Dublin City Council

River Dodder Flood Alleviation Works 2D – RDS Wall

Report for Screening for Environmental Impact Assessment

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1 Introduction

1.1 Introduction

Dublin City Council (DCC) intend to construct a new reinforced concrete L-wall along the right bank of the River Dodder near the entrance to the Royal Dublin Society (RDS) grounds on Anglesea Road in Ballsbridge, Dublin City. Refer to **Figure 1** and **Figure 2**. The proposed development (referred to in this report as the "RDS wall") is being incorporated into the River Dodder Flood Alleviation Works Phase 2D project design.

The Office of Public Works (OPW) have been carrying out the construction works on behalf of DCC for the previous River Dodder Flood Alleviation Works and will also construct the proposed development at the RDS wall.

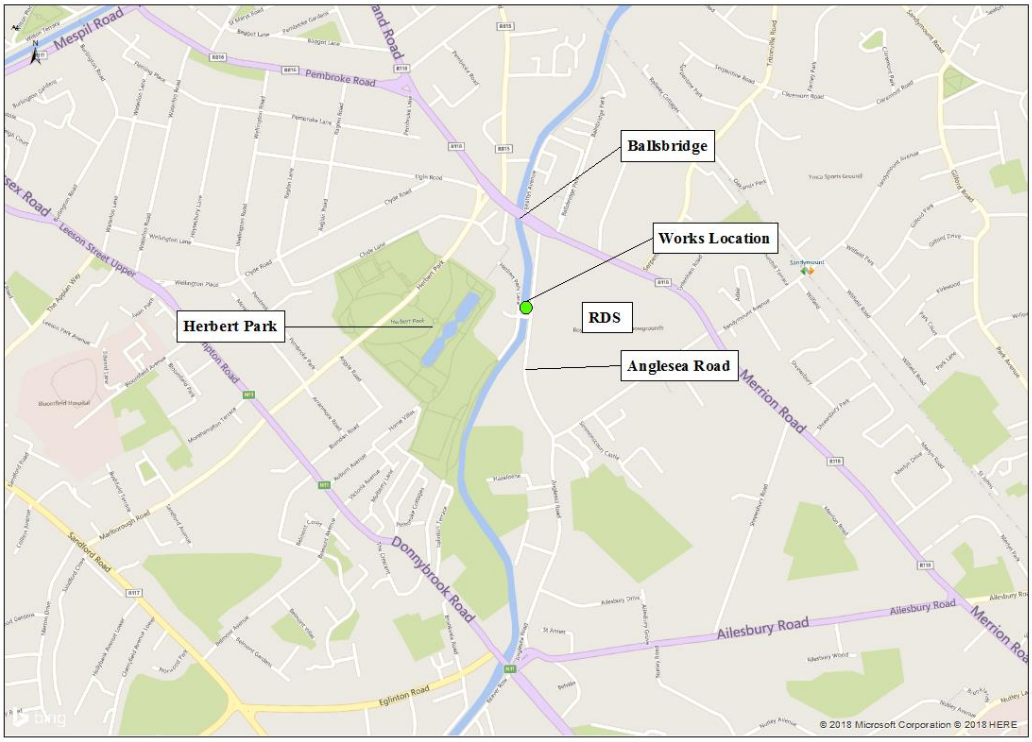
The main elements of the proposed development include:

- Removal of approximately 200m length of the existing RDS wall to footpath level between Ballsbridge and just upstream of the HPL Bridge.
- Construction of approximately 200m of new RDS river wall on the "wet side" of the existing RDS wall with a new reinforced concrete L-wall river wall. The new wall will be clad with thick coursed limestone with lime mortar pointing and a rounded coping in keeping with surrounding flood defences
- Width of footpath along Anglesea Road will increase from 2.8m to a maximum width of approximately 3.4m wide.
- Widening of the existing in-stream right wall haul road to up to a maximum width of 10m from the RDS wall to facilitate works;
- Reinstatement of the original existing riverbed level (existing 2009 levels) following the completion of the works, as agreed with Inland Fisheries Ireland;
- Retention of the existing trees along the Anglesea Road footpath; and
- Services along Anglesea Road will remain unaffected during construction and operation.

Arup has prepared this Environmental Impact Assessment (EIA) screening report on behalf of DCC to determine whether an EIA is required for the above proposed development along the River Dodder. This document sets out the results of the EIA screening and provides the competent authority Dublin City Council (DCC), with the information necessary to undertake the screening and make a final determination as to whether an Environmental Impact Statement (Environmental Impact Assessment Report[1]) is required.

