



Natura Impact Statement

Strategic Housing Development

Clonminch, Tullamore, Co. Offaly

Doherty Environmental Consultants Ltd.

September 2021

Strategic Housing Development

Clonminch, Tullamore

Natura Impact Statement

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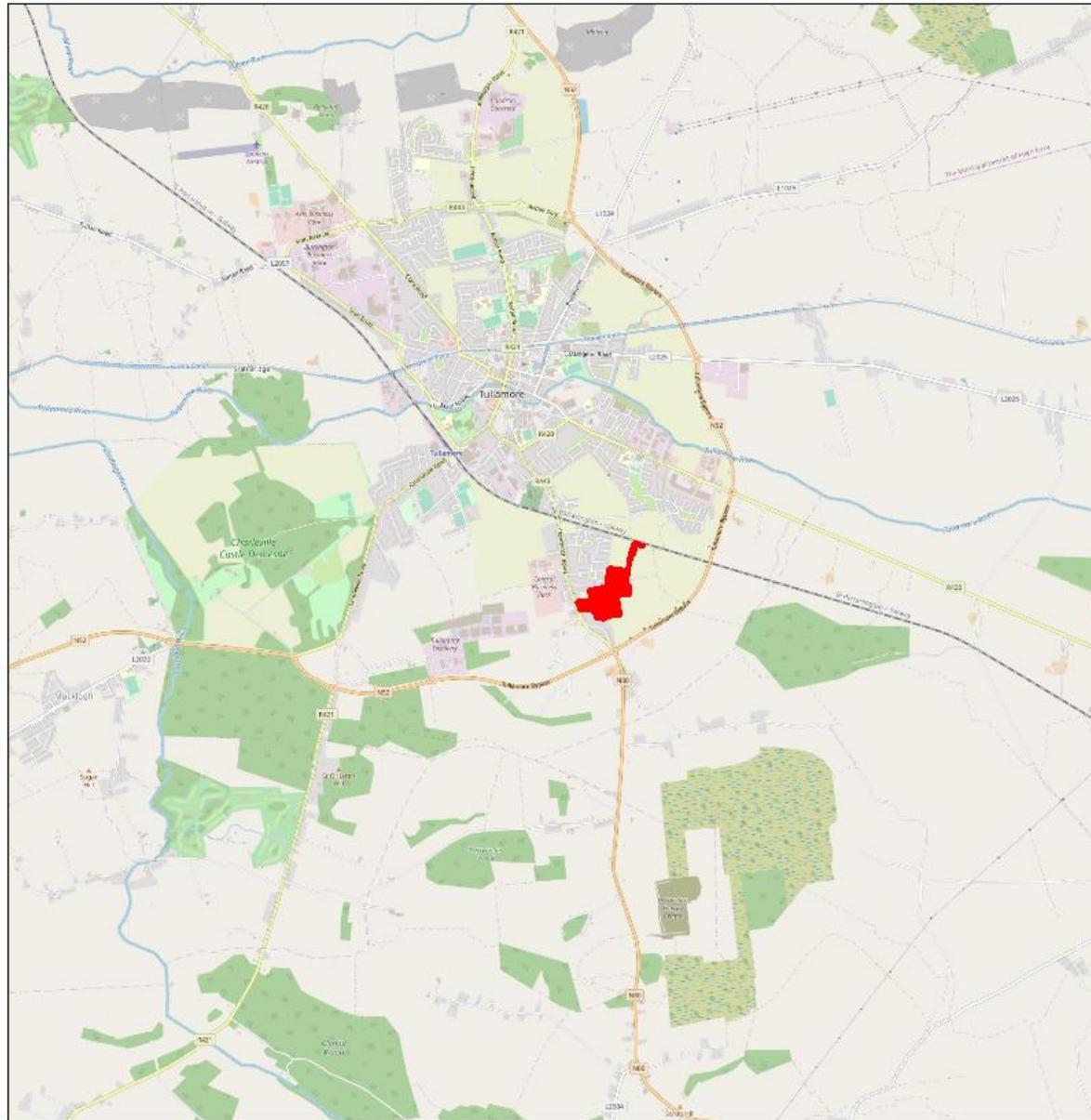
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1.0 INTRODUCTION

Doherty Environmental Consultants (DEC) Ltd. has been commissioned by Steinfort Investments Fund to prepare a Natura Impact Statement (NIS) for a proposed strategic housing development (SHD) at Clonminch, Tullamore, Co. Offaly (see Figure 1.1 for the location of project site and Figure 1.2 for an aerial view of the project site).

In accordance with Article 6(3) of the Habitats Directive, as transposed into Irish law by Regulation 42(1) and Part 5 of the European Communities (Birds and Natural Habitats) Regulations 2011 – 2015 (i.e. the “Habitats Regulations”) and Part XAB of the Planning and Development Act, 2000 (as amended) (i.e. the “Planning and Development Act”), a Screening Report for Appropriate Assessment (AA) was prepared to examine whether it could or could not be ruled out, on the basis of objective information, that the project, either individually or in combination with other plans or projects, was likely to have a significant effect on any European Sites. The Screening Report for Appropriate Assessment was prepared by DEC Ltd. on behalf of Steinfort Investments Fund and is provide as Appendix 1 to this NIS. The Screening Report for Appropriate Assessment concluded, in view of best scientific knowledge and the conservation objectives of the European Sites occurring within the zone of influence of the project, that, in the absence of appropriate mitigation, it could not be ruled out at the screening stage that the project would not result in significant negative effects to one European Site, namely the Charleville Wood SAC (Site Code: 000571). The conclusion of the Screening Report was informed by a highly precautionary approach and adopted a worst-case scenario. Such an approach was adopted to ensure consistency with the extremely low threshold for triggering likely significant effects as determined in both European and Irish case law and Section 177U of the Planning and Development Act. On the basis of the screening report conclusion AA is required in order to assess the implications of the project for the Charleville Wood SAC. In accordance with Section 177T of the Planning and Development Act, a NIS of the project has been prepared in order to assist the competent authority, in this case An Bord Pleanála, in carrying out its Appropriate Assessment. This NIS provides an examination, analysis and evaluation of the likely impacts from the Project, both individually and in combination with other plans and projects, in view of best scientific knowledge and the conservation objectives of the European Site concerned, namely the Charleville Wood SAC. It also prescribes appropriate mitigation to ensure that the Project will not adversely affect the integrity of this European Site, which has been identified as being at risk of likely significant

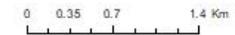


Clonminch SHD

Figure 1.1

Site Location

 Site Boundary



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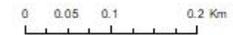


Clonminch SHD

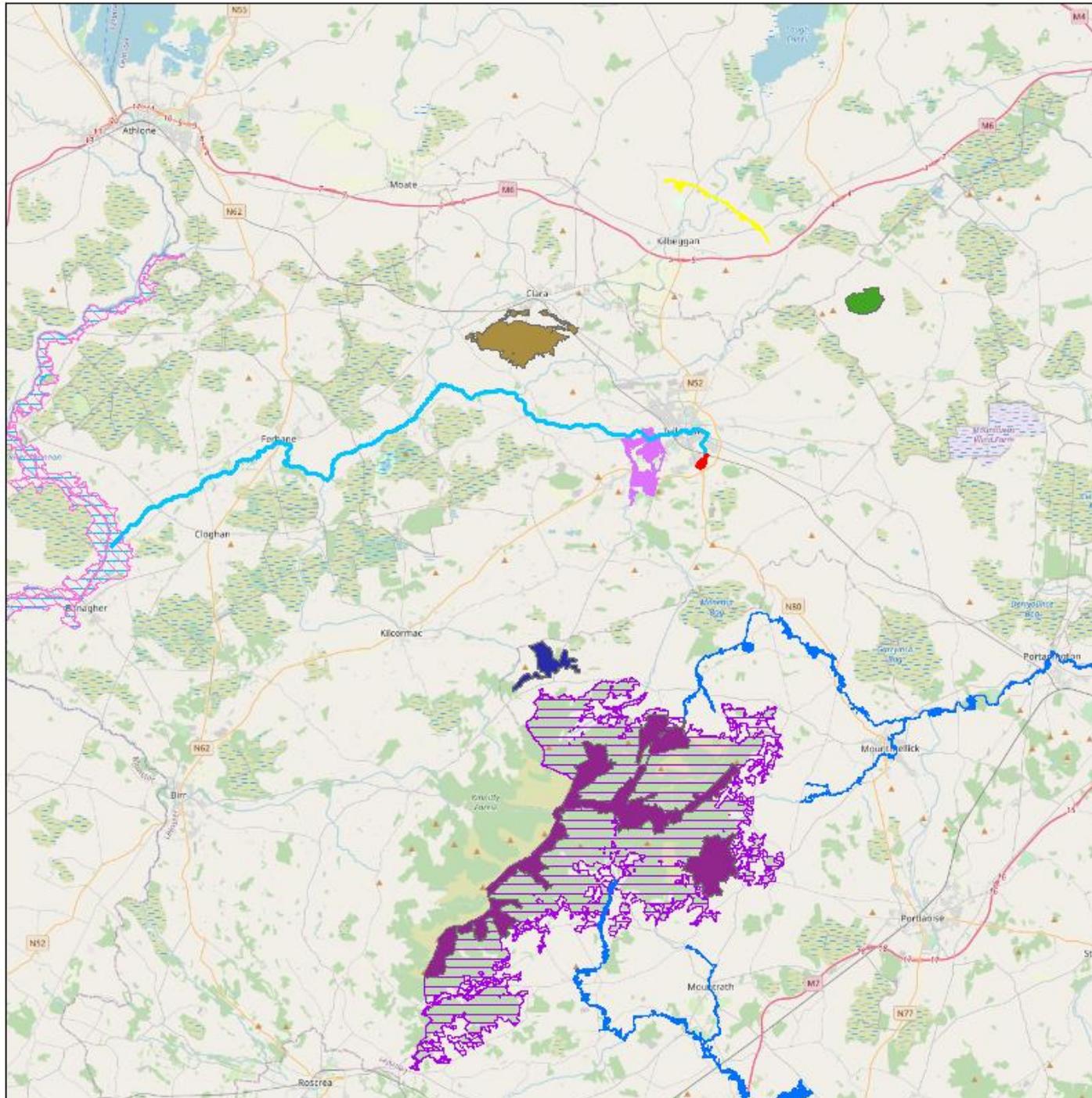
Figure 1.2

Aerial View of the Project Site

 Site Boundary



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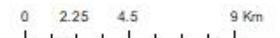


Clonminch SHD

Figure 1.3

European Sites in the Wider Surrounding Area

- Site Boundary
- Hydrological Pathway
- SACs & SPAs**
- Charleville Wood
- Clara Bog
- Clonaslee Eskers & Derry Bog
- Raheenmore Bog
- River Barrow & River Nore
- Slieve Bloom Mountains
- Split Hills & Long Hill Esker
- River Shannon Callows
- Middle Shannon Callows SPA
- Slieve Bloom Mountains SPA



| | |
|-------------|------------|
| Drawn By | PD |
| Date | 30/04/2021 |
| Data Source | OSM, NPWS |

effects. Finally, it provides complete, precise and definitive findings, which are capable of removing all reasonable scientific doubt as to the absence of adverse effects on the integrity of the Charleville Wood SAC.

1.1 SUMMARY OF SCREENING REPORT FOR APPROPRIATE ASSESSMENT

The Screening Report identified eight European Sites as occurring within the wider area surrounding the project site. Two other sites, namely the River Shannon Callows SPA and Middle Shannon Callows SPA, which occur at a significant distance from the project site (approximately 46km downstream) are also connected via a hydrological pathway to the project site and were screened for likely significant effects. No other European Sites are connected to the project via impact pathways and therefore the screening was restricted to examining the potential for likely significant effects to 10 European Sites. These 10 European Sites are listed on Figure 3.1 above and their location with respect to the project site is also shown. Of the ten European Site examined during the screening, nine were considered to lie outside the zone of influence of the project. This consideration was based on the distance between the project site and these European Site and/or the absence of any pathways that could connect the project site to these European Sites and their qualifying features of interest. As such one European Site, namely the Charleville Wood SAC, was identified as occurring within the zone of influence of the project.

The Charleville Wood SAC is designated for its role in supporting one qualifying habitat, namely Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*) [91E0] (henceforth to be referred to by its abbreviated name “alluvial woodland”); and one qualifying species, namely *Vertigo moulinsiana*. During the screening exercise a hydrological pathway was identified between the project site and the Charleville Wood SAC and its qualifying features of interest. The project was identified as having the potential to generated polluted surface water runoff during the construction phase and operation phase and has the potential to present a risk of the emission of wastewater to the hydrological pathway during the operation phase. With regard to the management of wastewater generated during the operation phase of the project, two interim options are proposed as part of the infrastructure design of the project, while existing capacity issues at the Irish Water Church Road pump station are addressed by Irish Water and Offaly County Council (see Section 2.3.2 for further details on these capacity issues). The first interim option, which has been approved by Irish Water, is to direct wastewater to the Tullamore Wastewater Treatment Plant. There are

capacity issues along the network at the Church Road pump station and as part of this management option these issues will be overcome by removing existing surface water volumes from the network so that adequate capacity is available along the network to facilitate the conveyance of wastewater, in the absence of any risk of surcharge, along the network to the wastewater treatment plant. During the screening this interim wastewater separation management option, which has been confirmed as feasible by Irish Water, was identified as not presenting a risk of pollution to the hydrological pathway connecting the project site to the Charleville Wood SAC and was therefore screened out.

This wastewater separation management option was identified as presenting an associated risk of pollution to the hydrological pathway connecting the project to the Charleville Wood SAC by directing surface water runoff from St. Columba's Place, to the west of the project site and where surface water will be removed from the existing combined sewer and directed to the hydrological pathway.

A second interim option (to be referred to hereafter as the wastewater storage tank management option), proposed as part of the infrastructure design involve the provision of a wastewater storage tank at the project site's pump station at the northern boundary of the project site. The wastewater storage tank will store wastewater generated at the project site during periods of critical rainfall events when there is a risk of surcharge downstream along the Irish Water Church Road pump station. During the screening it was found that in the absence of appropriate design measures, the potential risk for this storage tank to surcharge or leak to ground and emit wastewater to the hydrological pathway connecting the project site to the Charleville Wood SAC could not be ruled out as a potential impact pathway and as such the wastewater storage tank management option was therefore screened in.

The conveyance of contaminated waters downstream to the SAC via the hydrological pathway was identified as a potential risk to the conservation status of the alluvial woodland and *Vertigo moulinsiana*.

Based on the findings of the screening exercise it was considered that a NIS is required to examine the potential for the project to result in the discharge of polluted waters to the Charleville Wood SAC; the implication of such discharges to the conservation status of alluvial woodland and *Vertigo moulinsiana*; and the measures required to ensure that such discharges do not arise.

1.2 GUIDANCE

This NIS has been undertaken in accordance with National and European guidance documents: *Appropriate Assessment of Plans and Projects in Ireland: Guidance for Planning Authorities* (DEHLG 2010) and *Assessment of Plans and Projects Significantly Affecting Natura 2000 sites – Methodological Guidance of the Provisions of Article 6(3) and (4) of the Habitats directive 92/43/EEC*. The following guidance documents were also of relevance during this the preparation of this NIS:

- A guide for competent authorities. Environment and Heritage Service, Sept 2002. *Appropriate Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities* (2010). DEHLG.
- *Assessment of Plans and Projects Significantly Affecting Natura 2000 Sites – Methodological Guidance of the Provisions of Article 6(3) and (4) of the Habitats Directive 92/42/EED*. European Commission (2001).
- *Managing Natura 2000 Sites – The provisions of Article 6 of the Habitats directive 92/43/EEC*. European commission (2018).

The information provided in this NIS is also guided by European and Irish case law guiding the approach to Stage 2 Appropriate Assessment. In particular it is noted that the consideration of impacts provided in Section 4 this NIS has been undertaken in the absence of any regard to construction phase best practice measures, operation phase design measures or any related measures that aim to safeguard the receiving environment and the Charleville Wood SAC from potential adverse impacts.

1.2.1 *Background to Habitats Directive Article 6 Assessments*

The EC (2001) guidelines outline the stages involved in undertaking an assessment of a project under Article 6(3) and 6(4) of the Habitats Directive. The assessment process comprises the four stages outlined below. Stage 1 to 3 form part of the Article 6(3) process, while Stage 4 forms part of the Article 6(4) process. This NIS presents the findings of an examination, analysis and evaluation of the project to inform a Stage 2 Appropriate Assessment of the project.

- Stage 1 – Screening: This stage defines the proposed plan, establishes whether the proposed plan is necessary for the conservation management of the European Site and assesses the likelihood of the plan to have a significant effect, alone or in combination with other plans or projects, upon a European Site.
- Stage 2 – Appropriate Assessment: If a plan or project is likely to have a significant affect an Appropriate Assessment must be undertaken. In this stage the impact of the plan or project to the Conservation Objectives of the European Site is assessed. The outcome of this assessment will establish whether the plan will have an adverse effect upon the integrity of the European Site.
- Stage 3 – Assessment of Alternative Solutions: If it is concluded that, subsequent to the implementation of mitigation measures, a plan has an adverse impact upon the integrity of a European Site it must be objectively concluded that no alternative solutions exist before the plan can proceed.
- Stage 4 – Where no alternative solutions exist and where adverse impacts remain but imperative reasons of overriding public interest (IROPI) exist for the implementation of a plan or project an assessment of compensatory measures that will effectively offset the damage to the European Site will be necessary.

1.2.1.1 Stage 2: Appropriate Assessment

The EC Guidance Assessment Criteria for a Stage Two Appropriate Assessment seeks the following information:

1. A description of the elements of the project that are likely to give rise to significant effects to European Sites;
2. The Setting out of the Conservation Objectives of the Site;
3. A description of how the project will affect key species and key habitats;
4. A description of how the integrity of the site (determined by structure and function and conservation objectives) is likely to be affected by the project (e.g. loss of habitat, disturbance, disruption, chemical changes, hydrological changes etc.);

5. A description of the mitigation measures that are to be introduced to avoid, reduce or remedy the adverse effects on the integrity of European Sites.

This NIS addresses each of these items, but prior to doing so the following sections provide a description of the project; a description of the lands at and surrounding the footprint of the project site; a brief description of the Charleville Wood SAC; and a description of the hydrological pathway connecting the project site to the Charleville Wood SAC.

2.0 PROJECT DESCRIPTION

2.1 PROJECT OVERVIEW

The proposed Strategic Housing Development will consist of 349 no. dwellings, a crèche and two neighbourhood centre buildings. Residential buildings will range in height from single storey to four storey and are arranged around public open space areas

The proposed SHD also includes the construction of part of a key link road as identified by the Tullamore Town and Environs Development Plan 2010-2016 (as varied and extended), with vehicular access proposed onto Clonminch Road (R443) via a new signal controlled junction with toucan crossings. The development also provides for works to Clonminch Road including the provision of 2no. new bus stops and cycle lanes over a distance of c.1,700m from c.100metres south of the new vehicular junction to the application site northwards to c. 80metres north of its junction with Bachelors Walk (R420), Tullamore, Co..Offaly. Six ESB substations will also be required.

