12.0 LANDSCAPE

12.1 Introduction

This section of the EIAR assesses the landscape & visual impact associated with the development on the surrounding landscape in the vicinity of the proposed development. Methodologies used to assess the landscape and visual impacts are outlined and mitigation measures are proposed where required. A landscaping and restoration plan is proposed which will be implemented during the operational lifetime of the development with final restoration undertaken on completion of extraction. A copy of the Landscape & Restoration Plan is attached in Appendix 12.1.

A Visual Impact Assessment combines the magnitude of change with the sensitivity of the landscape to the development, which provides a measure of the significance of the impact. Understanding the character quality and value of the landscape determines the sensitivity of that landscape to accommodate change through development. The two principal factors determining the visual impact of a development are the sensitivity of the location or receptor and the scale or magnitude of the development.

12.2 Methodology

A detailed landscaping assessment was undertaken to assess the impact of the existing development on the surrounding landscape. This involved undertaking a visual impact assessment of the area and a desk-based study to gather information on the existing landscape, visual resource, planning context and landscape designations. Information has been gathered from the following sources:

Ordnance Survey Ireland 1:2,500 maps and 1:50,000 maps;
Aerial photography;
Laois County Development Plan 2021 – 2027;
Laois County Council Landscape Character Assessment 2021-2027.

The following methodologies for the assessment of landscape character, landscape sensitivity and visual impact have also been used in the preparation of this report:

DOE 'Landscape and Landscape Assessment Guidelines' (June 2000).
'Guidelines for Landscape and Visual Impact Assessment', (GLVIA) by the Landscape Institute with the Institute of Environmental Management and Assessment (Second Edition, 2002).
The Landscape Institute with the Institute of Environmental Management and Assessment, 2013, Guidelines for Landscape and Visual Assessment, (Third Edition).
Guidelines on the information to be contained in Environmental Impact Assessment Reports (EIAR) (EPA, May, 2022)

Field observations were undertaken to assess the landscape character and structure of the application area and its surroundings. A visual impact assessment of the pit was undertaken

from publicly accessible viewpoints in the vicinity. The Landscape Appraisal of County Laois was also consulted as part of the assessment.

This Landscape Character Assessment describes the landscape of Co. Laois including:

Physical elements - landform, land cover, geology, vegetation cover, hydrology and ecology.
Visual characteristics - type and extent of views, enclosure and patterns formed by physical elements.
Less tangible aspects such as historical and cultural associations, archaeology, remoteness, tranquillity, and aesthetic quality.

12.2.1 Landscape Assessment Criteria

When assessing the potential impacts on the landscape resulting from a development, the following criteria are considered:

Landscape character, value and sensitivity.
Magnitude of likely impacts.
Significance of landscape effects.

The sensitivity of the landscape to change is the degree to which a particular landscape receptor (Landscape Character Area (LCA) or feature) can accommodate changes or new features without unacceptable detrimental effects to its essential characteristics. Landscape Value and Sensitivity is classified using the following criteria:

Table 12.1: Landscape Value and Sensitivity

Sensitivity	Description
High	A landscape of particularly distinctive character, susceptible to relatively small changes.
Medium	A landscape of moderately valued characteristics reasonably tolerant to change.
Low	A relatively unimportant landscape, the nature of which is potentially tolerant to substantial change.

The magnitude of a predicted landscape impact is a product of the scale, extent or degree of change that is likely to be experienced as a result of the development. The magnitude takes into account whether there is a direct physical impact resulting from the loss of landscape components and/ or a change that extends beyond the proposal site boundary that may have an effect on the landscape character of the area.

Table 12.2: Magnitude of Landscape Impacts

Magnitude of Impact	Description
High	Notable change in landscape characteristics over an extensive area and/or permanent long-term change.
Medium	Moderate changes in a localised area and/or medium-term change.
Low	Small change in any components and/or short-term/temporary change.

The significance of a landscape impact is based on a balance between the sensitivity of the landscape receptor and the magnitude of the impact. The significance of landscape impacts is arrived at using the following matrix.

Table 12.3: Landscape Impact Significance Matrix

Magnitude of Landscape Resource Change	Landscape Sensitivity		
	Low	**Medium**	**High**
No Change	No Change	No Change	No Change
Low	Slight	Slight/Moderate	Moderate
Medium	Slight/Moderate	Moderate	Moderate/Substantial
High	Moderate	Moderate/Substantial	Substantial

Note that potential beneficial landscape impacts are not accounted for in the tables and matrix above. This is on the basis that quarrying activities are very unlikely to generate beneficial landscape impacts. In the rare instances that this might occur, perhaps by facilitating the rehabilitation of a degraded landscape, the benefits will be discussed in the assessment and the significance of the impact would default to the lowest end of the range (Imperceptible).

12.2.2 Visual Impact Assessment Criteria

As with the landscape impact, the visual impact of the development is assessed as a function of sensitivity versus magnitude. In this instance the sensitivity of the visual receptor, weighed against the magnitude of the visual effect.

12.2.2.1 *Sensitivity of Visual Receptors*

The susceptibility of a viewer to changes in a particular view relates to the occupation or activity they are engaged in at that location and whether views of the surrounding landscape are an important aspect of that occupation or activity i.e. hill walkers versus commuters. By comparison, the value of the view relates to the visual setting of the viewer and whether this is recognised through county designations and guidebooks or is likely to just have local value.

Table 12.4: Visual Receptor Sensitivity

Sensitivity	Description
High	e.g. users of an outdoor recreation feature which focuses on the landscape; valued views enjoyed by the community; tourist visitors to scenic viewpoint; occupiers of residential properties with a high level of visual amenity.
Medium	e.g. users of outdoor sport or recreation which does not offer or focus attention on landscape; occupiers of residential properties with a medium level of visual amenity.
Low	e.g. regular commuters, people at place of work; occupiers of residential properties with a low level of visual amenity.

12.2.2.2 *Visual Impact Magnitude*

The magnitude of visual effects is determined on the basis of two factors; the visual presence of the development and its effect on visual amenity. Visual presence is something of a quantitative measure relating to how noticeable or visually dominant the proposal is within a particular view. This is based on a number of aspects beyond simply scale in relation to distance. Some of these include the extent of the view as well as its complexity and the degree of movement experienced i.e. within a busy street scene. The backdrop against which the development is presented and its relationship with other focal points or prominent features within the view is also considered. Visual presence is essentially a measure of the relative visual dominance of the proposal within the available vista.

Table 12.5: Magnitude of Visual Impact

Criteria	Description
High	Total loss or alteration to key elements/features/characteristics of the existing landscape or view and/or introduction of elements considered totally uncharacteristic when set within the attributes of the receiving landscape or view.
Medium	Partial loss or alteration to key elements/features/characteristics of the existing landscape or view and/or introduction of elements that may be prominent but not necessarily substantially uncharacteristic when set within the attributes of the receiving landscape/view.
Low	Minor loss or alteration to key elements/features/characteristics of the existing landscape or view and/or introduction of elements that may not be uncharacteristic when set within the attributes of the receiving landscape/view.
No Change	Very minor loss or alteration to key elements/features/characteristics of the existing landscape or view and/or introduction of elements that are not uncharacteristic when set within the attributes of the receiving landscape/view.

12.2.2.3 *Visual Impact Significance Matrix*

As stated above, the significance of visual impacts is a function of visual receptor sensitivity and visual impact magnitude. This relationship is expressed in the significance matrix in Table 12.6 below.

Table 12.6: Visual Impact Significance Matrix

Magnitude of Visual Resource Change	Visual Sensitivity		
	Low	**Medium**	**High**
No Change	No Change	No Change	No Change
Low	Slight	Slight/Moderate	Moderate
Medium	Slight/Moderate	Moderate	Moderate/Substantial
High	Moderate	Moderate/Substantial	Substantial

12.2.3 *Landscape Character Assessment 2021-2027*

The landscapes in County Laois are constantly evolving in response to natural forces and human activity. Glacial movement shaped the topography into its present form and man's activities have been largely responsible for land cover since farming began around the 4th Century. There have been several phases of history which have left their marks on the landscape of County Laois and which are evident today such as a patchwork of elements including passage tombs and pre Christian earthworks, early Christian ecclesiastical buildings, Norman castles and walled settlements, 17th – 18th Century demesnes and field patterns and 18th – 19th Century buildings and structures.

Upland areas and hills within the county provide interest and contrast with the largely central lowland areas. These uplands are concentrated in the north-western and southern parts of the County and include the Sliabh Bloom Mountains (containing the highest summits in the county), Cullahill Mountain, Cullenagh Mountain, Fossy Mountain and Killeshin Hills.

Drainage in the county is largely defined by the Rivers Barrow, Nore and Erkina and their various tributaries mainly flowing in a northwest - southeast trajectory. Apart from minor (man-made) ones at Ballyfin, Grantstown, and Heywood, there are no significant natural lakes in the county reflecting the lack of drumlins to capture waterbodies and the predominantly limestone bedrock.

This Landscape Character Assessment seeks to recognise what is valuable and what elements should be preserved, conserved or enhanced. It also aims to predict the broad pattern of future changes and devise policies and objectives which will assist in ensuring that change is complimentary to landscape character.

The main forces for change which are causing changes to the overall appearance, function and condition of the landscape can be categorised as follows:

Settlements, Built Structures and Population Growth
Infrastructure and Industry
Tourism
Rivers and Canals

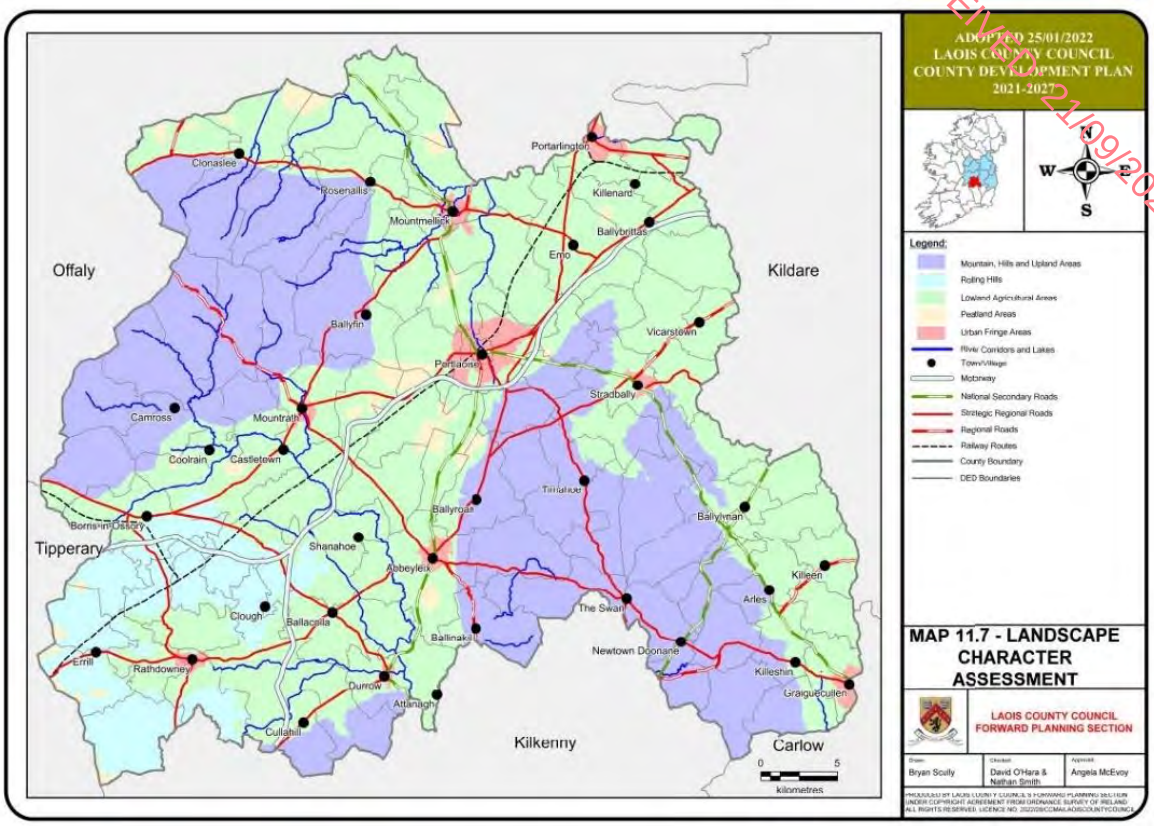
Agriculture
Tree Cover

The Landscape Character Assessment of County Laois has divided the County into6 Landscape Character Types (LCT's):

Mountains,Hills and Upland Areas
Lowland Agricultural Areas
River Corridors and Lakes
Peatland Areas
Urban Fringe Areas
Rolling Hill Areas

Landscape Character Types are distinct types of landscape that are relatively homogenous in character. They are generic in nature in that they may occur in different localities throughout any defined area. Nonetheless, where they do occur, they commonly share similar combinations of geology, topography, land cover and historical land-use. For example, blanket bog uplands are distinct landscape character types and are recognisable as such whether they occur in County Laois or other counties.

Plate 12.1: Landscape Character Assessment Extracted from Appendix 6 of *Laois County Development Plan 2021-2027*



Legend:

- Towns
- Mountain Areas
- River Corridors and Lakes
- Hills and Upland areas
- Motorway
- Rolling Hills
- National Secondary Roads
- Lowland Agricultural Areas
- Strategic Regional Roads
- Peatland Areas
- Regional Roads
- Urban Fringe Areas
- County Boundary

The application site is located in the Lowland Agricultural Areas Landscape Character Type (LCT) which covers the largest proportion of County Laois. In terms of land-use, it is comprised primarily of pastoral and tillage agriculture. It is generally a flat open landscape (around Ballylynan, Barrowhouse and the environs of Graiguecullen especially) with long range views towards the upland areas. Field patterns tend to be of large scale and are generally bounded by deciduous hedgerows containing mature trees. Farm sizes are larger than average. Throughout the county there is an abundance of 18th and 19th century demesnes with extensive areas of mixed woodland and parkland bounded by original stonewalls, creating an attractive landscape setting for the numerous estate houses.

The Lowland LCT has been developed more extensively than other LCT's, particularly in the north and east where there is development pressure from the large towns as well as the

Dublin metropolitan area. This has resulted in significant changes to the landscape character and it is crucial that future development of this LCT is carried out sensitively and with particular reference to the rural nature of the landscape.

The significant growth of towns and villages over the past decade has led to myriad of architectural styles that are not in keeping with the historic built vernacular. It is equally important that future development relates to the existing structure of towns and villages and reflects characteristic building scales and materials.

Much of the lowlands have an enclosed character with well-treed road corridors, dense hedgerows, parkland and areas of woodland. Views of landmarks within the landscape and of the surrounding upland areas are a characteristic of this area and must be retained because the interaction between the lowlands and hills/uplands is an important feature of this LCT.

12.2.3.1 General Recommendations for the LCT

1. Protect the 18th and 19th century estate landscapes and associated parkland & woodland to develop them as a tourism resource.
2. Utilise existing structures, settlement areas and infrastructure, whilst taking account of the visual absorption opportunities provided by existing topography and vegetation.
3. Recognise that the lowlands are made up of a variety of working landscapes, which are critical resources for sustaining the economic and social wellbeing of the county
4. Promote good agricultural practices and support incentives for smaller rural/family farms

12.2.3.2 Capacity to Accommodate Change

The forms of development most likely to occur in Co. Laois are identified based on an assessment of the current and planned landscape trends described above. The likely characteristics of each form of development is described below including the features that are likely to cause adverse impacts on landscape character. The Landscape Character Assessment states the following in relation to quarries:

> *"Quarries Includes working areas, stockpiles, storage and parking areas, haul routes, plant, machinery and signage. Key impacts on landscape character will include visual intrusion, noise and dust pollution, run-off, erosion of habitats, reduced biodiversity, loss of flora and fauna, land rehabilitation and conversion to other uses including agriculture, amenity and afforestation."*

12.2.4 *Laois County Development Plan 2021-2027*

The *Laois County Development Plan 2021-2027* was also reviewed as part of the assessment. Landscape is referred to in Section 11.10 of the CDP. The plan refers to the Landscape

Character Assessment (LCA) compiled for the County included as Appendix 6 of the Development plan and discussed above). It also states the policies attached to each Landscape Character Type. The application site is located in the LCT 2 Lowland Agricultural Area and the following policies are attached to the LCT area:

LCA 13 - *Recognise that this lowland landscape character area includes areas of significant landscape and ecological value, which are worthy of protection, particularly the 18th and 19th century estate landscapes and associated parkland & woodland to develop them as a tourism resource.*

LCA14 - *Continue to permit development that can utilise existing structures, settlement areas and infrastructure, whilst taking account of the visual absorption opportunities provided by existing topography and vegetation.*

LCA15- *Recognise that the lowlands are made up of a variety of working landscapes, which are critical resources for sustaining the economic and social wellbeing of the county.*

LCA16 - *6 Promote good agricultural practices to create a sustainable rural economy and support incentives for smaller rural/family farms to manage their land to avoid loss of hedgerows and field patterns.*

Development Management Standards

The *Development Plan* also lists a number of development management standards. Standards in relation to Landscaping plans and extractive development are listed below.