[1] An EIS is now referred to as an Environmental Impact Assessment Report (EIAR) in the 2014 EIA Directive (2014/52/EU)

Figure 1: Location of the proposed development. Source Bing Maps | Not to scale.



1.2 Background to the Proposed Development

The Dodder Flood Alleviation Works Phase 2C to 2E include the section of the River Dodder from Landsdowne Road Railway Bridge and upstream to Smurfit Weir. This section of the river is referred to as the Lower Dodder APSRs or Area of Potential Significant Risk in the Dodder CFRAMS Plan. APSRs are existing urban areas with high degrees of flood risk. The Phase 2D works have been on-going since 2016 and as a result the river has been modified to facilitate these works.

As discussed in Section 1.1, the proposed works to the RDS wall are being incorporated into the River Dodder Flood Alleviation Works Phase 2D design. Phase 2D is part of the overall Dodder Flood Alleviation Works Phase 2C-2E which are on-going and carried out under the approved Part 8 Planning Application 2504/13, issued in 2013.

The approved works (Planning Application 2504/13) under the Phase 2C-2E design are carried out along sections of the River Dodder from Smurfit Weir to Landsdowne Railway Bridge, approximately 1.6km in length. This length of the River Dodder includes the RDS wall. Under the approved Part 8 Planning Application (Planning No. 2504/13), it was proposed to raise the parapet height of the RDS wall however during the Phase 2D works the wall was found to have insufficient wall thickness and hence structural strength to withstand (approved) design condition.

1.3 Need for the Proposed Development

The existing RDS wall has a number of structural weaknesses that require a new river wall to be built including:

- No foundation or sour protection present;
- Significant settlement of the existing wall;
- Culverts and outfalls are collapsing;
- Spalling (breaking) and cracking evident;
- Loss of mortar and large stones recorded throughout;
- Upper parapet has become separated from the lower wall;
- Lower wall was found to have insufficient wall thickness and hence structural strength of the existing wall is insufficient to withstand design condition; and
- Loss of mortar and large stones recorded.

Wall repairs were carried out in November 2017 and May 2018 as part of the Phase 2D emergency works to assist with maintaining the integrity of the existing structure prior to the construction of a new river wall. These works included vegetation removal, localised repointing and the filling of significant voids. Underpinning of the river wall is currently underway as part of further emergency works. This will be completed prior to the construction of the proposed development.

Dublin City Council intend to carry out the proposed works on a section of the River Dodder wall by the RDS (referred to as the RDS wall) in Ballsbridge which is the subject of this EIA Screening.

2 Legislation and Guidance

2.1 Introduction

This section describes the relevant European and national legislation and guidance for this EIA screening report.

2.2 Overview

The current requirements for EIA for projects are set out by the European Union in Council Directive 2011/92/EU[2] on the Assessment of the Effects of Certain Public and Private Projects on the Environment as amended by Directive 2014/52/EU[3]. Directive 2014/52/EU amends Directive 2011/92/EU in a number of respects. For example, an Environmental Impact Statement (EIS) is now referred to as an Environmental Impact Assessment Report (EIAR). A review of this legislation was undertaken for the purpose of this EIA screening report.

In Ireland, the requirements for EIA are specified in Part X (Environmental Impact Assessment) of the Planning and Development Act, 2000, as amended and in Part 10 of the Planning and Development Regulations, 2001, as amended ('the Regulations'). A review of this legislation was undertaken for the purpose of this EIA screening report.

Directive 2014/52/EU was required to be transposed by 16 May 2017 and will likely necessitate changes in Irish laws, regulations and administrative provisions across a number of legislative codes to reflect the contents of Directive 2014/52/EU.

At the time of writing this report, the changes in Irish laws, regulations and administrative provisions across a number of legislative codes (including the Planning and Development Regulations, 2001, as amended) have not yet been implemented.

However, this EIA Screening report has been prepared in full accordance and compliance with the provisions of Directive 2014/52/EU and regard has also been had to the current provisions of the relative Irish legislative codes including the Planning and Development Regulations, 2001, as amended as they continue to apply at this time.

The following guidance and consultation documents have also been considered during the preparation of this report:

- Department of Housing, Planning, Community and Local Government (2017) *Transposition of 2014 EIA Directive (2014/52/EU) in the Land Use Planning and EPA Licencing Systems*;

[2] Directive 2011/92/EU of the European Parliament and of the Council of 13 December 2011 on the assessment of the effects of certain public and private projects on the environment (codification).
[3] Directive 2014/52/EU of the European Parliament and of the Council of 16 April 2014 amending Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment.