A foul raising main and associated strategic foul pumping station and rising main discharge manhole will be required to serve the proposed development.

2.2 CONSTRUCTION PHASE SURFACE WATER MANAGEMENT

The main contractor will be responsible for pollution prevention for the duration of the works. As fuels and oils are classed as hazardous materials, any on-site storage of fuel/oil, all storage tanks and all draw-off points will be bunded (or stored in double-skinned tanks) and located in the dedicated site compound.

The site works shall incorporate engineering measures such as the installation of a drainage system with settlement/silt collection ponds and provision of temporary interceptor(s). These surface water drainage management features will be installed as the first item of works for each phase of the development prior to their commencement.

Also, during the construction phase, standard construction phase silt and petrochemical interception will be carried out on all runoff and pumped water from site works.

Further, a silt curtain will be installed along the entire length of the eastern boundary of the site, between the site works and the watercourse. The purpose of this membrane will be to prevent any sediment discharge from draining into the watercourse.

All surface water runoff generated within the construction footprints and conveyed through the construction phase surface water treatment system will be discharged to the existing drain network within the project site and drain to the north to the Chancery Lane drain, with eventual discharge to the Tullamore River. The surface water drainage pathway between the project site and the Tullamore River is shown on Figures 3.1 to 3.3 below.

2.3 OPERATION PHASE SURFACE WATER MANAGEMENT

2.3.1 *Surface Water*

The site currently drains via a network of open drains which ultimately discharge to an open drain located adjacent to the northern portion of the site (along the Dublin to Galway railway line). Refer to Figure 2.1 below. A topographic survey was carried out in May 2020 to confirm the existing surface water outfall route beyond the northern boundary. There are a number of culverts beneath the railway line which direct flow from network of open drains within the site to an existing open drain on the northern side of the railway. This open drain then directs flows towards an existing 375mm diameter surface water drain at Chancery Lane. Surface water is then conveyed along this drain to discharge into the Tullamore River (the drainage pathway to the river is shown on Figure 3.1 to 3.3 below). It is proposed to discharge attenuated surface water flows from the proposed development to the existing network of open drains described above.

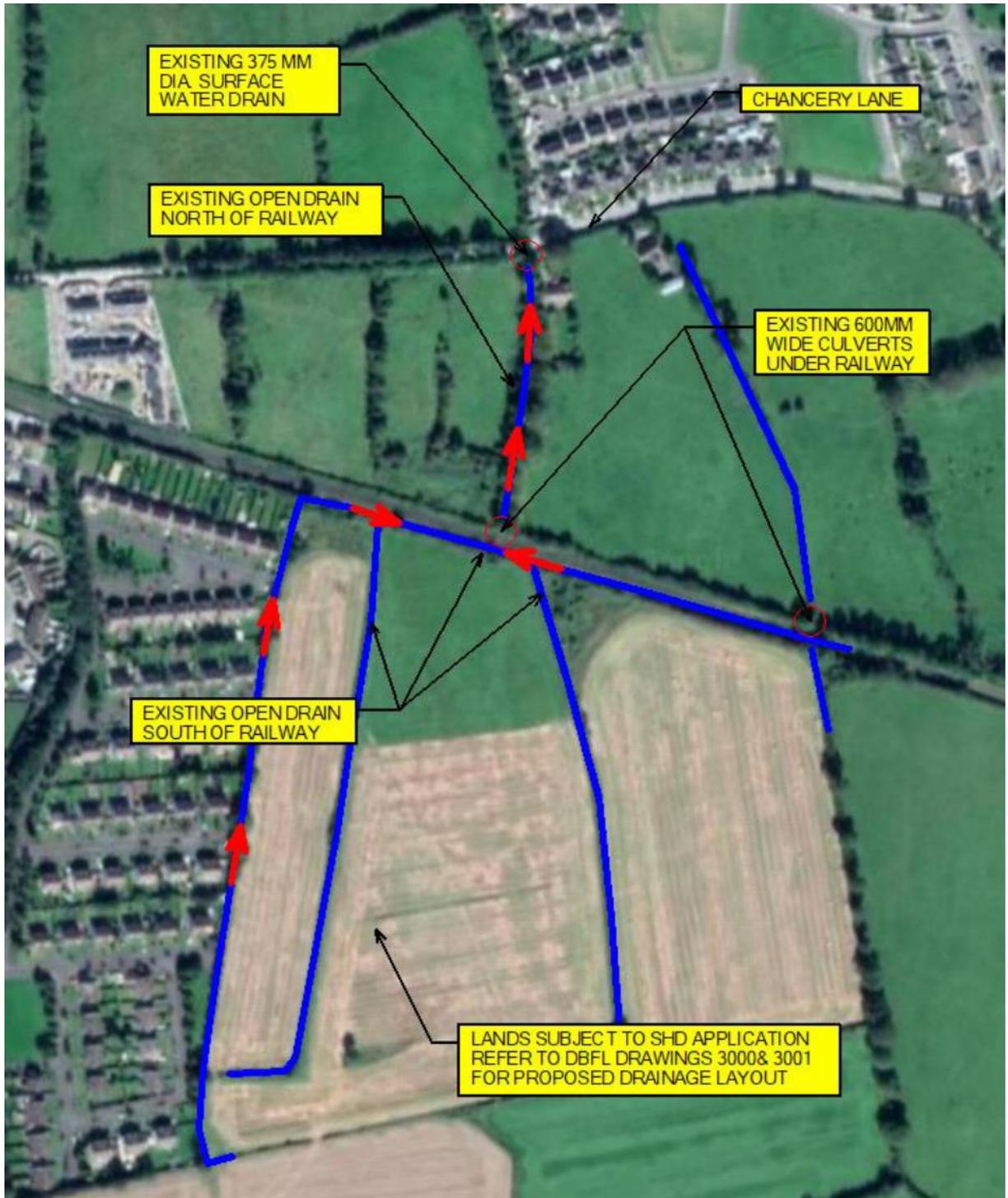


Figure 2.1: Existing Surface Water Pathway to Chancery Lane

2.3.1.1 Surface Water Design

As part of the surface water management design the project site will be separated into four separate water catchments. All catchments will discharge to an existing open drain located along the site's northern boundary.

Above ground detention basins are sized to attenuate up to a 1 in 100 year storm event. Surface water discharge rates from the proposed surface water drainage network will be controlled by a vortex flow control device (Hydrobrake or equivalent) and associated above ground attenuation. Surface water discharge will also pass via a full retention fuel / oil separator (sized in accordance with permitted discharge from the site).

The proposed surface water drainage network will collect surface water runoff from the site via a piped network prior to discharging off site via flow control device, attenuation and separator arrangement as noted above.

Surface water runoff from the site's road network will be directed to tree pits via conventional road gullies (with high level overflow to the piped surface water network). Surface water runoff from driveways will be captured by permeable paving.

Surface water runoff from house roofs will be routed to the proposed surface water pipe network via the porous aggregates beneath permeable paved driveways (providing an additional element of attenuation). Surface water runoff from apartments, the neighbourhood centre and creche will be captured by green roofs (sedum blanket) prior to being routed to the piped surface water drainage network.

- The surface water management design for the project also incorporate the following measures:
- Surface water network designed in accordance with GDSDS requirements
- Incorporates SUDS features e.g. green roofs, tree pits and permeable paving in the higher risk parking areas at the front of houses (i.e. treatment / filtration provided within the stone reservoir beneath permeable paved driveways)

Surface water attenuation (i.e. treatment / filtration provided within the landscaped areas in the detention basins) in conjunction with a final Class 1 fuel / oil separator prior to discharge to the downstream surface water network.

2.3.2 Foul Drainage

An existing 225mm diameter public foul sewer is located west of the site along the Clonminch Road which discharges northwards towards Church Road Pump Station. The proposed foul discharge point is located along the western boundary and is somewhat elevated above the north-east of the site, therefore, a strategic pumping station and associated rising main will be required to service the development. The proposed strategic foul pumping station is to be located in the north-east corner of the site (adjacent to the railway line). As such, this pump station will also serve other lands within the Eastern Node of the Southern Environs of Tullamore where a gravity drainage connection to the existing foul drainage infrastructure in Clonminch Road cannot be achieved.

The proposed foul drainage network within the development has been designed in compliance with Irish Water's Code of Practice for Wastewater Infrastructure and comprises of a series of 225mm diameter pipes, discharging to the strategic pumping station described above. Individual dwellings will be serviced by an individual 100mm diameter connections.

Confirmation of feasibility has been received from Irish Water on the 1st September 2021. Irish Water have advised as follows:

“Based upon the details you have provided with your pre-connection enquiry and on our desk top analysis of the capacity currently available in the Irish Water network(s) as assessed by Irish Water, we wish to advise you that your proposed connection to the Irish Water network can be facilitated at this moment in time”.

The proposed connection to the existing wastewater network is feasible subject to upgrades. The Southern Interceptor Sewer (SIS) project is due to be delivered by Irish Water in conjunction with Offaly County Council and will provide the long-term wastewater connection for the proposed development. There are existing capacity issues along the Irish Water wastewater network at the Church Road pump station, which has been liable to previous surcharge of wastewater during critical high rainfall events. The delivery of the SIS will remedy

these capacity issues. However, the SIS project is not likely to be completed prior to the operation phase of the proposed development and as such interim upgrade works are required. Irish Water have advised that separation works on existing combined sewers could provide an interim solution to address the existing constraints on the wastewater sewerage network. Refer to extract from Irish Water Confirmation of Feasibility below:

“There is sufficient capacity available at the Tullamore Wastewater Treatment Plant to facilitate your proposed development.

A wastewater connection from this development could be facilitated subject to the completion of interim works on the network. The interim works would primarily include surface water separation works within St. Columbas Place and along Clonminch Road (R443), which would remove sufficient volumes of surface water from the combined sewer system to free up capacity for the expected wastewater loading from the proposed development. We advise that you complete further hydraulic assessments of the said downstream network and include 1 in 1 year storm events in your assessment.”

“Further to this we would advise you enter a Project Works Service Agreement (PWSA) with Irish Water to establish and agree the optimum location for a storm water storage tank on the downstream network.

The enduring wastewater solution for this site is the planned Southern Interceptor Sewer (SIS). This project is currently being progressed by Irish Water and will be delivered by Irish Water in conjunction with Offaly County Council along with specific road projects in this area of Tullamore. Please note the SIS project is not likely to be completed before your proposed development. Accordingly, the identified interim works outlined above would be required to facilitate a wastewater connection from your site in the short term. Once the SIS project is completed the long-term wastewater connection for this development can be completed to an agreed location on the SIS.”

Please note the exact scope of surface water separation works and storage should be agreed with Irish Water in due course and in advance of the Connection Agreement for this development.”

To enable development of the site in advance of the delivery of the Southern Interceptor Sewer (SIS) project, the identified interim works outlined above can be provided to facilitate the wastewater connection in the intervening period.

For this interim wastewater separation management approach, an area has been identified to the west of the site, within St. Columba's Place, where road gullies currently discharge to an existing combined sewer network, with the combined sewer outfalling directly to St. Columba's Pump Station. A strategy to separate surface water from foul water in the combined sewer has been developed as part of the project and forms part of the foul water management design proposals for the project. The separation strategy has been identified for the area within St. Columba's Place and consists of:

- The construction of a surface water outfall to an existing open drain running along the eastern side of St. Columba's Place (taking flows from road gullies away from the combined sewer discharging to St. Columba's Pump Station).
- The attenuation of flows from road areas within St. Columba's Place to 2.0 l/sec (30 year storm event).

These measures will facilitate the potential removal of approximately 38.5 l/sec of surface water flow from the combined sewer (5 year storm event) and will provide capacity for the foul drainage flow from project site at Clonminch, Peak Discharge (6DWF), of 10.8 l/sec.

Taking 38.5 l/sec of surface water flow away from St. Columba's Pump Station when compared to the peak foul discharge from the subject application (10.8 l/sec) results in a potential reduction in hydraulic loading by a factor of 3.5 on the waste water network during problematic rainfall events.

With the above separation strategy in place all wastewater generated during the operation phase will be directed to the Tullamore wastewater treatment plant for treatment prior to discharge to the receiving environment. The project has been given design acceptance by Irish Water.

A second interim option for the management of wastewater generated by the project during the operation phase, while upgrades to the Irish Water wastewater infrastructure are progressed, is the provision of wastewater storage capacity at the project's pump station (i.e. the wastewater

storage tank management option). Under this option a wastewater storage tank will be provided at the project's pump station. Telemetry will be installed at the project's foul pumping station linking to the problematic Church Road Pump Station in the town centre which could allow the project's foul storage tank to be activated and store flows generated by the development should the network in the town centre become inundated. In effect the project's foul storage tank will be utilised to store wastewater emissions from the project during surcharge events in the town centre and therefore allow the proposed development to proceed on a phased basis in advance of any network upgrades.

2.3.3 Water Supply

The site's proposed water main layout is shown on DBFL Drawing 180002-3002.

It is proposed to connect to the existing 9" diameter watermain on the Clonminch Road to service the proposed development. A 200mm diameter spine water main will be provided along the development's arterial roads with a number of 150mm / 100mm diameter looped branch mains provided elsewhere.

The proposed water main layout has been designed in accordance with Irish Water Standard Detail STD-W-02 including provision of a bulk flow meter at the connection point to the existing water supply network on Clonminch Road.

Sluice Valves have been arranged in accordance with Irish Water Standard Detail STD-W-02, Note 6 ("valves shall be arranged in such a manner to allow the network to be managed to ensure that no more than 40 properties lose water from a burst on the system, at any one time").

Individual houses will have their own connections (25mm O.D. PE pipe) to distribution water mains via service connections and boundary boxes. Individual connections are to be installed in accordance with Irish Water Standard Detail STD-W-03

2.4 CONSTRUCTION SEQUENCE

The construction phase will be completed in the following sequence:

Stage 1- Excavation & site preparation works

Stage 2- Substructure works

Stage 3- Superstructure works

2.5 CONSTRUCTION MATERIALS

The following construction materials will be required for the works:

- Concrete: This will be delivered by readymix truck and placed directly in prepared forms.
- Hardcore: This will be stored in the Construction compounds and delivered to site location by dump truck.
- The following materials will be stored in the construction compound
- PVC Drainage Piping and fittings.
- PVC ducting
- Acodrain drainage hardware
- Concrete Blocks and premixed mortar in bins
- Recessed Metal I.C. covers.
- Limestone and Concrete Paving Materials
- Pre-bagged bedding mortars and grouts
- Concrete mini pillar vaults
- Materials for Public lighting installation
- Builders site fencing, site access and traffic control equipment

2.6 DURATION OF THE CONSTRUCTION PHASE

It is estimated that the works will take approximately 48 months to complete.

3.0 BASELINE DESCRIPTIONS

3.1 DESCRIPTION OF THE SITE LOCATION

The project site is located in an area of agricultural land to the southeast of the centre of Tullamore. It is located approximately 1.8km to the southeast of the town centre. The site is bounded to the north by the Iarnrod Eireann railway line, to the south and east by agricultural land in the form of arable land and improved agricultural grassland. The N52 national road is located further south, southeast of the project site. Existing residential housing estates and the R443 form the western boundary to the site.

The application site will include Clonminch Road and works to the road to provide segregated cycle tracks and associated alterations to the carriageway from the application site to the town centre at Bachelors.

The EPA national rivers digital mapping and the Water Framework Directive catchment and subcatchment digital mapping were reviewed for the project site and the surrounding area. The project site is located within the Tullamore River subcatchment of the River Shannon catchment. The Tullamore River is located approximately 935m to the north of the project site boundary. A minor 1st order stream tributary of the Tullamore River, the Cloncollog Stream, is located approximately 870m to the southeast of the project site. A review of the Cassini 6-inch historical map does not indicate the presence of any other watercourses in the vicinity of the project site not mapped by the EPA on the national rivers database. Artificial drainage ditches flow parallel to the railway to the north of the project site and these drains convey waters to the Tullamore River. Seasonal/ephemeral drains occur along some of the existing hedgerow field boundaries within the project site. is currently conveyed in an northerly direction (see Figure 2.1) and drain into an existing drain along the northern side of the railway bounding the project site to the north. This drain flows towards an existing surface water drain along Chancery Lane, which in turn conveys water to the north where it eventually discharges to the Tullamore River.

The water quality of the Tullamore River is monitored by the EPA. Monitoring locations are located upstream of the project site at a Springfield Bridge in the townland of Meelaghans (approximately 3.5km to the east of the project site) and downstream of the project site at a bridge southwest of Ballycowen, near the Grand Canal (over 5km to the west of the project site). Water quality from the upstream monitoring location has been reported by the EPA to be of Q3, moderately polluted, while water quality at the downstream monitoring location has been reported to be of Q4, good water quality.

Charleville Wood SAC is the nearest designated conservation area to the project site. It is located approximately 1.8km to the west of the project site. Charleville Wood is also listed as a pNHA. The nearest NHA to the project site is Hawkswood Bog NHA, approximately 3.7km to the south. No SPAs occur in the vicinity of the project site, with the nearest, the Slieve bloom Mountains SPA, located over 12km to the south.

The quarternary geology at the project site and surrounding area is dominated by till derived from limestone. The dominant soils are limestone till while the bedrock consists of dark limestone and shale. The project site overlies a locally important aquifer. The subsoils are classed by the GIS as being of moderate permeability and the groundwater vulnerability has been assessed as moderate.

The land cover within the project site is dominated by arable land (BC1). Hedgerows (WL1) form field boundaries throughout the site and as noted above drainage ditches (FW4) occur along many of the field boundaries.

3.2 DESCRIPTION OF THE CHARLEVILLE WOOD SAC

3.2.1 Site Synopsis

Charleville Wood is a large woodland surrounded by estate parkland and agricultural grassland located about 3 km south-west of Tullamore in Co. Offaly. It is located approximately 1.9km to the west of the project site and 3km downstream via the hydrological pathway between the project site and the SAC's eastern boundary. The SAC is designated for its role in supporting one qualifying habitat, namely Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae) [91E0] (henceforth to be referred to by its

abbreviated name “alluvial woodland”); and one qualifying species, namely *Vertigo moulinsiana*.