"DM ED1 - Industrial activities

Where proposed industrial facilities, waste disposal facilities, mineral extraction developments, or other developments that may have a significant impact on surface water quality, ground water quality, or on the water table, the developer will be required (whether as part of an EIAR or an Environmental Report) to:

1) submit an assessment of the impact of the development on water quality and the water table; mitigation and monitoring measures should also be included, as appropriate;

Development proposals that could cause pollution, a reduction in biological or chemical water quality or changes in the water table will not be accepted unless appropriate mitigatory measures are proposed, such as settlement ponds, oil and chemical interceptors, bunding of storage tanks and refuelling areas, capping where ground water is exposed as a result of extraction etc."

"DM RL3 Mining and Aggregates

Applications for new development for aggregate extraction, processing and associated processes, shall

1) identify existing public rights of way and walking routes which may be impacted on or are adjacent to the development site. They shall be kept free from development as a Rights of Way/Walking Route

2) ensure the protection, conservation, preservation and safeguarding of recorded monuments and areas in their vicinity, World Heritage Sites(including Tentative Sites), NHA's, Euro Sites, Nature Reserves, scenic views and prospects archaeological sites and features, natural heritage, natural environment, features of natural beauty or interest and prescribed sites, geological sites and areas of geological/geomorphological or historic interest and areas of high scenic amenity from inappropriate development that might be detrimental to them.

3) minimise adverse effect on the environment and visual and natural amenities to the greatest possible extent must be carried out during all life cycle stages, whether in respect of new quarries or extensions to existing ones and development will be prohibited if the quality of the environment or landscape, particularly sensitive landscape, is adversely affected or there is a reduction of the visual amenity of areas of high amenity.

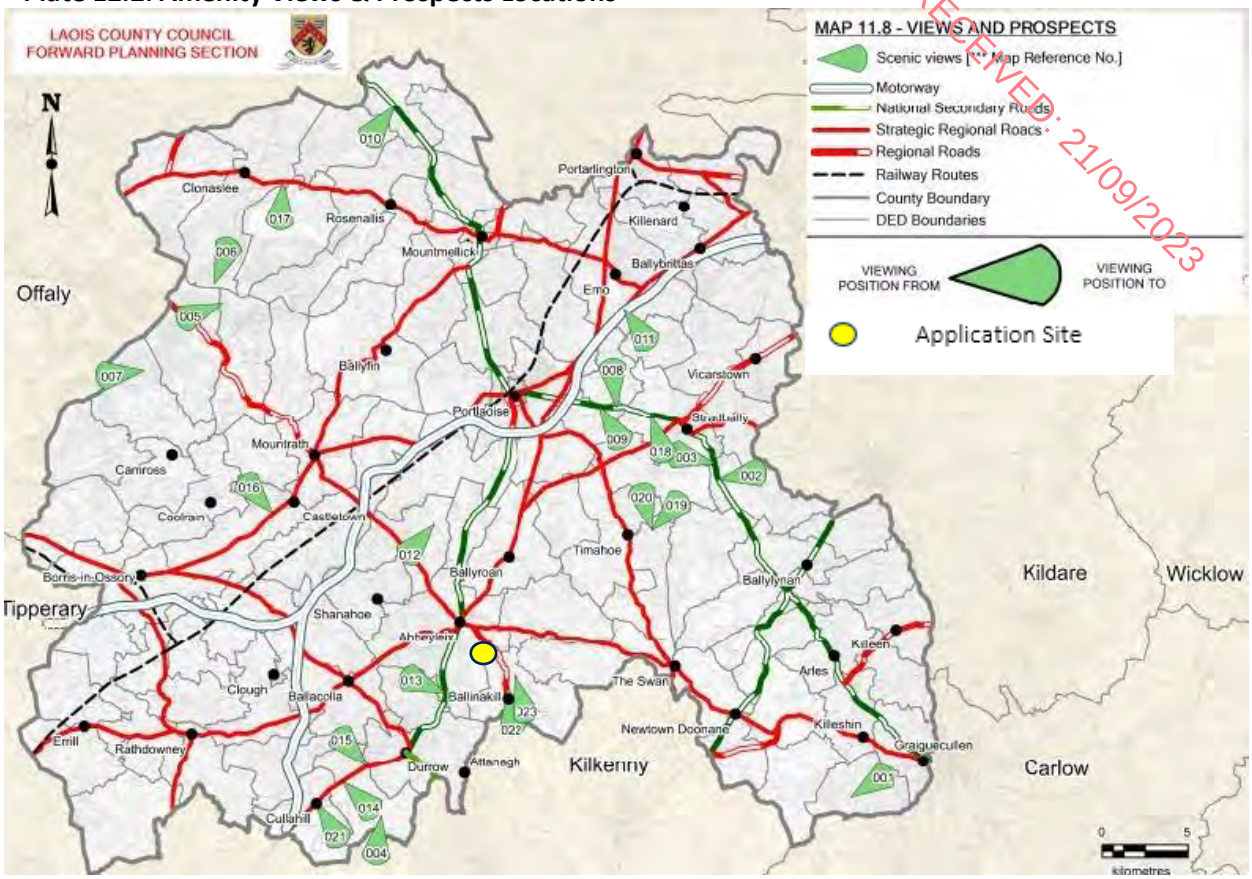
4) be landscaped either by the retention of existing vegetation or by screening to minimise the detraction from the visual quality of the landscape.

5) Require that development proposals on or in proximity to a quarry site should investigate the nature and extent of the risks associated with the development together with appropriate mitigation."

12.2.5 Amenity Views and Prospects

County Laois contains a number of valuable views and prospects which offer a very attractive cross-sectional view and overall impression of differing landscapes as one traverses the county. The protection of these views and prospects will be done on a case-by-case basis through the development management process when considering individual planning applications. Development that would seriously hinder or obstruct such views and prospects will not be allowed. The current *Development Plan* lists a number of views for the County which are detailed on Plate 12.2. The application site is not located in the vicinity of a designated view.

Plate 12.2: Amenity Views & Prospects Locations



12.3 Existing Environment

The application site consists of a greenfield area of 8.5 hectares comprising of several grazing fields with some woodland and scrub in the central area, is bordered by agricultural grassland to the east, north, and south, and by a local public road to the west. This public road defines the western boundary of the site. West of the local public road, the land is low-lying and boggy before transitioning into peatland at Abbeyleix Bog.

The site, which has an elevation range of between approximately 92 and 130m OD (Ordnance Datum) is located on a hillside that steadily slopes westerly towards the lower lying and flatter boglands (Abbeyleix Bog). The site is located at the topographic transition between the Castlecomer Plateau to the east and Laois Central Lowlands to the west. Much of the site area has a characteristic hummocky/hilly terrain, which is typical of a glacial sand and gravel deposition area. The land then generally flattens out to the west, towards the River Nore which flows in a southerly direction approximately 2.2km west of the site (further west of Abbeyleix Bog).

The surrounding area consists predominantly of mixed agricultural land, upland heath and wet grassland, in addition to scattered small plantations of conifer forestry. Isolated farmsteads are typically scattered along the local roads. There are a number of existing sand

and gravel pits in the area, the closest one is a small disused pit located approximately 500m to the southeast of the site. The existing Booth Precast Products Ltd manufacturing facility is located 1.3km to the south of the application site.

12.3.1 Visual Assessment

The Zone of Visual Influence (ZVI) is the area within which views of the proposed development can be obtained. The extent of the ZVI is determined primarily by the topography of the area, buildings, woodlands, berms, hedges or other local features obscure visibility from the main roads, local viewpoints/landmarks, settlement, etc.

A visual assessment of the application site was undertaken from a series of representative viewpoints to illustrate typical views towards the site. Fifteen viewpoints were originally chosen as part of the visual assessment which are illustrated on Plate 12.3. An additional seven locations along the public road are also assessed to demonstrate proposed landscape changes in proximity to the public road. The additional locations are labelled VPA16 to VAP22 and the locations are illustrated on Plate 12.4.

Plate 12.3: Location of Viewing Points used to Assess Visual Impact

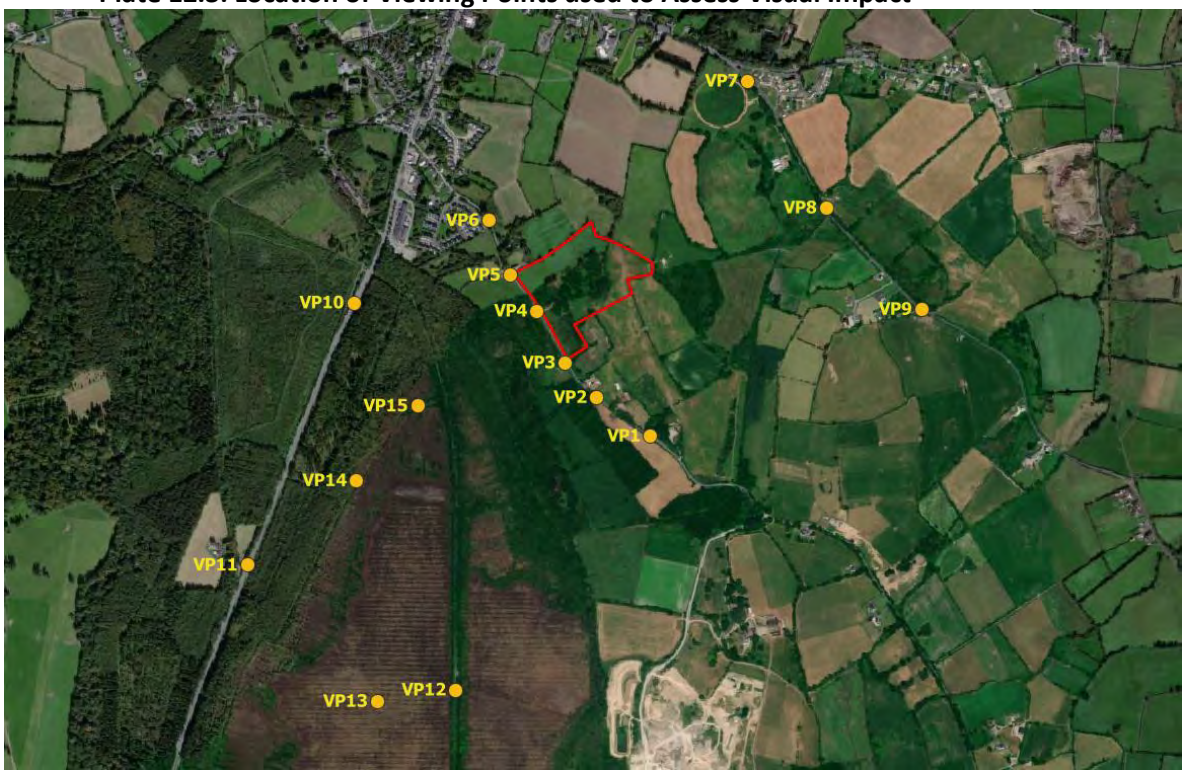
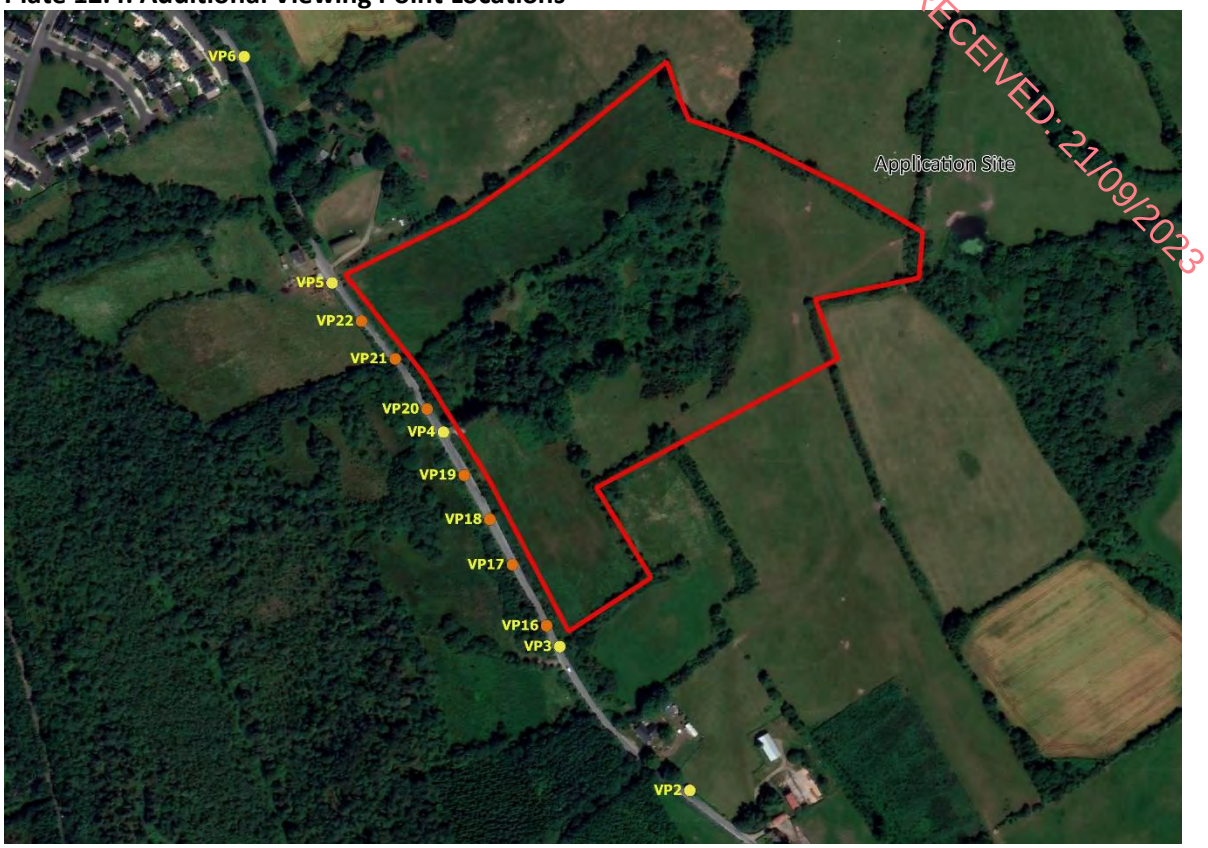


Plate 12.4: Additional Viewing Point Locations



Viewpoint 1

Viewpoint 1 is from a location to the south of the application site along the L-5731-25 road. The application site is not visible at this location due to the topography of the surrounding land and the field boundary hedgerows.

