaeological heritage in Local Authority ownership and areas at risk from climate change including, but not necessarily restricted to, the Record of Monuments and Places, Protected Structures and Architectural Conservation Areas designated in the Development Plan;
- Undertake climate change vulnerability assessments for the historic structures and sites in its area, subject to resources and funding;
- Develop disaster risk reduction policies addressing direct and indirect risks to the built and archaeological heritage in its area;
- Develop resilience and adaptation strategies for the built and archaeological heritage in its area;
- Develop the skills capacity within the Local Authority to address adaptation/ mitigation/emergency management issues affecting historic structures and sites in order to avoid inadvertent loss or damage in the course of climate change adaptation or mitigation works.

The protection of architectural heritage is provided for through a range of legal instruments that include the Heritage Act 1995, the Architectural Heritage (National Inventory) and National Monuments (Misc. Provisions) Act 1999, and the Planning and Development Act 2000. The Planning and Development Act 2000 requires all Planning Authorities to keep a 'Record of Protected Structures' (RPS) of special architectural, historical, archaeological, artistic, cultural, scientific, social or technical interest. As of the 1st January 2000, all structures listed for protection in current Development Plans, have become 'protected structures'. Since the introduction of this legislation, planning permission is required for any works to a protected structure that would affect its character. A protected structure also includes the land and other structures within its curtilage. While the term 'curtilage' is not defined by legislation, the Architectural Heritage Protection Guidelines for Local Authorities (Department of Arts, Heritage and the Gaeltacht 2011), describes it as the parcel of land immediately associated with a structure and which is (or was) in use for the purposes of the structure. In addition, local authorities must provide for the preservation of places, groups of structures and townscapes of architectural heritage significance through designation of Architectural Conservation Areas (ACAs).

The National Inventory of Architectural Heritage (NIAH) was established to record architectural heritage structures within the State and while inclusion in the NIAH does not provide statutory protection listing in the inventory is a signifier of architectural heritage value and it is intended to advise local authorities on compilation of their Record of Protected Structures. The NIAH also includes a Survey of Historic Gardens and Landscapes which comprises a non-statutory, desk-based survey of such features. Details on the Protected Structures and NIAH-listed features within the study area are provided in Section 15.3.3.2 of this chapter.

The *Limerick Development Plan 2022-2028* (adopted 17 June 2022) presents a number of objectives to ensure the protection of the architectural heritage resource within the County and these include:

**Objective EH O50 Work to Protected Structures** It is an objective of the Council to:



- a) *Protect structures included on the RPS from any works that would negatively impact their special character and appearance.*
- b) *Ensure that any development proposals to Protected Structures, their curtilage and setting, shall have regard to the Architectural Heritage Protection Guidelines for Planning Authorities published by the Department of the Arts, Heritage and the Gaeltacht.*
- c) *Ensure that all works are carried out under the supervision of a qualified professional with specialised conservation expertise.*
- d) *Ensure that any development, modification, alteration, or extension affecting a Protected Structure and/ or its setting, is sensitively sited and designed and is appropriate in terms of the proposed scale, mass, height, density, layout and materials.*
- e) *Ensure that the form and structural integrity of the Protected Structure is retained in any redevelopment and that the relationship between the Protected Structure and any complex of adjoining buildings, designed landscape features, or views and vistas from within the grounds of the structure are respected.*
- f) *Respect the special interest of the interior, including its plan form, hierarchy of spaces, architectural detail, fixtures and fittings and materials.*
- g) *Support the re-introduction of traditional features on protected structures where there is evidence that such features (e.g. window styles, finishes etc.) previously existed.*
- h) *Ensure that new and adapted uses are compatible with the character and special interest of the Protected Structure.*
- i) *Protect the curtilage of Protected Structures and to refuse planning permission for inappropriate development within the curtilage and attendant grounds, that would adversely impact on the special character of the Protected Structure.*
- j) *Protect and retain important elements of built heritage including historic gardens, stone walls, entrance gates and piers and any other associated curtilage features.*
- k) *Ensure historic landscapes and gardens associated with Protected Structures are protected from inappropriate development.*

**Objective EH O51 Energy Efficiency of Protected Structures** *It is an objective of the Council to have regard to the Department of Environment, Heritage and Local Government's publication on Energy Efficiency in Traditional Buildings (2010) and the Irish Standard IS EN 16883:2017 Conservation of Cultural Heritage – Guidelines for Improving the Energy Performance of Historic Buildings (2017) and any future advisory documents in assessing proposed works on Protected Structures.*

**Objective EH O52 National Inventory of Architectural Heritage (NIAH)** *It is an objective of the Council to review and update the RPS on foot of any Ministerial recommendations including the NIAH and any future updates. The Ministerial Recommendations, made under Section 53 of the Planning Act, will be taken into account when the Planning Authority is considering proposals for development that would affect the historic or architectural interest of these structures.*

**Objective EH O53 Architectural Conservation Areas** *It is an objective of the Council to:*

- a) *Protect the character and special interest of an area, which has been designated as an Architectural Conservation Area (ACA) as set out in Volume 3.*
- b) *Ensure that all development proposals within an ACA be appropriate to the character of the area having regard to the Character briefs for each area.*

- c) *Ensure that any new development or alteration of a building within an ACA or immediately adjoining an ACA, is appropriate in terms of the proposed design, including scale, height, mass, density, building lines and materials.*
- d) *Seek a high quality, sensitive design for any new development(s) that are complementary and/or sympathetic to their context and scale, whilst simultaneously encouraging contemporary design which is in harmony with the area. Direction can also be taken from using traditional forms that are then expressed in a contemporary manner, rather than a replica of a historic building style.*
- e) *Seek the retention of all features that contribute to the character of an ACA, including boundary walls, railings, soft landscaping, traditional paving and street furniture.*
- f) *Seek to safeguard the Georgian heritage of Limerick.*

### 15.3.3 Archaeological and Historical Context

There are a total of eight recorded archaeological sites located within the 1km study area and these are listed in Table 15.5 and mapped in Figure 15.3. There is one recorded archaeological site located within the boundary of the proposed development site and this comprises a children's burial ground (LI005-007---). Additionally, some portions of the proposed development site encroach into the archaeological Zone of Notification (ZoN) which surrounds settlement cluster (LI005-039---) (see Figure 15.4). This settlement was depicted on the seventeenth-century Down Survey Map (see Section 15.3.3.3), however, much of its location is now occupied by the Clonile and Shanrath housing estates. The children's burial ground (LI005-007----) is depicted on the first edition 6-inch Ordnance Survey (OS) map of 1844 with the inscription 'Crag Grave yd.' while the 25-inch OS map of 1902 labels it as 'Crag Grave Yard (disused).', indicating that it was no longer in active use by the start of the twentieth century. According to Ordnance Survey letters from 1840, "only children were being interred there" at that time, suggesting that the graveyard formerly acted as a more formal burial ground.