The site, which is underlain by deep glacial deposits, includes a small lake with a wooded island, and a stream runs along the western perimeter. The woodland is one of very few ancient woodlands remaining in Ireland, with some parts undisturbed for at least 200 years. At Charleville Wood, approximately 10% of the woodland has been under-planted with conifers and other exotic trees, but the majority is dominated by Pedunculate Oak (*Quercus robur*). There is much Ash (*Fraxinus excelsior*) and scattered Wych Elm (*Ulmus glabra*), while birch (*Betula* spp.) is a feature of the boggy margins. The shrub layer is composed largely of Hazel (*Corylus avellana*), Hawthorn (*Crataegus monogyna*) and Blackthorn (*Prunus spinosa*). The ground layer is varied, including damp flushed slopes with Ramsons (*Allium ursinum*) and drier, more open areas with a moss sward composed largely of *Rhytidiadelphus triquetris*. The fungal flora of the woodland is notable for the presence of several rare Myxomycete species, namely *Hemitrichia calyculata*, *Perichaena depressa*, *Amaurochaete atra*, *Collaria arcyronema*, *Stemonitis nigrescens* and *Diderma deplanata*. Wet alluvial forest is found around the lake. It is dominated by Grey Willow (*Salix cinerea*) with Alder (*Alnus glutinosa*) and Ash. The ground flora is dominated by Common Reed (*Phragmites australis*) with Marsh-marigold (*Caltha palustris*), sedges (*Carex* spp.), Meadowsweet (*Filipendula ulmaria*), Yellow Iris (*Iris pseudacorus*), Gipsywort (*Lycopus europaeus*) and Water Mint (*Mentha aquatica*) present. Extensive swamps of Bulrush (*Typha latifolia*) and Bottle Sedge (*Carex rostrata*) have developed in the lake shallows. The wooded island at its centre is famed for its long history of non-disturbance. Hazel, Spindle (*Euonymus europaeus*) and Ivy (*Hedera helix*) reach remarkable sizes here.

The lake is an important wildfowl habitat - it supports populations of Mute and Whooper Swan and a number of duck species, including Teal, Wigeon, Shoveler, Pochard and Tufted Duck. A number of unusual insects have been recorded in Charleville Wood, notably *Mycetobia obscura* (Order Diptera), a species known from only one other site in Ireland. The site is also notable for the presence of a large population of the rare snail species, *Vertigo moulinsiana*. Charleville Wood is one of the most important ancient woodland sites in Ireland. The woodland has a varied age structure and is relatively intact with areas of both closed and open canopy. The understorey and ground layers are also well-represented. Alluvial forest is a priority habitat listed on Annex I of the E.U. Habitats Directive, while the rare snail species, *Vertigo moulinsiana*, is listed on

Annex II of this Directive. Moorkens (2002) has suggested that the Grand Canal may be a source of the *Vertigo moulinsiana* population occurring within the wetland habitats of Charleville Wood. The wetland areas, with their associated bird populations, rare insect and *Myxomycete* species, contribute further to the conservation significance of the site.

3.2.1.1 Overview of Alluvial Woodland

Alluvial woodland is a priority Annex I habitat. A number of variants of this habitat exist, of which riparian forests of *Fraxinus excelsior* and *Alnus glutinosa* (Alno-Padion) of temperate and Boreal Europe lowland and hill watercourses are the most common type found in Ireland. They occur on heavy soils which are periodically inundated by the annual rise of river levels, but which are otherwise well-drained and aerated during low water. The herbaceous layer includes many large species such as *Filipendula ulmaria*, *Angelica sylvestris*, *Rumex sanguineus* and *Carex* spp., vernal species such as *Ficaria verna* and *Anemone nemorosa*, and other indicative species such as *Carex remota*, *Lycopus europaeus*, *Urtica dioica* and *Geum rivale*.

The short-term and long-term trends for this habitat are decreasing. The threats and pressures to this habitat include the introduction of non-native invasive species, presence of problematic native species, the clear-cutting of trees.

The surface area of alluvial woodland in Ireland is estimated to be approximately 19.64km². As no site-specific conservation objectives have been published for the Charleville Wood SAC, a map showing the extent of this habitat within the SAC that will be the target of the SAC's conservation objectives has yet to be published by the NPWS. However, the extent of the favourable reference area (FRA) of this habitat has been mapped by the NPWS as part of their Article 17 Reporting under the EU Habitats Directive. The extent of this habitat, as mapped for the Article 17 Reporting is shown on Figure 3.1 below. The area shown on Figure 3.1 measures approximately 57.85 hectares, which represents approximately 3% of the area of alluvial woodland occurring in Ireland. As can be seen on Figure 3.1 the mapped extent of alluvial woodland within the SAC is not hydrologically connected to the project site. The hydrological pathway is located approximately 1.75km to the north of this area of mapped alluvial woodland. As such there are no pathways linking this mapped area of alluvial woodland to the project.

Figure 3.1 shows the presence of substantial additional plots of woodland within the SAC, some of which occur downstream of project site, flanking the hydrological pathway to the north and south. While as noted above no conservation objectives map has been prepared for Charleville Wood SAC, all woodland habitats occurring within the SAC were subject to detailed survey and analysis as part of the National Survey of Native Woodland (NSNW) (Perrin et al., 2008). The woodland habitats flanking the hydrological pathway towards the northern end of the SAC were classified in the NSNW as the following woodland habitat types:

Fraxinus excelsior (Ash) – *Hedera helix* (Ivy): *Quercus robor* (Oak) – *Rubus fruticosus* (Bramble) vegetation type; and

Alnus glutinosa (Alder) – *Filipendula ulmaria* (Meadowsweet): *Crataegus mongyna* (Hawthorn) – *Geranium robertianum* (Herb Robert) vegetation type.

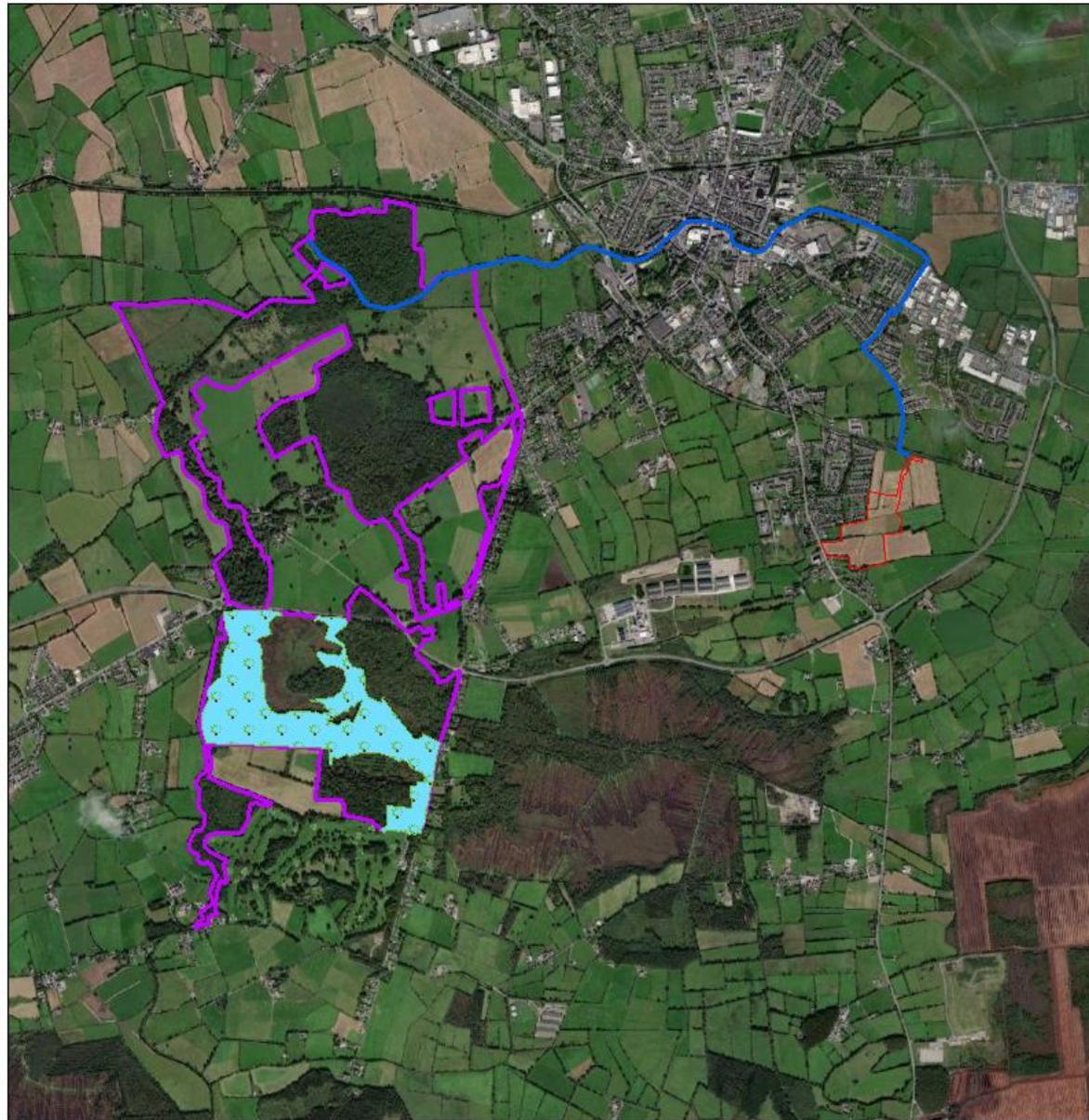
The extent of these woodland habitat types flanking the hydrological pathway and all other woodland habitat types occurring in the SAC that were classified during the NSNW are shown on Figure 3.2. The area of identified Annex 1 alluvial woodland habitat is also shown for comparison on Figure 3.2. The larger woodland polygon in which this example of Annex 1 alluvial woodland habitat sits was identified during the NSNW survey as consisting of non-Annex oak, ash, hazel woodland and Annex alluvial woodland.

Of the woodland habitats occurring within the SAC only one woodland type was identified as being representative of an Annex 1 habitat. This was the *A. glutinosa* - *F. ulmaria* group, *S. cinerea* - *E. fluviatile* vegetation type which occurs to towards the south of the SAC and approximately 1.75km to the south of the hydrological pathway. This area broadly overlaps the area identified by the NPWS (2019a) as forming part of the FRA of alluvial woodland (see Figure 3.1 for mapped extent).

The two examples of woodland habitat flanking the hydrological pathway were not identified in the NSNW survey as having links to the Annex 1 alluvial woodland habitat or any other Annex 1 woodland habitat type.

In light of the above it can be concluded that there is no hydrological pathway linking the project site to the alluvial woodland of the Charleville Wood SAC.

Notwithstanding the absence of a hydrological pathway between the project site and the alluvial woodland of the SAC it is noted that the woodland habitats flanking the hydrological pathway are connected via semi-natural habitat corridors to this qualifying habitat (see Figure 3.3) and the conservation of these non-Annex 1 habitat woodland habitats is required for the

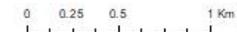


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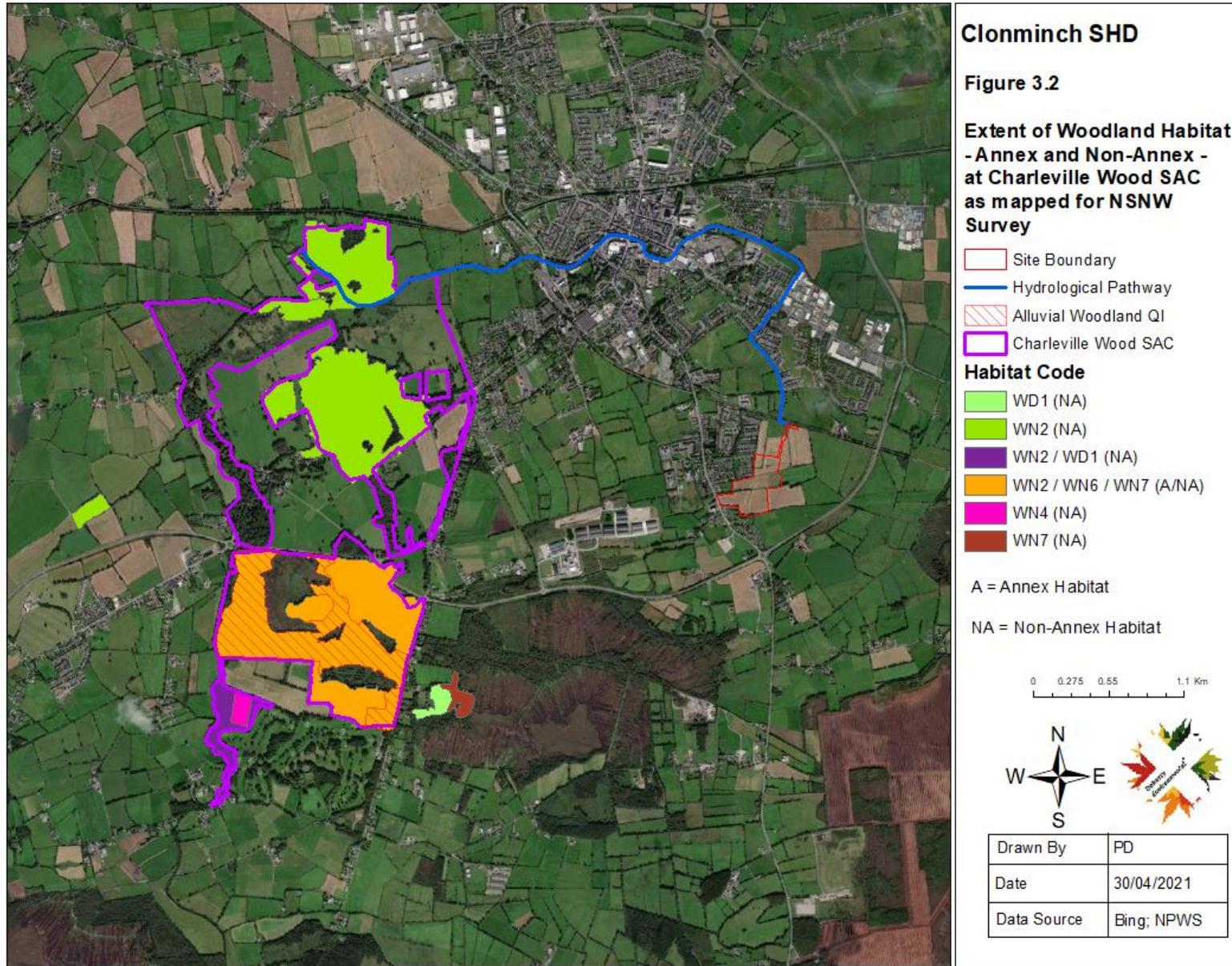
Figure 3.1

Extent of Alluvial Woodland at Charleville Wood SAC as mapped for NPWS 2019 Article 17 Report

-  Alluvial Woodland QI
-  Hydrological Pathway
-  Charleville Wood SAC
-  Site Boundary
-  15km Buffer



| | |
|-------------|------------|
| Drawn By | PD |
| Date | 30/04/2021 |
| Data Source | OSM; NPWS |



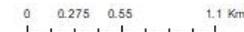


Clonminch SHD

Figure 3.3

Semi-Natural Corridors Between the Hydrological Pathway and Annex Alluvial Woodland Habitat

-  Alluvial Woodland QI
-  Hydrological Pathway
-  Semi-Natural Corridors
-  Charleville Wood SAC
-  Site Boundary



| | |
|-------------|------------|
| Drawn By | PD |
| Date | 30/04/2021 |
| Data Source | Bing; NPWS |

maintenance of the overall favourable conservation status of the alluvial woodland and the SAC. For example, changes in the species composition of non-Annex 1 habitats through the increase in extent of undesirable, negative indicator species (for instance as a result of increases in trophic status) could in turn result in the dispersal of such negative indicator species, via existing corridors as shown on Figure 3.3), to the Annex 1 woodland habitat. Furthermore and in keeping with this point, it is noted that existing European Case Law (Case C-461/17) requires an examination of other non-qualifying habitat types or species that may form part of a SAC so that the overall environment protection mechanism of Article 6(3) is satisfied. As such this NIS will examine the potential for the project to result in adverse effects to the non-qualifying woodland habitat flanking the river within the SAC.

3.2.1.2 Overview of *Vertigo moulinsiana*

Vertigo moulinsiana, Desmoulin's whorl snail, is the largest of the *Vertigo* species found in Ireland with its size ranging from 1.7mm and up to 2.7mm high and 1 to 1.5mm in width. It is broadly egg-shaped and has a red-brown relatively glossy shell (Plate 1). It shows a preference for calcareous damp or wet habitats with tall-growing vegetation. As such it is often associated with reed-beds and swamps, and some types of fens (e.g. *Cladium* fens) and marshes. Suitable vegetation types are additionally often found bordering waterbodies such as canals, ditches, lakes and rivers. Examples include areas with *Glyceria maxima*, *Phragmites australis*, *Cladium mariscus* and some tall or tussock-forming *Carex* species such as *Carex riparia*. This species, in contrast with other *Vertigo* species, can migrate considerable distances vertically during the year, climbing high in the vegetation in autumn, and remaining low during winter. It can withstand certain amounts of flooding, but appears to be relatively intolerant of drying out.

Water-borne transportation is believed to be the principal dispersal mechanism for *V. moulinsiana*. By the nature of its wetland habitat, the snails are likely to be able to float on the water surface or attached to floating vegetation and can therefore disperse during periods of flooding. Dispersal is also believed to be mediated by mammals, the snail being brushed from vegetation as the animals pass, and then adhering to their body hair. A similar dispersal is inferred by attachment to the feet and feathers of birds. The ability of the species to self-fertilise makes it possible for a single coloniser to establish a new population.