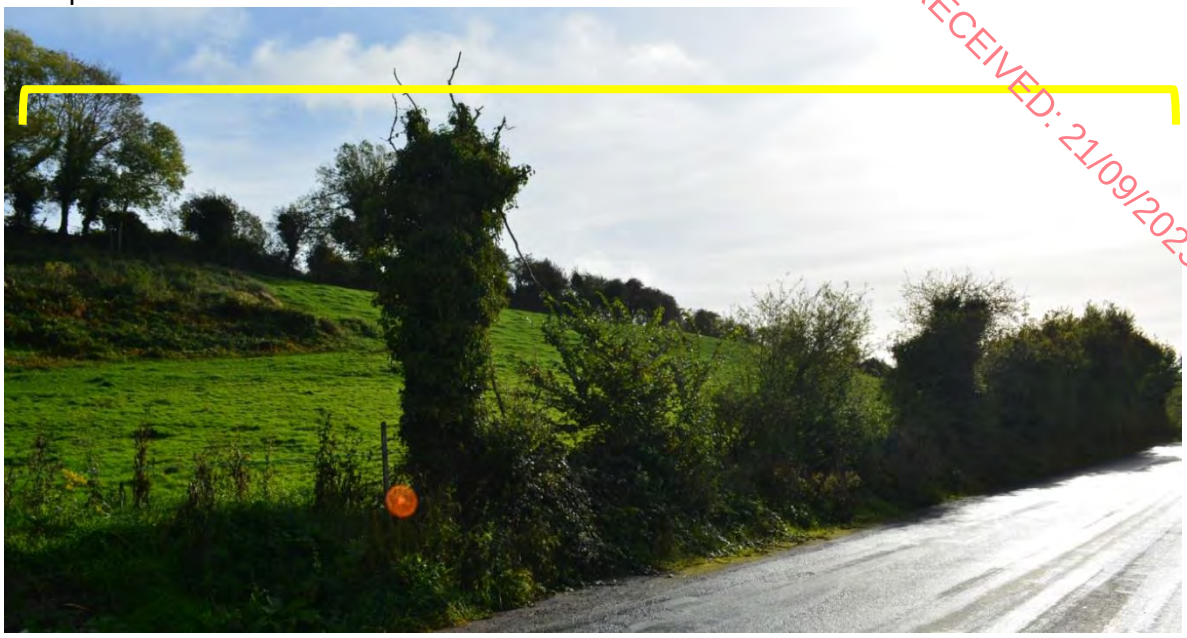
Viewpoint 2

Viewpoint 2 is from a location northwest of Viewpoint 1 along the L-5731-25 local road closer to the application site. The application site is not visible due to the natural topography and vegetation located along field boundaries.

Viewpoint 3

Viewpoint 3 is from a location along the boundary of the application site and the L-5731-25 local road. The site is visible along the local road due to the topography and limited boundary vegetation.

Viewpoint 4

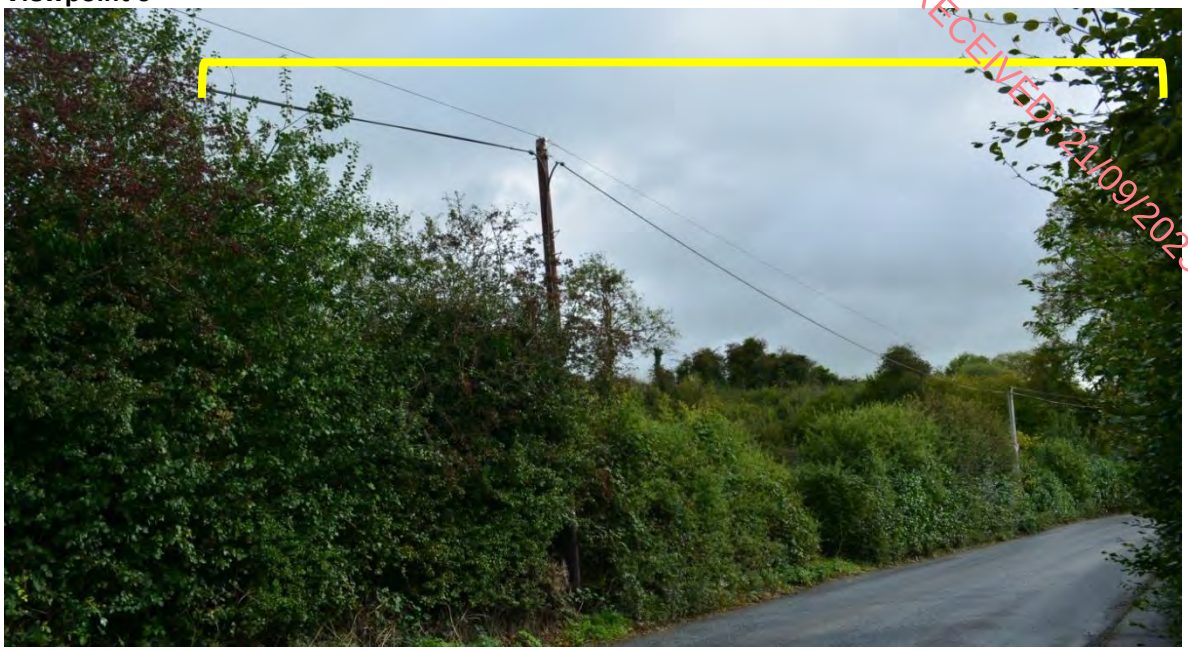


Viewpoint 4 is taken from a location to the west of the site along the L-5731-25. Similar to viewpoint 3 the application site is visible at this location.

Viewpoint 5

Viewpoint 5 is from a location further north along the L-5731-25. Similar to viewpoint 3 and 4 the application site is visible at this location.

Viewpoint 6



Viewpoint 6 is from a location close to Grallow Wood housing estate. The application site is not visible due to the screening provided by the natural topography and vegetation located along field boundaries.

Viewpoint 7

Viewpoint 7 is taken from a location along the R432 close to a housing estate on the outskirts of Abbeyleix town. The application site is not visible at this location due to the vegetation located along field boundaries.

Viewpoint 8

Viewpoint 8 is taken from a location further south along the R432. The application site is slightly visible at this location with vegetation along field boundaries providing significant screening.

Viewpoint 9

This viewpoint is from a location further south of the R432 from viewpoint 8. The application site is not visible at this location.

Viewpoint 10

Viewpoint 10 is from a location along the N77 to the west of the site. The application site is not visible at this location due the woodland area along eastern side of the N77.

Viewpoint 11

Viewpoint 11 is from a location along the N77 further south of viewpoint 10. Similar to viewpoint 10, the application site is not visible due to the woodland area along eastern side of the N77.

Viewpoint 12

Viewpoint 12 is from a location along the main path before you proceed onto the board walk. The application site is not visible to through the existing vegetation.

Viewpoint 13

Viewpoint 13 was taken from a location along the Abbeyleix Board walk. The upper part of the application site is visible at this location.

Viewpoint 14

Viewpoint 14 was taken from a location along the Abbeyleix Bog walk southwest of the application site. The application site is slightly visible through the vegetation.

Viewpoint 15

Viewpoint 15 is from a location where the boardwalk returns to meet the main track. The application site is not visible at this location.

Viewpoint 16

Viewpoint 16 is from a location along the L-5731-25 local road close to the south eastern boundary of the application site. The existing roadside vegetation provides screening of the site.

Viewpoint 17

Viewpoint 17 is from a location along the L-5731-25. The application site is visible above the road side vegetation.

Viewpoint 18

Viewpoint 18 is from a location along the L-5731-25. Similar to Viewpoint 17 the application site is visible above the roadside vegetation.

Viewpoint 19

Viewpoint 19 is from a location to further north of Viewpoint 18. The application site is not visible at this location due to the roadside vegetation.

Viewpoint 20

Viewpoint 20 is from a location further north of the existing site entrance. The existing roadside vegetation provides screening of the application site.

Viewpoint 21

Viewpoint 21 is from a location along the northwestern boundary of the application site. The application site is not visible at this location due to the roadside vegetation.

Viewpoint 22

Viewpoint 22 was taken close to the northwestern corner of the application site. The application site is not visible at this location due to the roadside vegetation.

12.4 Proposed Development

The application site consists of a greenfield area of 8.5 hectares comprising of several grazing fields with some woodland and scrub in the central area. The applicant proposes to remove the existing woodland, vegetation and overburden and extract the underlying sand and gravel material in line with an eight-phase extraction plan.

It is proposed to construct a berm along the western boundary using overburden and sand and gravel material removed from Phase 1. As extraction proceeds into various phases, overburden removed from the working phase will be used to restore the previous phase where material has been extracted. This will be undertaken on a rolling basis to minimise the uncovered area of the site.

All extracted sand and gravel material from the application site will be transported to the applicant's manufacturing facility located approximately 1.3km to the south of the application site.

The proposed development will require the erection of minor infrastructure to include a wheel wash and refuelling area. These facilities will be located close to the entrance to the site. Plant and machinery which will operate at the application site will consist of excavators, road trucks and a water bowser.

The pit will operate between the hours of 0700 hours and 2000 hours Monday to Friday and 0800 to 1800 hours on Saturday and will not operate on Sundays or Public Holidays. The maximum rate of extraction will be in the region of 200,000 tonnes/annum; however, this will depend on the demand for material. Therefore, the applicant is seeking a 10 year permission in order to extract the available material taking into account years when the maximum extraction rate will not be achieved. The application site will be landscaped and restored in line with the proposed landscape and restoration plan.

12.5 Impact Assessment

12.5.1 Landscape Impact

The proposal seeks remove the existing trees and vegetation and to extract the available resource from the application site in order to supply the applicant's needs. Based on the field survey and reference to the County Development Plan & Landscape Character Assessment of Co. Laois, the landscape value of the study area has been given a rating of 'Medium'. While the extraction of material will alter the landform and vegetation cover, the magnitude of change as a result of the proposed development has been assessed as 'Medium'. As defined by Table 12.3, the significance of landscape impacts of the development is assessed as 'Moderate'. The impacts associated with extraction of will be mitigated by the proposed landscape and restoration plan for the application site.

12.5.2 Visual Impact

As seen from the visual impact assessment, the application site is visible from the public road along the western boundary due to the topography of the site. The application site is not visible at the majority of the other locations. Based on the visual impact assessment criteria detailed above an assessment of each viewpoint location was undertaken which is summarised below in Table 12.7. Where the proposed development will not result in any further visual change, it is deemed that 'No Change' will occur.

Table 12.7: Predicted Visual Impacts with Mitigation

VP No.	Description	VP Sensitivity	Magnitude of Visual Change	Mitigation Measures	Magnitude of Visual Change with Mitigation	Significance of Visual Change
1	Application site is not visible at this location due to the topography of the surrounding land and the boundary hedgerows.	Low	No Change	None Required	No Change	No Change
2	Application site is not visible due to the natural topography and	Low	No Change	None Required	No Change	No Change

	vegetation located along field boundaries.					
3	Application site is visible along the local road due to the topography of the site and limited boundary vegetation.	Low	Medium	Construction and planting of berm and new hedgerow along western boundary of the site	Low/ Medium	Slight/ Moderate to Moderate
4	Application site is visible along the local road due to the topography of the site and limited boundary vegetation.	Low	Medium	Construction and planting of berm and new hedgerow along western boundary of the site	Low/ Medium	Slight/ Moderate to Moderate
5	Application site is visible along the local road due to the topography of the site and limited boundary vegetation.	Low	Medium	Construction and planting of berm and new hedgerow along western boundary of the site	Low/ Medium	Slight/ Moderate to Moderate
6	Application site is not visible due to the screening provided by the natural topography and vegetation located along field boundaries.	Low	No Change	None Required	No Change	No Change
7	Application site is not visible due to the screening provided by the natural topography and vegetation located along field boundaries.	Low	No Change	None Required	No Change	No Change
8	The application site is slightly visible at this location with vegetation along field boundaries providing significant screening.	Low	Low	Planting of trees along site boundaries	No Change	No Change
9	Application site is not visible due to the natural topography of surrounding land.	Low	No Change	None Required	No Change	No Change
10	Application site is not visible due to vegetation.	Low	No Change	None Required	No Change	No Change

11	Application site is not visible due to vegetation.	Low	No Change	None Required	No Change	No Change
12	Application site is not visible due to vegetation.	Low	No Change	None Required	No Change	No Change
13	The upper part of the application site consisting of Phases 3 & 8 is visible at this location	Medium	Medium	The side slopes will be vegetated as soon as each is extracted which will be within a 12-month period	Low/ Medium	Slight/ Moderate to Moderate
14	The upper part of the application site consisting of Phases 3 & 8 is slightly visible at this location	Medium	Medium	The side slopes will be vegetated as soon as each is extracted which will be within a 12-month period	Low/ Medium	Slight/ Moderate to Moderate
15	Application site is not visible due to vegetation	Low	No Change	None Required	No Change	No Change
16	Application site is not visible due to the screening provided by the vegetation located along the western boundary	Low	Medium	Construction and planting of berm and new hedgerow along western boundary of the site	Low/ Medium	Slight/ Moderate to Moderate
17	Application site is visible along the local road due to the topography of the site and limited boundary vegetation.	Low	Medium	Construction and planting of berm and new hedgerow along western boundary of the site	Low/ Medium	Slight/ Moderate to Moderate
18	Application site is visible along the local road due to the topography of the site and limited boundary vegetation.	Low	Medium	Construction and planting of berm and new hedgerow along western boundary of the site	Low/ Medium	Slight/ Moderate to Moderate
19	Application site is not visible due to the screening provided by the roadside vegetation along the western boundary	Low	Medium	Construction and planting of berm and new hedgerow along western boundary of the site	Low/ Medium	Slight/ Moderate to Moderate
20	Application site is not visible due to the screening provided by	Low	Medium	Construction and planting of berm and new hedgerow	Low/ Medium	Slight/ Moderate

	the roadside vegetation along the western boundary			along western boundary of the site		to Moderate
21	Application site is not visible due to the screening provided by the roadside vegetation along the western boundary	Low	Medium	Construction and planting of berm and new hedgerow along western boundary of the site	Low/ Medium	Slight/ Moderate to Moderate
22	Application site is not visible due to the screening provided by the roadside vegetation along the western boundary	Low	Medium	Construction and planting of berm and new hedgerow along western boundary of the site	Low/ Medium	Slight/ Moderate to Moderate

As illustrated in Table 12.7, the assessment of the significance of visual impacts on the viewpoint is based on a combination of the visual sensitivity and magnitude of visual changes to the viewpoint. The assessment of the existing visual environment and the impact of the proposed development and its various component parts on visual receptors have been assessed.

The proposed development will not result in a significant increase in visibility of the application site at the majority of locations. The active pit face will be visible from the western boundary during the operational phase. The visual impact significance associated with the proposed development has been assessed as being Slight/Moderate to Moderate at locations where the development site is visible.

It is proposed to extract material from the application site over an 8 No. phase extraction plan with each phase corresponding to approximately 12 months. This will ensure that phases are extracted then restored on a rolling basis with only a minimum area of the site subject to activity.

It is proposed to remove the existing hedgerow along the western boundary and plant a new boundary hedgerow set back from the existing boundary to improve site lines. The location of the berm and the proposed hedgerow along the western boundary are illustrated on Plate 12.5. The new boundary hedgerow will consist of native trees and shrubs. When the trees and shrubs mature they will provide additional screening of the pit.

Plate 12.5: Location of Proposed Berm and Hedgerow

12.5.3 Do-Nothing Effect

If the proposed development is not granted planning permissions, the site will remain as it is currently and continue to be used for agricultural use. Material will continue to be sourced from pits and quarries located at a greater distance from the application site.

12.6 Mitigation Measures

It is proposed to implement a rolling landscape and restoration plan which will aid in reducing the visual impact associated with the proposed development. This includes the revegetating or areas, provision of berms and planting of trees and shrubs to reduce visibility of the pit.

A restoration plan will be implemented during the operational phase and will be completed on extraction of the available resource. This will involve spreading a layer of soil material on the pit floor, seeding and returning to grassland. This is dealt with in more detail in the landscape and restoration plan.

12.7 Unplanned Events

It is highly unlikely that any unplanned events should occur that could impact on landscape and restoration of the pit. As stated in Section 6.0 (Land, Soils & Geology), side slopes will be extracted in line with Guidelines to the Safety, Health and Welfare at Work (Quarries) Regulations 2008 (S.I. No. 28 of 2008) which will ensure stability of side slopes. Berms will be constructed and vegetated to ensure stability of material. All plant and infrastructure will be removed from the pit prior to final restoration and an inspection will be undertaken to ensure no potential sources of contamination are present.

12.8 Landscape & Restoration Plan

A landscape & restoration plan has been compiled for the proposed development which will be implemented during the operational phase with final restoration undertaken on completion of extraction. A copy of the restoration plan is attached in Appendix 12.1.