- Department of Housing, Planning, Community and Local Government (2017) *Implementation of Directive 2014/52/EU on the effects of certain public and private projects on the environment (EIA Directive): Advice on the Administrative Provisions in Advance of Transposition*;
- Department of the Environment, Community and Local Government (2013) *Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment*;
- Department of the Environment, Heritage and Local Government (2003) Environmental Effect Assessment (EIA) *Guidance for Consent Authorities regarding Sub-threshold Development*;
- Environmental Protection Agency (2017) *Revised Guidelines on the Information to be contained in Environmental Impact Statements (Draft August 2017)*;
- Environmental Protection Agency (2015) *Advice Notes for Preparing Environmental Impact Statements Draft September 2015*;
- Environmental Protection Agency (2003) *Advice Notes on Current Practice in the Preparation of Environmental Impact Statements*;
- Environmental Protection Agency (2002) *Guidelines on the Information to be contained in Environmental Impact Statements*; and
- European Commission (2017) *Guidance on EIA Screening*.
- European Commission (2015) *Interpretation of definitions of project categories of Annex I and II of the EIA Directive*.

2.3 Consideration of Requirement for Mandatory EIA

2.4 Section 172 of the Planning and Development Act 2000, as amended

Section 172 of the Planning and Development Act, 2000, as amended sets out the requirement for Environmental Impact Assessment as follows:

[172 (1) An environmental impact assessment shall be carried out by the planning authority or the Board, as the case may be, in respect of an application for consent for proposed development where either—

(a) the proposed development would be of a class specified in—

(i) Part 1 of Schedule 5 of the Planning and Development Regulations 2001, and either—

(I) such development would exceed any relevant quantity, area or other limit specified in that Part, or

(II) no quantity, area or other limit is specified in that Part in respect of the development concerned,

or

(ii) Part 2 of Schedule 5 of the Planning and Development Regulations 2001 and either—

(I) such development would exceed any relevant quantity, area or other limit specified in that Part, or

(II) no quantity, area or other limit is specified in that Part in respect of the development concerned,

or

(b)(i) the proposed development would be of a class specified in Part 2 of Schedule 5 of the Planning and Development Regulations 2001 but does not exceed the relevant quantity, area or other limit specified in that Part, and

(ii) the planning authority or the Board, as the case may be, determines that the proposed development would be likely to have significant effects on the environment.]

2.5 Schedule 5 of the Planning and Development Regulations 2001, as amended

The prescribed classes of development and thresholds that trigger a mandatory Environmental Impact Assessment are set out in Schedule 5 of the Planning and Development Regulations, 2001 as amended. A review of the project types listed in aforementioned Schedule 5, as amended has been carried out.

It is considered that the proposed works to the RDS wall is a type of development listed in Part 2 Class 10 of Schedule 5 but does not meet the threshold:

Part 2: Class 10

(f)(ii) *Canalisation and flood relief works, where the immediate contributing sub-catchment of the proposed works (i.e. the difference between the contributing catchments at the upper and lower extent of the works) would exceed 100 hectares or where more than 2 hectares of wetland would be affected or where the length of river channel on which works are proposed would be greater than 2 kilometres.*

The proposed development can be defined as flood relief works. However, the proposed development does not exceed the relevant quantity, area or other limit specified in Class 10 as the immediate contributing sub-catchment of the proposed works to the RDS wall is 18 hectares (threshold is greater than 100 hectares), no wetland is affected (threshold is greater than 2 hectares) and the length of channel on which the works are proposed is approximately 200m (threshold is greater than 2km). With regard to potential cumulative effects, the proposed development does not increase the overall length of river channel on which works are proposed for the wider permitted scheme (Phase 2C-2E) which remains less than 2 kilometres. Therefore, the proposed development does not exceed these thresholds and does not trigger a mandatory EIA (and subsequently the preparation of an EIS (EIAR))[4] under Schedule 5 of the Planning and Development Regulations 2001, as amended.

[4]An Environmental Impact Statement (EIS) is now referred to as an Environmental Impact Assessment Report (EIAR) in Directive 2014/52/EU.