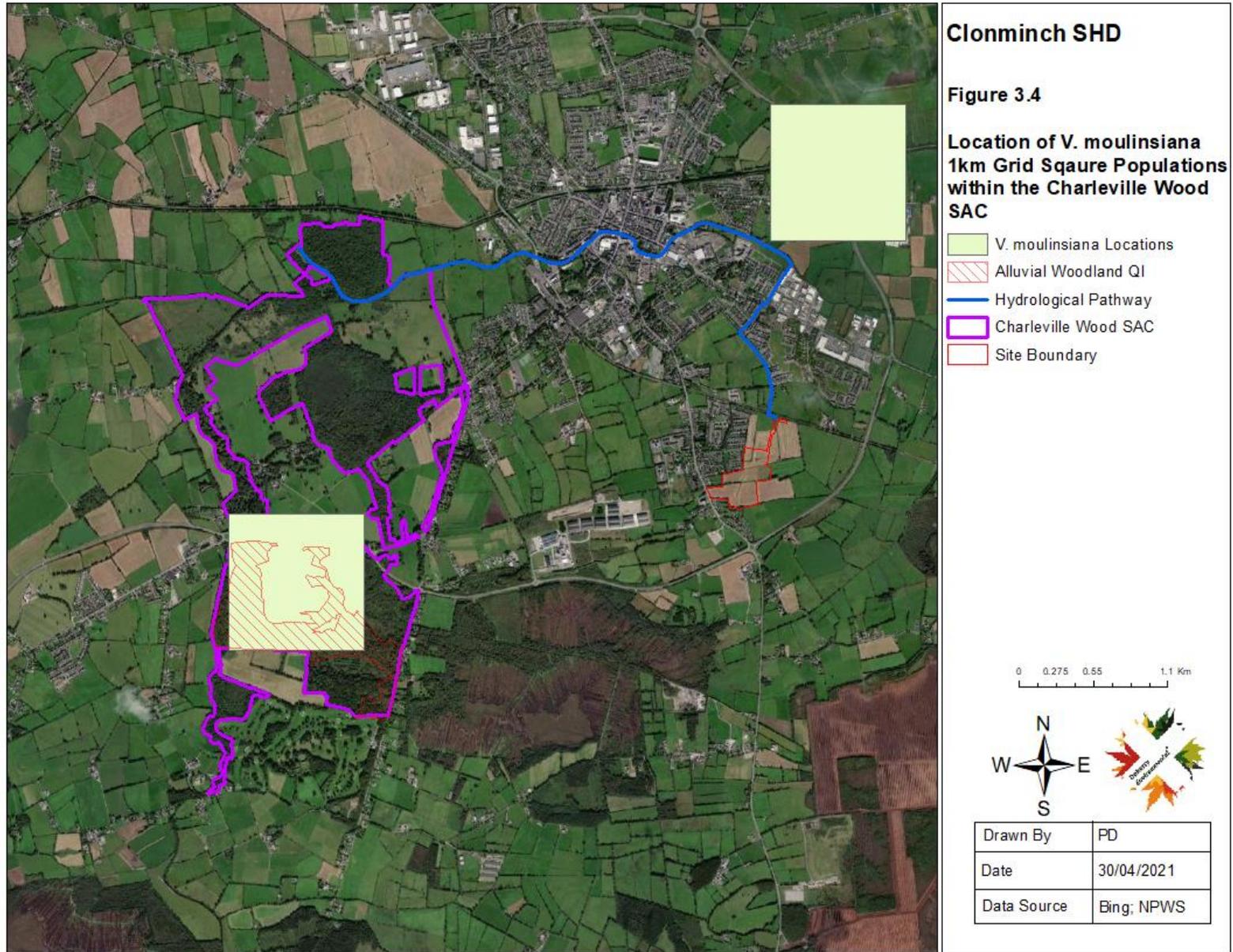
Plate 1: *V. moulinsiana* (Photo: M. Long)



The long-term national trend of this species is decreasing and its overall national trend in conservation status is deteriorating (NPWS, 2019b). Brophy & Long (2019) assessed the conservation status of the population of *Vertigo moulinsiana* at the site level throughout a number of selected sites in Ireland. The conservation assessment for the population supported by Charleville Wood SAC found that this population is currently at favourable conservation status. Brophy & Long (2019) noted that the general habitat in which *Vertigo moulinsiana* is present at Charleville Wood SAC is within a lake fringe area of swamp fen surrounding Charleville Lake. Charleville Lake is located towards the south of the SAC, south of the N52 national road and is located approximately 1.8km to the south of the Tullamore River and the hydrological pathway.

Threats and pressures to this species include natural succession in habitats resulting in the change of swards and reduction in plant species relied upon by *Vertigo moulinsiana*, abiotic natural processes such as drying out, abandonment of management again leading to change in habitat and sward and extensive grazing or undergrazing again leading to changes in habitat and sward type.

The population of *Vertigo moulinsiana* on a national basis is measured by the number of 1km² grids in which it has been recorded. The Favourable Reference Population (FRP) is 66 1km² grids. One 1km² grid has been identified within the Charleville Wood SAC (NPWS, 2019b). This is shown on Figure 3.4. A second 1km² population is located to the north of the project site along the Grand Canal. The project site is not connected to this population via a hydrological pathway. As can be seen on Figure 3.4 the location of the *Vertigo moulinsiana* population within the SAC is located well to the south (i.e. approximately 1.5km) of the hydrological pathway linking the project site to this SAC. As noted above the swamp fen



surrounding Charleville Lake, is located within this 1km² and is situated approximately 1.8km to the south of the Tullamore River and the hydrological pathway and is separated from it by the N52 national road. As such the existing known extent of the *Vertigo moulinsiana* population supported by the SAC is not connected to the project site via the hydrological pathway.

However, as shown on Figure 3.3 above there are semi-natural corridors linking the known area of *Vertigo moulinsiana* habitat to the Tullamore River and flanking woodland habitat. The *Alnus glutinosa* – *Filipendula ulmaria*: *Crataegus mongyna* – *Geranium robertianum* habitat¹ occurring to the south of the river (see Figure 3.2) is a damp wet woodland habitat that support tall growing herbs, rushes, sedges and grass that may have suitability for supporting *Vertigo moulinsiana*. It is also noted that Moorkens (K.T. Cullen/White Young Green, 2002) suggests that there may be links between the Charleville Wood SAC *Vertigo moulinsiana* population (to the south of this woodland) and the Grand Canal (to the north of this woodland) and therefore the area of woodland flanking the river could function as a stepping stone habitat between these two areas. As such the wet alder-meadowsweet woodland is considered to represent a suitable habitat for this species.

3.2.2 Documented Threats & Pressures to Charleville Wood SAC

The NPWS have documented threats and pressures to the Charleville Wood SAC in their Natura 2000 Data Return Form for this SAC. The threats and pressures to this SAC have been ranked in terms of low, medium and high impacts. No moderate threats or pressures are listed for this SAC. The high impact threats and pressures to this SAC are as follows:

- G01 Outdoor sports and leisure activities, recreational activities
- G01.02 Walking, horseriding and non-motorised vehicles
- F03.02.03 trapping, poisoning, poaching

¹ Referred to hereafter as wet alder-meadowsweet woodland

3.2.3 Conservation Objectives

The overall Conservation Objectives for the Charleville Wood SAC is to maintain the favourable conservation status of the habitats and species for which the SAC is designated. The favourable conservation status of species will be achieved when:

- population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats, and
- the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and
- there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis

Favourable conservation status of habitats is achieved when:

- its natural range, and area it covers within that range, are stable or increasing
- the specific structure and functions which are necessary for its long- term maintenance exist and are likely to continue to exist for the foreseeable future, and;
- the conservation status of its typical species is favourable.

Site-specific Conservation Objectives (SSCOs) for European Sites provide further details on the Conservation Objectives for qualifying features. SSCO's publish the attributes and associated targets that define the favourable conservation status of qualifying features of interest. At the time of writing no SSCO's have been published for the *Vertigo moulinsiana* population or alluvial woodland habitat of the Charleville Wood SAC.

In the absence of published SSCO's for this SAC a search of SSCO's for *Vertigo moulinsiana* and alluvial woodland, published for other SACs has been undertaken. The SSCO's for *Vertigo moulinsiana* and alluvial woodland that are relied upon in this NIS have been sourced from the published Conservation Objectives for the River Barrow and River Nore SAC.

The SSCO's and their attributes and targets for both alluvial woodland and *Vertigo moulinsiana* are described in Section 6 below.

3.3 DESCRIPTION OF THE HYDROLOGICAL PATHWAY

The hydrological pathway between the project site and the Charleville Wood SAC is established initially by the drainage ditch that runs along the base of the railway embankment to the north of the project site. Surface water arising from the project site will be discharged to this drainage ditch. Water flows from this drainage ditch through an existing culvert under the railway and flows north along an open drainage ditch towards Chancery Lane, where it connects into an existing 375mm drain that conveys surface water north towards the Tullamore River. The Charleville Wood SAC is located approximately 3.5km from the project site along this pathway.

The Tullamore River is monitored by the EPA. The ecological status of this river between 2010 and 2015 was classified as poor, while the river waterbody Water Framework Directive (WFD) status 2013 – 2018 classified the stretch of the Tullamore River downstream of the project site and flowing through Charleville Wood SAC at moderate status. However, the latest Q-value water quality monitoring undertaken along the Tullamore River downstream of the project site and Charleville Wood SAC, at a bridge southwest of Ballycowen Bridge, assigned a Q-value 4, indicating Good biological water quality status. The Tullamore River is classed as a Nutrient Sensitive Area owing to the presence of an urban wastewater treatment plant (Tullamore Wastewater Treatment Plant) within its catchment. The most recent WFD subcatchment report for the Tullamore River (subcatchment Tullamore_SC_010) (EPA, 2019) identified urban waste water as the only pressure to water quality along the section of the river flowing through Charleville Wood SAC. The most recent Water Framework Directive (WFD) catchment summary report for 25A Lower Shannon Catchment (EPA, 2018) notes that this wastewater treatment plant is compliant with environment objectives. The most recent publicly available Annual Environmental Report (AER) for the wastewater treatment plant is from 2019 (Irish Water, 2020). This AER concluded that the wastewater treatment plant is compliant with the Emission Limit Values (ELVs) for the plant and as such is not resulting in any negative impact to water quality along the Tullamore River. There are known existing constraints relating the Irish Water sewerage network and surcharges at the networks Church Road pump station during critical rain fall events and these constraints are examined further in Section 4 below.

4.0 CONSIDERATION OF POTENTIAL IMPACTS TO EUROPEAN SITES

4.1 SOURCE OF POTENTIAL IMPACTS

4.1.1 Potential for Groundwater Impact Pathway

The potential for groundwater connections between the project site and the Charleville Wood SAC were identified during the screening exercise as requiring further examination. A review of the Geological Survey of Ireland (GSI) Geashill Groundwater Body report has been undertaken to identify the potential for a groundwater impact pathway between the project site and the SAC. The Groundwater Body report states that the main discharge points for groundwater is along contours to streams and rivers. At the project site contours rise to the south and further to the west near the SAC and fall to the east and northeast. The topography and surface water flow paths, as shown on Figure 2.1 above, are generally to the north towards the railway. Based on the GSI Geashill Groundwater Body Report and the contours in the surrounding area, the surface water draining to ground through the project site will follow north/northeasterly baseflows and will exit at the railway drain or further northeast along the Tullamore River, where they will contribute to the surface water hydrological pathway between the project site and the SAC. In light of this no groundwater flow pathway connect the project site to the SAC. However groundwater flows will contribute to the surface water pathway that connects the project site to the SAC and this pathway is considered further below.

4.1.2 Potential for Changes to Hydrological Regime of the Tullamore River

The potential for the project to result in changes to the hydrological regime of the Tullamore River downstream of the project site was identified during the screening exercise as requiring further examination. The potential for the provision of impermeable and permeable made ground surfaces within the project site to alter the hydrological regime of the Tullamore River was examined as part of the hydrological assessment, detailed in the EIAR for the project, which is presented under separate cover. The hydrological assessment found that, even in the absence of SUDS and other measures to retard surface water runoff rates from the project site, there will be no potential for runoff from such areas during the operation phase to have a perceptible effect on the hydrological regime of the Tullamore River. Based on this assessment, the potential for such changes to occur are eliminated and will not represent a source of potential effects to the Charleville Wood SAC.

4.1.3 Potential for Surface Water Impact Pathway

The project will have the potential to result in the discharge of contaminated surface water from the project site during the construction phase and operation phase. This contaminated surface water will be conveyed downstream along the hydrological pathway to the Charleville Wood SAC.

Earthworks associated with the construction phase of the project will denude surfaces and have the potential to generate silt-laden surface water runoff from the project site. In the event that water generated in the construction footprint is of a poor water quality standard or becomes contaminated from construction works, its discharge will have the potential to perturb water quality downstream along the Tullamore River. In addition, potentially contaminating materials such as oils, fuels, lubricants, other construction-related solutions and cement-based products will be used on site during the construction phase and the accidental emission of such material via surface water runoff to the Tullamore River will have the potential to undermine water quality within the river.

During the operation phase surface water generated at the project site will discharge via the proposed surface water pathway to the Tullamore River and the section of the river flowing through the SAC. In addition, in the event that the wastewater management option that has been agreed to by Irish Water is implemented for the initial operation phase of the project, additional surface water generated at St. Columba's Place to the west of the project site will also be diverted from the existing combined sewer serving this area and be directed to the hydrological pathway. The potential will exist for surface water runoff from car parking areas from both the project site and St. Columba's Place to be contaminated in the event of fuel leaks or accidental spills. Any untreated discharge of contaminated surface water runoff from the project site or St. Columba's Place to the Tullamore River could result in pressures to the water quality of this river.

While it is noted that the uncontrolled release of contaminated surface drainage waters to the Tullamore River is likely to be rapidly diluted and distributed within this waterbody, any deposition of contaminants such as hydrocarbons or cement material to the river could result in perturbations to the status of habitats and fauna support by/influenced by the river. The toxic effect of such contaminants, particularly hydrocarbons, on feeding, growth, development and

reproduction are known to cascade and bioaccumulate throughout the food chain affecting benthic fauna, fish, birds and mammals (Ferrando, 2015).

The significance of the impact of the uncontrolled release of contaminants from the project site or St. Columba's Place to the Tullamore River and the habitats and associated fauna influenced by the river will depend upon the frequency of the release and the concentration of contaminating materials in surface water discharging from the project site to the river. In a worst-case scenario the ongoing discharge of waters with high concentrations of contaminating substances could over time lead to the deposition of such contaminants in the river system. For instance Revitt et al. (2014) demonstrated the potential of car parking areas to result in a build-up of diffuse pollution loads on their surfaces with subsequent mobilization and direct discharge to receiving waters.

4.1.4 Potential for Wastewater Pathway

There are existing constraints on the existing Irish Water wastewater sewerage network serving the lands in which the project site is located. Wastewater overflows have occurred at the Irish Water Church Road Pump Station during critically high rainfall events.

The project will result in the generation of wastewater during the operation phase and contribute additional loads to the existing network. During the screening of the project the wastewater storage tank management option that involves the provision of wastewater storage at the project's pump station during critical rainfall events was identified as presenting a risk of wastewater surcharge or leakage from this storage tank to the hydrological pathway connecting the project site to the Charleville Wood SAC. In the absence of suitable design safeguards, the storage of wastewater at a wastewater tank during critical rainfall events will have the potential to increase the risk posed by wastewater to water quality in the Tullamore River catchment and in the river itself. The discharge of wastewater to the Tullamore River will pose a risk to the trophic status of this watercourse and will in turn have the potential to discharge nutrient enriched waters over woodland habitats within the Charleville Wood SAC during flood events.

4.2 IMPLICATIONS FOR ALLUVIAL WOODLAND

As noted in Section 3.2.3 above there are no SSCOs published for Charleville Wood SAC and in lieu of this the SSCOs taken from the Lower River Shannon SAC are relied upon. While

there is no hydrological pathway connecting the project site to the example of qualifying alluvial woodland habitat in the SAC, for the purposes of this NIS the SSCOs for this habitat are applied to the woodland habitats flanking the Tullamore River. These SSCOs do not list a water quality or a nutrient specific attribute or target for this habitat. There is a target to maintain the appropriate hydrological regime necessary for maintenance of alluvial vegetation. Periodic flooding is essential to maintain alluvial woodlands along river floodplains. The supporting document for woodlands in the Lower River Shannon SAC (NPWS, 2012), located downstream of the River Shannon Callows SAC, lists potential threats to this habitat type including an indirect threat from sewage discharges which will pollute receiving waters and have an indirect impact on alluvial woodland habitat. Such indirect impacts are likely to be associated with an increase in the trophic status of the woodland leading to the stronger growth of nitrophilous species and loss of less vigorous species. The NPWS (2012) supporting document focuses on the impact of elevated nutrients to this habitat and does not identify other contaminants such as excessive silts, hydrocarbons etc. as a specific threat to this habitat. As such the emission of silt-laden, cement-laden or hydrocarbon contaminated surface water runoff to the Tullamore River and its dispersal onto flanking woodland in the SAC is not likely to result in long-term adverse effects to the status of woodland habitats occurring within the SAC and will not have adverse effects to the qualifying alluvial woodland habitat occurring to the south of the river within the SAC boundary.

In the event that wastewater generated during the operation phase is emitted to the hydrological pathway, the project will have the potential to result in elevated nutrient concentrations downstream along the Tullamore River. During spate events river water will flood woodland habitat within the SAC and nutrient enriched river water will deposit on the woodland floor. It is further noted that it is only during critical spate events where there will be potential for the release of wastewater to the hydrological pathway as wastewater will only be stored in the project's wastewater storage tanks during such events. While it is acknowledged that the likelihood for such processes to result in changes to the trophic status of the woodland and subsequent changes in swards are limited², for this NIS a worst-case scenario is adopted.

² Any wastewater accidentally emitted from the project during the operation phase will be to the Tullamore River channel. Water is conveyed along the channel through the SAC. There is a circa

4.3 IMPLICATIONS FOR VERTIGO MOULINSIANA

In the event that discharges from the project site result in the deposition of polluted surface water and particularly nutrient enriched surface water to woodland habitats occurring along the Tullamore River riparian corridor the potential will exist for such discharges to result in changes to the vegetation community and the structure of the riparian woodland habitat. This in turn will have the potential to result in changes to the potential for the herb layer of the wet alder – meadowsweet woodland habitat to support *Vertigo moulinsiana*.

4.4 IN-COMBINATION EFFECTS

A search of the Offaly County Council online planning portal was completed in March 2021 to identify any other recently (i.e. within the last 5-years) applied for or granted projects within the vicinity of the project site or downstream of the project site along the two hydrological pathways was completed. Three recent applied for or granted projects were identified during this search. These are as follows:

Application Reg. Ref. 19512: A planning approved development at Tullamore Rugby club consisting of a single storey extension to the rear of the existing stand for plant room for a generator and store room, an extension to the existing car park to the front of the main clubhouse and new entrance off Spollenstown road with ancillary works. This project was screened for Appropriate Assessment by Offaly County Council and it was determined that it did not have

3km distance along the hydrological pathway between the project site and the SAC and wastewater will be diluted as it travels downstream along the pathway. The potential for wastewater discharge from the storage tanks will be restricted to critical spate events only when wastewater is stored in the tanks to relieve capacity constraints at the Church Road pump station. Water is likely to only breach the channel banks and flood the woodland floor during excessive spate events. A review of OPW Flood Maps shows that during a 1 in 10 year flood, flooding is restricted to a narrow corridor along the Tullamore River; during a 1 in 100 year event; flooding is restricted to a corridor along the Tullamore River with some additional flooding in the ash, ivy, oak terrestrial woodland to the north of the river; during a 1 in 1000 year flood, flooding occurs in both ash, ivy, oak terrestrial woodland and the wetter alder, meadowsweet woodland to the south of the river.

the potential alone or in-combination with other plans or projects to result in likely significant effects to European Sites. As such there is no potential for the current project to combine with this project to result in cumulative adverse effects to the Charleville Wood SAC.

Application Reg. Ref 16352: A planning approved development at St. Joseph's cemetery consisting of a proposed extension to existing St. Joseph's cemetery, Tullamore including new entrance from Spollanstown industrial estate and car parking. this application is within the curtilage of a protected structure. This project was screened for Appropriate Assessment by Offaly County Council and it was determined that it did not have the potential alone or in-combination with other plans or projects to result in likely significant effects to European Sites. As such there is no potential for the current project to combine with this project to result in cumulative adverse effects to the Charleville Wood SAC.