12.9 Residual Impacts

The extraction of material by its nature results in an impact on the landscape which is difficult to mitigate against. The proposed landscape and restoration plan will mitigate the impact in so far as possible.

12.10 References

Laois County Development Plan 2021-2027

Landscape Character Assessment 2021-2027 (Appendix 6 of the *Laois County Development Plan 2021-2027*)

DOE 'Landscape and Landscape Assessment Guidelines' (June 2000).

Department of the Environment, Heritage and Local Government, (2004) Quarries and Ancillary Activities - Guidelines for Planning Authorities, Dublin: Stationary Office.

Environmental Protection Agency, (2006) Environmental Management Guidelines - Environmental Management in the Extractive Industry (Non-Scheduled Minerals), Wexford: Environmental Protection Agency.

Irish Concrete Federation, (2005) Environmental Code, 2nd ed., Dublin: Irish Concrete Federation.

Guidelines for Landscape and Visual Impact Assessment, (GLVIA) by the Landscape Institute with the Institute of Environmental Management and Assessment (Second Edition, 2002).

The Landscape Institute with the Institute of Environmental Management and Assessment, 2013, Guidelines for Landscape and Visual Assessment, (Third Edition).

Guidelines on the information to be contained in Environmental Impact Assessment Reports (EIAR) (EPA, May, 2022)

APPENDIX 12.1: Landscape & Restoration Plan

Landscape & Restoration Plan

For
Proposed Sand & Gravel Pit at
Knocknamoe and Ballymullen Townlands,
Abbeyleix, Co. Laois

Prepared For:

Booth Precast Products Ltd.

Prepared By
Earth Science Partnership
September 2022

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Figures

Appendices

1.0 Introduction

This Landscape and Restoration Plan has been prepared on behalf of Booth Precast Products Ltd. to accompany a planning application for a proposed sand and gravel pit at Knocknamoe and Ballymullen townlands, Abbeyleix, Co. Laois. The site is located approximately 1km south of Abbeyleix town.

This report addresses the landscaping and restoration of the application site during the operational phase and the final restoration of the pit on completion of extraction of the available resource. The final restoration layout and sections are detailed on Figures 1.0 – 3.0 attached in the Figures section.

This document identifies a general strategy and objectives of the proposed landscape and restoration plan. The Plan forms an important link between the predicted impacts of the operations on the site and also the need to plan for long-term land and site management. Restoration of a former sand and gravel pit site provides an opportunity for enhancement of local biodiversity with the phased re-colonisation and naturalisation of disused areas within the site, and ultimately the entire site.

Conversely, through management of biodiversity during excavation and subsequent rehabilitation, extraction sites can have a positive impact on biodiversity through the creation of new habitats and colonisation by new species of flora and fauna which can enhance and protect biodiversity during operation and post-closure. Mitigation measures are suggested to reduce potential impacts on wildlife and fauna in the surrounding environment.

The following matters were taken into consideration as part of the landscape and restoration plan:

- Habitat type and species local to the site.
- Planning requirements and applicable legislation.
- Interaction with the surrounding environment.
- Health & safety considerations.
- Resources available.
- Nature and extent of aggregates extraction.
- Availability of suitable restoration materials.

The proposed phased approach to landscaping and restoring the pit over its operational years will reduce the cost associated with the final restoration of the pit on completion of extraction. By the end of the pit working life, areas that have been landscaped will be well

established, and have blended with the surrounding countryside. The following documents were consulted with as part of the compilation of this Landscape and Restoration Plan.

- Independent Tree Surveys - Tree Survey Report Knocknamoe, Abbeyleix, Co. Laois; January 2021.
- 5.0 Biodiversity Chapter of the Environmental Impact Assessment Report.

2.0 The Site

The application site consists of a greenfield area of 8.5 hectares comprising of several grazing fields with some woodland and scrub in the central area. It is bordered by agricultural grassland to the east, north, and south, and by a local public road to the west. This public road defines the western boundary of the site. West of the local public road, the land is low-lying and boggy before transitioning into peatland at Abbeyleix Bog.

The site, which has an elevation range of between approximately 92 and 130m OD (Ordnance Datum) is located on a hillside that steadily slopes westerly towards the lower lying and flatter boglands (Abbeyleix Bog). The site is located at the topographic transition between the Castlecomer Plateau to the east and Laois Central Lowlands to the west. Much of the site area has a characteristic hummocky/hilly terrain, which is typical of a glacial sand and gravel deposition area. The land then generally flattens out to the west, towards the River Nore which flows in a southerly direction approximately 2.2km west of the site (further west of Abbeyleix Bog).

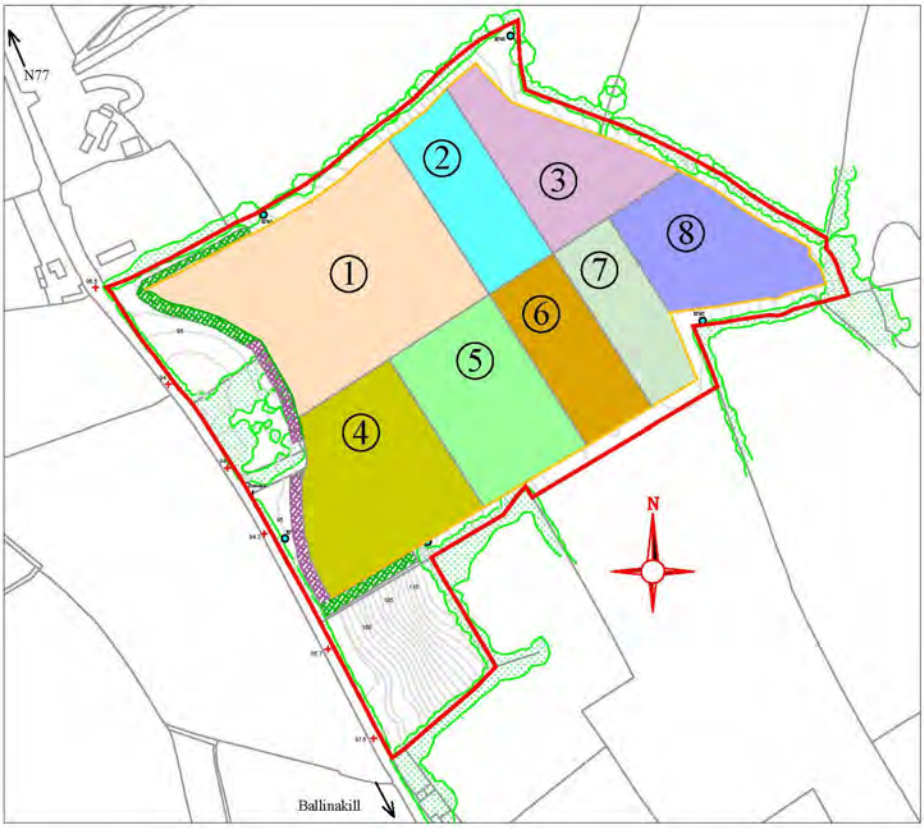
The surrounding area consists predominantly of mixed agricultural land, upland heath and wet grassland, in addition to scattered small plantations of conifer forestry. Isolated farmsteads are typically scattered along the local roads. There are a number of existing sand and gravel pits in the area, the closest one is a small disused pit located approximately 500m to the southeast of the site. The existing Booth Precast Products Ltd manufacturing facility is located 1.3km to the south of the application site.

3.0 The Proposed Development

The applicant proposes to remove the existing woodland, vegetation and overburden and extract the underlying sand and gravel material in line with an eight-phase extraction plan as detailed on Plate 1. As illustrated in Plate 1, the extraction of material will be undertaken over 8 phases over a 10 year period with each phases consisting on average of 12 months of material. It is proposed to implement a rolling landscape and restoration plan which will aid in reducing the visual impact associated with the proposed development. This includes the revegetating or areas, provision of berms and planting of trees and shrubs to reduce visibility

of the pit. This will ensure that phases are extracted then restored on a rolling basis with only a minimum area of the site subject to activity.

Plate 1: Proposed Extraction Plan



It is proposed to construct a berm along the western boundary using overburden and sand and gravel material removed from Phase 1. As extraction proceeds into various phases, overburden removed from the working phase will be used to restore the previous phase where material has been extracted. This will be undertaken on a rolling basis to minimise the uncovered area of the site

All extracted sand and gravel material from the application site will be transported to the applicants manufacturing facility located approximately 1.3km to the south of the application site.

The proposed development will require the erection of minor infrastructure to include a wheel wash and refuelling area. These facilities will be located close to the entrance to the site. Plant and machinery which will operate at the application site will consist of excavators,

road trucks and a water bowser. Plant and machinery which will operate at the application site will consist of excavators, road trucks and a water bowser.

The pit will operate between the hours of 0700 hours and 2000 hours Monday to Friday and 0800 to 1800 hours on Saturday and will not operate on Sundays or Public Holidays. The maximum rate of extraction will be in the region of 200,000 tonnes/annum; however this will depend on the demand for material. Therefore, the applicant is seeking a 10 year permission in order to extract the available material taking into account years when the maximum extraction rate will not be achieved. The application site will be landscaped and restored in line with the proposed landscape and restoration plan.

The proposed area that will be subject to quarrying has been designed to include a buffer zone between the edge of the extraction works and the surrounding hedgerows to ensure that sufficient topsoil is left intact between the hedges and the extraction works to allow for their successful long-term retention. The buffer zone will be approximately 12m wide and thus extend beyond the minimum root protection area (RPA) distance as defined by *BS5837: Trees in relation to design, demolition and construction (2012).*

The intention is to re-vegetate the site following extraction of the available resource. This re-vegetation will involve the phased planting of large numbers of trees that in time will establish and develop into mature woodland to replace those trees removed to facilitate the extraction of material. With good planting stock and proper aftercare, along with improved hedgerow management of the surrounding hedges, these post-quarrying landscape works could see the arboricultural value of the site being improved in the long-term.

4.0 Landscaping Measures

A number of landscaping proposals are proposed as part of the initial phases of the proposed development in order to provide visual screening of the proposed development and to improve traffic site lines which include the following:

4.1 Species Rich Grassland

It is proposed to transform the southern section of the application site which has been removed from the extraction area from improved agricultural land to species rich grassland which will increase the biodiversity of the area.

4.2 Removal of Existing Roadside Hedgerow.

The existing roadside hedgerow along the western boundary of the application site will be removed to improve site lines for traffic safety. Security fencing/stock proof post and wire fencing will be erected set back from the road edge and a new hedge will be planted on the

inside. The hedge will be replaced by a new native species hedge which will be set back from the road edge. This new hedge will be comprised of a mix of native tree and shrub species including Hawthorn, Blackthorn, Hazel, Spindle Euonymus europaeus, Holly and Willow Salix spp., with Hawthorn being the most numerically dominant species planted (approx. 50%).

The bare-rooted whips will be planted at close spacing in a staggered pattern onto a well-prepared earthen bank. Any significant failures will be replaced with fresh planting stock. Once well established, the hedge will then be managed through regular trimming operations as is normal practice.

4.3 Berm Construction

A berm will be constructed along the western boundary of the pit to screen the pit from the local road. Overburden and sand and gravel material removed from Phase 1 of the development will be used to construct the berm. Sections through the berm are detailed on Figures 2.0 and 3.0.

Wild flower seed will be spread on the berm to stimulate growth. This coupled with the natural seed bank present in the soil will ensure that vegetation will establish on the berm in a short space of time. The berm will be removed at the end of the permission and the material will be used to restore phase 8 of the extraction plan and other remaining areas in the pit.

5.0 Restoration Measures

As stated previously the site will be extracted and restored on a rolling basis as part of an 8 phase extraction plan. In each phase there will be a requirement to restore side slopes and the pit surface which is discussed below.

5.1 Phase I – Permanent Restoration of Side Slopes

When the sand and gravel extraction is completed within each phase, the newly created embankment will be graded for stability and topsoil will be re-laid onto the new surface to create a growing medium for the planned replacement planting. The newly re-landscaped side slope and strip of land left intact along the edge of the quarry cutting will be planted up with a mix of tree species during the winter dormant season that follows the completion of the quarrying works.

A strip of land of approximately 12m between the existing hedgerows and the edge of the pit face will be left unplanted and kept clear to allow for maintenance works to the hedgerows and reduce the potential shading and competition on the hedges caused by the new planting as it matures.

When completed, the new woodland planting will cover an area somewhat greater than the area cleared of tree cover to facilitate the quarry works.

The tree species mix should include a range of species with the potential to cope with the planting environment and to build in long-term resilience to pests and diseases. Tree species to be considered include both native and some non-native species, including the following: Silver Birch (*Betula pendula*), Common Alder (*Alnus glutinosa*), Italian Alder (*Alnus cordata*), Aspen (*Populus tremula*), Holly (*Ilex aquifolium*), Hazel (*Corylus avellana*), Field Maple (*Acer campestre*), Hornbeam (*Carpinus betulus*), Sycamore (*Acer pseudoplatanus*), Wild Cherry (*Prunus avium*), Bird Cherry (*Prunus padus*), Scots Pine (*Pinus sylvestris*), Common Oak (*Quercus robur*), Sessile Oak (*Quercus petraea*).

The planting of new Ash (*Fraxinus excelsior*) trees is not advised on account of the prevalence of Ash Dieback disease.

The trees should be planted as young bare-rooted whips at around 1m-1.5m spacing. The trees should be planted in a mixed species layout, with some small clusters of individual species (Oak and Pine) spread throughout. Alder and Birch will be the dominant species within the mix, together forming around 30% of the total number of trees. Aftercare will be undertaken where practicable, with weed control (spot treatment with approved herbicide) likely to be the principal operation for the first few years of establishment.

Any areas of high tree mortality should be replaced with fresh planting following a review of the likely cause of the failures. The plantations should be inspected and reviewed every 6 months for the first 5 years, then annually thereafter. The plantations are likely to require some thinning work in the future, however, this is not envisaged to be necessary for a significant time and be dictated by the development of the new plantation woodland.

5.2 Phase II - Grading of Overburden on Exposed Surfaces

The grading of overburden material on the pit floor of extracted areas will be undertaken on completion of extraction of material. Overburden removed from the working phase will be used to restore the extracted phase.

Prior to the overburden being applied the extracted area will cultivated to ensure good drainage percolation is maintained. A layer of topsoil overburden will be applied to exposed surfaces using an excavator and dump truck. The material will be graded and seeded with

grass seed to return the area to agricultural grassland. This will continue to be the case with further phases of extraction.

5.2.1 Phase III – Removal of Berm

Once all phases have been extracted, the berm will be removed and the overburden will be used to restore Phase 8 and other areas of the pit where overburden is required. This will be undertaken using an excavator and dump truck. The exposed surface of phase 8 will be restored as undertaken in previous phases.

6.0 Decommissioning

When extraction activity has ceased at the site, all plant and infrastructure present will be removed and reused at a different location. Plant and infrastructure on site will not pose any environmental concern during the decommissioning phase. After plant equipment and unused structures are removed from the site an inspection will be undertaken to ensure that all plant and equipment has been decommissioned and removed. Figure 1.0 details the proposed restored site layout map.

7.0 Mitigation Measures & Monitoring

Implementing a landscape and restoration plan on a phased basis provides for mitigation to reduce the impact associated with the extraction stages of the development. This will serve to reduce the overall impact of the project, namely:

- Visual Impact
- Biodiversity & Ecological (flora & fauna) impact

Landscape work and planting as part of the overall process will serve to reduce the long-term visual impact of the development. The landscaping measures have been designed to conceal the pit as much as possible screening it from outside views. These measures consist of the following:

- Provision of a berm along the western boundary which will be planted with native trees and shrubs.
- It is recommended that hedgerows and tree lines along the site perimeter be retained where possible with further landscaping of areas.
- The use of native species will support a wider range of insects and animals and will contribute more to the ecology of the region than non-native ornamental vegetation.
- Further provision of perimeter fencing around the site where required to prevent unauthorised access.
- All planting of trees and shrubs will take place during the dormant seasons. Bare-rooted plants transplant most successfully during their dormant season, this is usually

between November and March/April. Avoiding times when the ground is actually frozen, this will mean either autumn or spring planting.