2.6 Sub-threshold Development

2.6.1 Introduction

Section 92 of the Planning and Development Regulations, 2001, as amended define sub-threshold development as follows:

"*sub-threshold development' means development of a type set out in Schedule 5 which does not exceed a quantity, area or other limit specified in that Schedule in respect of the relevant class of development*;"

As detailed above in Section 2.5, the proposed development is considered to be of a type set out in Part 2 (Class 10) of Schedule 5 but it does not exceed the relevant quantity, area or other limit specified in that Part. Therefore, it is a sub-threshold development.

Section 103 of the Planning and Development Regulations, 2001, as amended, sets out the requirements for the planning authority in relation EISs and sub-threshold planning applications. The planning authority must make a determination as to whether the development would be likely to have significant effects on the environment and it must have regard to Schedule 7 of the Planning and Development Regulations, 2001, as amended.

It is therefore necessary to consider whether EIA would be required on a sub-threshold basis, under the criteria set out in Schedule 7 of the Planning and Development Regulations, 2001, as amended. Detail in this regard is set out below, to provide the competent authority, Dublin City Council with the information necessary to undertake the screening assessment

The final determination in this regard will be made by Dublin City Council, as the competent authority, in its screening assessment.

2.6.2 Schedule 7 of the Planning and Development Regulations, 2001, as amended

An examination has been made as to whether the proposed development would or would not, individually and in combination with other developments, be likely to have significant effects on the environment (with reference to the criteria set out in Schedule 7 of the Planning and Development Regulations 2001, as amended).

The criteria in Schedule 7 are grouped under the following three headings and are presented in Table 1 below:

(i) Characteristics of proposed development (Section 3 of this Report);

(ii) Location of proposed development (Section 4 of this Report); and

(iii) Characteristics of potential impacts (Section 5 of this Report).

The Guidance for Consent Authorities regarding Sub-Threshold Development from the Department of the Environment, Heritage and Local Government also provides guidance on the determination of likely 'significant effects' of a development in Ireland by way of criteria that aligns with EU policy.

Table 1: Criteria for determining whether a development would or would not be likely to have significant effects on the environment

Schedule 7 - Criteria for determining whether a development would or would not be likely to have significant effects on the environment
The characteristics of proposed development:
"The characteristics of proposed development, in particular: the size of the proposed development, the cumulation with other proposed development, the nature of any associated demolition works, the use of natural resources, the production of waste, pollution and nuisances, the risk of accidents, having regard to substances or technologies used."
Location of proposed development:
"The environmental sensitivity of geographical areas likely to be affected by proposed development, having regard in particular to: the existing land use, the relative abundance, quality and regenerative capacity of natural resources in the area, the absorption capacity of the natural environment, paying particular attention to the following areas: (a) wetlands, (b) coastal zones, (c) mountain and forest areas, (d) nature reserves and parks, (e) areas classified or protected under legislation, including special protection areas designated pursuant to Directives79/409/EEC and 92/43/EEC, (f) areas in which the environmental quality standards laid down in legislation of the EU have already been exceeded, (g) densely populated areas, (h) landscapes of historical, cultural or archaeological significance."
Characteristics of potential impacts:
"The potential significant effects of proposed development in relation to criteria set out under paragraphs 1 and 2 above and having particular regard to: the extent of the impact (geographical area and size of the affected population), the transfrontier nature of the impact, the magnitude and complexity of the impact, the probability of the impact, the duration, frequency and reversibility of the impact."

2.7 Annex III of the EIA Directive (2014/52/EU)

At the time of writing this report, the changes in Irish laws, regulations and administrative provisions across a number of legislative codes (including the Planning and Development Regulations, 2001, as amended) required for the transposition of Directive 2014/52/EU have not yet been implemented.

The criteria outlined in Schedule 7 of these Regulations are based on the older EIA Directive (2011/92/EU).

The most recent amendments to the EIA Directive (2014/52/EU) include an updated Annex III and a new Annex IIA. Therefore, this EIA screening report has also had regard to the requirements of the Directive 2014/52/EU in advance of transposition into Irish legislation.

An examination has been made as to whether the proposed development would or would not, individually and in combination with other developments, be likely to have significant effects on the environment. This has been undertaken with reference to the criteria set out in Annex III of the 2014 EIA Directive.

Annex III sets out the criteria to determine whether the projects listed in Annex II of the Directive should be subject to an EIA. Annex III is presented below in Table 2 and has also been examined in the context of the proposed development.