Application Reg. Ref. 19/285: A planning approved development at Tullamore college consisting of the provision of 2 no 30 meter wide x 13.5 meter high ball-stops, to the east and west sides of the existing playing field, which is located to the east of the existing school, together with all associated siteworks. This project was screened for Appropriate Assessment by Offaly County Council and it was determined that it did not have the potential alone or in-combination with other plans or projects to result in likely significant effects to European Sites. As such there is no potential for the current project to combine with this project to result in cumulative adverse effects to the Charleville Wood SAC.

Section 3 above provides details for existing threats and pressures to the Charleville Wood SAC and its qualifying features of interest. None of the impacts listed in Section 3 above are related to water quality pressures and as such the project will not have the potential to combine with these existing threats and pressures to result in cumulative adverse effects to the conservation status of the Charleville Wood SAC and its qualifying features of interest.

5.0 DESCRIPTION OF HOW THE PROJECT COULD AFFECT KEY HABITATS & SPECIES

A NIS is required to assess the potential for impacts to the integrity of a European Site, with respect to the site's structure and function and its Conservation Objectives. The structural and functional elements of a European Site to maintain the favourable conservation status of qualifying features of interest are embedded into the list of detailed SSCOs for each of the site's

interest features. As such a European Sites' SSCOs represent the parameters against which a project's potential to adversely affect the integrity of a European Sites should be considered.

Table 5.1 lists the Conservation Objectives attributes and targets for each of the qualifying features of interest of the Charleville Wood SAC and assesses the potential for the project to result in adverse effects to these attributes and targets.

It is noted that the appraisal outlined in Table 5.1 has been completed without any regard to the mitigation measures that will be implemented as part of the project. These mitigation measures are considered later in Section 7 below.

Table 5.1: Examination of Potential Impact to the Site-Specific Conservation Objectives for Woodland Habitat and *Vertigo moulinsiana*

| Attribute No. | Attribute | Target | Examination of Adverse Effects to Conservation Objectives Attributes & Targets |
|-------------------------|--------------------------------------|--|---|
| Woodland Habitat | | | |
| 1 | Habitat area | Area stable or increasing, subject to natural processes. | The project is located at a remote distance from examples of this habitat within the SAC and will not have the potential to result in changes to the extent of alluvial wet woodland within it. |
| 2 | Habitat distribution | No decline. | The project is located at a remote distance from examples of this habitat and will not have the potential to result in changes to it distribution within the SAC. |
| 3 | Woodland size | Area stable or increasing. | The project is located at a remote distance from examples of this habitat and will not have the potential to result in changes to woodland size within the SAC. |
| 4 | Woodland structure: cover and height | Diverse structure with a relatively closed canopy containing mature trees; sub-canopy layer with semi-mature trees and shrubs; and well-developed herb layer | In the event that the project result in the discharge of polluted surface water to woodland habitat and in particular the discharge of nutrient enriched surface water, as a result of wastewater emissions to the hydrological pathway during the operation phase, the potential will exist for the project to result in a change to the structure of the herb layer occurring in the riparian zone of woodland habitats that are liable to flooding from waters conveyed along the Tullamore River. |

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| 5 | Woodland structure: community diversity and extent | Maintain diversity and extent of community types | In the event that the project result in the discharge of polluted surface water to woodland habitat and in particular the discharge of nutrient enriched surface water, as a result of wastewater emissions to the hydrological pathway during the operation phase, the potential will exist for the project to result in a change to the diversity of the herb layer occurring in the riparian zone of woodland habitats that are liable to flooding from waters conveyed along the Tullamore River. Nutrient enrichment could over time result in the dominance of nitrophilous species and their subsequent spread within the SAC and in examples of qualifying alluvial woodland habitat to the south of the hydrological pathway. |
| 6 | Woodland structure: natural regeneration | Seedlings, saplings and pole age-classes occur in adequate proportions to ensure survival of woodland canopy | The emission of polluted surface waters to the woodland habitat of the SAC will not have the potential to result in a change in the structure of tree species and their age-classes that contribute to the woodland canopy |

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| 7 | Hydrological regime: flooding depth/height of water table | Appropriate hydrological regime necessary for maintenance of alluvial vegetation | The project will not involve any works within watercourses and will not have the potential, even in the absence of measures to control runoff ³ , to result in any perceptible changes to surface water runoff within the Tullamore River sub-catchment downstream of the project site. |
| 8 | Woodland structure: dead wood | At least 30m ³ /ha of fallen timber greater than 10cm diameter; 30 snags/ha; both categories should include stems greater than 40cm diameter (greater than 20cm diameter in the case of alder) | By virtue of the remote distance between the project and examples of this habitat within the SAC there will be no potential for it to result in changes to the extent of dead wood within the SAC. the extent of deadwood within woodland habitat is not sensitive to the discharge of polluted surface water to the woodland floor. |

³ The potential for the project to result in changes to surface water volumes along the Tullamore River and related changes to its hydrological regime was examined in Section 4.1 above it was found that the project, even in the absence of measures to control surface water runoff there will be no potential for the project to result in perceptible changes to flow rates and the hydrological regime of the Tullamore River.

| | | | |
|-----------------------------------|--|---|--|
| 9 | Woodland structure: veteran trees | No decline | The project will not have the potential to result in a decline in the abundance of veteran trees associated with this habitat. |
| 10 | Woodland structure: indicators of local distinctiveness | No decline | For the reasons outlined for attribute no. 5 above the emission of polluted surface water from the project and downstream to the woodland habitat of the SAC will have the potential to result in changes that could undermine the local distinctive of the woodland herb layer and a change to a more generic nutrient enriched herb layer. |
| 11 | Vegetation composition: native tree cover | No decline. Native tree cover not less than 95% | The tree cover of the woodland habitats occurring within the SAC is not sensitive to the discharge of nutrient enriched surface water to the woodland floor. Existing tree species such as alder, ash, oak are tolerant of nutrient enriched habitats. |
| 12 | Vegetation composition: typical species | A variety of typical native species present, depending on woodland type. | For the reasons outlined for attribute no. 5 above the emission of polluted surface water from the project and downstream to the woodland habitat of the SAC will have the potential to result in changes that could change the typical suite of woodland herb species to a more generic nutrient enriched herb layer. |
| 13 | Vegetation composition: negative indicator species | Negative indicator species, particularly non-native invasive species, absent or under control | For the reasons outlined for attribute no. 5 above the emission of polluted surface water from the project and downstream to the woodland habitat of the SAC will have the potential to result in changes that could promote the growth of nitrophilous species which represent a suite of negative indicator species for this habitat. |
| <i>Vertigo moulinsiana</i> | | | |
| 14 | Distribution: occupied sites | No decline. | The known population of <i>Vertigo moulinsiana</i> at Charleville Wood SAC is located approximately 1.5km to the south of the hydrological pathway and is not connected to |

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| | | | the project site. However the alder – meadowsweet woodland flanking the southern bank of the Tullamore River is considered to provide suitable habitat for <i>Vertigo moulinsiana</i> and may function as a stepping stone habitat between the Grand Canal and the known <i>Vertigo moulinsiana</i> population to the south. Changes in woodland community structure of the alder – meadowsweet woodland to the south of Tullamore River as a result of the discharge of nutrient enriched waters to the woodland floor during spate events will undermine this potential to undermine the capacity for the alder-meadowsweet woodland to support this species. This could arise as a result of a change in the sward community to a more aggressive nitrophilous sward that results in the loss of key vegetation relied upon by this species. |
| 15 | Population size: adults | At least 5 adults snails in at least 50% of samples | For the reasons outlined for Attribute No. 14 above the project will have the potential to result in a reduction of potential suitable habitat for <i>Vertigo moulinsiana</i> within the alder meadowsweet woodland habitat along the Tullamore River southern riparian zone. |
| 16 | Population density | Adult snails present in at least 60% of samples per site | For the reasons outlined for Attribute No. 11 above the project will have the potential to result in a reduction of potential suitable habitat for <i>Vertigo moulinsiana</i> within the alder meadowsweet woodland habitat along the Tullamore River southern riparian zone. |
| 17 | Area of occupancy | Minimum of 1ha of suitable habitat per site | For the reasons outlined for Attribute No. 11 above the project will have the potential to result in a reduction of potential suitable habitat for <i>Vertigo moulinsiana</i> within the |

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| | | | alder meadowsweet woodland habitat along the Tullamore River southern riparian zone. |
| 18 | Habitat quality: vegetation | 90% of samples in habitat classes I and II as defined in Moorkens & Killeen (2011) | For the reasons outlined for Attribute No. 11 the project will have the potential to result in a reduction of potential suitable habitat for <i>Vertigo moulinsiana</i> within the alder meadowsweet woodland habitat along the Tullamore River southern riparian zone.. |
| 19 | Habitat quality: soil moisture levels | 90% of samples in moisture class 3-4 as defined in Moorkens & Killeen (2011) | The project will not have the potential to result in changes to soil moisture levels in woodland habitat adjacent to the Tullamore River. |

6.0 A DESCRIPTION OF HOW THE INTEGRITY OF THE SITE IS LIKELY TO BE AFFECTED BY THE PROJECT

EU Guidelines (2001) recommend as part of a Stage 2 Appropriate Assessment that a checklist of site integrity is carried out (see Table 7.1). This aids in establishing the nature of potential adverse effects to the integrity of the European Sites, as defined by the conservation objectives of special conservation interests occurring within the sphere of influence of the project.

Table 6.1: Checklist of Site Integrity

| Conservation Objectives | |
|--|--|
| Does the Project have the potential to: | |
| Cause delays in progress towards achieving the conservation objectives of the site | Yes. In the absence of mitigation the project will have the potential to contribute to water quality perturbations downstream with potential implications for the woodland habitat and potentially suitable <i>Vertigo moulinsiana</i> habitat occurring within the SAC. |
| Interrupt progress towards achieving the conservation objectives of the site | Yes. See response to first question above. |
| Disrupt those factors that help to maintain the favourable conditions of the site | Yes. See response to first question above. |
| Interfere with the balance, distribution and density of key species that are the indicators of the favourable condition of the site. | Yes. See response to first question above. |
| cause changes to the vital defining aspects (e.g. nutrient balance) that determine how the site functions as a habitat or ecosystem? | Yes. See response to first question above. |
| change the dynamics of the relationships (between, for example, soil and water or plants and animals) that define the structure and/or function of the site? | Yes. The discharge of potentially contaminated surface water from the project site to woodland and potentially suitable <i>Vertigo moulinsiana</i> habitat of the SAC could contribute to a localised effect to the keystone alluvial woodland and <i>Vertigo moulinsiana</i> habitat occurring a minimum distance of 1.5km to the south of the Tullamore River. |
| interfere with predicted or expected natural changes to the site (such as water dynamics or chemical composition)? | Yes. The discharge of potentially contaminated surface water from the project site could result in a decrease in the diversity of |

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| | woodland habitat communities supported by the SAC. |
| reduce the area of key habitats? | No. The project will not result in a reduction in woodland habitat, however it will have the potential to result in a reduction in the area of potentially suitable <i>Vertigo moulinsiana</i> habitat occurring adjacent to the Tullamore River. |
| reduce the population of key species? | Yes. See response to questions above. |
| change the balance between key species? | Yes. The prolonged discharge of potentially contaminated surface water runoff from the project site to woodland habitat within the SAC will have the potential to result in a reduction in the structure and diversity of the woodland communities adjacent to the Tullamore River with potential consequent effects as a result of dispersal within alluvial woodland habitats towards the south of the SAC. |
| reduce diversity of the site? | Yes. See response to the question above. |
| result in fragmentation? | No. |
| result in loss or reduction of key features (e.g. tree cover, tidal exposure, annual flooding, etc.)? | Yes. Any prolonged discharge of polluted surface water runoff from the project site to woodland habitats will have the potential to result in the reduction of woodland communities supported by these habitats. |

7.0 A DESCRIPTION AND EVALUATION OF MITIGATION MEASURE

Targeted mitigation measures are provided to safeguard against the potential effects of the project to the water quality of the Tullamore River during the construction phase and operation phase of the project. The measures to be implemented to protect the water quality downstream along the Tullamore River will in turn avoid the potential for such discharges to the woodland habitats of the Charleville Wood SAC flanking the river downstream and thus eliminate the potential for adverse effects to the semi-natural woodland habitats occurring within the SAC and in turn the alluvial woodland and populations of *Vertigo moulinsiana* supported by the SAC.

7.1 MEASURES TO PROTECT SURFACE WATER QUALITY

7.1.1 Construction Phase

All construction phase surface water management measures detailed in Section 2.2 above and outlined in the Preliminary Construction Management Plan (PCMP) prepared for the project will be implemented in full. The following measures detailed below are consistent with the elements designed in Section 2.2. and the PCMP.

7.1.1.1 Best Practice

The construction phase of the project will adhere to best practice guidance, particularly the CIRIA guidance document C532 Control of water pollution from construction sites. The construction approach will also adhere to the requirements set out in the Inland Fisheries Ireland guidance document *Requirements for the Protection of Fisheries Habitat during Construction and Development Works and Development Sites*.

During construction key requirements for control of chemical pollution risk will include measures that will be put in place during the construction phase to collect, attenuate, settle and treat surface water runoff prior to discharge from the site. These measures will include:

- Storage – all equipment, materials and chemicals will be stored a minimum distance of 25m away from any surface water body (i.e. existing open drains). Chemical, fuel and oil stores will be sited on impervious bases and within a secured bund of 110% of the storage capacity, within the lay down area.
- The integrity and water tightness of all the bunding structures and their resistance to penetration by water or other materials stored therein shall also be tested and demonstrated.
- All fuel oil fill areas will have an appropriate spill apron and spill kits will be provided on site.

- Vehicles and refuelling – standing machinery will have drip trays placed underneath to prevent oil and fuel leaks causing pollution. Where practicable, refuelling of vehicles and machinery will be carried out on an impermeable surface in designated areas, well away from any surface waterbody.
- Maintenance – maintenance to construction plant will not be permitted on site, unless vehicles have broken down necessitating maintenance at the point of breakdown. All necessary pollution prevention measures will be put in place prior to commencement of maintenance in this instance.
- Concrete - Wet concrete operations will be carried out in dry conditions. Runoff from contaminated surface water runoff will be directed to the construction phase surface water drainage system to be installed on site.
- Mess, sanitation and welfare facilities will be required during construction and will be located at the construction compound. Foul effluent will make use of chemical facilities with periodic removal for offsite disposal at a suitably licenced treatment facility.
- Excess spoil material not required for final landscaping will not be stored on site. It will be removed from site via sealed trucks for disposal at an appropriately licenced facility.
- Any spoil material required for final landscaping will be stored in a bunded area within the project site.

7.1.1.2 Erosion & Sediment Control Measures

Section 2.2 above details measures to be implemented during the construction phase to treat surface water runoff for erosion and sediment control. These are as follows:

- Measures will be implemented to capture and treat sediment laden surface water runoff (e.g. sediment retention ponds, surface water inlet protection, fencing and signage around specific exclusion zones and earth bunding adjacent to open drainage ditches).
- Surface water runoff from areas stripped of topsoil and surface water collected in excavations will be directed to on-site settlement ponds where measures will be

implemented to capture and treat sediment laden runoff prior to discharge of surface water at a controlled rate.

- On-site settlement ponds are to include geotextile liners and riprapped inlets and outlets to prevent scour and erosion.
- Interceptor, catch drains will be installed around construction footprints. These drains will direct clean runoff from the surrounding area away from the construction footprint and into the existing surface water drains that drain the project site.
- The construction phase Contractor will be required to appoint a suitably qualified Environmental Management for the duration of the construction phase. The Environmental Manager will be responsible for monitoring water quality at settlement pond outlets. The parameters to be monitored will include as a minimum total Suspended Solids, Turbidity and Total Petroleum Hydrocarbons. Emission limit values (ELVs) will be based on a recognised environmental quality standards for each parameter to be monitored.

7.1.1.3 Accidental Spills & Leaks

- All oils, fuels and other chemicals will be stored in a secure bunded hardstand area.
- Refuelling and servicing of construction machinery will take place in a designated hardstand area which is also remote from any surface water inlets (when not possible carry out such activities off site).
- A response procedure will be put in place to deal with any accidental pollution events and spillage kits will be available and construction staff will be familiar with the emergency procedures and use of the equipment.

7.1.1.4 Concrete

- Concrete batching will take place off site, wash down and wash out of concrete trucks will take place off site and any excess concrete is not to be disposed of on site.
- Pumped concrete will be monitored to ensure there is no accidental discharge.
- Mixer washings are not to be discharged into surface water drains.

7.1.1.5 Wheel Wash

- Discharge from any vehicle wheel wash areas is to be directed to on-site settlement ponds, debris and sediment captured by vehicle wheel washes are to be disposed off-site at a licensed facility.

7.1.1.6 Spoil Disposal

It is proposed that all excavated material will be removed from the site to an appropriately licenced facility. Soil for disposal from the site are classified as waste and must comply with waste management legislation. The relevant legislation is the EU council decision (2003/33/EC) which has been implemented in all member states and sets out the criteria for the acceptance of waste at Landfills. Limit values for the acceptance of inert, non-hazardous and hazardous waste are set out in sections 2.1, 2.3 & 2.4 of the decision respectively.

Final certification for all materials removed off site will require to be provided by the main contractor on completion of the excavation works.

7.1.2 Operation Phase

7.1.2.1 Surface Water Management System

Surface water generated at the project site during the operation phase will be managed as four separate catchments. Catchments A to D will discharge to an existing open drain located along the site northern boundary.

Above ground detention basins will be provided and have been designed so that they can accommodate up to a 1 in 100 year storm event. Surface water discharge rates from the proposed surface water drainage network will be controlled by a vortex flow control device (Hydrobrake or equivalent) and associated above ground attenuation. Surface water discharge will also pass via a full retention fuel / oil separator (sized in accordance with permitted discharge from the site). Surface water diverted from St. Columba's Place to the surface water network (as part of the interim wastewater management while Irish Water and Offaly County Council progress the SIS project) will also be treated via a full retention fuel/oil separator prior to release to the hydrological pathway and the Tullamore River.

The proposed surface water drainage network will collect surface water runoff from the site via a piped network prior to discharging off site via flow control device, attenuation and separator arrangement as noted above.

Surface water runoff from the site's road network will be directed to tree pits via conventional road gullies (with high level overflow to the piped surface water network). Surface water runoff from driveways will be captured by permeable paving.

Surface water runoff from house roofs will be routed to the proposed surface water pipe network via the porous aggregates beneath permeable paved driveways (providing an additional element of attenuation). Surface water runoff from apartments, the neighbourhood centre and creche will be captured by green roofs (sedum blanket) prior to being routed to the piped surface water drainage network.

The surface water network has been designed in accordance with the Greater Dublin Strategic Drainage Strategy (GSDSDS) requirements and as outlined above incorporates SUDS features such as green roofs, tree pits and permeable paving in the higher risk parking areas at the front of houses (i.e. treatment/filtration provided within the stone reservoir beneath permeable paved driveways, as well as providing surface water attenuation, hydrobrakes and a final Class 1 fuel/oil separator prior to discharge to the receiving environment.