- Regular Inspections post-planting will provide an assessment of the success of the planting regime. Where necessary i.e. where planting fails, additional supplemental planting can take place.

8.0 After Use

The greatest potential for biodiversity in relation to extractive sites is after the operation has ceased and the site has been restored. The aim of any restoration plan is to restore ecological balance and to produce self-sustaining plant and wildlife communities and habitats.

Figures

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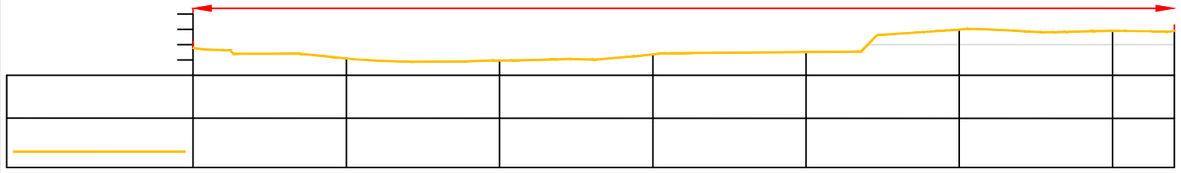

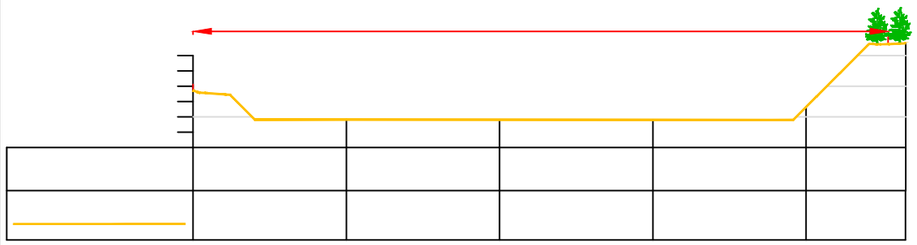

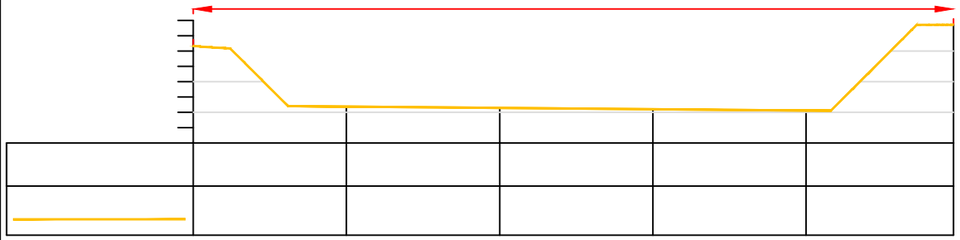

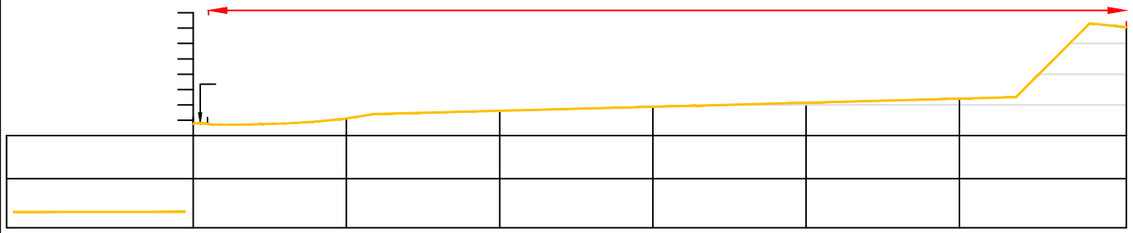

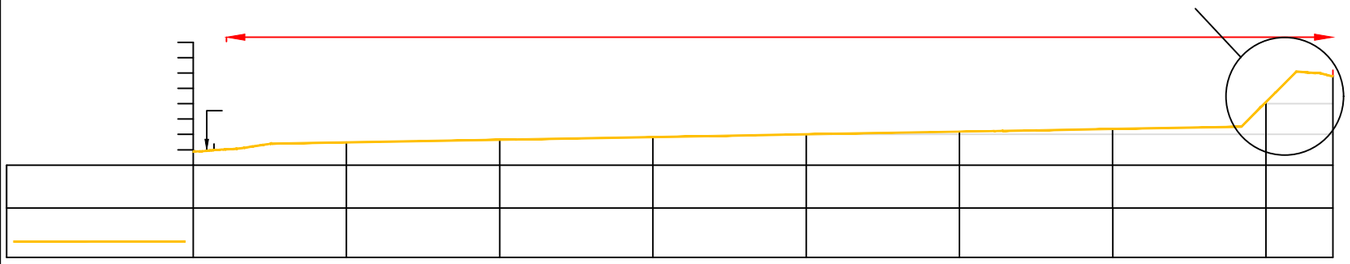

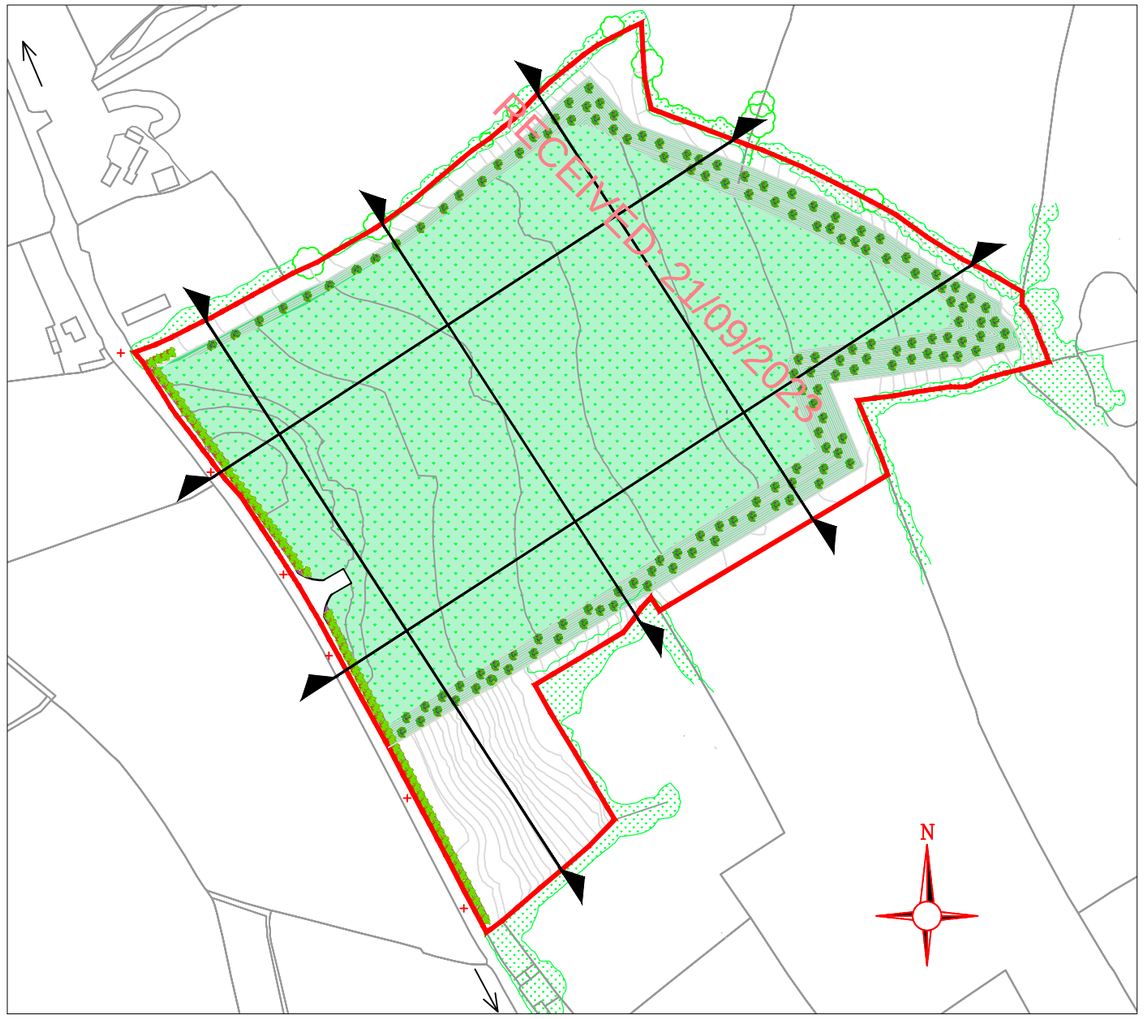

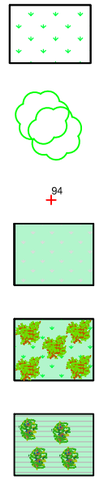

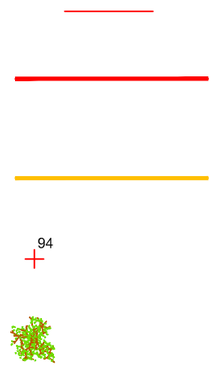

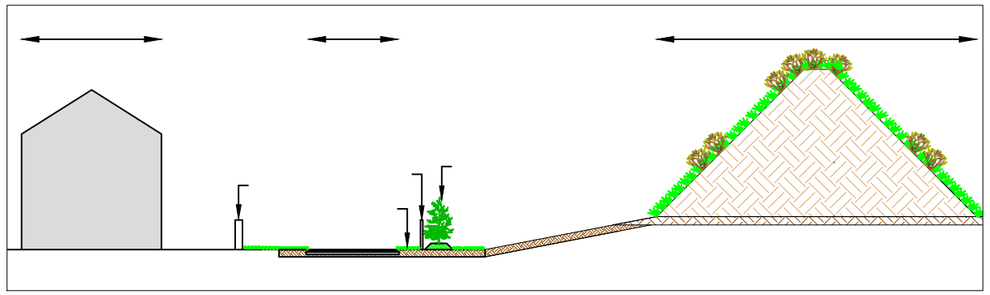

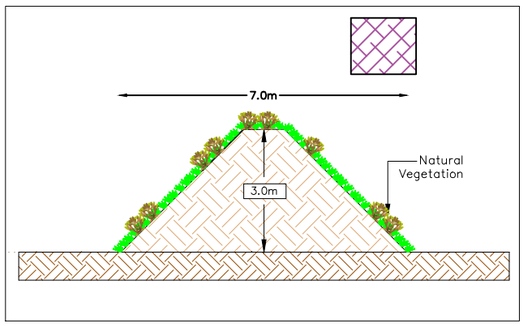

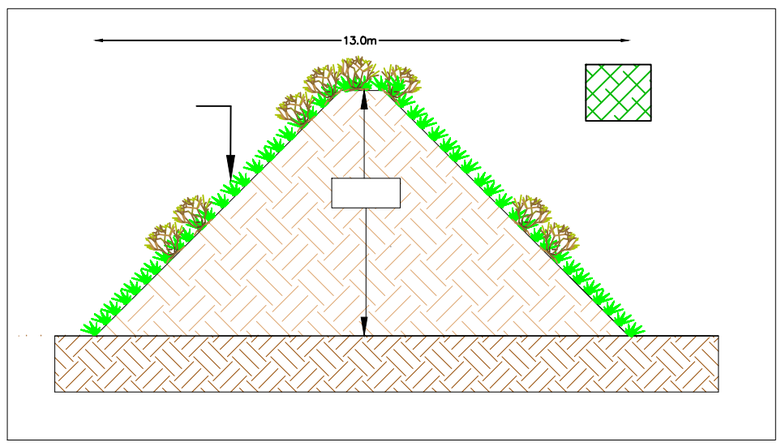

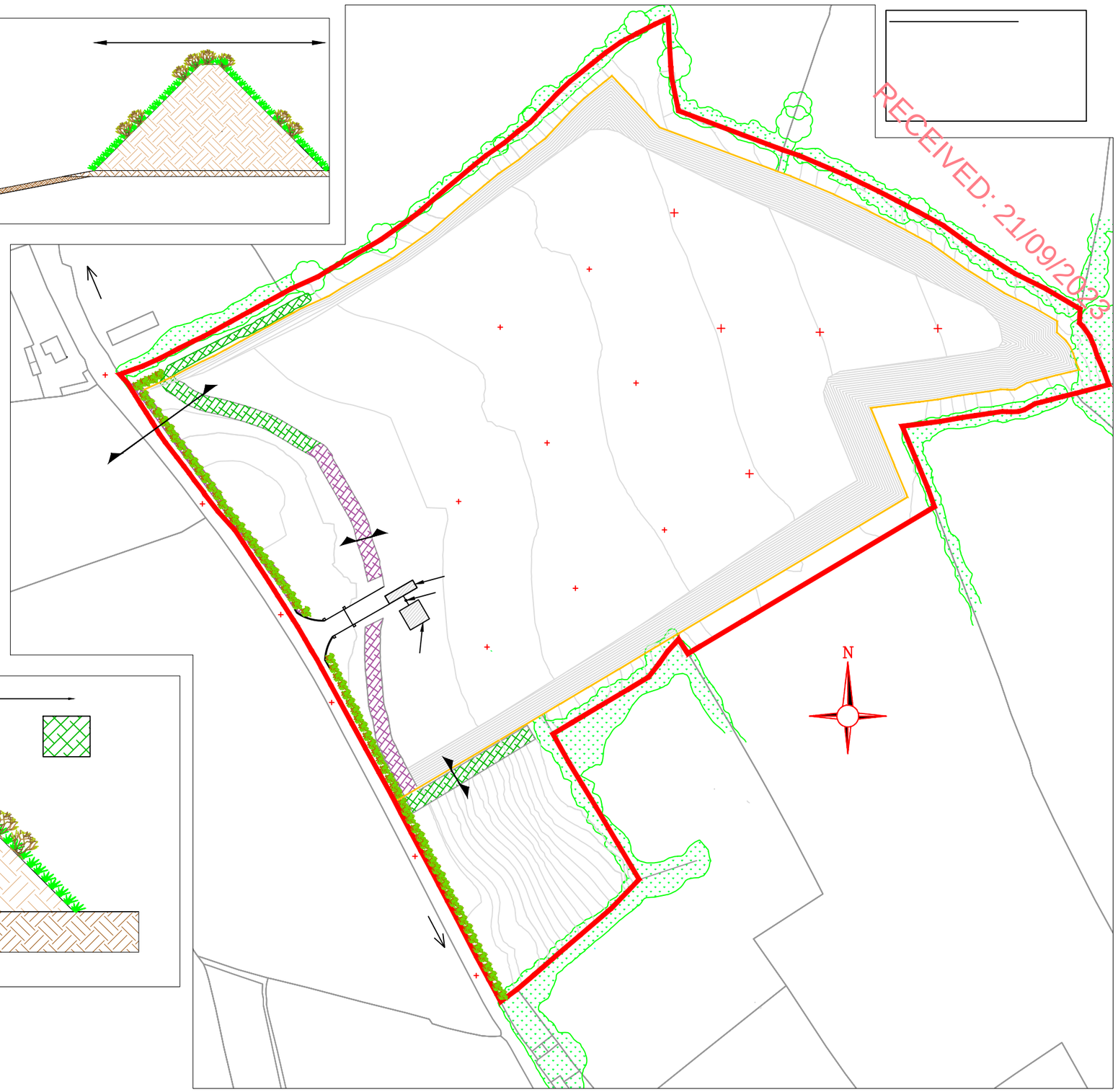

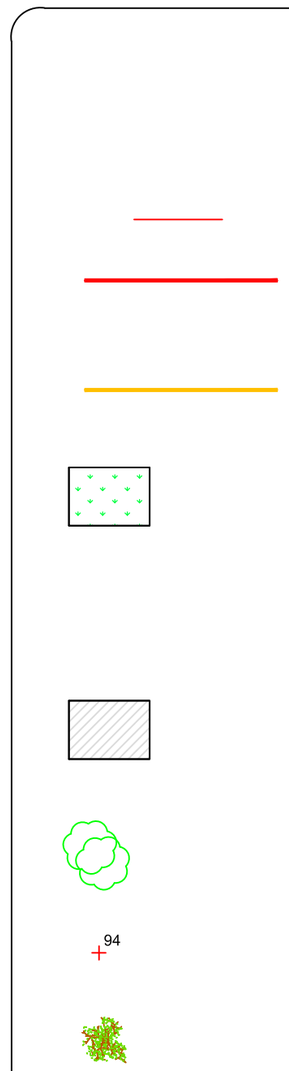

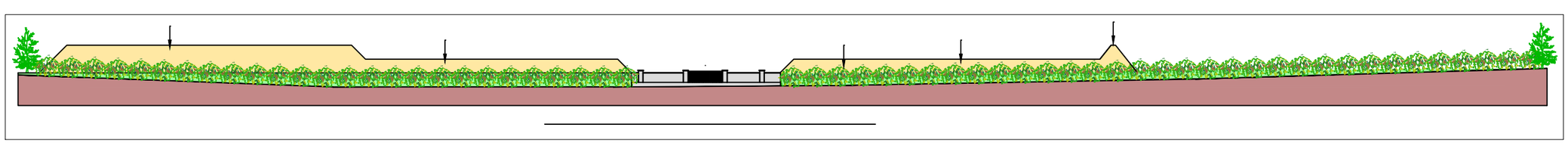

Appendix A - Tree Survey Report

Independent Tree Surveys

Tree Survey Report
Booth Precast
Ballymullen
Abbeyleix
Co. Laois

February 2021

Independent Tree Surveys
Our Lady's Cottage,
Drummond
Rosenallis
Co. Laois
T: 057 8628597
M: 087 1380687
www.independenttreesurveys.ie

Arboricultural ASSOCIATION
Professional Member

Contents

1.0 Introduction

It is proposed to develop lands at Ballymullen, Abbeyleix, Co. Laois for quarrying. This report has been commissioned to provide an arboricultural assessment of the trees, hedges, and woodland on the site and to assess the likely impact of the proposed development on those trees and hedges.