The six other recorded monuments located within the 1km study area surrounding the proposed development site comprise, a burial cairn (LI005-005----) located in Clondrinagh, enclosures (CL063-001---- & CL063-002----) located in the townlands of Pass and Gortgarraun in County Clare, Ballygrennan Castle (LI005-010----) and a historic bridge (LI005-038---- & CL062-049---) which traverses the Crompaun River (also named Meelick Creek) and connects the townland of Clonconane in County Limerick with Meelick in County Clare. The extant bridge dates to *circa* 1800, however, it may have been built on the site of the medieval bridge that is depicted on the seventeenth-century Down Survey map of the Barony of North Liberties. These archaeological sites are all located over 450m from the boundary of the proposed development site (Table 15.5).

Furthermore, there are two recorded archaeological sites located within the townland of Clonconane whose precise location is unknown. These sites consist of Clonconane Castle (LI005-058001-) and an associated deserted medieval settlement (LI005-058002-) which are depicted within the townland on the Down Survey mapping. However, it is unlikely that these sites are located within the subject lands as the Down Survey mapping depicts them as being located a significant distance to the west.

SMR No.	Class	Townland	ITM refs	Distance from development
CL062-049----	Bridge	Meelick (Bunratty Lower By.)	554143, 659507	c.515m east
CL063-001----	Enclosure	Pass	554694, 660102	c.560m north
CL063-002----	Enclosure	Gortgarraun	555364, 660352	c.900m northeast
LI005-005----	Cairn - burial cairn	Clondrinagh	554406, 658780	c.470m southwest
LI005-007----	Children's burial ground	Clonconane	554812, 659256	Within development site
LI005-010----	Castle - unclassified	Ballygrennan (Pubblebrien By.)	555963, 659858	c.940m northeast
LI005-038----	Bridge	Clonconane	554146, 659504	c.515m east
LI005-039----	Settlement cluster	Ballygrennan (North Liberties By.), Clonconane	555236, 659030	Outer edge of ZoN extends into development site

**Table 15.5:** List of recorded archaeological sites located within 1km of the overall development site

The following presents summary details of the main periods within the Irish archaeological record with references to the recorded archaeological sites located within the study area. The dating framework used for each period is based on *Guidelines for Authors of Reports on Archaeological Excavations* as published by the National Monuments Service (NMS).

#### *Prehistoric Periods*

Traditionally, the earliest recorded evidence for human settlement in Ireland dates to the Mesolithic period (7000–4000 BC) when groups of hunter-gatherers arrived on the island. However, recent evidence in the form of a butchered bear patella found in 'Alice and Gwendoline' Cave near Ennis in County Clare now suggests that humans were present in Ireland during the Palaeolithic period between 12,800 to 12,600 cal BC (Dowd and Carden 2016, 161). Similarly, re-examination of a reindeer bone fragment discovered in Castlepook Cave near Doneraile, County Cork revealed human butchery marks on the bone which was radiocarbon dated to 31,000 BC (Carden 2020), establishing human activity in Ireland more than 20,000 years earlier than previously thought. While these prehistoric settlers did not construct settlements or monuments that have left any above ground traces, their presence can often be identified by scatters of worked flint in ploughed fields.

The Neolithic period (*circa* 4000-2400 BC) began with the arrival and establishment of agriculture as the principal form of economic subsistence, which resulted in more permanent settlement patterns. As a consequence of the more settled nature of agrarian life, new site-types, such as more substantial rectangular timber houses and various types of megalithic tombs, begin to appear in the archaeological record during this period.

The Irish Bronze Age (*circa* 2400–500 BC) commenced with the arrival of metal-working techniques to the island and this technological advance resulted in the introduction of a new artefactual assemblage into the Irish archaeological record. This period was also associated with the construction of new monument types such as standing stones, stone rows, stone circles, barrows and *fulachta fia*. *Fulachta fia* translates as cooking places of the wild (or of deer), they are often interpreted as the remains of cooking sites and are the most numerous archaeological site type in Ireland, numbering some 7000

recorded examples. Radiocarbon dating of excavated examples has generally produced dates in the Bronze Age. A number of alternative interpretations have been forwarded as to the function of these archaeological sites, such as their potential uses as bathing, saunas, garment washing and dyeing, leather processing and even brewing sites (Hawkes 2015).

A burial cairn (LI005-005----), revealed during pre-development archaeological investigations (Licence ref. 03E1144) in the townland of Clondrinagh, likely dates to the Bronze Age period. A partial excavation undertaken on the monument uncovered a circular mound, *circa* 23m in diameter and standing 1.5m above the surrounding field. It was found that the mound, or cairn, was made up of small and medium-sized stones to a depth of 1m. On the western side of the cairn, a combination of larger stones and the natural bedrock acted as revetting for the cairn material. On the old ground surface beneath the cairn, fragments of cremated human bone were found in a discrete deposit. No evidence for any cists or deposits of bone within the cairn was found in the limited area examined.

The arrival of iron-working technology in Ireland saw the advent of the Iron Age (600 BC – 400 AD). This period has been traditionally associated with a Celtic ‘invasion’ but this view is no longer widely accepted as recent archaeological evidence points instead to a gradual acculturation of the Irish Bronze Age communities following centuries of contacts with Celtic-type cultures in Europe. Relatively little has been traditionally known about Iron Age settlement and ritual practices until recent decades when the corpus of evidence has been greatly increased by the discovery of Iron Age sites during schemes such as bog-cutting and road construction projects.

Archaeological investigations (E4440) in advance of the proposed Coonagh – Knockalisheen Distributor Road in Counties Limerick and Clare revealed evidence of Bronze Age and Iron Age activity. Thirteen burnt stone spreads (four with possible troughs), a wooden trackway potentially contemporary with one of the burnt stone spreads, four burnt stone pits, two pits associated with charcoal production, a probable ring-barrow, two pits of unknown function and a curvilinear feature were all revealed. The discovery of these sites demonstrates a significant settlement pattern in the lands around the proposed development site during the later prehistoric periods.

#### *Medieval and post-medieval periods*

The early medieval period began with the introduction of Christianity and continued up to the arrival of the Anglo-Normans in the late twelfth century (*circa* 400–1169 AD). While the medieval period saw the emergence of the first phases of urbanisation around the larger monasteries and the Hiberno-Norse ports, the dominant settlement pattern was still rural-based and centred around enclosed farmsteads known as ringforts (earth/timber built) and cashels (stone built). Ringforts are one of the most numerous monuments in the Irish landscape, with some 45,000 recorded examples (Stout 1997, 53). These sites comprise broadly circular enclosures delimited by one or more concentric banks and ditches in the case of ringforts and drystone walls in the case of cashels. They were formerly known by the names *ráth*/*lios*/*cathair*/*dún*, which still form some of the most common place-name elements within the Irish landscape. The majority of excavated examples have produced evidence for the remains of timber houses, outbuildings and stockades as well as a variety of agricultural and craft activities such as grain processing and metalworking. An enclosure (CL063-002----) at Gortgarraun, located 900m northeast and enclosure (CL063-001----) located in the townland of Pass, County Clare, *circa* 560m to the north of the proposed development site, likely date to the early medieval period.