The provision of these design elements and the treatment of all surface water generated at the project site and at St. Columba's Place, while the interim wastewater separation management option is in place, will ensure that clean surface water is discharged from the project site to the hydrological pathway.

7.1.2.2 Foul Drainage

In the absence of appropriate design measures the interim wastewater storage tank management option for the operation phase of the project has been identified as presenting a risk of pollution to the hydrological pathway, with consequent effects as outlined in Section 5 and 6 above, to the Charleville Wood SAC.

In order to eliminate the potential for pollution of the hydrological pathway between the project site and the Charleville Wood SAC, with wastewater discharges from the proposed storage

tank, the tank to be used will be designed to provide adequate storage for wastewater generated at the project site during a critical rainfall event. During normal operation, an emergency storage volume of 155m³ will be required to cater for the project site. This equates to the storage of 446l/dwelling/day for 349 dwellings). In order to ensure adequate capacity at the proposed storage tank additional buffer storage, above this required storage volume, will be provided. The additional storage volume will equate to the provision of storage over a 72 hour period for 200 dwellings. Combining the emergency storage volume required during normal operation and a buffer volume to allow 72-hour storage for 200 dwellings results in a volume of 267m³.

This will represent an oversized storage tank for the project and will provide adequate storage during critical high rainfall events, whilst at the same time avoiding wastewater surcharge from the tank. The tank will be designed to be water tight and free from leaks. The tank will also be subject to regular integrity testing at a set frequency during its lifetime use to ensure that it remains free from leaks. The provision of 72 hours storage is considered sufficient to allow normal operation of the foul drainage network to return following a storm event.

7.2 EVALUATION OF MITIGATION MEASURES

The mitigation measures and environmental safeguards outlined above for the construction phase of the project are taken from established best practice guidelines that have been successfully implemented for a wide range of project-level infrastructural developments. These measures have undergone extensive and rigorous monitoring for their effectiveness at development sites where they have previously been applied to ensure adverse environmental impacts are avoided.

The results of this monitoring and the recommendation of these measures as standard best practice guidelines is based upon their high degree of success in ensuring negative environmental impacts are avoided.

The best practice guidance that have informed the mitigation measures and environmental safeguards proposed in this NIS and that will be adhered to throughout the construction and operation of the proposed development include:

- The Good Practice Guidance notes proposed by EA/SEPA/EHS:
- PPG 1: Understanding your environmental responsibilities - good environmental practices

- GPP 2: Above ground oil storage tanks
- PPG 3: Use and design of oil separators in surface water drainage systems
- GPP 4: Treatment and disposal of wastewater where there is no connection to the public foul sewer
- GPP 5: Works and maintenance in or near water
- PPG 6: Working at construction and demolition sites
- PPG 7: Safe storage - The safe operation of refuelling facilities
- GPP 8: Safe storage and disposal of used oils
- GPP 8: Safe storage and disposal of used oils
- GPP 8: Safe storage and disposal of used oils
- GPP 19: Vehicles: Service and Repair
- GPP 21: Pollution incident response planning
- GPP 22: Dealing with spills
- GPP 26 Safe storage - drums and intermediate bulk containers
- PPG 27: Installation, decommissioning and removal of underground storage tanks
- CIRIA Environmental Good Practice on Site.
- CIRIA Control of Water Pollution from Construction Sites. Technical Guidance C648.
- CIRIA SuDS Manual Technical Guidance C697.
- Development on Unstable Land. Department of Environment (DOE), UK.
- GDSDS

In addition, the proposed wastewater storage management option represent an effective interim approach for managing wastewater during the initial phase of the operation phase, while the upgrade of the municipal wastewater network is completed by Irish Water and Offaly County Council. These proposals can be implemented in advance of, and without impact on, any proposed Irish Water network upgrade plans for the area which emerge as part of the SIS project. The proposed wastewater storage management option represents a commonly used methodology to maximise wastewater network capacity has been effectively implemented for other schemes in the past. Examples of where this methodology has been implemented include a previous SHD project at Newbridge, CO. Kildare (Planning Reference: ABP-302141-18) and the completed large-scale Wonderful Barn residential development at Leixlip, Co. Kildare.

8.0 CONCLUSION

This NIS presents an analysis of the potential for the project to result in adverse impacts to the Charleville Wood SAC. An evaluation of the potential impact of discharges of surface drainage waters during the construction and operation phase and wastewater during the operation phase has been completed.

During the evaluation of potential impacts associated with the discharge of surface drainage waters it was found that, in the absence of mitigation measures, the potential will exist for contaminants to be released from the project site to the hydrological pathway connecting the project site to the Charleville Wood SAC and for adverse impacts to woodland habitats occurring within the SAC and the *Vertigo moulinsiana* population support by the SAC. A range of mitigation measures have been prescribed in this NIS that aim to avoid the discharge of contaminated surface drainage waters and wastewater from the project site during the construction and operation phase. These mitigation measures have been evaluated and reference has been made to their incorporation into best practice guidelines and their successful implementation for other similar development projects. It has been concluded that, provide all mitigation measures that aim to avoid the discharge of contaminated surface drainage waters and wastewater are implemented, the potential for adverse impact to the Charleville Wood SAC will not arise.

Based upon the information provided in this NIS, it is the considered view of the authors of this NIS that it can be concluded by An Bord Pleanála that the project, alone or in-combination with other plans or projects, will not result in significant adverse effects to the integrity and conservation status of the Charleville Wood SAC or any other European Sites, in view of their Conservation Objectives and on the basis of best scientific evidence and there is no reasonable scientific doubt as to that conclusion.

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APPENDIX 1: SCREENING REPORT FOR APPROPRIATE ASSESSMENT



Strategic Housing Development

Clonminch, Tullamore

Screening Report for Appropriate
Assessment

Doherty Environmental Consultants Ltd.

September 2021

Strategic Housing Development

Clonminch, Tullamore

Screening Report for Appropriate Assessment

| | | |
|-------------------|------------------|-------------------------|
| Document Stage | Document Version | Prepared by |
| Application Stage | Final | Pat Doherty MSc, MCIEEM |

This report has been prepared by Doherty Environmental Consultants Ltd. with all reasonable skill, care and diligence. Information report herein is based on the interpretation of data collected and has been accepted in good faith as being accurate and valid.

This report is prepared for Steinfort Investment Fund and we accept no responsibility to third parties to whom this report, or any part thereof, is made known. Any such party relies on the report at their own risk.

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1.0 INTRODUCTION

Doherty Environmental Consultants (DEC) Ltd. have been commissioned by Steinfort Investments Fund to undertake a Screening Report for Appropriate Assessment for a proposed housing development at Clonminch, Tullamore, Co. Offaly (see Figure 1.1 for location).

This Screening Report for Appropriate Assessment forms Stage 1 of the Habitats Directive Assessment process and is being undertaken in order to comply with the requirements of the Habitats Directive Article 6(3). The function of this Screening Report is to determine if it can or cannot be excluded, on the basis of objective information, that the project, individually or in combination with other plans or projects, will have a significant effect on a European Site. This Screening Report has been prepared to provide information to the competent authority to assist them in their determination as to whether a Stage 2 Appropriate Assessment is required for the project.

1.1 LEGISLATIVE CONTEXT

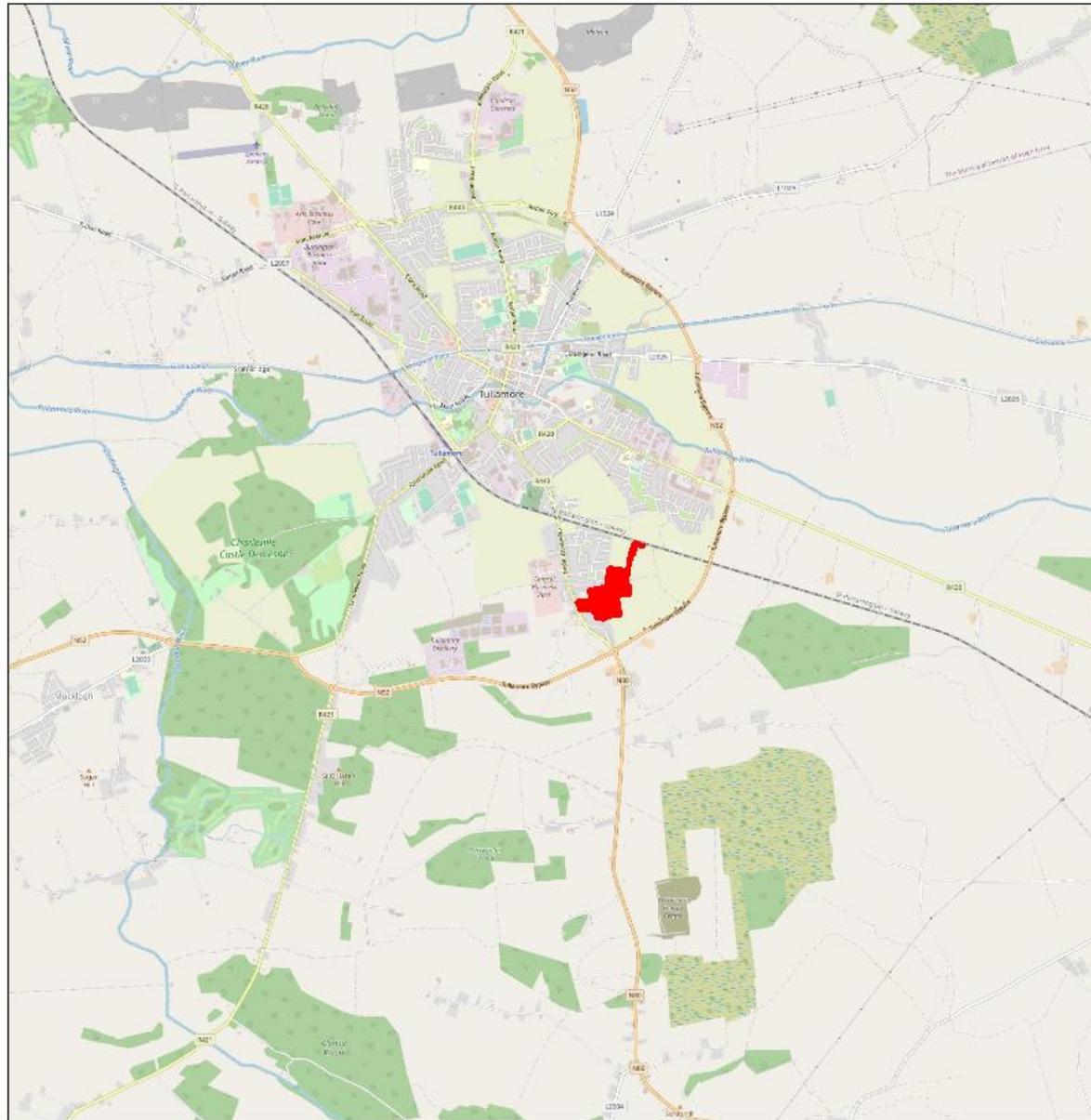
This Screening Report for Appropriate Assessment is being prepared in order to enable the competent authority to comply with Article 6(3) of Council Directive 92/43/EEC (The Habitats Directive). It is prepared to assess whether or not the project alone or in combination with other plans and projects is likely to have a significant effect on any European Site in view of best scientific knowledge and in view of the conservation objectives of the European Sites and specifically on the habitats and species for which the sites have been designated.

1.1.1 Requirement for an Assessment under Article 6 of the Habitats Directive

According to Regulation 42(1) of the European Communities (Birds and Natural Habitats) Regulations 2011 – 2015, the competent Authority has a duty to:

- Determine whether the proposed Project is directly connected to or necessary for the management of one of more European Sites; and, if not,
- Determine if the Project, either individually or in combination with other plans or projects, would be likely to have a significant effect on the European Site(s) in view of best scientific knowledge and the Conservation Objectives of the site(s).

This Report contains information to support a Screening for Appropriate Assessment and is intended to provide information that assists the competent authority when assessing and addressing all issues regarding the construction and operation of the Project and to allow the competent authority to comply with the Habitats Directive. Article 6(3) of the Habitats Directive defines the requirements for assessment of projects and plans for which likely significant effects on European Sites may arise. ^[1]~~[SEP]~~The European Communities (Birds and Natural Habitats) Regulations, 2011 – 2015 (the Habitats Regulations) transpose into Irish law Directive 2009/147/EC (the Birds Directive) and Council Directive 92/43/EEC (the Habitats Directive) together which list habitats and species that are of international importance for conservation and require protection. The Habitats Regulations requires competent authorities, to carry out a Screening for Appropriate Assessment of plans and projects that, alone or in combination with other plans or projects, would be likely to have significant effects on European Sites in view of best scientific knowledge and the Site’s conservation objectives. This requirement is transposed into Irish Law by Part 5 of the Habitats Regulations and Part XAB of the Planning and Development Act, 2000 (as amended).

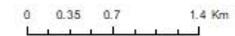


Clonminch SHD

Figure 1.1

Site Location

 Site Boundary



| | |
|-------------|------------|
| Drawn By | PD |
| Date | 09/02/2021 |
| Data Source | OSM |

1.2 STAGE 1 SCREENING METHOD

This Screening Report has been prepared in order to comply with the legislative requirements outlined in Section 1.1 above and aims to establish if it can or cannot be excluded, in view of best scientific knowledge and a European Site's conservation objectives and on the basis of objective information, that the project, individually or in combination with other plans or projects, is likely have a significant effect on a European Site. In this context "likely" refers to the presence of doubt with regard to the absence of significant effects (ECJ case C-127/02) and "significant" means not trivial or inconsequential but an effect that has the potential to undermine the European Site's conservation objectives (English Nature, 1999; ECJ case C-127/02). In other words any effect that compromises the conservation objectives of a European Site and interferes with achieving the conservation objectives for the site would constitute a significant effect.

The nature of the likely interactions between the project and the conservation objectives of European Sites will depend upon the sensitivity of these sites and their reasons for designation to potential impacts arising from the project; the current conservation status of the features for which European Sites have been designated; and any likely changes to key environmental indicators (e.g. habitat structure; vegetation community) that underpin the conservation status of European Sites, in combination with other plans and projects.

This Screening Report for Appropriate Assessment has been undertaken with reference to respective National and European guidance documents: Appropriate Assessment of Plans and Projects in Ireland: Guidance for Planning Authorities (DEHLG 2010) and *Assessment of Plans and Projects Significantly Affecting Natura 2000 sites – Methodological Guidance of the Provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC* and recent European and National case law. The following guidance documents were also of relevance during the preparation of this Screening Report:

- A guide for competent authorities. Environment and Heritage Service, Sept 2002. Appropriate Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities (2010). DEHLG.

- Assessment of Plans and Projects Significantly Affecting Natura 2000 Sites – Methodological Guidance of the Provisions of Article 6(3) and (4) of the Habitats Directive 92/42/EEC. European Commission (2001).
- Managing Natura 2000 Sites – The provisions of Article 6 of the Habitats Directive 92/43/EEC. European commission (2018).

The EC (2001) guidelines outline the stages involved in undertaking a Screening Report for Appropriate Assessment for projects. The methodology adopted during the preparation of this Screening Report is informed by these guidelines and was undertaken in the following stages:

1. Describe the project and determine whether it is necessary for the conservation management of European Sites;
2. Identify European Sites that could be influenced by the project;
3. Where European Sites are identified as occurring within the zone of influence of the project identify potential effects arising from the project and screen the potential for such effects to negatively affect European Sites identified under Point 2 above; and

Identify other plans or projects that, in combination with the project, have the potential to affect European Sites.

2.0 PROJECT DESCRIPTION

2.1 PROJECT OVERVIEW

The proposed Strategic Housing Development will consist of 349 no. dwellings, a crèche and two neighbourhood centre buildings. Residential buildings will range in height from single storey to four storey and are arranged around public open space areas

The proposed SHD also includes the construction of part of a key link road as identified by the Tullamore Town and Environs Development Plan 2010-2016 (as varied and extended), with vehicular access proposed onto Clonminch Road (R443) via a new signal controlled junction with toucan crossings The development also provides for works to Clonminch Road including the provision of 2no. new bus stops and cycle lanes over a distance of c.1,700m from

c.100metres south of the new vehicular junction to the application site northwards to c. 80metres north of its junction with Bachelors Walk (R420), Tullamore, Co..Offaly. Six ESB substations will also be required.

A foul raising main and associated strategic foul pumping station and rising main discharge manhole will be required to serve the proposed development.

2.2 CONSTRUCTION PHASE SURFACE WATER MANAGEMENT

The main contractor will be responsible for pollution prevention for the duration of the works.

As fuels and oils are classed as hazardous materials, any on-site storage of fuel/oil, all storage tanks and all draw-off points will be bunded (or stored in double-skinned tanks) and located in the dedicated site compound.

The site works shall incorporate engineering measures such as the installation of a drainage system with settlement/silt collection ponds and provision of temporary interceptor(s). These surface water drainage management features will be installed as the first item of works for each phase of the development prior to their commencement.

Also, during the construction phase, standard construction phase silt and petrochemical interception will be carried out on all runoff and pumped water from site works.

Further, a silt curtain will be installed along the entire length of the eastern boundary of the site, between the site works and the watercourse. The purpose of this membrane will be to prevent any sediment discharge from draining into the watercourse.

2.3 OPERATION PHASE SURFACE WATER MANAGEMENT

2.3.1 Surface Water

The site currently drains via a network of open drains which ultimately discharge to an open drain located adjacent to the northern portion of the site (along the Dublin to Galway railway line). There are a number of culverts beneath the railway line which direct flow from network of open drains within the site to an existing open drain on the northern side of the railway. This

open drain then directs flows towards an existing 375mm diameter surface water drain at Chancery Lane. It is proposed to discharge attenuated surface water flows from the proposed development to the existing network of open drains described above.

As part of the surface water management design the project site will be separated into four separate water catchments. All catchments will discharge to an existing open drain located along the site's northern boundary.

Above ground detention basins have been sized to attenuate up to a 1 in 100 year storm event. Surface water discharge rates from the proposed surface water drainage network will be controlled by a vortex flow control device (Hydrobrake or equivalent) and associated above ground attenuation. Surface water discharge will also pass via a full retention fuel / oil separator (sized in accordance with permitted discharge from the site).

The proposed surface water drainage network will collect surface water runoff from the site via a piped network prior to discharging off site via flow control device, attenuation and separator arrangement as noted above.

Surface water runoff from the site's road network will be directed to tree pits via conventional road gullies (with high level overflow to the piped surface water network). Surface water runoff from driveways will be captured by permeable paving.

Surface water runoff from house roofs will be routed to the proposed surface water pipe network via the porous aggregates beneath permeable paved driveways (providing an additional element of attenuation). Surface water runoff from apartments, the neighbourhood centre and creche will be captured by green roofs (sedum blanket) prior to being routed to the piped surface water drainage network.