2.0 Instruction

To carry out a Tree Survey of the site and prepare an Arboricultural Impact Assessment, Method Statement and Tree Protection Plan in accordance with BS5837: *Trees in relation to design, demolition and construction (2012)* of the trees, woodland and hedges relevant to the planned quarry development on lands at Ballymullen, Abbeyleix, Co. Laois.

3.0 Report Limitations

The inspection has been carried out from ground level using visual observation methods only.

Trees are living organisms whose health and condition can change rapidly. Trees should be checked on a regular basis, preferably once a year. The conclusions and recommendations of this report are valid for one year.

The fruiting bodies of some important species of decay fungi only emerge at certain times of the year and may not have been visible during this inspection.

There is no such thing as a 100% safe tree in all conditions, since even perfectly healthy trees may fall or suffer branch break.

Climbing plants such as Ivy can obscure structural defects and some symptoms of disease, where such plants prevent a thorough examination it is recommended that the climber be cut at ground level and the tree re-inspected when it has died back.

Many of the individual trees (especially in the more densely wooded parts of the site) shown on the survey drawing are plotted in their *approximate* locations based upon handheld GPS measurements (not topographic land survey methods) made during the site visit and should be regarded as indicative.

A significant proportion of the trees recorded in the survey are Ash (*Fraxinus excelsior*), this native species is currently becoming seriously impacted by the fungal disease known as Ash Dieback (ADB). Whilst most of the Ash trees on the site showed relatively few definitive signs of the disease, estimations of projected tree lifespan (ERC) and tree quality assessment grade (BS5837 category) are likely to be downgraded significantly if, as is likely, the disease takes hold in the area. For the purposes of this survey, Ash trees in apparently good condition at the time of inspection were graded category B, and any showing even slight signs of stress were graded category C. No Ash trees were graded category A. If ADB disease affects the Ash population as is expected by many tree specialists, virtually all these trees will likely be reduced to category U.

Report Prepared by

John Morgan
BSc (Hons) Tech Cert (Arbor A)
M Abor A (Membership number PR407)

February 17th, 2021

4.0 Survey Methodology

The significant individual trees in and around the site were assessed from ground level using Visual Tree Assessment (VTA) techniques and relevant observations and findings were recorded in compliance with the industry standard document BS5837: *Trees in relation to design, demolition and construction (2012)*. Similar groups of trees, woodlands, hedges, and areas of scrub were assessed and described collectively.

4.1 Survey Key

Tree Numbers
Individual trees (prefix T), tree groups (prefix G), woodlands (prefix W) and hedges (prefix H) around the site were allocated numbers. These numbers identify the trees, groups, woodlands, and hedges in the survey schedule and on the supporting survey drawings.

Tree Species
Common and botanical names of the tree species were recorded.

Tree Crown Dimensions
Tree height (Ht), crown clearance (Cl) and crown-spread (NESW cardinal points) measurements are in metres and are estimated.

Stem Diameter (Dbh)
Measurements are in millimetres and taken at 1.5m from ground level, multiple stems (St) are recorded as a function of the BS:5837 RPA formulae described below. Where tree stems could not be directly accessed; the stem diameters were estimated.

Tree age classes
Age classes were recorded as:

Y	Young	Recently planted (with 5 years or so)
SM	Semi-Mature	Well established young tree
EM	Early Mature	Established tree not yet fully grown
M	Mature	Full or near full grown tree
LM	Late Mature	Older specimen in full maturity
OM	Over Mature	Reached full maturity now declining through natural causes
Vet	Veteran	Notable due to large size, old age, ecological importance

Tree Physiological and Structural condition
Tree condition was graded as

Good:	No obvious defects visible, vigour and form of tree good.
Fair:	Tree in average condition for its age and the environment.
Poor:	Tree shows signs of ill health/structural defect
Bad:	Tree in seriously bad health/major structural problem

Work Recommendations
Preliminary management recommendations are made in the schedule where deemed necessary and pertain to *current site conditions* unless otherwise stated.

Estimated Remaining Contribution (ERC)
The approximate number of years that a tree should continue to live and contribute amenity, conservation, or landscape value to the site under current site conditions.

4.2 Tree Retention Category (Cat) (BS5837: 2012 Trees in relation to design, demolition and construction – Recommendations)

The tree retention category system grades a tree's suitability for retention within a development:

A Indicates a tree of high quality and value. These are trees that are particularly good examples of their species, which also provide landscape value. These trees are in such a condition as to be able to make a substantial contribution. (A minimum of 40 years is suggested)

B Indicates a tree of moderate quality and value. Trees that might be included in the high category but are downgraded because of impaired condition. These trees are in such a condition as to make a significant contribution. (A minimum of 20 years is suggested)

C Indicates a tree of low quality and value - trees with an estimated remaining life expectancy of at least 10 years, or younger trees with a stem diameter of below 150mm and/or <10m in height.

U Trees that are in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years.

Subcategories

Tree categories may be further categorised using the following sub-categories (e.g. C1, C2 or C3) - 1 mainly Arboricultural qualities, 2 mainly landscape qualities, 3 mainly cultural values.

4.3 Root Protection Area

The Root Protection Area **(**RPA) is the minimum area around individual trees to be protected from disturbance during construction works; RPA is recorded as a radius in metres measured from the tree stem and is shown on the tree survey/constraints drawing as a circle with the tree stem in the centre.

For single stem trees, the root protection area (RPA) should be calculated as an area equivalent to a circle with a radius 12 times the stem diameter.

For trees with more than one stem, one of the two calculation methods below should be used.
The calculated RPA for each tree should be capped to 707 m2.

a) For trees with two to five stems, the combined stem diameter should be calculated as follows:
√ ((stem diameter 1)2 + (stem diameter 2)2 ... + (stem diameter 5)2)
b) For trees with more than five stems, the combined stem diameter should be calculated as follows:
√ ((mean stem diameter)2 × number of stems)

5.0 Findings

The project site is approximately 8.5ha. in area and is situated in the townland of Ballymullen which is located approximately 1km south of Abbeyleix town. The trees, woodlands and hedges were assessed during a series of site visits in December 2020; the field data for the trees is contained in the accompanying Tree Survey Schedule. Approximate tree location, BS5837 category, RPA and approximate crown shape are shown on the Tree Survey Drawing 21008_TS.

The site is covered mostly by permanent pasture separated into fields bordered by traditional agricultural hedges. The external boundaries of the site are all marked by such hedges, with neighbouring farmland adjoining the site apart from the western boundary along the public road. The central part of the site (covering approximately 2ha) includes a patchwork of scrub, secondary woodland, emergent hedgerow trees, small areas of open ground, and groups of exotic conifer trees associated with the grounds of the former dwelling/building in the western part of the site.

The old farm hedges are in mostly poor condition following years of deferred management. Native species hedges require regular management works to maintain constituent tree health and vitality and hedge density/thickness. Most of the hedgerows on and around the site have started to decline in vitality as the trees and bushes have become overmature (especially the Hawthorn and Elder bushes) or have succumbed to disease (notably the Elm trees, with the Ash trees likely to follow). Traditional practices such as coppicing and hedge-laying help maintain hedge health by encouraging the trees to continue to live in the immature lifecycle phase of growth, deferring these practices often leads to a gradual decline in tree vitality and eventual hedge fragmentation, this is particularly noticeable in the southern half of hedge H1 and hedges H2-H8. The northern ends of hedge H1 and hedge H9 along the northern and north-western boundaries have been more actively managed and show better vitality and continuity. The hedges include relatively few emergent mature trees (trees T1-T10), nearly all of which are Ash trees in variable condition.

Most of the trees on the site are concentrated within the central part of the property and include groups of conifers planted along the old access route to the west (groups G3, G4, G6-G8), two areas of more mixed secondary woodland (W1 and W2) and clusters and linear groups of mature (mostly Ash and Sycamore) trees around the edges of the central wooded region (groups G1-G2, G5, G9-G12 and trees T11-T25).

The mixed conifers (groups G3, G4, G6-G8) established as part of a previous land use layout (dwelling house or farmyard), are now well-established and quite prominent from the public road, however they include many individuals of low quality and value. Many of these trees have been subject to poor previous pruning treatments, major bark-stripping by livestock, storm damage and/or overstocking due to a lack of thinning. These conifers are mostly exotic species of limited conservation or landscape value.

A significant portion of this mostly wooded central region is covered by dense naturally regenerated scrub, this scrub is dominated by Elm, Hawthorn, Ash, Sycamore and Elder across the central and eastern bulk of the region, with a small patch of Willow scrub (group G13) now developing across the wetter ground just inside the western boundary hedge.

The densely stocked young Elm trees in and around woodland W2 and within hedge H1 have been heavily impacted by Dutch Elm disease and have suffered extremely high mortality rates, leaving many stems standing dead.
The composition and structure of the wooded region reflects the management history of the site, with the dense scrub growth and naturally regenerated young trees becoming established following a cessation of active management some time ago. The area of sloping ground within the woodland labelled W1 has probably had tree cover for longer than much of the rest of the site, however, even this woodland is clearly secondary in origin given its species mix and age class structure.

The region contains some larger mature Ash trees and a single large Horse Chestnut (T11), however, there are no specimen trees (of Oak, Beech, Lime etc.) that could be described as being of *high arboricultural value* on the site. The Ash trees include some individuals (groups G1 and G2) that be it not for the presence of Ash Dieback disease (ADB), would be considered to be of moderate or high value, however, unfortunately the indications are that the disease has begun to the affect trees in the area and suggesting projected useful life expectancies of 40+ years for these trees would be unrealistic.

Overall, the quality and value of the tree stock on the site is relatively low, with the main value lying in the collective nature of the groups and clusters of trees and the landscape and conservation benefits of the surrounding hedgerows.

6.0 Preliminary Management Recommendations

Preliminary management recommendations for the trees, woodlands and hedges assessed are listed in the tree survey schedule in the appendices; as per BS5837, these pertain to *current* site conditions unless otherwise stated.

All tree work should be carried out by qualified and experienced tree surgeons.

All tree work should be in accordance with *BS3998 (2010) Tree Work – Recommendations.*

7.0 Site Photographs

1. Southern half of the roadside hedge H1, viewed from the northwest.

2. Over-mature Hawthorn trees in fragmented hedge-line H3 along the southern boundary area of the site.

3. Willow regeneration making up group G13 encroaching across unmanaged land in the central part of the western edge of the site.

4. Central wooded part of the site seen from the south, with conifer tree group G3 to the left, woodland W1 in the centre and group G1 to the right.

5. Mixed conifer group G4 to the left and group G7 to the right of the old track through the trees.

6. Woodland W1 seen from the old track at the western edge of the wood; W1 includes the mature Pine trees (G8) in the centre of the picture.

7. Emergent hedgerow trees T1 (to the left) to T5 (far right) along hedge H9 following the northern boundary of the site.

8. Young trees making up dense secondary woodland W2; many of the trees are semi-mature Elm trees now standing dead after being killed by Dutch Elm disease.

9. Cluster of mature Sycamore and Ash trees (group G9) in the north-eastern part of the wooded central area of the site.

10. Mature trees (T19-T24, G11) in the south western part of the central wooded area of the site.

11. Solitary Ash tree (T9) on the boundary hedge H6 at the north-eastern edge of the site; most of this hedge is now made up of Gorse bushes.

8.0 Arboricultural Impact of the New Development

The planned quarrying development will involve the extraction of sand and gravel deposits underlying the soil surface from the site in eight main phases. The open cast quarrying will require that the upper soil layer and all associated surface vegetation inside the footprint of the extraction works will need to be removed prior to sand and gravel extraction. The full extent of the quarrying across the site will thus necessitate the phased removal of the central wooded area including all the tree groups and woodlands identified in the site survey. The proposed landscaping works to construct screening berms along the road frontage of the site will require the removal of the existing hedge (H1). The trees and woodland requiring removal to facilitate the project are shown on the Tree Protection Drawing 21008_TPP.

The proposed area subject to quarrying has been designed to include a buffer zone between the edge of the extraction works and the surrounding hedgerows to ensure that sufficient topsoil is left intact between the hedges and the extraction works to allow for their successful long-term retention. The buffer zone will be approximately 12m wide and thus extend beyond the minimum root protection area (RPA) distance as defined by BS5837: *Trees in relation to design, demolition and construction (2012).* As the extraction works extend towards the buffer zone, the root spread of the hedgerow trees will be vulnerable to damage by excavation works unless this is carefully managed; tree protection methodology appropriate to the work site is detailed in the arboricultural method statement below.

The nature of the sand and gravel quarrying process will mean that the short-term impact on the existing trees and woodland will be significant, with all vegetation being removed prior to each phase becoming operational. The longer-term impact of the works will be mitigated by the land restoration operation that will follow the completion of quarrying in each phase of extraction works. It is proposed that land restoration work will be initiated on the quarried land as soon as the next phase is prepared for extraction, this will minimise the amount of land exposed at one time and allow new landscaping (including extensive tree planting) to establish while the quarrying continues in the next phase. The intention is to re-vegetate the site following the ending of the extraction process and the restoration of the topsoil layer over the quarried land surface, this re-vegetation will involve the phased planting of large numbers of trees that in time will establish and develop into mature woodland to replace those trees removed to facilitate the quarry. With good planting stock and proper aftercare, along with improved hedgerow management of the surrounding hedges, these post-quarrying landscape works should see the loss of trees and woodlands mitigated in the longer term.

9.0 Arboricultural Method Statement

9.1 Tree Work Operations

All individual trees and groups of trees within each project Phase (1-8 successively) will be felled as part of works to clear the vegetation layer. Trees will be mostly processed for firewood, although some individuals may be selected for milling or other purposes. Brash will be chipped on-site.

All chainsaw tree work should be carried out by qualified and experienced tree surgeons; and be in accordance with *BS3998 (2010) Tree Work – Recommendations.* Scrub and bushes will be removed by mechanical methods.

9.2 Tree Protection Measures

Sturdy, robust fencing will be erected along the lines shown on the Tree Protection Plan Drawing 21008_TPP to clearly mark the edge of the lands to be excavated and thus prevent extraction work encroaching into the root protection areas of the trees to be retained. The fencing should be clearly marked with signage stating *Tree Protection Fence – No Access*. The tree protection fencing will be put in place *before* any excavation work commences and should remain in place until their removal or re-location is authorised by a qualified arborist.