Table 2: Annex III of the 2014 EIA Directive

1. Characteristics of the project
The characteristics of projects must be considered, with particular regard to:
(a) the size and design of the whole project;
(b) cumulation with other existing and/or approved projects;
(c) the use of natural resources, in particular land, soil, water and biodiversity;
(d) the production of waste;
(e) pollution and nuisances;
(f) the risk of major accidents and/ or disasters which are relevant to the project concerned, including those caused by climate change, in accordance with scientific knowledge;
(g) the risks to human health (for example due to water contamination or air pollution).

2. Location of projects
The environmental sensitivity of geographical areas likely to be affected by projects must be considered, with particular regard to:
(a) the existing and approved land use;
(b) the relative abundance, availability, quality and regenerative capacity of natural resources (including soil, land, water and biodiversity) in the area and its underground;
(c) the absorption capacity of the natural environment, paying particular attention to the following areas: (i) wetlands, riparian areas, river mouths; (ii) coastal zones and the marine environment; (iii) mountain and forest areas; (iv) nature reserves and parks; (v) areas classified or protected under national legislation; Natura 2000 areas designated by Member States pursuant to Directive 92/43/EEC and Directive 2009/147/EC; (vi) areas in which there has already been a failure to meet the environmental quality standards, laid down in Union legislation and relevant to the project, or in which it is considered that there is such a failure; (vii) densely populated areas; (viii) landscapes and sites of historical, cultural or archaeological significance.

3. Type and characteristics of the potential effect	
The likely significant effects of projects on the environment must be considered in relation to criteria set out in points 1 and 2 of this Annex, with regard to the effect of the project on the factors specified in Article 3(1), taking into account:	
(a)	the magnitude and spatial extent of the effect (for example geographical area and size of the population likely to be affected);
(b)	the nature of the effect;
(c)	the transboundary nature of the effect;
(d)	the intensity and complexity of the effect;
(e)	the probability of the effect;
(f)	the expected onset, duration, frequency and reversibility of the effect;
(g)	the cumulation of the effect with the effect t of other existing and/or approved projects;
(h)	the possibility of effectively reducing the effect.

The above information, which is provided in the remainder of this report, will allow an assessment of 'likely significant effects' to be undertaken and will subsequently enable Dublin City Council to determine the need for an EIA. It has been assumed for the purposes of this report that the terms 'effects' and 'impacts' are interchangeable.

The EC Guidance on EIA Screening (EC, 2017) provides a checklist to help users decide whether EIA is required based on the characteristics of a project and its environment. This checklist is included in Table 5 of Section 6 below.

3 Characteristics of the Proposed Development

3.1 Introduction

The first criterion included in Schedule 7 of the Regulations and Annex III of the 2014 EIA Directive (2014/52/EU) relates to the characteristics of the proposed development, having particular regard to the size of the proposed development, accumulation with other proposed developments, nature associated with demolition works, use of natural resources, production of waste, pollution and nuisances and risk of accidents. A brief assessment of the various elements and their location in relation to the proposed development is presented below.

As per Table 1 above, the Guidance for Consent Authorities regarding Sub-threshold Development (DoEHLG, 2003) outlines the information to be considered under this heading as follows:

"The characteristics of proposed development, in particular:

- *The size of the proposed development,*
- *The cumulation with other proposed development,*
- *The nature of any associated demolition works,*
- *The use of natural resources,*
- *The production of waste, pollution and nuisances,*
- *The risk of accidents, having regard to substances or technologies used."*

As per Table 2 above, Annex III of the 2014 EIA Directive outlines the information to be considered under this heading as follows:

The characteristics of projects must be considered, with particular regard to:

- *The size and design of the whole project;*
- *Cumulation with other existing and/or approved projects;*
- *The use of natural resources, in particular land, soil, water and biodiversity;*
- *The production of waste;*
- *Pollution and nuisances;*
- *The risk of major accidents and/ or disasters which are relevant to the project concerned, including those caused by climate change, in accordance with scientific knowledge;*
- *The risks to human health (for example due to water contamination or air pollution).*

3.2 Size and Design of the Proposed Development

The total length of wall to be replaced (the proposed development) is approximately 200m, shown on the engineering drawings, refer to Drawing No. D-DR-W-0201 in Appendix A for the engineering drawings. Refer to site location in Figure 2.

The existing river wall under HPL ridge will not undergo works as part of this proposed development.

The L-wall will consist of an in-situ reinforced concrete base that extends up to approximately 5.5m horizontally from the wall underneath the river bed. A shear key or mini-piles may be required as part of the foundation design. The vertical reinforced concrete stem will be built in front of the existing river wall with a concrete infill between the two walls (existing and new). For heritage reasons, the new wall will be debonded (separated) from the existing wall by means of a suitable membrane or similar. All concrete will be poured in-situ.