The following summary includes high-level information on the urban settlement of Limerick in order to provide a wider context for the study area during the period from the ninth century onward. The area of the proposed development is located in the Barony of the North Liberties. It is recorded in the Annals that in AD 744 the *Dál Cais* defeated the *Corcu Modruad*, occupying the latter's strategic lands in Clare which controlled the Shannon. Viking raiders first appeared on the Shannon circa AD 825. Although there are some references to a ninth-century settlement in Limerick, the permanent settlement appears to have been established in AD 922 by Tamar MacAilche on the island in the Shannon formed by the Abbey River. This island became known as *Inis Sibhton*, or *Inis an Ghaill Duibh*, later King's Island. The Viking town is still visible in the street pattern of the old city on King's Island. Viking Limerick allied with the Irish in Munster in AD 926 to repel an incursion from the Vikings of Waterford.

The arrival and conquest of large parts of Ireland by the Anglo-Normans in AD 1169 marks the advent of the late medieval period which continued until approx. AD 1550. This period saw the continuing expansion of Irish urbanisation as many of the port cities developed into international trading centres and numerous villages and towns developed as local or regional market centres. The below summary of the late medieval period includes high-level information on the urban settlement of Limerick in order to provide a wider context for the study area during this period.

In 1174, Domhnall Mór Ó Briain burned Limerick city to prevent it falling to the Normans. The city was finally captured in 1195, under Prince John and was granted a charter and mayor, Adam Sarvant (1197-98), and bailiffs were John Bambery and Walter White. King John's Castle was erected between 1200 and 1207, along with the original Thomond Bridge.

Prince John and his Norman Chief Justiciar, or solicitor, Myler Fitzhenry conferred 40 ploughlands (*seisreacha*) on the people of Limerick, each with its own castle. Twenty-four of these ploughlands were located south of the Shannon and sixteen to the north; these included several areas within the study area, such as Knock, Caherdavin, Shanabooley, Ballygrennan, Clonconane, Clondrinagh, and Moylish. A Limerick Corporation Inquisition of 1615 states that, "they were in the possession of Richard de Clare (of Bunratty) from the Kings of England as tenants of the Mayor and Corporation". In 1316, Edward Bruce, brother of King Robert I of Scotland, captured Limerick. The occupation was short lived and ended when Edward was killed in 1318 and the Scots were defeated. Construction of the town wall on King's Island, known as Engishtown, began in the fourteenth century and continued until the end of the fifteenth century. Irishtown, which developed on the other side of the Abbey River, was also enclosed by a wall. Limerick prospered as a port and trading centre; farm produce was exported and wine was imported from France and Spain. In 1497 and 1498 there were great famines, followed by plague in 1521 but the settlement recovered thereafter and a 1574 document prepared for the Spanish ambassador attests to the wealth of the city. By 1641, Limerick was the third largest city in Ireland, with a population estimated at about 3,500. In the fifteenth and sixteenth centuries - in common with other major Irish towns - Limerick became a virtual city-state, due to the breakdown of effective English rule throughout the country. While the city remained loyal to the Crown and conscious of its status as a Royal city, the Reformation created acute tensions between the citizens' conflicting allegiances to the Catholic Church and the Protestant English monarchy.

Limerick was besieged several times in the seventeenth century. In 1642, Irish Confederates seized King John's Castle. The city was besieged by Oliver Cromwell's army under Henry Ireton in 1651; after a blockade several months long Cromwellian forces retook the castle. Limerick was besieged during

the Williamite Wars in 1690 and again in 1691, which ended with the signing of the Treaty of Limerick. These wars decimated both the population and the city. Ballygrennan Castle or Castle Park is located *circa* 850m to the northeast of the proposed development. It was built and occupied in 1620 by the O'Brien's of Thomond. In 1782 it became the property of the Ormsbys under the name of Blackland Castle, and lastly, in 1833, it became the property of Christopher Delmege who rebuilt large portions of the structure.

The post-medieval period (1550+) saw the development of high and low status stone houses throughout the Irish country. During this period any given settlement cluster is likely to have consisted primarily of single-storey thatched cottages with associated farm buildings while two-storey farmhouses became more common in the nineteenth century. The settlement cluster (LI005-039----) in Ballygrennan and Clonconane, Ballygrennan Castle (LI005-010----), located c.940m northeast of the overall development site and Clonconane Castle (LI005-058001-) and an associated deserted medieval settlement (LI005-058002-), which are depicted on the 17<sup>th</sup> century Down Survey mapping likely dates from this period. Although the ZoN for the settlement cluster (LI005-039----) extends into the proposed development site, much of its site is now occupied by the Clonile and Shanrath housing estates. A pit and a burnt spread were uncovered in this area during archaeological monitoring (Licence No. 98E0321) of the construction phase a housing development in 1998 (O'Rahilly1998). Archaeological test trenching (Licence No. 04E0851) and monitoring of a site on the opposite side of the Cratloe Road, did not reveal anything of archaeological significance at that location (Dunne 2004).

The eighteenth century was a period of growth and expansion for the city and environs of Limerick. The construction of public buildings and infrastructure projects were paid for with local taxes on trans-Atlantic trade. The medieval city walls and its 17 gates were for the most part pulled down in 1760. In 1733, George III approved the repair of the road from the North Liberties of Limerick, to Cratloe and Sixmilebridge. The road is now known as the Old Cratloe Road or Wood Road. Meelick Bridge (LI005-038---- and CL062-049----), which traverses the Crompaun River or Meelick Creek connecting the townland of Clonconane to Meelick in County Clare, may have been built on the site of the medieval bridge that is depicted on the seventeenth-century Down Survey map of the Barony of North Liberties.

In the nineteenth century prominent industries within the Limerick area included tanning, lace, flour milling, clothing, tobacco, brewing, papermaking and milk processing. Wellesley Bridge (later Sarsfield Bridge), connecting the city with the western side of the Shannon, was built in 1827, and Thormond Bridge was rebuilt in 1836. The Great Southern & Western Railway reached Limerick in 1848. While it is estimated that the Great Famine reduced the population of County Limerick by 70,000, the population of the city actually rose slightly, as people fled to the workhouses.

The children's burial ground (SMR LI005-007----) located within the boundary of the MS but outside of the subject development site is a site type often traditionally associated with the Famine period of the late 1840s. However, according to Ordnance Survey letters from 1840, the graveyard was in use prior to then when, "only children were being interred there" at that time, perhaps suggesting that the site formerly acted as a more formal burial ground.

### 15.3.3.1 Database of Irish Excavation Reports

The Database of Irish Excavation Reports contains summary accounts of archaeological investigations undertaken in the Republic of Ireland and Northern Ireland from 1969 to present ([www.excavations.ie](http://www.excavations.ie)).