Where heavy machinery access has to encroach the RPAs of the trees to be retained for reasons unforeseen and unavoidable; suitable ground protection will be put in place to prevent any significant soil compaction or root damage near the trees; this should take the form of suitable strength ground protection mats or cellular confinement system capable of supporting the appropriate weight.

All site offices, materials storage, staff parking etc. will located outside of the RPAs of the trees being retained wherever practical; where this is not possible then the ground surface will be covered by an appropriate ground protection layer following consultation with a qualified arborist.

The tree protection measures will be overseen and directed on-site by a dedicated site arborist.

10.0 Tree and Hedgerow Planting – Post Quarrying

When the sand and gravel extraction is completed within each phase, the newly created embankment will be graded for stability and topsoil will be re-laid onto the new surface to create a growing medium for the planned replacement planting. The newly re-landscaped site slope and strip of land left intact along the edge of the quarry cutting will be planted up with a mix of tree species during the winter dormant season that follows the completion of the quarrying works. A strip of land between the existing hedgerows and the edge of the site slope should be left unplanted and kept clear to allow for maintenance works to the hedgerows and reduce the potential shading and competition on the hedges caused by the new planting as it matures. When completed, the new woodland planting will cover an area somewhat greater than the area cleared of tree cover to facilitate the quarry works.

The tree species mix should include a range of species with the potential to cope with the planting environment and to build in long-term resilience to pests and diseases. Tree species to be considered include both native and some non-native species, including the following:
Silver Birch (*Betula pendula*), Common Alder (*Alnus glutinosa*), Italian Alder (*Alnus cordata*), Aspen (*Populus tremula*), Holly (*Ilex aquifolium*), Hazel (*Corylus avellana*), Field Maple (*Acer campestre*), Hornbeam (*Carpinus betulus*), Sycamore (*Acer pseudoplatanus*), Wild Cherry (*Prunus avium*), Bird Cherry (*Prunus padus*), Scots Pine (*Pinus sylvestris*), Common Oak (*Quercus robur*), Sessile Oak (*Quercus petraea*).
The planting of new Ash (*Fraxinus excelsior*) trees is not advised on account of the prevalence of Ash Dieback disease.

The sloping ground is likely to provide some challenges to the land restoration process, with tree planting and aftercare being naturally more difficult and time consuming on such terrain, however, many forestry plantations have been successfully established on steep sites.

The trees should be planted as young bare-rooted whips at around 1m-1.5m spacing. The trees should be planted in a mixed species layout, with some small clusters of individual species (Oak and Pine) spread throughout. Alder and Birch should be the dominant species within the mix, together forming around 30% of the total number of trees. Aftercare should be undertaken where practicable, with weed control (spot treatment with approved herbicide) likely to be the principal operation for the first few years of establishment. Any areas of high tree mortality should be replaced with fresh planting following a review of the likely cause of the failures.

No obvious signs of Rabbits or Hares were seen during the survey, however where significant populations are identified, some protective fencing around the new planting may be required.

The plantations should be inspected and reviewed every 6 months for the first 5 years, then annually thereafter. The plantations are likely to require some thinning work in

the future, however, this is not envisaged to be necessary for a significant time and be dictated by the development of the new plantation woodland.

Site specific experience gained during the first phases of planting should be used to inform and improve the later phases of planting on the site.

A narrow strip inside the boundary hedges should be kept clear by periodic mowing, and the boundary hedges themselves should be subject to increased management intervention over future years. The hedges labelled H2-H6 and H8-H9 should be subject to more detailed review and steps taken to help restore and re-invigorate these degraded features. Likely work operations to be included in these renovation works are selective felling of dead and dying trees and bushes, selective coppicing of trees and bushes (especially late mature Hawthorn bushes), selective hedge-laying of suitable stems to help regenerate individual trees and plug gaps in the hedges, Ivy and Bramble clearance and infill planting with fresh native hedging plants (Hawthorn, Blackthorn *Prunus spinosa*, Hazel, Holly).

The hedge (H1) that runs along the road frontage of the site will be replaced by a new native species hedge. This new hedge should be comprised of a mix of native tree and shrub species including Hawthorn, Blackthorn, Hazel, Spindle *Euonymus europaeus*, Holly and Willow *Salix spp*., with Hawthorn being the most numerically dominant species planted (approx. 50%).

The bare-rooted whips should be planted at close spacing in a staggered pattern onto a well-prepared earthen bank. Any significant failures should be replaced with fresh planting stock. Once well- established, the hedge should then be managed through regular trimming operations as is normal practice.

Should livestock be introduced into the restored pasture making up the bulk of the site post-quarrying, the new tree plantations and hedgerow will require adequate protective fencing (fixed stock-proof fencing or electric fencing) to be put in place to prevent animal browsing and trampling of the young trees.

11.0 Appendices

Tree Survey Schedule

Tree Survey Drawing 21008_TS (Tree Constraints Plan)

Tree Protection Drawing 21008_TPP

Hedge and Woodland Planting Plan Drawing 21008_HWPP

Tree Survey Schedule
Knocknamoe, Abbeyleix,
Co. Laois
January 2021

Type	No.	Species	Age	Ht m	Dbh mm	St	Cr	N	S	E	W	ERC	Phys Cond	Structural Condition/Comments	Preliminary Recommendations	RPA m	Cat
T	1	Acer pseudoplatanus (Sycamore)	M	16	783 Est	3	4	7.5	7	7	7.5	20+	Fair	Fair. Medium sized tree growing in hedgerow. Thick Ivy growth on tree stem restricts view of main branch unions. Stem divides below 1.5m.	Cut Ivy around stem base. Inspect stem/basal area when Ivy has died back.	9.4	B2
T	2	Fraxinus excelsior (Ash)	M	16.5	450 Est	1	4	9	7.5	7.5	7.5	10+	Fair	Fair. Medium sized tree growing in hedgerow. Some damage to surface roots. Old wound at tree base following loss of secondary stem in past.	Monitor tree condition for signs of Ash Dieback disease.	5.4	B2
T	3	Fraxinus excelsior (Ash)	SM	11.5	354	2	2	4.5	4	4.5	4	<10	Poor	Poor. Smaller sized tree. Twin stem from ground level. Bark wounding by livestock. Significant dieback in crown with east stem mostly dead and decaying.	Coppice.	4.25	U
T	4	Fraxinus excelsior (Ash)	EM	12	424	2	2	6	7	3	5.5	10	Fair/Poor	Fair. Some epicormic growth indicative of stress. Twin stem from ground level. Minor dieback in crown.	Monitor tree condition for signs of Ash Dieback disease.	5.09	C2
T	5	Fraxinus excelsior (Ash)	EM	15	648	4	2	6	6	6	5	10+	Fair	Fair. Good vitality. Medium sized tree on edge of bank. Multiple stems below 1.5m.	Monitor tree condition for signs of Ash Dieback disease.	7.78	C2
T	6	Acer pseudoplatanus (Sycamore)	M	12.5	721	2	2.5	6	7	7	5	20+	Fair	Fair. Medium sized tree in hedge. Twin stem from ground level.	No urgent works needed.	8.65	B2
T	7	Fraxinus excelsior (Ash)	SM	10	424	2	2	4	6	4	2	10+	Fair	Fair. Smaller sized tree in hedge. Initial lean but self corrects to vertical.	Monitor tree condition for signs of Ash Dieback disease.	5.09	C2
T	8	Fraxinus excelsior (Ash)	EM	12.5	854	2	2	5	5	3	6	<10	Poor	Fair/Poor. Medium sized tree. Some old wounds on stem. Dieback in crown. Historic loss of major limb. Epicormic shoots on branching throughout crown. Bacterial canker present on branches.	Monitor tree condition. Consider coppicing to allow regeneration of fresh growth.	10.25	U
T	9	Fraxinus excelsior (Ash)	SM	10	495	2	1.5	4	5.5	5	4.5	10	Fair	Fair/Poor. Smaller sized tree. Stem divides below 1.5m. Some basal decay. Major bark wounding on stem. Compression fork at tree base.	Monitor tree condition for signs of Ash Dieback disease.	5.94	C2
T	10	Fraxinus excelsior (Ash)	M	16	500	1	2	6	7	6.5	6	20+	Fair	Fair. Medium sized tree in hedge. Thick Ivy growth on tree restricts view of main branch unions. Unable to inspect stem due to undergrowth. Epicormic shoots on branching in crown.	Clear undergrowth and inspect stem base. Monitor tree condition for signs of Ash Dieback disease.	6	B2
T	11	Aesculus hippocastanum (Horse Chestnut)	OM	21.5	900	1	2	7	8	9	7	10	Poor	Poor. Large old specimen tree. Some badly storm damaged branches in crown. Recent loss of major limb. Bleeding canker lesions on stem-branches. Tree liable to further storm damage.	Crown clean and crown reduce by 2-3m.	10.8	C2

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Type	No.	Species	Age	Ht m	Dbh mm	St	Cr	N	S	E	W	ERC	Phys Cond	Structural Condition/Comments	Preliminary Recommendations	RPA m	Cat
T	12	Picea abies (Norway Spruce)	M	25	600	1	4	4	4	4	4	20+	Fair	Fair. Tall mature Spruce of typical upright form. Thick Ivy growth on tree stem.	Cut Ivy around stem base.	7.2	B2
T	13	Betula pendula (Silver Birch)	M	15	400	1	3	4	3	3	3	<10	Dead	Bad. Mature Birch tree now standing dead in woodland.	Consider removal as part of good management.	4.8	U
T	14	Betula pendula (Silver Birch)	M	15	400	1	3	4	4	4	4	20+	Fair	Fair. Mature Birch in woodland. Upright form.	No urgent works needed.	4.8	B2
T	15	Fraxinus excelsior (Ash)	M	19	450	1	2	6	6	6	6	20+	Fair	Fair. Mature Ash tree at edge of old track. Average shape/form.	Monitor tree for signs of Ash Dieback disease.	5.4	B2
T	16	Fraxinus excelsior (Ash)	M	13	600	1	2	6	6	6	6	<10	Poor	Poor. Medium sized tree on fence-line with some old wounds on stem. Compression fork on main stem. Epicormic shoots on branching throughout crown.	Monitor tree for signs of Ash Dieback disease. Consider coppicing.	7.2	U
T	17	Fraxinus excelsior (Ash)	M	12	626	2	1	7	7	7	7	10+	Fair	Fair. Ash on old hedgeline. Thick Ivy growth on tree restricts view of main stem and branch unions. Epicormic shoots on branching throughout crown.	Monitor tree condition for signs of Ash Dieback disease.	7.51	C2
T	18	Fraxinus excelsior (Ash)	M	12	566	2	1	7	7	7	7	10+	Fair	Fair. Ash on hedgeline. Thick Ivy growth on tree stem restricts view of main branch unions. Twin stem from ground level. Epicormic shoots on branching throughout crown.	Monitor tree condition for signs of Ash Dieback disease.	6.79	C2
T	19	Fraxinus excelsior (Ash)	M	17	600	1	2	6	6	6	6	10+	Poor	Fair. Medium sized tree. Bacterial canker present on branches.	Monitor tree condition for signs of Ash Dieback disease.	7.2	C2
T	20	Fraxinus excelsior (Ash)	M	19	500	1	2	6	6	6	6	20+	Fair	Fair. Larger mature tree on fenceline.	Monitor tree condition for signs of Ash Dieback disease.	6	B2
T	21	Acer pseudoplatanus (Sycamore)	M	18	806	2	1	7	7	7	7	10+	Fair	Fair/Poor. Medium sized tree. Multiple stems below 1.5m. Compression fork on main stem.	No urgent works needed.	9.67	C2
T	22	Fraxinus excelsior (Ash)	M	15	550	1	1	5	8	5	4	10+	Fair	Fair/Poor. Medium sized tree on fenceline with lean to East. Unbalanced crown shape.	Monitor tree condition for signs of Ash Dieback disease.	6.6	C2
T	23	Fraxinus excelsior (Ash)	M	16	500	1	2	5	5	5	5	10+	Fair	Fair. Medium sized tree. Upright form.	Monitor tree condition for signs of Ash Dieback disease.	6	C2
T	24	Fraxinus excelsior (Ash)	EM	16	300	1	2	5	5	5	5	10+	Fair	Fair. Medium sized tree. Upright form.	Monitor tree condition for signs of Ash Dieback disease.	3.6	C2
T	25	Betula pendula (Silver Birch)	M	15	495	2	2	4	4	4	4	10+	Fair	Fair. Medium sized tree in scrubland. Stem divides below 1.5m.	No urgent works needed.	5.94	C2

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Type	No.	Species	Age	Ht m	Dbh mm	St	Cr	N	S	E	W	ERC	Phys Cond	Structural Condition/Comments	Preliminary Recommendations	RPA m	Cat
H	1	Corylus avellana (Hazel) Crataegus monogyna (Hawthorn) Sambucus nigra (Elder) Ulmus glabra (Wych Elm) Salix caprea (Goat Willow)	M OM	6	150	1	0	2	2	2	2	10+	Fair/Bad	Fair/Bad. Hedge following road frontage of the site. Northern section well managed and trimmed into shape alongside grass field. Central and southern section left largely unmanaged, with gaps developing where the Elm trees have died off and Hawthorn has become overmature. Many dead Elm stems. Thick Ivy and Brambles. Understorey dominated by Snowberry, especially along southern half of hedgeline.	Restore bulk of hedge by coppicing, laying and infill planting.	1.8	C2
H	2	Crataegus monogyna (Hawthorn) Sambucus nigra (Elder) Buxus sempervirens (Box)	M OM	6	300	4	0	2	2	2	2	10+	Fair/Poor	Fair/Poor. Old field boundary hedgerow left largely unmanaged for many years. Hedge now contains many over-mature Hawthorn and Elder in poor condition. Single mature Box tree/bush at western end of hedge worthy of retention.	Coppice weaker/selected stems. Infill gaps with fresh planting.	3.6	C2
H	3	Crataegus monogyna (Hawthorn) Sambucus nigra (Elder) Fraxinus excelsior (Ash)	M OM	6	300	4	0	2	2	2	2	10+	Fair/Poor	Fair/Poor. Old field boundary hedgerow left largely unmanaged for many years. Hedge now contains many over-mature Hawthorn and Elder in poor condition.	Coppice weaker/selected stems. Infill gaps with fresh planting.	3.6	C2
H	4	Crataegus monogyna (Hawthorn) Sambucus nigra (Elder) Fraxinus excelsior (Ash)	M OM	6	300	4	0	2	2	2	2	10+	Fair/Poor	Fair/Poor. Old field boundary hedgerow left largely unmanaged for many years. Hedge now contains many over-mature Hawthorn and Elder in poor condition.	Coppice weaker/selected stems. Infill gaps with fresh planting.	3.6	C2
H	5	Crataegus monogyna (Hawthorn) Sambucus nigra (Elder) Fraxinus excelsior (Ash) Prunus spinosa (Blackthorn) Acer pseudoplatanus (Sycamore) Quercus robur (Common Oak)	M	6	300	4	0	2	2	2	2	10+	Fair/Poor	Fair/Poor. Old field boundary hedgerow left largely unmanaged for many years. Hedge now contains many over-mature Hawthorn and Elder in poor condition.	Coppice weaker/selected stems. Infill gaps with fresh planting.	3.6	C2