- The surface water management design for the project also incorporate the following measures:
- Surface water network designed in accordance with GDSDS requirements

- Incorporates SUDS features e.g. green roofs, tree pits and permeable paving in the higher risk parking areas at the front of houses (i.e. treatment / filtration provided within the stone reservoir beneath permeable paved driveways)
- Surface water attenuation (i.e. treatment / filtration provided within the landscaped areas in the detention basins) in conjunction with a final Class 1 fuel / oil separator prior to discharge to the downstream surface water network.

2.3.2 Foul Drainage

An existing 225mm diameter public foul sewer is located west of the site along the Clonminch Road which discharges northwards towards Church Road Pump Station. The proposed foul discharge point is located along the western boundary and is somewhat elevated above the north-east of the site, therefore, a strategic pumping station and associated rising main will be required to service the development. The proposed strategic foul pumping station is to be located in the north-east corner of the site (adjacent to the railway line). As such, this pump station will also serve other lands within the Eastern Node of the Southern Environs of Tullamore where a gravity drainage connection to the existing foul drainage infrastructure in Clonminch Road cannot be achieved.

The proposed foul drainage network within the development has been designed in compliance with Irish Water's Code of Practice for Wastewater Infrastructure and comprises of a series of 225mm diameter pipes, discharging to the strategic pumping station described above. Individual dwellings will be serviced by an individual 100mm diameter connections.

Confirmation of feasibility has been received from Irish Water on the 1st September 2021. Irish Water have advised as follows:

"Based upon the details you have provided with your pre-connection enquiry and on our desk top analysis of the capacity currently available in the Irish Water network(s) as assessed by Irish Water, we wish to advise you that your proposed connection to the Irish Water network can be facilitated at this moment in time".

The proposed connection to the existing wastewater network is feasible subject to upgrades. The Southern Interceptor Sewer (SIS) project is due to be delivered by Irish Water in

conjunction with Offaly County Council and will provide the long-term wastewater connection for the proposed development. However, the SIS project is not likely to be completed prior to the proposed development and as such interim upgrade works are required. Irish Water have advised that separation works on existing combined sewers could provide an interim solution to address the existing constraints on the wastewater sewerage network. Refer to extract from Irish Water Confirmation of Feasibility below:

“There is sufficient capacity available at the Tullamore Wastewater Treatment Plant to facilitate your proposed development.

A wastewater connection from this development could be facilitated subject to the completion of interim works on the network. The interim works would primarily include surface water separation works within St. Columbas Place and along Clonminch Road (R443), which would remove sufficient volumes of surface water from the combined sewer system to free up capacity for the expected wastewater loading from the proposed development. We advise that you complete further hydraulic assessments of the said downstream network and include 1 in 1 year storm events in your assessment.”

“Further to this we would advise you enter a Project Works Service Agreement (PWSA) with Irish Water to establish and agree the optimum location for a storm water storage tank on the downstream network.

The enduring wastewater solution for this site is the planned Southern Interceptor Sewer (SIS). This project is currently being progressed by Irish Water and will be delivered by Irish Water in conjunction with Offaly County Council along with specific road projects in this area of Tullamore. Please note the SIS project is not likely to be completed before your proposed development. Accordingly, the identified interim works outlined above would be required to facilitate a wastewater connection from your site in the short term. Once the SIS project is completed the long-term wastewater connection for this development can be completed to an agreed location on the SIS.”

Please note the exact scope of surface water separation works and storage should be agreed with Irish Water in due course and in advance of the Connection Agreement for this development.”

To enable development of the site in advance of the delivery of the Southern Interceptor Sewer (SIS) project, the identified interim works outlined above can be provided to facilitate the wastewater connection in the intervening period.

An area has been identified to the west of the site, within St. Columba's Place, where road gullies currently discharge to an existing combined sewer network, with the combined sewer outfalling directly to St. Columba's Pump Station. A strategy to separate surface water from foul water in the combine sewer has been developed as part of the project and forms part of the foul water management design proposals for the project. The separation strategy has been identified for the area within St. Columba's Place and consists of:

- The construction of a surface water outfall to an existing open drain running along the eastern side of St. Columba's Place (taking flows from road gullies away from the combined sewer discharging to St. Columba's Pump Station).
- The attenuation of flows from road areas within St. Columba's Place to 2.0 l/sec (30 year storm event).

These measures will facilitate the potential removal of approximately 38.5 l/sec of surface water flow from the combined sewer (5 year storm event) and will provide capacity for the foul drainage flow from project site at Clonminch, Peak Discharge (6DWF), of 10.8 l/sec.

Taking 38.5 l/sec of surface water flow away from St. Columba's Pump Station when compared to the peak foul discharge from the subject application (10.8 l/sec) results in a potential reduction in hydraulic loading by a factor of 3.5 on the waste water network during problematic rainfall events.

With the above separation strategy in place all wastewater generated during the operation phase will be directed to the Tullamore wastewater treatment plant for treatment prior to discharge to the receiving environment. The project has been given design acceptance by Irish Water.

A second interim option for the management of wastewater generated by the project during the operation phase, while upgrades to the Irish Water wastewater infrastructure are progressed, is the provision of wastewater storage capacity at the project's pump station. Under this option a wastewater storage tank will be provided at the project's pump station. Telemetry will be

installed at the project's foul pumping station linking to the problematic Church Road Pump Station in the town centre which could allow the project's foul storage tank to be activated and store flows generated by the development should the network in the town centre become inundated. In effect the project's foul storage tank will be utilised to store wastewater emissions from the project during surcharge events in the town centre and therefore allow the proposed development to proceed on a phased basis in advance of any network upgrades.

2.3.3 Water Supply

The site's proposed water main layout is shown on DBFL Drawing 180002-3002.

It is proposed to connect to the existing 300mm diameter watermain on the Clonminch Road to service the proposed development (as advised by Irish Water in the Confirmation of Feasibility).. A 200mm diameter spine water main will be provided along the development's arterial roads with a number of 150mm / 100mm diameter looped branch mains provided elsewhere.

The proposed water main layout has been designed in accordance with Irish Water Standard Detail STD-W-02 including provision of a bulk flow meter at the connection point to the existing water supply network on Clonminch Road.

Sluice Valves have been arranged in accordance with Irish Water Standard Detail STD-W-02, Note 6 ("valves shall be arranged in such a manner to allow the network to be managed to ensure that no more than 40 properties lose water from a burst on the system, at any one time").

Individual houses will have their own connections (25mm O.D. PE pipe) to distribution water mains via service connections and boundary boxes. Individual connections are to be installed in accordance with Irish Water Standard Detail STD-W-03

2.4 CONSTRUCTION SEQUENCE

The construction phase will be completed in the following sequence:

Stage 1- Excavation & site preparation works

Stage 2- Substructure works

Stage 3- Superstructure works

2.5 CONSTRUCTION MATERIALS

The following construction materials will be required for the works:

- Concrete: This will be delivered by readymix truck and placed directly in prepared forms.
- Hardcore: This will be stored in the Construction compounds and delivered to site location by dump truck.
- The following materials will be stored in the construction compound as shown on Figure 2.1.
- PVC Drainage Piping and fittings.
- PVC ducting
- Acodrain drainage hardware
- Concrete Blocks and premixed mortar in bins
- Recessed Metal I.C. covers.
- Limestone and Concrete Paving Materials
- Pre-bagged bedding mortars and grouts
- Concrete mini pillar vaults
- Materials for Public lighting installation
- Builders site fencing, site access and traffic control equipment

2.6 DURATION OF THE CONSTRUCTION PHASE

It is estimated that the works will take approximately 48 months to complete.

3.0 PROJECT SITE

The project site is located in an area of agricultural land to the southeast of the centre of Tullamore. It is located approximately 1.8km to the southeast of the town centre. The site is bounded to the north by the Iarnrod Eireann railway line, to the south and east by agricultural land in the form of arable land and improved agricultural grassland. The N52 national road is located further south, southeast of the project site. Existing residential housing estates and the R443 form the western boundary to the site.

The application site will include Clonminch Road and works to the road to provide segregated cycle tracks and associated alterations to the carriageway from the application site to the town centre at Bachelors.

The EPA national rivers digital mapping and the Water Framework Directive catchment and sub-catchment digital mapping were reviewed for the project site and the surrounding area. The project site is located within the Tullamore River sub-catchment of the River Shannon catchment. The Tullamore River is located approximately 935m to the north of the project site boundary. A minor 1st order stream tributary of the Tullamore River, the Cloncollog Stream, is located approximately 870m to the southeast of the project site. A review of the Cassini 6-inch historical map does not indicate the presence of any other watercourses in the vicinity of the project site not mapped by the EPA on the national rivers database. Artificial drainage ditches flow parallel to the railway to the north of the project site and these drains convey waters to the Tullamore River. Seasonal/ephemeral drains occur along some of the existing hedgerow field boundaries within the project site. surface water in these drains is currently conveyed in a northerly direction and drain into an existing drain along the northern side of the railway bounding the project site to the north. This drain flows towards an existing surface water drain along Chancery Lane, which in turn conveys water to the north where it eventually discharges to the Tullamore River.

The topography within the project site generally falls from southwest towards the northeast at gradients ranging from 1:20 (adjacent to the southern boundary) to 1:80 (typical surface

gradient over the majority of the site). Surface water flow paths follow the site topography from a south to north direction.

The water quality of the Tullamore River is monitored by the EPA. Monitoring locations are located upstream of the project site at a Springfield Bridge in the townland of Meelaghans (approximately 3.5km to the east of the project site) and downstream of the project site at a bridge southwest of Ballycowen, near the Grand Canal (over 5km to the west of the project site). Water quality from the upstream monitoring location has been reported by the EPA to be of Q3, moderately polluted, while water quality at the downstream monitoring location has been reported to be of Q4, good water quality.

Charleville Wood SAC is the nearest designated conservation area to the project site. It is located approximately 1.8km to the west of the project site. The nearest NHA to the project site is Hawkswood Bog NHA, approximately 3.7km to the south. No SPAs occur in the vicinity of the project site, with the nearest, the Slieve bloom Mountains SPA, located over 12km to the south.

The quarternary geology at the project site and surrounding area is dominated by till derived from limestone. The dominant soils are limestone till while the bedrock consists of dark limestone and shale. The project site overlies a locally important aquifer. The subsoils are classed by the GIS as being of moderate permeability and the groundwater vulnerability has been assessed as moderate. Preliminary Ground Investigations for the proposed development were carried out by Ground Investigations Ireland (GII) in May 2020. A 200mm to 250mm deep topsoil layer overlies cohesive deposits comprising of sandy clayey silts or silty clays with occasional cobbles and boulders. Infiltration tests were completed on site and overall these indicate the presence of low permeability soils overlying the project site.

The land cover within the project site is dominated by arable land (BC1). Hedgerows (WL1) form field boundaries throughout the site and as noted above drainage ditches (FW4) occur along many of the field boundaries.

4.0 IS THE PROJECT DIRECTLY CONNECTED WITH OR NECESSARY FOR THE CONSERVATION MANAGEMENT OF EUROPEAN SITES

Given the description of the proposed project in Section 2 above it is clear that the project is not directly connected with or necessary for the management of any European Sites.

5.0 IDENTIFY EUROPEAN SITES LIKELY TO BE INFLUENCED BY THE PROJECT

Current guidance (OPR, 2021) informing the approach to screening for Appropriate Assessment defines the zone of influence of a proposed development as the geographical area over which it could affect the receiving environment in a way that could have significant effects on the Qualifying Interests of a European site. It is recommended that this is established on a case-by-case basis using the Source-Pathway-Receptor (SPR) framework.

As a first step in identifying the European Sites that could be connected to the project via SPR pathways all European Sites occurring in the wider surrounding area were identified. There are 8 European Sites, consisting of 7 SACs and 1 SPA, occurring in the wider area surrounding the project site and these are shown on Figure 5.1 and 5.2. Given that the proposed housing development will be separated from the nearest European Site (i.e. the Charleville Wood SAC) by a distance of 1.8km there will be no potential for the project to result in direct impacts to European Sites. Therefore this screening report turns its attention to identifying the potential for indirect impacts to European Sites.

Using the SPR framework the project, as described in Section 2 of this Screening Report, represents the source of potential impacts to European Sites.

Potential impact pathways are restricted to a consideration of hydrological pathways and mobile species pathways.

Noise generated at the project site during construction or operation will not have the potential to disturb features within the nearest European Sites, the Charleville Wood SAC. This is due to the buffer distance of 1.8km occurring between the project site and this SAC and the absence of any qualifying interest at this SAC that are sensitive to noise disturbance. No aerial emissions will present a risk to surrounding European Sites. This is based on the type of activities to be associated with the project site. The construction phase will have the potential to generate small

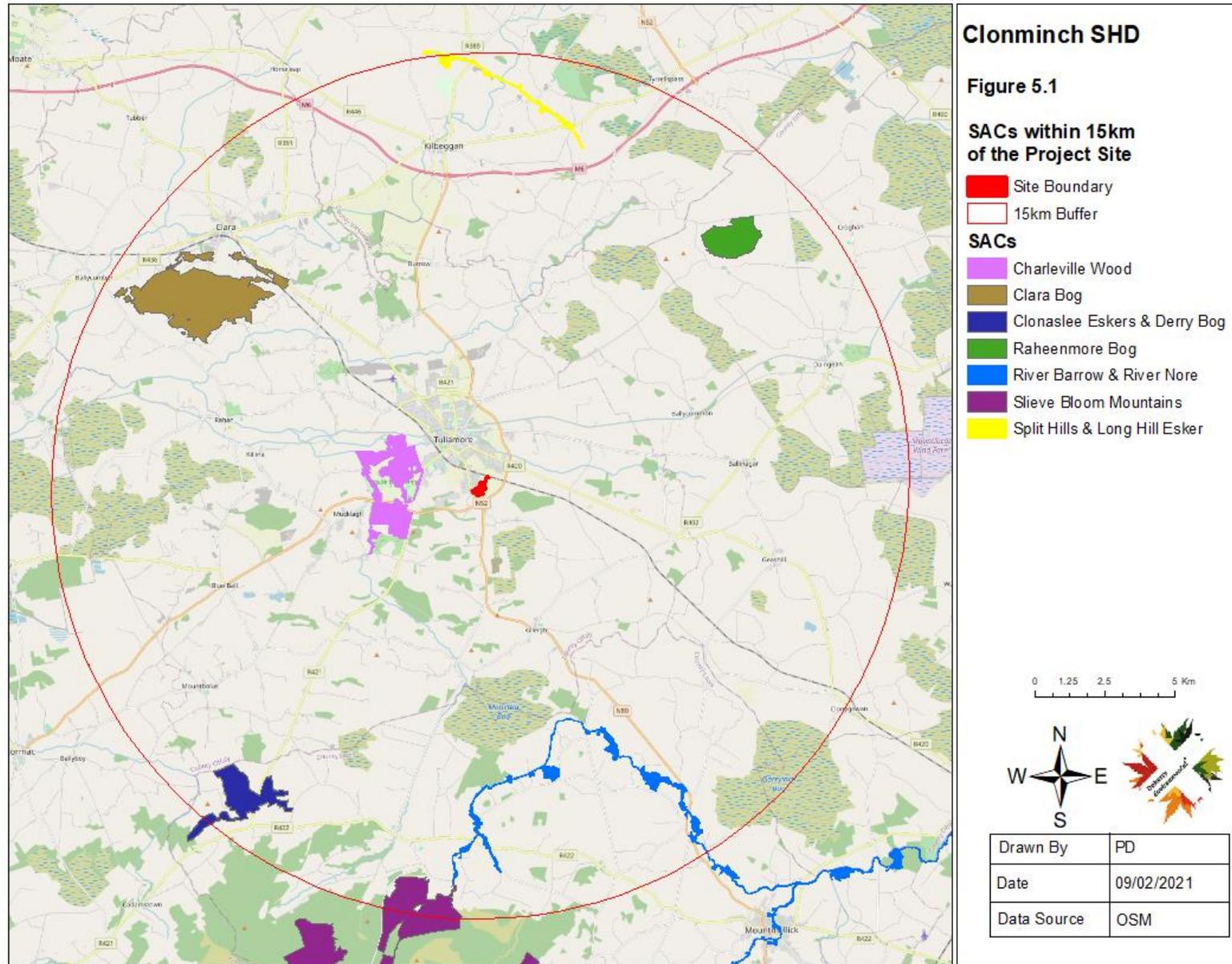
quantities of dust but this will be associated with a small area of ground that is under construction at any one time and will result in a negligible amount of dust to be generated. Aside from exhausts associated with construction machinery there will be no other aerial emissions generated during the construction phase. The only emissions to be generated during the operation phase will be from exhausts associated with residential heating and vehicles. Neither of these sources of emissions will have the potential to influence the conservation status of habitats and species occurring within surrounding SPA and SAC. In light of the above and the separation distance of approximately 1.8km from the project site and the nearest European Sites, emissions to air will not have the potential to function as an impact pathway connecting the project site to European Sites.