A search of the townland of Clonconane, County Limerick and the surrounding townlands of Ballygrennan, Knock, Gortgarraun and Shannabooley, County Limerick and Clondrinagh, Meelick, Pass and Punchbowl, County Clare has revealed that 16 licensed archaeological investigations have taken place within these areas, with seven of these are associated the Coonagh – Knockalisheen Distributor Road (see Appendix 15.4 for details). Of these investigations, nine produced prehistoric material (one also produced medieval and post-medieval material), particularly associated with burnt mounds. A further six investigations produced no archaeological evidence and one provided evidence of ephemeral undated activity and nineteenth-century material.

Details on recent archaeological investigations within the MS are provided below (Section 15.3.3.7).

### 15.3.3.2 Architectural Heritage

There are two protected structures listed in the *Limerick Development Plan 2022-2028*, which are also listed in the National Inventory of Architectural Heritage (NIAH), located within the 1km study area surrounding the proposed development site and these comprise Meelick Bridge and Ballygrennan Castle (Table 15.6 and Figure 15.3). These structures are also recorded archaeological monuments and neither are located within 500m of the proposed development site.

NIAH No.	RPS No.	Name	Townland	ITM refs	Distance from development
21900501	3308	Meelick Bridge	Clonconane	554143, 659507	c.515m east
21900502	3306	Castle Park	Ballygrennan	555963, 659858	c.940m northeast

**Table 15.6:** List of NIAH and Protected Structures located within 1km of the overall development site

### 15.3.3.3 Cartographic Review

The detail on historic cartographic sources demonstrates the nature of past settlements and land use patterns in recent centuries and can also highlight the impacts of modern developments and agricultural practices. This information can aid in the identification of the location and extent of unrecorded or partially levelled features of archaeological or architectural heritage interest. The cartographic sources examined for the study areas include the Down Survey map (surveyed in the 1650s) (see Figure 15.8), the first edition of the 6-inch OS maps (published in 1844) (see Figure 15.9) and the 25-inch OS maps (published in 1902) (see Figure 15.10).

The townland of Clonconane is referred to as 'Clonecanane' on the seventeenth-century Down Survey map. The area is located within the barony of the North Liberties; however, the survey also included it within the barony of Bunratty in County Clare. This maps clearly shows that the boundaries of the townland of Clonconane and the surrounding townlands were well established by the mid-seventeenth century. It is also clear that Pass Road was the main thoroughfare extending to the northwest from Limerick City.

A collection of buildings (settlement cluster LI005-039----) is shown on either side of Pass Road (circled in red on Figure 15.8). The road continues northwest-ward to Meelick Bridge (LI005-038----/ CL062-049----), which traverses the Crompaun River or Meelick Creek connecting the townland of Clonconane, County Limerick to Meelick in County Clare. The Down Survey map also depicts Clonconane Castle

(LI005-058001-) and an associated deserted medieval settlement (LI005-058002-) within the townland of Clonconane. However, it is unlikely that these sites are located within the proposed development site as the Down Survey mapping depicts them as being located a significant distance to the west.

The area is referred to by its existing name 'Clonconane' on the first edition 6-inch OS map and on the subsequent 25-inch edition map. The Children's burial ground (LI005-007----) within the western portion of the proposed development site is referred to as 'Crag Grave Yard' on both map editions, with the 25-inch map indicating that the graveyard was disused by 1902. An area marked 'Red Gate' is included in both the first edition 6-inch and the 25-inch OS maps to the southeast of the proposed development site and this may be a historical place name associated with the settlement cluster (LI005-039----). The recorded location of the settlement cluster is shown as undeveloped agricultural land on both of the OS maps. No potential unrecorded archaeological features are depicted within the proposed development site on either edition of the OS maps.

#### 15.3.3.4 Review of Aerial, Satellite and LiDAR Imagery

A review of publicly accessible aerial, satellite and LiDAR sources published online by the Ordnance Survey of Ireland, Google, Bing Maps and the Geological Survey of Ireland (LiDAR) was undertaken in order to assess if any traces of potential unrecorded archaeological sites were visible within the proposed development site. A review of available aerial/satellite imagery for a variety of years from 1995 to 2022 indicates that the fields that comprise the overall development site have generally been in use as grazing land in recent decades. These images show that the portion of the overall development site that includes Phases 1, 3 and 4, and the Neighbourhood Centre and Creche was in use as a golf course during the 1990s but had reverted back to pasture by 2000. Part of the Phase 2 area contained a playing pitch in 1995, whilst the Phase 5 area continued to be used for agriculture. A number of landscaped features associated the golf course are visible on the reviewed images and these are not archaeological in origin. The recorded archaeological monument (children's burial ground LI005-007---) within the site is clearly visible on all reviewed images.

A series of parallel east to west orientated linear trends are evident in LiDAR images and on some aerial images are agricultural in appearance and indicates that fields within the proposed development site have also been used for tillage in the past (see Figure 15.7). No potential previously unrecorded archaeological features are visible within the proposed development site on any of the reviewed images.

#### 15.3.3.5 Undesignated Cultural Heritage Assets

While encompassing the archaeological and designated architectural heritage resources, cultural heritage also includes various undesignated assets such as settlements, demesne landscapes, vernacular structures, townland boundaries, folklore, placenames and historical events.

The detail on the Down Survey maps indicates that the boundary of Clonconane townland was well established by at least the middle of the seventeenth century. A review of the historic OS maps revealed that the overall proposed development site is contained within Clonconane and there are no townland boundaries located within the site. Townlands are the smallest unit of territorial divisions in the Irish landscape, and many may preserve early Gaelic territorial boundaries that pre-date the Anglo-Norman conquest. The layout and nomenclature of Irish townlands was recorded and standardised by the work of the Ordnance Survey in the nineteenth century. The Irish translations their names often refer to



natural topographical features, but name elements may also indicate the presence of past human activity within the townland, e.g., dun, lios or rath indicate the presence of a ringfort while temple, saggart, termon or kill likely record an association with a church site. The proposed development site is located within the townland of Clonconane (*Cluain Canáin*) with the *cluain* meaning 'meadow/pasture' ([www.loganim.ie](http://www.loganim.ie)). The townland is described by Mr John McMahon in the National Folklore Commission's Schools Collection as 'Conan's Meadow' ([www.duchas.ie](http://www.duchas.ie)).

A review of the National Folklore Commission's Schools Collection<sup>2</sup> revealed that it contains a few mentions Clonconane townland. A reference to the townland collected by P. Nic Mhathghamhna for Meelick School from Mr John McMahon noted the following:

*The houses are all slated now. The remains of a couple of the old thatched homes may still be seen. There were far more people in this townland long ago. Many of them settled down in America. McMahon is the principal name. There is only one man over seventy and he has not Irish. The land is rich and fertile. It is a great plain and it is good meadow-land.*

#### 15.3.3.6 Field Survey

The MS and its environs were inspected on 11 November 2021 and 14 November 2022 and the Phase 5 area was also inspected on 7 March 2023. The site was assessed in terms of historic landscape, land use, vegetation cover, presence and potential for undetected archaeological and architectural heritage sites/features. Weather conditions were dry and bright at the time of survey, and this provided excellent landscape visibility. No difficulties were encountered during topographical survey. The MS comprises a parcel of moderate to good quality, undulating pastoral land to the north of the Old Cratloe Road in the townland of Clonconane, County Limerick. The disused Children's burial ground (LI005-007----), is visible as a circular overgrown area defined by a *circa* 1m high earthen and stone bank, with frequent scrub and rush overgrowth and occasional trees. It is accessed via a gap in the bank and vegetation cover on the east side and the internal area of the burial ground is obscured by overgrowth.