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Type	No.	Species	Age	Ht m	Dbh mm	St	Cr	N	S	E	W	ERC	Phys Cond	Structural Condition/Comments	Preliminary Recommendations	RPA m	Cat
H	6	Crataegus monogyna (Hawthorn) Sambucus nigra (Elder) Fraxinus excelsior (Ash) Prunus spinosa (Blackthorn) Ulex europaeus (Gorse)	SM M	6	300	4	0	2	2	2	2	10+	Fair	Fair. Old farm hedgerow that has become dominated by Gorse, with few trees or bushes left. Single emergent Ash trees and some semi-mature Sycamore and Hawthorn bushes the only remaining trees.	Cut out Gorse and restore hedge with fresh planting of Hawthorn, Hazel etc.	3.6	C2
H	7	Crataegus monogyna (Hawthorn) Sambucus nigra (Elder) Fraxinus excelsior (Ash) Prunus spinosa (Blackthorn)	M	6	300	4	0	2	2	2	2	10+	Fair/Poor	Fair/Poor. Short section of hedgerow between scrub woodland and north-eastern boundary of site. No recent management and hedge becoming overmature.	Coppice weaker/selected stems. Infill gaps with fresh planting.	3.6	C2
H	8	Crataegus monogyna (Hawthorn) Sambucus nigra (Elder) Fraxinus excelsior (Ash) Prunus spinosa (Blackthorn) Acer pseudoplatanus (Sycamore)	M	6	300	4	0	2	2	2	2	10+	Fair/Poor	Fair/Poor. Remnant section of old farm hedgerow along site boundary. Hedge has become somewhat fragmented as it has been left unmanaged, leaving some gaps.	Coppice weaker/selected stems. Infill gaps with fresh planting.	3.6	C2
H	9	Crataegus monogyna (Hawthorn) Sambucus nigra (Elder) Fraxinus excelsior (Ash) Prunus spinosa (Blackthorn) Acer pseudoplatanus (Sycamore)	M	6	300	4	0	2	2	2	2	10+	Fair	Fair. Long length of hedgerow running along the northern boundary of the site. Mostly Hawthorn bushes with a series of larger emergent Ash trees and one mature Sycamore tree set within the hedge.	Coppice weaker/selected stems.	3.6	C2
G	1	Fraxinus excelsior (Ash)	M	15 to 17	600	1	2	6	7	6	7	10	Fair/Poor	Fair. Linear group of larger mature Ash trees along fenceline. Thick Ivy growth on trees. Old fencing wire fixed to lower stems. Trees in variable condition, with some dieback, smaller deadwood, and epicormic growth indicative of stress/disease present.	Monitor trees for signs of Ash Dieback disease.	7.2	C2

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Co. Laois
January 2021

Type	No.	Species	Age	Ht m	Dbh mm	St	Cr	N	S	E	W	ERC	Phys Cond	Structural Condition/Comments	Preliminary Recommendations	RPA m	Cat
G	2	Fraxinus excelsior (Ash)	M	16 to 24	400 to 800	1	2	9	9	9	9	20+	Fair	Fair. Row of large mature trees along fenceline. Thick Ivy restricts view of main branch unions. Some minor dieback in crowns.	Monitor trees for signs of Ash Dieback disease.	7.2	B2
G	3	Picea sitchensis (Sitka Spruce) Picea abies (Norway Spruce) Chamaecyparis lawsoniana (Lawson Cypress)	EM	16 to 20	300 to 400	1	5	3	3	3	3	10+	Fair	Fair. Twin row of mixed exotic conifers along north side of entrance track. Medium sized trees of upright form, set at around 2m spacing. Thick Ivy growth on tree stems. Trees appear to have been established as screen or shelterbelt associated previous land use layout. Limited value and potential.	No urgent works needed.	4.8	C2
G	4	Chamaecyparis lawsoniana (Lawson Cypress) Fagus sylvatica (Beech) Picea abies (Norway Spruce) Thuja plicata (Western Red Cedar)	EM	18	400	1	0	3	3	3	3	10+	Fair	Fair/Poor. Plantation of conifers (mostly Western Red Cedar and Lawson Cypress) established on land to west of old driveway/track. Mostly upright form. Many trees have significant bark wounding to lower stems, presumably from livestock gnawing. Some potentially weak unions in crown structures, with some failed unions apparent. Limited value and potential.	No urgent works needed.	4.8	C2
G	5	Fraxinus excelsior (Ash) Pseudotsuga menziesii (Douglas Fir) Pinus sylvestris (Scots Pine)	EM	17 to 22	400	1	3	4	4	4	4	20+	Fair	Fair. Cluster of trees on or just inside fence, one Ash with a spreading crown alongside more upright conifers.	No urgent works needed.	4.8	B2
G	6	Picea abies (Norway Spruce)	M	18	450	1	3	4	4	4	4	10+	Fair	Fair. 2x larger Spruce trees at woodland edge. Main leader dead/missing. Excessive Ivy growth in crown.	Cut Ivy around stem base.	5.4	C2
G	7	Chamaecyparis lawsoniana (Lawson Cypress)	EM	18	492	3	2	4	4	4	4	10+	Fair	Fair/Poor. Row of Cypress trees along bank to east of track. Previously topped; probably established as hedge and left to grow unchecked since topping works.	Crown reduce by 2-3m.	5.9	C2
G	8	Pinus sylvestris (Scots Pine)	M	16	500	1	5	6	6	6	6	20+	Fair	Fair. Cluster of 3 mature Pines in woodland. Thick Ivy growth on tree stems. Some storm damaged branches in crowns.	No urgent works needed.	6	B2
G	9	Acer pseudoplatanus (Sycamore) Fraxinus excelsior (Ash)	M	16	400	1	3	6	6	6	6	20+	Fair	Fair/Poor. Cluster of mature trees in variable condition. Ash on hedgeline with canker and epicormic growth. Better quality Sycamore trees, except for a single larger tree with a badly defective union as main stem forks.	Monitor trees for signs of Ash Dieback disease. Coppice defective Sycamore.	4.8	U C2 B2

Tree Survey Schedule
Knocknamoe, Abbeyleix,
Co. Laois
January 2021

Type	No.	Species	Age	Ht m	Dbh mm	St	Cr	N	S	E	W	ERC	Phys Cond	Structural Condition/Comments	Preliminary Recommendations	RPA m	Cat
G	10	Acer pseudoplatanus (Sycamore) Fraxinus excelsior (Ash)	EM	20	400	1	2	5	5	5	5	20+	Fair	Fair/Poor. Cluster of 3 Ash and 1 Sycamore. Mostly upright form. Compression forks on main stems of several trees.	Monitor Ash trees for signs of Ash Dieback disease.	4.8	C2 B2
G	11	Acer pseudoplatanus (Sycamore) Fraxinus excelsior (Ash)	SM	13	300	1	2	4	4	4	4	10+	Fair	Fair. Upright form. Cluster of young trees.	Monitor Ash trees for signs of Ash Dieback disease.	3.6	C2
G	12	Salix caprea (Goat Willow)	EM	9	350	1	1	5	5	5	5	10+	Fair	Fair. Cluster of 3 Willows in scrub to east of wooded area.	No urgent works needed.	4.2	C2
G	13	Salix caprea (Goat Willow)	SM	4 to 8	100 to 300	1	0	4	4	4	4	10+	Fair	Fair. Willow scrub in poorly drained land to the east of hedge H1 along the road frontage of the site. Group includes a mix of age class, with older mature trees closer to the roadside hedge and young natural regeneration extending across the ground to the north-east. Limited value.	Coppice any collapsing older trees.	3.6	C2
W	1	Acer pseudoplatanus (Sycamore) Aesculus hippocastanum (Horse Chestnut) Betula pendula (Silver Birch) Crataegus monogyna (Hawthorn) Fagus sylvatica (Beech) Fraxinus excelsior (Ash) Ilex aquifolium (Holly) Pinus sylvestris (Scots Pine) Chamaecyparis lawsoniana (Lawson Cypress)	SM EM M	10 to 16	100 to 500	1	2	3	3	3	3	20+	Fair	Fair. Area of secondary woodland on sloping ground to east of old track. Mix of species, with younger Beech intermingled with some larger Pine, Birch and Ash. Cluster of mostly Ash to north of group. Young Hawthorn and Holly in understorey.	Selective thin to favour better quality stems. Monitor woodland for signs of Ash Dieback disease.	3.6	U C2 B2

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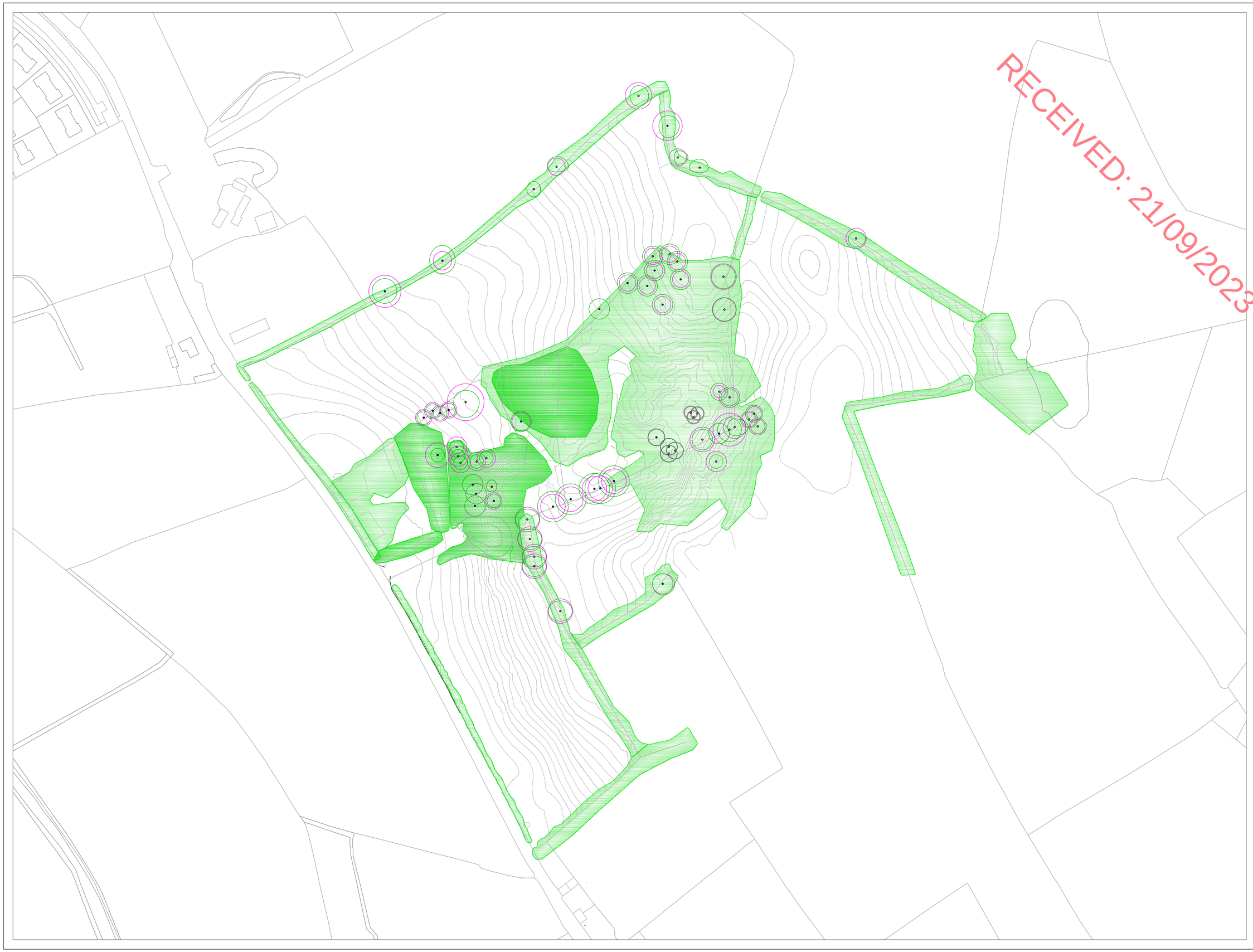
W	2	Acer pseudoplatanus (Sycamore) Fraxinus excelsior (Ash) Crataegus monogyna (Hawthorn) Sambucus nigra (Elder) Ulmus glabra (Wych Elm)	SM	10	150	1	1	3	3	3	3	10+	Fair/Bad	Fair/Bad. Area of young secondary woodland with high stem density. High proportion of woodland is made up of young Elm trees that have been decimated by Dutch Elm disease, leaving many dead stems. Stand is surrounded by dense thicket of scrub growth (mainly Elm and Hawthorn regeneration and Brambles).	Fell dead trees and coppice weaker/selected stems.	1.8	U C2
W	3	Acer pseudoplatanus (Sycamore) Crataegus monogyna (Hawthorn) Fraxinus excelsior (Ash) Sambucus nigra (Elder) Corylus avellana (Hazel) Ulmus glabra (Wych Elm) Ilex aquifolium (Holly) Prunus spinosa (Blackthorn)	SM	6	100	1	1	2	2	2	2	10+	Fair	Fair. Thick scrub of naturally regenerated saplings and bushes forming dense thicket. Includes Brambles, Gorse, etc. as well as young trees.	No urgent works needed.	1.2	C2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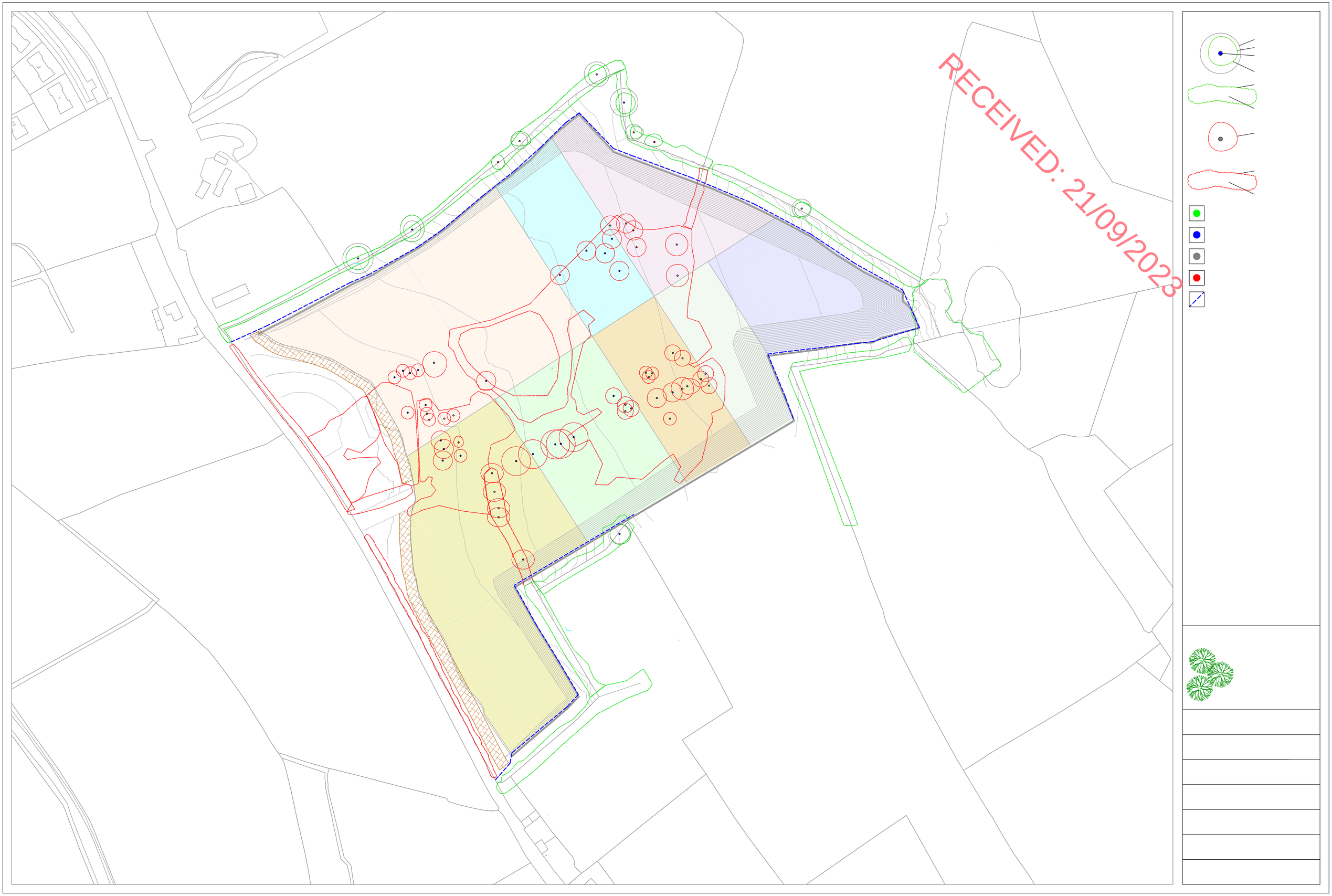
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