The existing RDS wall will be removed to footpath level. The stone removed will be re-used as cladding for the new footpath-level wall where possible. This will extend the footpath to a maximum width of 3.4m, except at tie-in locations to existing walls, where the current width footpath will be retained. The trees along the footpath will be retained and the existing utilities under the footpath will also be retained.

The top of the wall will be approximately 1.4m above street level with rounded coping (in keeping with the surrounding flood defences) and a maximum of 750mm wide. The wall will be clad with 200mm thick coursed limestone cladding with lime mortar pointing. The flood wall is designed to withstand a 1 in 100 year flood event.

The proposed development will take approximately ten months to complete. Construction works will be limited to the hours of 7.30am - 4.30pm Monday to Friday. Works will not be permitted outside these hours.

3.2.1 Works Areas

The works areas have previously been established during the River Dodder Flood Alleviation Works Phase 2D. There are two works areas and one construction compound that will be used during the construction phase of the proposed development:

Works area No. 1 – Herbert Park Lane Bridge

This works area and temporary river crossing has been used previously to carry out works upstream of the Herbert Park Lane (HPL) Bridge under the River Dodder Flood Alleviation Works 2D, such as the emergency works (refer to Section 1.2) on the right river wall/RDS wall and the adjacent flood defence wall at Zardoz Court. The existing haul road is adjacent to the RDS wall will be widened into the River Dodder to facilitate the construction works for the proposed development, refer to Section 3.2.2 and Photo 1 in Appendix B. No materials, machinery or equipment will be stored along the haul routes.

Access to this works area is from the Herbert Park Lane entrance to the Herbert Park on the left side of the river, refer to Figure 2. The access to Herbert Park from Herbert Park Lane will be temporarily restricted during the duration of the construction works in order to access the works area No.1 and the existing temporary river crossing. The works area is secure and inaccessible to the public.

Works No. 2 – Old Toilet Block, Ballsbridge

This works area has been used previously to complete works under the River Dodder Flood Alleviation Works 2D (including emergency works to the right river wall/RDS wall) downstream of the HPL Bridge as well as at Ballsbridge. Access to this works area is from at location of the old toilet block on Anglesea Road, refer to Figure 2.

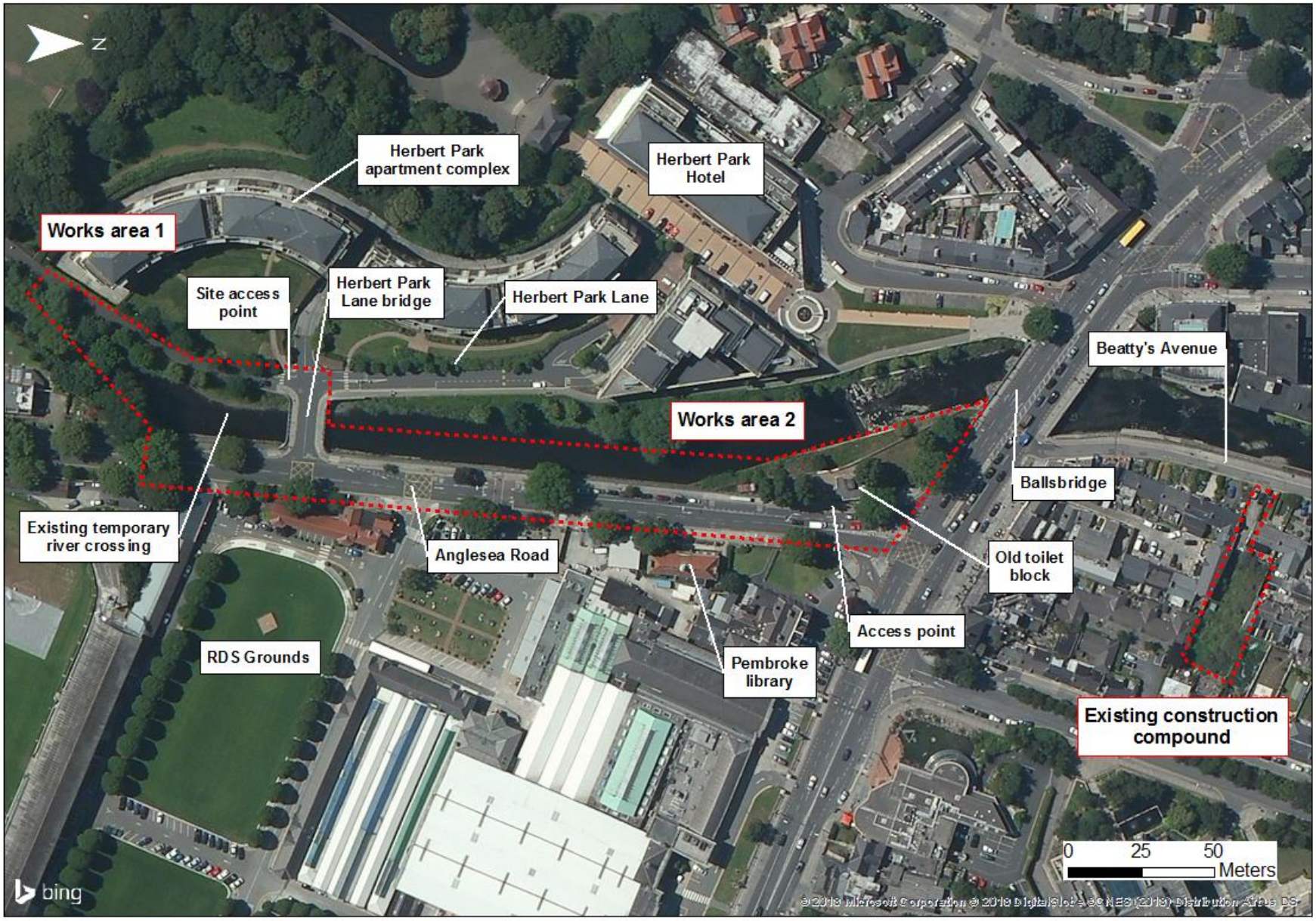
There is an existing haul road that adjacent to the RDS wall from the works area entrance to HPL Bridge. This existing haul road will be widened to facilitate the construction works for the proposed development. No materials, machinery or equipment will be stored along the haul routes.