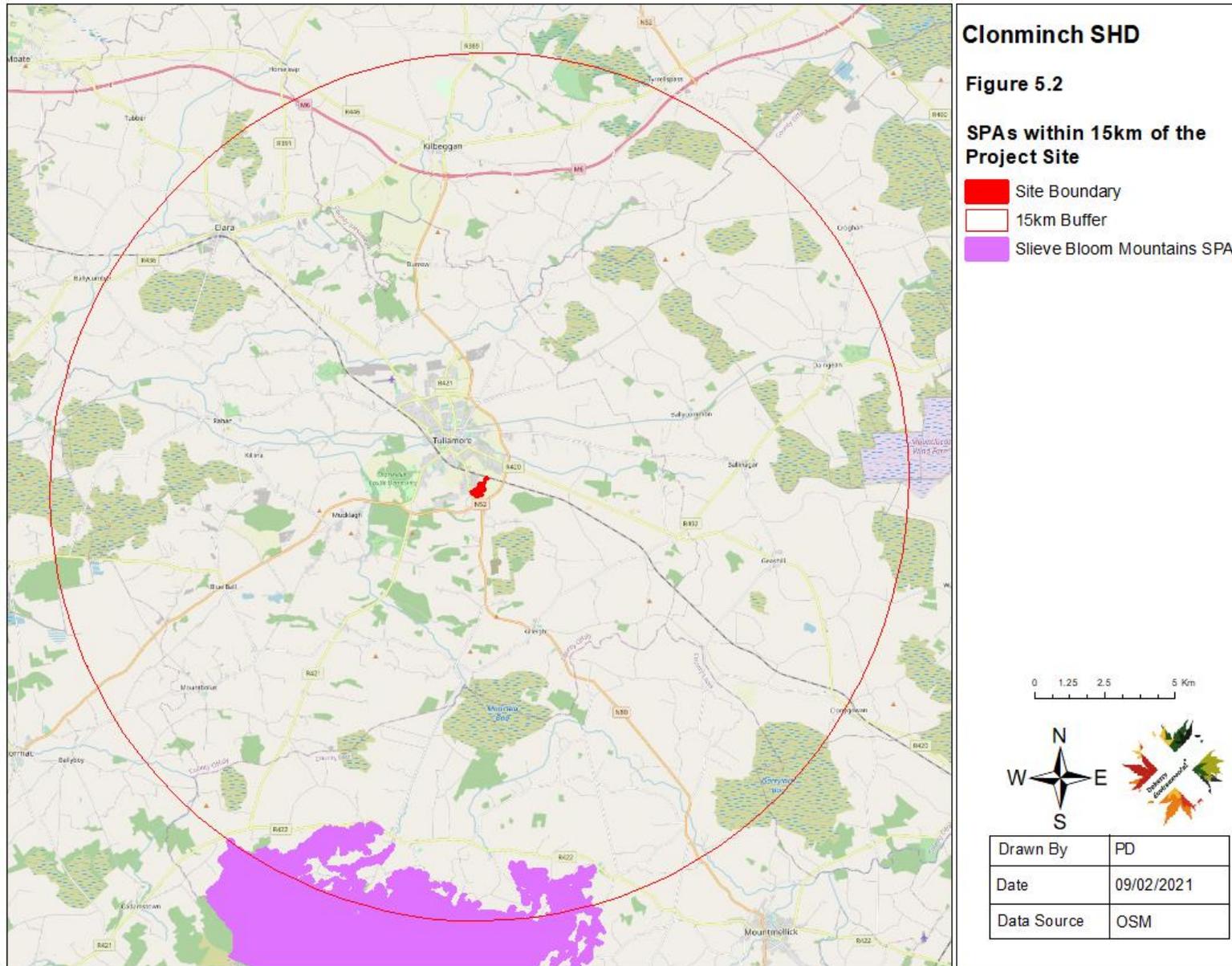
It is noted that there is a hydrological pathway connecting the project site to two additional European Sites at a significant distance (i.e. 46km) from the project site. These are the River Shannon Callows SAC and the Middle Shannon Callows SPA. These two European Sites are also included in the examination provided in Table 5.1 below to identify the European Sites occurring within the zone of influence of the project. The location of these two European Sites with respect to the project site and the hydrological pathway connecting both locations are shown on Figure 5.3.

The receptors represent European Sites and their associated qualifying features of interest. A full list of all qualifying features of interest/special conservation interests of the European Sites that are listed on Table 5.1 are provided in Appendix 1. Table 5.1 identifies the European Sites occurring within the zone of influence of the project. The identification of European Sites within the zone of influence of the project has been undertaken by examining whether or not there is:

- a hydrological or mobile species pathway between the Project site and European Sites features of interest;
- potential for qualifying species/special conservation interest bird species of these European Sites to rely on the project site.

The identification of pathways is underpinned by a precautionary approach.





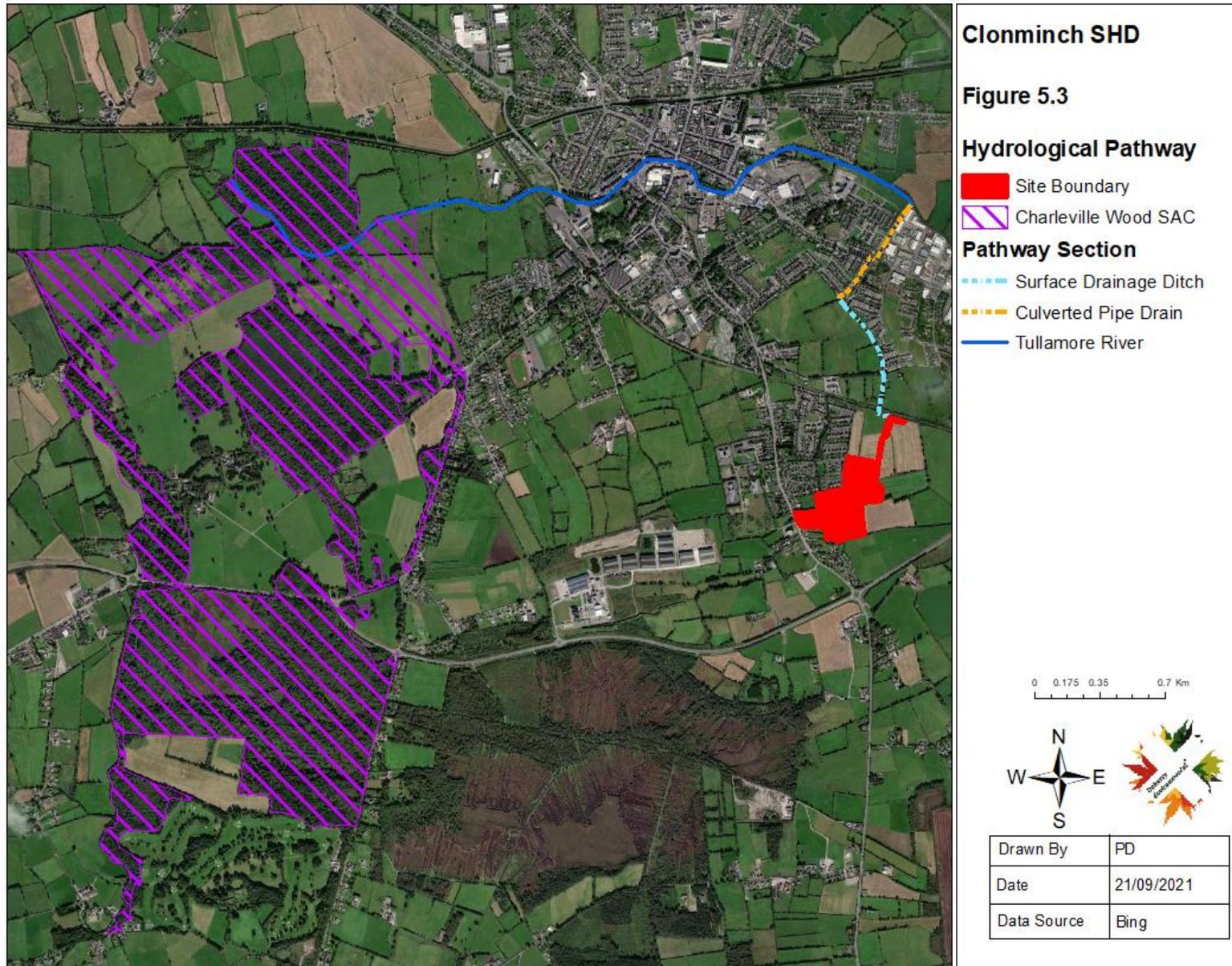


Table 5.1: Identification of European Sites occurring within the zone of influence of the Project

| European Sites | Distance from Project Site | Is there a Hydrological Pathway? | Does the Project have the potential to interact with Mobile Species? | Do European Sites occur within the Projects Zone of Influence? |
|--|----------------------------|--|---|--|
| Charleville Wood SAC (Site code: 000571) | 1.8km | There is a hydrological pathway connecting the project site to this SAC. During the construction stage surface water will runoff to on site drains that drain to an existing drain to the north and eventually drains to the Tullamore River. During the operation phase it is proposed to discharge surface water to drains along the railway line to the north along which will connect into an existing drain along Chancery Lane that eventually conveys surface water to the north and discharges to the Tullamore River. The operation phase | No. <i>Vertigo moulinsiana</i> is the only Annex 2 species listed as a qualifying feature of interest for this SAC. While <i>Vertigo moulinsiana</i> are mobile within habitat patches they are largely sedentary or a poorly mobile organism that are restricted to bespoke habitat patches. In and of themselves they lack mobility to disperse between suitable habitat area. The dispersal of <i>Vertigo</i> snails is believed to be mediated by mammals and birds (NPWS, 2019; Horsak, 2017). Furthermore there is no | Yes. Given the presence of a surface water hydrological pathway and a wastewater hydrological pathway between the project site and this SAC it is considered to lie within the zone of influence of the project. |

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| | | <p>hydrological pathway along the railway line, Chancery Lane and into the Tullamore River will represent the shortest pathway between the project site and this SAC and this measures approximately 3km downstream.</p> <p>The Tullamore River flows through Charleville Wood SAC and as such establishes a pathway between the project site and this SAC. Given the relative proximity of the SAC to the project site downstream along the operation phase hydrological pathway, the proposed discharge of surface water to this hydrological pathway during the construction phase and operation phase and the provision of onsite wastewater storage the potential for this hydrological pathway to function as a pollution impact pathway cannot be ruled out at the screening stage.</p> | <p>suitable habitat occurring at the project site to support <i>Vertigo moulinsiana</i>.</p> | |
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| | | <p>It is also noted that the project site is located in an area classed at moderate groundwater vulnerability and that the alluvial woodland habitat, for which this SAC is designated, is influenced by groundwater levels and condition. As such further examination of the potential for the project to alter groundwater conditions is also required.</p> <p>All wastewater generated on site during the construction phase will be contained within bunded storage tanks that will be regularly emptied and serviced by an licenced wastewater contractor. All wastewater will be transported from the project site to a licence wastewater treatment plant for treatment prior to release to the receiving environment.</p> <p>The proposed wastewater management option that has been agreed to be Irish Water, will discharge wastewater from the</p> | | |
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| | | <p>project site to the Tullamore wastewater treatment plant. Sufficient capacity will be made available along the municipal wastewater network by diverting surface water from the combined sewer at St. Columba's Place. The additional wastewater loads generated at the project site during its operation phase will be adequately treated at the wastewater treatment plant prior to discharge to the receiving environment. This approach to the management of wastewater during the operation phase will eliminate the potential for a wastewater pathway to connect the operation phase of the project to this SAC.</p> <p>It is noted that the additional surface water directed from St Columba's Place to the Chancery Lane surface water pipe and the Tullamore River will also form part of the surface water pathway connecting the project to this river.</p> | | |
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| | | <p>An alternative wastewater management option for the project’s operation phase has also been included as part of the project’s infrastructure design. This alternative option involves the storage of wastewater at wastewater storage tank at the project’s pump station. As described in Section 2.3.2 above the storage tank will be used to store wastewater generated by the project during surcharge events at the existing Church Road Pump Station.</p> <p>In the event that the wastewater storage tank provided at the project’s pump station is subject to surcharge or leakage to ground the potential will exist for wastewater emissions to the existing open drain to the along the railway to the north of the project site. This drain forms part of the hydrological pathway that links the project site to the Tullamore River, which in turn passes through this SAC. Thus in the event of surcharge/leakage of the wastewater</p> | | |
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| | | <p>storage tank there is potential for a wastewater impact pathway to connect the project site to this SAC.</p> <p>The cycle lane element of the project will be provided along the Clonmich Road to the west of the project site. The cycle lane will be provided along an existing road corridor and will not involve the crossing of any surface watercourses. Given that the cycle lane will be provided along an existing road corridor, will entail small scale construction works and will not result in any interactions with watercourses, there will be no hydrological pathway connecting this element of the project to this SAC.</p> | | |
| Slieve Bloom Mountains SAC (Site code: 000412) | 13km | No. There are no hydrological pathways connecting the project site or the proposed cycle land element of the project to this SAC. | No. No qualifying species are listed as qualifying feature of interest for this SAC. | No, this SAC does not occur within the zone of influence of the project. |

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| Clara Bog SAC (Site code: 000572) | 13.7km | No. There are no hydrological pathways connecting the project site or the proposed cycle land element of the project to this SAC. | No. No qualifying species are listed as qualifying feature of interest for this SAC. | No, this SAC does not occur within the zone of influence of the project. |
| Raheenmore Bog SAC (Site code: 000582) | 12.6km | No. There are no hydrological pathways connecting the project site or the proposed cycle land element of the project to this SAC. | No. No qualifying species are listed as qualifying feature of interest for this SAC. | No, this SAC does not occur within the zone of influence of the project. |
| Clonaslee Eskers And Derry Bog SAC (Site | 12.4km | No. There are no hydrological pathways connecting the project site or the proposed cycle land element of the project to this SAC. | No. No qualifying species are listed as qualifying feature of interest for this SAC. | No, this SAC does not occur within the zone of influence of the project. |

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| code: 000859) | | | | |
| Split Hills And Long Hill Esker SAC (Site code: 001831) | 12.7km | No. There are no hydrological pathways connecting the project site or the proposed cycle land element of the project to this SAC. | No. No qualifying species are listed as qualifying feature of interest for this SAC. | No, this SAC does not occur within the zone of influence of the project. |
| River Barrow and River Nore SAC (Site code:002162) | 8.5km | No. There are no hydrological pathways connecting the project site or the proposed cycle land element of the project to this SAC. | No. While this SAC is designated for its role in supporting a range of mobile fish species as well as otters, given the absence of any hydrological pathways, the location of the project site in a separate surface water catchment and the absence of suitable habitat for these species within the project site there will be no potential for the project to interact with the populations of these species supported by this SAC. | No, this SAC does not occur within the zone of influence of the project. |

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| <p>Slieve bloom Mountains SPA (Site code: 004160)</p> | <p>12.3km</p> | <p>No. There are no hydrological pathways connecting the project site or the proposed cycle land element of the project to this SAC.</p> | <p>No. While this SPA is designated for its role in supporting breeding hen harrier there is no suitable breeding habitat for this species occurring at or in the wider vicinity of the project site.</p> | <p>No, this SPA does not occur within the zone of influence of the project.</p> |
| <p>River Shannon Callows SAC (Site code: 000216)</p> | <p>46km</p> | <p>Yes. While there is a hydrological pathway connecting the project site to this SAC, it is noted that there is a significant distance between the SAC and project site of approximately 46km. In addition, the Tullamore River discharges to the Clodiagh River which in turn discharges to the Brosna River before discharging to the River Shannon at this SAC. There are also multiple smaller rivers and streams draining each of these river sub-catchments. The distance downstream to this SAC and the dilution factor along these rivers downstream from the project site will be sufficient to ensure that there is</p> | <p>No. While this SAC is designated for its role in supporting otters for the reasons set out for the hydrological pathway opposite there will be no potential for interactions between the project and the otter population of this SAC.</p> | <p>No, this SAC does not occur within the zone of influence of the project.</p> |

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| | | <p>no conceivable potential for this hydrological pathway to function as a potential pollution impact pathway between the project site and this SAC. Furthermore it is noted that the most significant risk of pollution to surface waters during the construction phase relates to the accidental leak of a single construction vehicle, resulting in a potential chemical loading to a receiving watercourse of a maximum of 200 litres. During the operation phase the most significant risk of pollution to surface waters relates to an accidental private vehicle leak, resulting in a potential chemical loading to a receiving watercourse of a maximum of 70 litres; and the potential for surcharge/leakage of the wastewater storage tank at the project's pump station (should this option be proceeded with). The potential for surcharge or leak of the onsite wastewater storage tank will be intermittent at most as</p> | | |
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| | | <p>this storage tank will only be utilised during periods of surcharge at the existing Church Road pump station, which can arise during critical rainfall events. Given the distance between the project site and this SAC; the dilution factor occurring downstream; and the intermittent sources of potential pollution; any contaminants discharging from the project site to the Tullamore River will become entirely diluted within the receiving Shannon surface water catchment and will natural degrade at a remote distance from this SAC.</p> | | |
| <p>Middle Shannon Callows SPA (Site code: 004096)</p> | <p>46km</p> | <p>Yes, but for the reasons set out above for the River Shannon Callows SAC, the hydrological pathway connecting the project to this SPA will not function as a potential pollution pathway and therefore there is no functional impact pathway connecting the project site to this SPA.</p> | <p>No. The project site is located well beyond the typical foraging distances for the wetland bird species that are listed as special conservation interest bird species of this SPA (see SNH, 2016).</p> | <p>No, this SPA does not occur within the zone of influence of the project.</p> |

Table 5.1 above has identified the Charleville Wood SAC as occurring within the zone of influence of the project by virtue of a hydrological pathway connecting the project site to this SAC via the Tullamore River and relative proximity to the project site, being located approximately 3km downstream. The potential for changes to groundwater conditions was also identified as pathway linking the project site to the Charleville Wood SAC.

6.0 IDENTIFICATION OF POTENTIAL EFFECTS TO THE CHARLEVILLE WOOD SAC

A hydrological pathway has been identified between the project site and the Charleville Wood SAC. Environmental effects generated by the project have the potential to arise as a result of the discharge of storm water or wastewater to the hydrological pathway and for the conveyance of such pollution downstream to the SAC.

The project site is also noted to occur in an area of moderate groundwater vulnerability. In light of this and the qualifying features of interest of the Charleville Wood SAC which are alluvial woodland and *Vertigo moulinsiana*, both of which can be influenced by changes to groundwater conditions, the potential for negative impacts to groundwater conditions at the SAC as a result of the project also requires further examination.

It is considered that a Natura Impact Statement is required to examine the potential for the project to result in perturbations to surface water and groundwater conditions and to evaluate how such perturbations could adversely affect the conservation status of the qualifying features of interest of this SAC.

6.1 POTENTIAL IN-COMBINATION EFFECTS

In the absence of appropriate safeguards the project will have the potential to generate polluted surface waters and groundwaters on site and in the event of their discharge from the project site, the potential for the project to combine with any other existing sources of pollutants or pressures to the Tullamore River or the groundwater body underlying the Charleville Wood SAC cannot be ruled out at the screening stage. A Natura Impact Statement will be required to identify other plans, projects or land uses with which the project could combine to result in adverse cumulative effects to the Charleville Wood SAC.

7.0 SCREENING CONCLUSION

The proposed project has been screened for its potential to result in likely significant effects to surrounding European Sites. As this project site is located approximately 1.8km from the nearest European Sites, a Source-Pathway-Receiver model was used to identify potential impact pathways linking the project site to European Sites. The potential impact pathways identified were restricted to hydrological and mobile species pathways.

One European Site, the Charleville Wood SAC has been identified as occurring within the zone of influence of the project. The reason for identifying this SAC within the zone of influence of the project was due to the presence of a hydrological pathway linking the project site to this SAC and its qualifying features of interest as well as the uncertainty of impacts at the screening stage to groundwater conditions and for changes in groundwater conditions as a consequence of the project could in turn undermine groundwater conditions within the SAC.

For the reasons outlined above it is the considered view of the authors of this Screening Report for Appropriate Assessment that the potential for likely significant effects to European Sites cannot be ruled out at the Screening stage and that an Appropriate Assessment of the project is required. Based on this conclusion a Natura Impact Statement will be prepared to inform An Bord Pleanála during its Appropriate Assessment of the project and its potential to result in adverse effects to the integrity of the Charleville Wood SAC, alone or in-combination with other plans or projects.

The Natura Impact Statement for this project will provide further examination and analysis of the project's potential to result in adverse impacts to the Charleville Wood SAC and where necessary will prescribe mitigation measures that will aim to eliminate the potential for the project to result in adverse effects to the integrity of this European Site.

8.0 REFERENCES

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