The field surveys revealed the presence of a number of potential archaeological features that have low surface expressions, the morphology of which is similar to ring barrows and other circular burial and settlement sites. However, the detail on an OSI aerial image from 1995 shows that these correlate to the locations of landscaped features within a golf course and it is concluded that these features are, therefore, not archaeological in nature. No other surface traces of potential archaeological, architectural or cultural heritage features were noted during the field surveys and extracts from the photographic record are provided in Appendix 15.1.

#### 15.3.3.7 Archaeological Site Investigations

Seven programmes of archaeological investigations, which comprised a combination of geophysical surveys and archaeological testing, have been undertaken for the various phases of the proposed development in recent years (Table 15.7).

<sup>2</sup> <https://www.duchas.ie/en>

Phase	Planning ref	Details
Phase 1	21/1800	A programme of archaeological test trenching was undertaken for Phase 1 Housing Development at Old Cratloe Road, Clonconane, County Limerick under Excavation Licence 22E0664 in September 2022. This programme involved the excavation of 40 no. trenches, totalling 1335 linear metres. Nothing archaeological was identified. (see Plate 15.9 & Figure 15.15)
Phase 2	22/817	<p>A geophysical survey of the Phase 2 area at Old Cratloe Road, Clonconane, County Limerick was undertaken under survey licence 22R0379 in November 2022. A number of anomalies of archaeological potential, including a u-shaped feature at the northern portion of the area were observed.</p> <p>A programme of archaeological test trenching, comprising the excavation of 18 no. test trenches across the Phase 2 area was undertaken in February 2023 under Excavation Licence 23E0034. Linear and curvilinear anomalies identified in the geophysical survey were ground-proofed during the testing programme.</p> <p>Archaeological material was identified in three of the trenches; Trenches 3, 4 and 7, while potential archaeological material was also identified in four trenches; Trenches 7, 8, 9 and 11.</p> <p>A semi-circular ditch, identified in the geophysics was targeted by Trenches 3 and 4 which were positioned to cross this anomaly. Portions of an infilled ditch, measuring between 3.5 to 4.5m in width were located on the three points indicated by the geophysics survey results.</p> <p>This feature bears all the hallmarks of a levelled ringfort, with an internal diameter of approximately 29m. Further features, consisting of four small pits or postholes were identified within the area enclosed by the curvilinear ditch close to the intersection of Trenches 3 and 4. Some linear features were also noted in Trench 3 (though these linear features may relate to later agriculture).</p> <p>It is believed that these features relate to early medieval activity and further mitigation in the form of preservation by record will be undertaken prior to construction activities associated with the proposed development. (see Plates 15.8, 15.10, 15.11, 15.12 &amp; Figures 15.16, 15.18)</p>
Phase 3	22/959	<p>A programme of archaeological test trenching was undertaken in January 2023 under Excavation Licence 23E0018.</p> <p>A total of 32 no. trenches were excavated in the Phase 3 area. Archaeological material was identified in two of these trenches; Trenches 14 and 18. These areas of activity are located 55m apart.</p> <p>An oval-shaped pit was identified in Trench 14, measuring 1.5m x 1.25m in plan. The upper portion of this pit was truncated by a linear furrow, indicating that the pit pre-dated the agricultural activity represented by the furrow.</p> <p>Four small possible archaeological features were identified in Trench 18. These may represent three postholes and a stakehole. These were clustered within an area measuring 3.1m north to south and 1.5m east to west. A quadrant was investigated in one of these features and a cut with straight sides was noted, the fill of the feature included charcoal and possible flecks of burnt bone.</p> <p>Trenches 31 and 32 were within the zone of notification (but 20m from) the Children's Burial Ground LI005-0070000, but no related material was identified in those trenches.</p> <p>Further mitigation in the form of preservation by record will be undertaken prior to construction activities associated with the proposed development for the archaeological material uncovered</p>

Phase	Planning ref	Details
		during this phase. (see Plates 15.1, 15.13, 15.14, 15.15 & Figures 15.11, 15.12, 15.13, 15.14, 15.16, 15.18)
Phase 4	22/1114	A programme of archaeological test trenching was undertaken in February 2023 under Excavation Licence 22E0091. A total of 11 no. test trenches were excavated with a combined length of 422m. Ten trenches (T1-10) were excavated in their original locations with one 27m long trench (T4b) added to the original layout. The testing programme identified one archaeological feature, a burnt mound measuring a minimum of c.20m NNW-SSE by 8m E-W in Trench 4. The feature is located on a west facing slope near the western boundary of the site, immediately northeast of a pond. One c.27m long additional trench (4b) was excavated across Trench 4 in order to investigate the extent of the burnt mound. The full extent of the burnt mound to the south could not be identified since an overhead powerline meant that T4b could not be excavated for more than 8m in this direction. The burnt mound was not present within Trench 2. Further mitigation in the form of preservation by record will be undertaken prior to construction activities associated with the proposed development for the archaeological material uncovered during this phase. (see Plates 15.6, 15.16, 15.17, 15.18 & Figure 15.19)
Neighbourhood Centre	22/917	A programme of archaeological test trenching was undertaken in January 2023 under Excavation Licence 23E0016. Nothing archaeological was identified within this area. (see Plates 15.1, 15.6, 15.7, 15.19 & Figure 15.16, 15.20)
Crèche	N/A	No archaeological works required
Phase 5		A geophysical survey of the northern portion of the Phase 5 area (the southern portion proposed for a wet grassland is too wet for survey) was undertaken in January 2023 under survey licence 23R0025. A small number of anomalies of potential archaeology were identified but the results indicate that these are not significant in terms of number or complexity. Targeted archaeological testing of these anomalies will need to be undertaken to elucidate their archaeological significance. (see Plate 15.20 & Figures 15.21, 15.22)

**Table 15.7:** Results from archaeological investigations within the overall proposed development site

### 15.3.3.8 Summary

The review of the historic mapping indicates that the MS has been occupied by farmland since at least the early nineteenth century (and possibly as far back as the seventeenth century) and it has retained its agricultural character with only a slight alteration of field boundaries since the production of the historic OS maps.

The Down Survey map depicts a cluster of buildings within the environs of the proposed development and the Archaeological Survey of Ireland have established a Zone of Notification around this settlement cluster (LI005-039----) which extends slightly into the southern end of the proposed development site. There is no evidence of any features associated with this settlement cluster on any of the later OS maps or recent aerial images and much of the location of the settlement cluster is now occupied by modern housing.