The existing haul road was established during the River Dodder Flood Alleviation Works Phase 2D. Refer to Photo 2 in Appendix B. The works area is secure and inaccessible to the public.

Construction Compound– Beatty's Avenue

There is an existing construction compound that is currently being used for the Phase 2C and 2D works, located at Beatty's Avenue. The compound is used for the storage of plant, machinery, supplied and staff facilities, refer to Figure 2. No materials, machinery or equipment will be stored along the haul routes. These areas will be kept clear when there are no construction works.

Figure 2: Proposed development location | Source Bing Maps 2018.



3.2.2 Haul Roads

In-stream works will be required to carry out the L-wall construction as the base of the wall will be buried in the river bed. In addition, construction constraints due to services present on Anglesea Road and traffic restrictions prohibit these works being carried out from Anglesea Road (dry side). There is an existing haul road which is being used to carry out the current flood defence works. It may be necessary to widen to a total maximum width of 10m from the river wall to facilitate the construction works. The haul road width will also depend on the requirement to maintaining river flow. This may be reduced with the use of temporary sheet piles to reduce water inflow into the excavation.

Preliminary consultation with Inland Fisheries Ireland (IFI) has indicated that the haul road widening is acceptable provided that fish passage is maintained in the river. The riverbed will be reinstated to the existing level (2009 levels) with agreement of IFI. It is proposed to construct/repair the haul road before the end of August 2018 and thus avoid any conflict with the fish-spawning season as has previously been agreed with IFI for such works. Any works that are required outside this timeframe will be agreed with IFI in advance.

Following the works, the haul road will be removed and the riverbed will be restored to its 2009 level as has been previously agreed with IFI for the existing works. These 2009 levels have been recorded as part of the River Dodder catchment flood risk assessment study (CFRAMS).

Repair and widening of the existing haul roads and/or construction of the wider haul road will require the placement of imported granular material (clean broken stone) approximately 150mm in size. The haul road will be 300mm above the general bed level. The placement of granular material will only be carried out at a time of relatively low flows in the River Dodder.

For works upstream of Herbert Park Lane Bridge, machinery will access the existing haul road on the right bank from a ramp and river crossing which has been previously established, refer to Figure 2 and to Photo 1 in Appendix B.

For works downstream of Herbert Park Lane Bridge, machinery will access the existing haul road from an existing ramp from the old toilet block. Refer to Figure 2 and Photo 2 in Appendix B.

3.2.3 Traffic Management

If necessary, a traffic management plan (TMP) will be designed, implemented, maintained and de-mobilised by Dublin City Council. It is not envisaged that traffic flow will be interrupted along Anglesea Road. Car parking along Anglesea Road adjacent to the works will temporarily be removed during the demolition of the wall to footpath level.