The children's burial ground (LI005-007----) within the boundary of the MS but located outside of the subject application Phase 3 site is depicted on the historic OS maps and is clearly visible as a sub-circular feature on all reviewed aerial images. In addition, extant remains of this site were noted during

field surveys carried out as part of this assessment and it survives as a heavily overgrown enclosed feature that is not accessible to the public.

While the desktop studies and field surveys did not identify other potential archaeological or architectural heritage features within the proposed development site, a number of previously unrecorded archaeological features were identified during recent archaeological site investigations (Table 15.7).

There are a total of six other recorded archaeological monuments located within the 1km study area surrounding the overall development site and none of these are located within 450m of its boundary (Table 15.5). There are also two Protected Structures located within the 1km study area around the proposed development site and neither of these are located within 500m of its boundary (Table 15.6). These known cultural heritage assets comprise features of medium-high values and their current condition and indicative values, as well as potential sensitivities to indirect impacts of a visual nature, have been assessed based on their locations, classifications, designations, inventory descriptions and reviews of historical maps and modern aerial/satellite images. It should be noted that all archaeological sites, including levelled examples, have the potential to possess sub-surface features, artefacts, human burials and other archaeological remains, that may be of High or Very High values. However, this cannot be ascertained without recourse to archaeological excavation, and these are attributes unlikely to be subject to effects in the absence of direct impacts.

## 15.4 DESCRIPTION OF EFFECTS

This section of the chapter deals specifically with the Phase 3 area within the overall proposed development as shown in Figure 15.2.

### 15.4.1 Construction Effects

There are no recorded archaeological sites within the application site Phase 3 area, although a small portion of the area encroaches into the ZoN around the children's burial ground (LI005-007----) (Figure 15.3). This archaeological site is clearly defined on the ground and will not be directly impacted by the construction phase of the proposed Phase 3 development. There are no other extant recorded monuments within the Phase 3 area and therefore, the construction phase will have no predicted impact on the known archaeological resource.

A programme of archaeological test trenching was undertaken across the Phase 3 area in January 2023 and a small quantity of previously unrecorded features of archaeological potential were uncovered within a discrete portion of the area (Table 15.7). While a full archaeological excavation, including post-excavation analyses, is required to ascertain if these features are archaeological in origin, construction phase ground excavation works at their locations will result in permanent, direct, negative effects on these features and this will require mitigation.

There are no designated architectural heritage structures or undesignated structures of architectural heritage interest located within the Phase 3 area. There are two designated architectural heritage structures within the surrounding 1km study area, both of which are located more than 500m from the

Phase 3 area (Table 15.6). The construction phase of the proposed development will have no predicted impact on designated or undesignated structures of architectural heritage interest.

There are no undesignated vernacular structures, demesne lands or townland boundaries located within the Phase 3 area and no intangible attributes, such as historical or folklore associations, were noted during the assessment. The construction phase will, therefore, have no predicted impacts on the undesignated cultural heritage resource.

#### 15.4.2 Operational Effects

The overgrown children's burial ground (LI005-007----) will be visible from the southern portions of the Phase 3 development and, therefore, the proposed development will have a slight, indirect, permanent, negative effect on the setting of this recorded monument.

The location of the recorded settlement cluster (LI005-039---) to the east of the proposed development retains no surface remains and much of its location is occupied by modern housing. The operational phase will, therefore, result in no predicted impacts on the location or setting of this levelled site.

There are a total of six other recorded archaeological monuments located within the 1km study area surrounding the overall development site and none of these are located within 450m of its boundary (Table 15.5). There are also two Protected Structures located within the 1km study area around the proposed development site and neither of these are located within 500m of its boundary (Table 15.6). Given the distance of these constraints from the proposed development, no operational phase impacts on their settings are predicted.

### 15.5 LIKELIHOOD OF SIGNIFICANT EFFECTS

#### 15.5.1 'Do-Nothing' Effects

A 'Do Nothing Scenario' will see the continued preservation of recorded and potential cultural heritage features within the study area and will not result in any predicted significant effects on the cultural heritage resource.

#### 15.5.2 Construction Effects

No potential significant construction phase effects on the cultural heritage resource have been identified.

#### 15.5.3 Operational Effects

No potential significant operational phase effects on the cultural heritage resource have been identified.

#### 15.5.4 Cumulative Effects

The Phase 3 development is part of a larger proposed development that includes a number of contiguous phases of development within the Masterplan area. There is one recorded archaeological site children's burial ground (LI005-007---) within the overall Masterplan area and the archaeological *Zone of Notification* (ZoN) which surrounds settlement cluster (LI005-039---) also extends within the

Masterplan area. The development has been designed to avoid any direct impacts on the children's burial ground (LI005-007---), which will be preserved *in situ* as a greenspace within the Masterplan area. An Archaeological Management Plan for this monument, which contains mitigation measures to protect and enhance this archaeological site during the operational phase of the entire Masterplan area, including Phase 3, has been submitted to Limerick City and County Council (Planning Ref. 21/1800) (see Section 15.6.2.1). The archaeological Zone of Notification (ZoN) which surrounds settlement cluster (LI005-039---) also extends within the eastern end of the Masterplan area. This settlement cluster depicted on a seventeenth-century cartographic source but is not present on nineteenth-century OS mapping and its recorded location is now occupied by modern housing. No sub-surface traces of the settlement cluster were identified during the various phases of archaeological investigation completed within the Masterplan area. There are no other recorded archaeological sites located within 450m of the overall development area.

Areas containing previously unrecorded features of archaeological potential have been identified during site investigations in the Phase 2 and Phase 3 area of the overall Masterplan area. Potential impacts on these potential archaeological features will be ameliorated by a programme of archaeological excavation (preservation by record). A small number of archaeological sites were identified during works on the Coonagh - Knockalisheen Distributor Road, part of which bisects the Masterplan area. These archaeological sites were excavated and recorded as part of that scheme.

Following the implementation of the operational phase measures to protect and enhance the children's burial ground (LI005-007---) (see Section 15.6.2.1) and the full systematic archaeological excavation of the potential archaeological features identified within the Masterplan area, the Phase 3 development is not predicted to result in any significant cumulative effects on the archaeological resource. There are no designated architectural heritage structures located within 500m of the Masterplan area and no potential undesignated examples, or other features of cultural heritage interest, have identified within its boundary or its close environs. It is, therefore, concluded that the proposed Phase 3 development will not result in any predicted significant cumulative effects on these elements of the cultural heritage resource.

## 15.6 REMEDIAL & MITIGATION MEASURES

### 15.6.1 Construction Phase

#### 15.6.1.1 Mitigation by Avoidance / Design

CH CONST 1: The children's burial ground (LI005-007---) located within the Masterplan area will be preserved *in situ* as an undeveloped greenspace and is outside the Phase 3 area. A 20m buffer from the outer edge of the monument will be established prior to any construction works commencing within the site.

#### 15.6.1.2 Mitigation by Prevention

CH CONST 2: The 20m buffer around the children's burial ground (LI005-007---) will be fenced-off with Harris fencing prior to the commencement of construction to protect the site during the course of works. This fence shall remain in place until all development works have been completed. The fencing will be

erected under archaeological supervision and no construction related activities, such as machine movements, dumping of spoil or storage of materials will occur within the fenced-off area.

### 15.6.1.3 Mitigation by Reduction

CH CONST 3: Archaeological investigations have identified the existence of previously unrecorded features of potential archaeological origin within the Phase 3 area. As preservation *in situ* of the identified features of archaeological potential is not a viable option within the proposed development, these features will be preserved by record through a programme of archaeological excavation and recording under licence from the National Monuments Service (NMS) in the Department of Housing, Local Government and Heritage.

The archaeological excavations will involve the stripping of topsoil from appropriate areas around the identified archaeological features within the development site and this will be carried out under the constant supervision of a suitably qualified archaeologist. The stripped area will include at least 10m of clearance from the outermost archaeological feature to the edge of the excavation. The supervised topsoil stripping will be undertaken using a mechanical excavator fitted with a toothless bucket which will remove the topsoil down to the uppermost archaeological layer or the surface of natural subsoil in areas where not archaeological material is present. A systematic programme of manual archaeological excavation of all revealed features of archaeological potential will then be carried out in accordance with the method statement submitted to the NMS as part of the licence application process. This will include the manual excavation of all identified archaeological features, the compilation of written, drawn and photographic records, the retrieval of archaeological objects and a programme of environmental sampling.

The archaeological excavations will be undertaken in advance of the main construction works in the relevant areas in order to allocate adequate time to appropriately excavate and record the archaeological deposits/features.

Following the completion of excavations, a post-excavation phase of works, involving analysis, reporting and dissemination to the relevant authorities will be undertaken off site. The level of the post-excavation analysis and reporting will be commensurate with the level of archaeology excavated on site.

## 15.6.2 Operational Phase

### 15.6.2.1 Mitigation by Avoidance / Design

There are no recorded archaeological sites located within the Phase 3 area, although a small portion of the area encroaches into the ZoN around the children's burial ground (LI005-007----). This archaeological site is clearly defined on the ground and will not be directly impacted by the proposed Phase 3 development which has been designed to avoid this recorded monument and it will be preserved *in situ* within a greenspace area.

CH OPER1: An Archaeological Management Plan for the Phase 1 area (Planning Ref. 21/1800) was submitted to Limerick City and County Council. This included mitigation measures to manage and protect the children's burial ground (LI005-007----) during the operational phase which will also apply for the operational phase of Phase 3 and these are as follows:

- A policy of minimal change shall be adopted with regard to the existing features of the archaeological monument. The existing site is surrounded by bushes and thick bramble and these shall be retained to define the perimeter of the monument. Any non-woody shrubs around the perimeter of the monument shall be pruned/removed by hand during routine maintenance. Maintenance involving minimal change will help the site to retain its current character, ensure that the archaeological monument remains inviolate and that the plant and animal ecosystems that have developed naturally on the monument are not unnecessarily disturbed.
- The site will be framed by a buffer of wildflower meadow around its periphery, which will be subject to bi-annual maintenance, which will include strimming/cutting of vegetation using hand tools. Material will be removed from the site to a designated dumping site located outside the 20m buffer around the monument. Any wind-blown modern plastics or other debris identified within the site during routine maintenance shall be collected and removed to an appropriate facility. No burning of materials shall occur.
- Routine bi-annual maintenance shall include monitoring the condition of the monument and its surrounds and the identification of evidence of inappropriate usage or anti-social behaviour.
- Interpretive signage shall be erected approximately 20m from the exterior edge of the feature (outside the buffer surrounding the monument). The signage shall include a description of the site as provided by the Archaeological Survey of Ireland and a generic explanation of the monument type.

#### **15.6.2.2 Mitigation by Prevention**

Following the implementation of the mitigation measures presented in Section 15.6.2.1, no mitigation measures by prevention will be required to maintain the children's burial ground (LI005-007----).

#### **15.6.2.3 Mitigation by Reduction**

Following the completion of the archaeological mitigation measures presented in Section 15.6.1.3, it is concluded that no further mitigation measures by reduction will be required during the operational phase.

### **15.7 RESIDUAL EFFECTS**

#### **15.7.1 Construction Phase**

The mitigation measures presented in Section 15.6 will result in the appropriate recording of the previously unrecorded features of archaeological potential identified during recent site investigations within the Phase 3 area by a full archaeological excavation. This shall result in a high magnitude of impact, albeit ameliorated by the creation of a full and detailed archaeological record, the results of which shall be disseminated. This shall result in a potential moderate range of significance of effect in the context of residual impacts on the unrecorded archaeological resource.

#### **15.7.1 Operational Phase**

Following the implementation of the mitigation measures presented in Section 15.6.2.1, it is predicted that the Phase 3 development will result in a not significant, indirect, permanent, negative impact on the setting the children's burial ground located within the Masterplan area.



## 15.8 MONITORING

### 15.8.1 Construction Phase

There are a number of obligatory processes to be undertaken as part of applications to the National Monuments Service for licences to carry out archaeological excavations and these will allow for monitoring of the successful implementation of mitigation measures. A detailed method statement stating the proposed strategy for the pre-construction archaeological excavations will accompany the submitted licence application which will clearly detail the extent of the archaeological works and outline the processes to be enacted to excavate and record all identified archaeological materials. A preliminary report on the archaeological excavations will then be submitted to the National Monuments Service, the National Museum of Ireland and the Planning Authority which will clearly describe the results of all archaeological works in written, mapped and photographic formats. Following the completion of all required post-excavation analyses, including environmental, artefact studies and dating, a final report on the excavations will be submitted to the above bodies.

### 15.8.1 Operational Phase

All required onsite archaeological excavation mitigation measures will be enacted prior to and during the construction phase and, therefore, no cultural heritage mitigation measures requiring monitoring are predicted during the operational phase of the proposed development. The Archaeological Management Plan for the Phase 1 area proposed "Routine bi-annual maintenance shall include monitoring the condition of the monument and its surrounds and the identification of evidence of inappropriate usage or anti-social behaviour". The proposed measures to protect the children's burial ground (LI005-007---) will also apply for the operational phase of Phase 3.

## 15.9 REFERENCES

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**APPENDIX 15.1: PHOTOGRAPHIC RECORD**



*Plate 15.1 Aerial view with main development area, facing northwest*



*Plate 15.2 Drone photo of the Children's burial ground (LI005-007--), facing south*



**Plate 15.3** View of the Children's burial ground (LI005-007---), facing north from Old Cratloe Road



**Plate 15.4** View of former golf course feature, facing north



**Plate 15.5** Drone view of former golf course feature, facing northeast



**Plate 15.6** Drone view of Clonconane, facing northeast from Old Cratloe Road



**Plate 15.7** Drone view of Clonconane, facing southwest



**Plate 15.8** Drone view of Phase 2 area, Clonconane, facing east

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**Plate 15.9** Drone view of Phase 1 area, Clonconane following test trenching, facing north



**Plate 15.10** Infilled ditch in west of Trench 3 (Phase 2 area), facing west



*Plate 15.11* Infilled ditch in west of Trench 3 (Phase 2 area), facing west

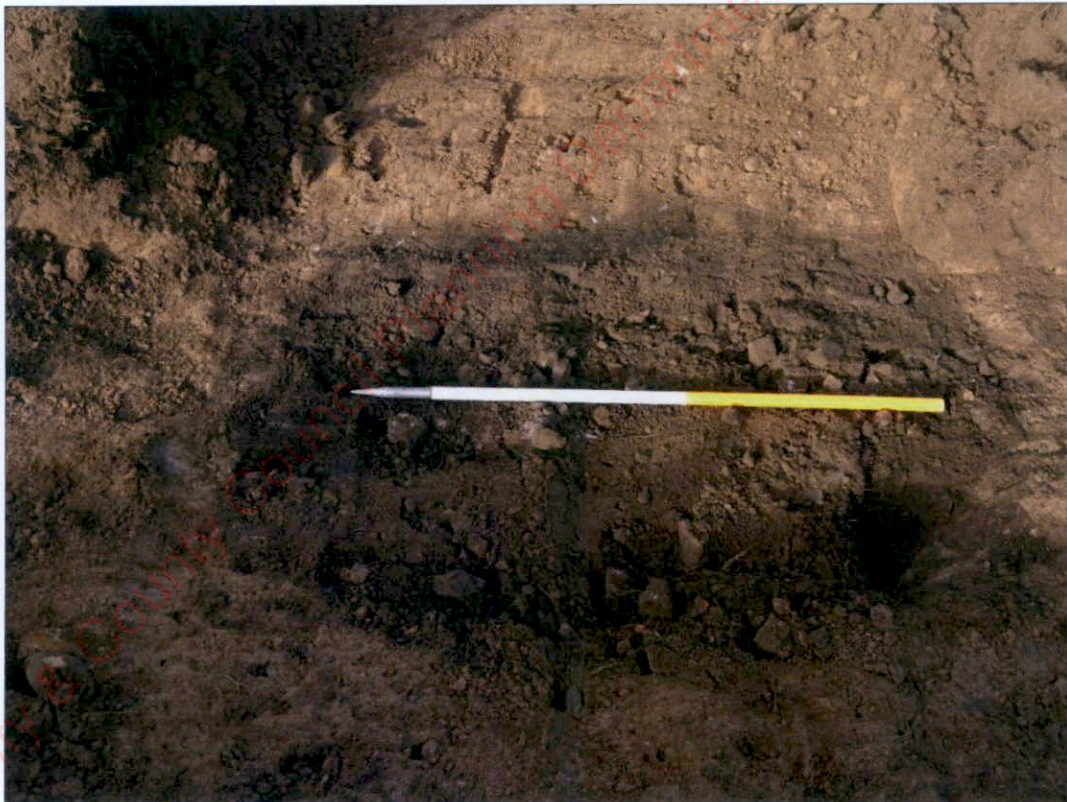


*Plate 15.12* Pit containing charcoal and burnt bone within Trench 7 (Phase 2 area), facing southwest

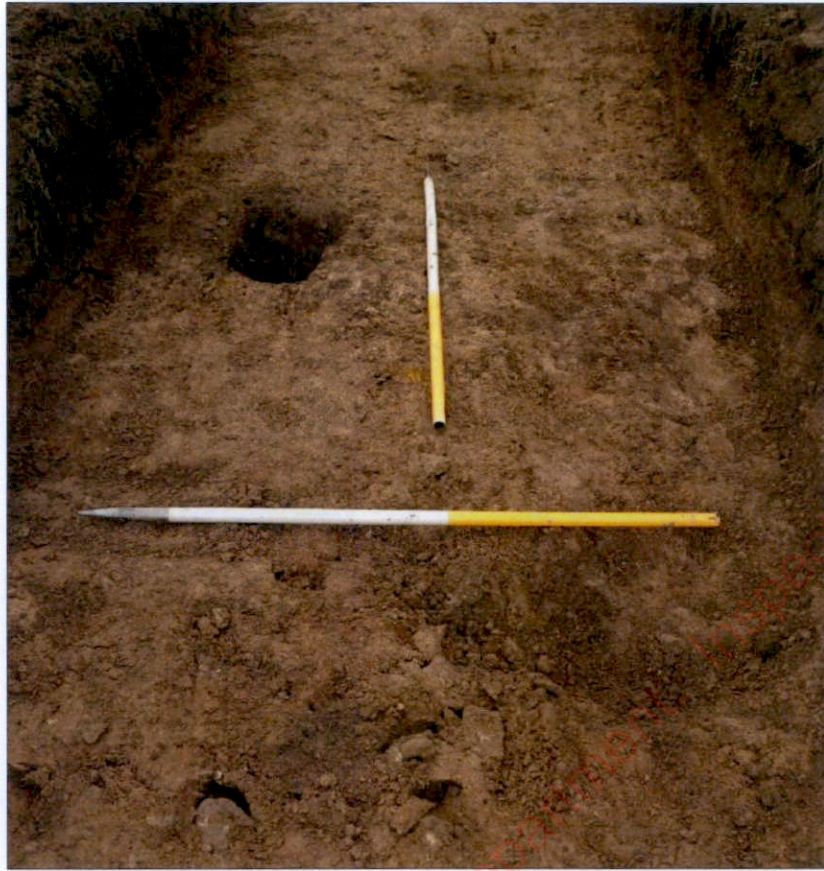




*Plate 15.13 Aerial image of closed trenches in the Phase 3 area, facing northeast*



*Plate 15.14 Pit in Trench 14 (Phase 3 area)*



**Plate 15.15** Potential features in Trench 18 (T18) (Phase 3 area)



**Plate 15.16** Trench 4 (T4) facing east  
(Phase 4 area)



**Plate 15.17** T4 facing north-northwest  
(Phase 4 area)



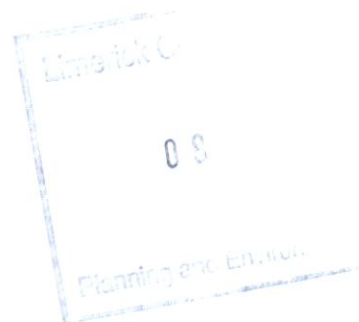
**Plate 15.18** T4 extension (Phase 4 area)



**Plate 15.19** Trench 11 (Neighbourhood Centre), facing west. Considerable disturbance was noted in the area of a historic quarry



**Plate 15.20** View of geophysical survey of the Phase 5 area, January 2023





**Plate 15.21** View of proposed wet grassland habitat (Phase 5 area), facing southwest



**Plate 15.22** View of proposed wet grassland habitat (Phase 5 area), facing southwest

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**Plate 15.23** View of proposed wet grassland habitat (Phase 5 area), facing northeast



**Plate 15.24** View of proposed pond location within wet grassland habitat (Phase 5 area)

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**Plate 15.25** View of ground conditions in northern portion of proposed wet grassland habitat (Phase 5 area), facing southeast

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