3.2.4 Pedestrians

Access to the existing footpath adjacent to the RDS wall will be restricted as the works progress. Pedestrians will be directed to temporarily use the footpath adjacent to the RDS ground.

The footpath width will increase from approximately 2.8m up to approximately 3.4m wide and will be reinstated following completion of the RDS wall construction.

3.2.5 Demolition

The existing flood defence wall will be removed above footpath level. This will be carried out in stages as the new L-wall is being constructed. Hoarding will be erected around the works areas for safety and restrict access.

The stone removed from the existing footpath level river wall will be reused for the construction of the new footpath level wall where possible. Potential dust generation will be limited as demolition of the wall will take place in stages.

3.2.6 Sequence of Structural Works

The sequence of structural works is described here.

The proposed flood defence works on the right bank of River Dodder in Phase 2D (Ballsbridge to Herbert Park Lane Bridge) will be built in stages with each 3m long unit of wall completed at a time. There will be approximately 60 No. concrete units. This is a total length of 200 linear meters over two sections (up and downstream of HPL Bridge).

Each unit will consist of the following elements:

- Excavation for foundation base
- Installation of mini-piles or shear key
- Construction of wall base
- In-situ concentrate wall pour in lifts

3.2.7 Excavation

For each wall unit, excavation of the structural base will be required. Temporary sheet piles may be required along the haul road to provide stability to the haul road during excavation. The sheet piles will be installed in stages as each section of the wall is being built. An example of this is shown in Photo 7 in Appendix B.

An excavator will access the work unit from the haul road. A dumper truck will access the haul road and remove any excavated material off-site for appropriate disposal. The excavator will dig out the ground for the base of the existing wall. Temporary sheet piles may be required to support the excavation, as mentioned in Section 3.2.2. This will also reduce water ingress into the excavation. A trench box may also be required for the excavation of the shear key.

A 150mm water pump will be installed prior to the excavation works in anticipation of use immediately afterwards. The area will be pumped continuously after the excavation for the concrete base to clear all the water from the area and then turned off.

The water will be discharged through a sediment bag, also known as a "dirt bag", prior to being discharged into the watercourse. The sediment bag is a semi-permeable material that filters the pumped water to remove sediment. The dirt bags will be placed on the overlying footpath and the filtered 'clean' water will be discharged back into the watercourse. The sediment material collected in the sediment bags will be emptied into the site dumper truck and stockpiled in the Beatty's Avenue construction compound before being exported off-site. A mobile diesel generator will be used on site to power the water pump.

3.2.8 Concrete Elements

The concrete elements will consist of the construction of the shear key (or mini piles), construction of the wall base and the concrete pours for the wall lifts.

Excavation will be required for the construction of the shear key (which acts to anchor the new RDS wall). A trench box may also be required for the excavation of the shear key to provide ground stability, refer to Photo 8 of Appendix B. Alternatively, mini piles will be installed to anchor the wall, the installation of which will not require excavation.

The ground will be excavated for the base pour. The excavated material will be placed in the dumper truck and removed for off-site disposal.

Interlocking concrete "Kelly" blocks (1500mm x 600mm x 600mm) will be used to provide the concrete mould (shutter), the inside face of the base. Refer to Photo 5 in Appendix B, photographs are from previous river wall works on the river Dodder. The prefabricated reinforcing steel cages will be lifted into position using a hydraulic excavator. The cages are prefabricated in the construction compound on Beatty's Avenue.

Concrete will be poured directly from the concrete truck into the shuttering/form work where possible. Where the concrete truck is not able to access the pour site, concrete will be poured into concrete buckets that can be filled at the concrete lorry and transported to the pour site using the excavator. A tap at the base of the bucket (skip) will be opened and concrete piped by gravity to where is needed. Refer to Photo 6 of Appendix B. The excavation, placing of pre-fabricated steel reinforced cage and concreting of the base will take place in one day for each 3m long wall unit.

The base unit will be power washed the following day to provide the necessary bond to the next pour. This water run-off will be pumped into the sediment bag.

The box section will be shuttered according to the design and concrete will be poured into the shuttering to set. Shuttering provides the formwork or mould for the concrete structure. The next day the box section will be power washed as described for the base unit.

Before the wall lifts commence, the voids between the back of the proposed wall and the existing masonry wall will be filled. The void will be shuttered and will be concreted as described above. The proposed works will be debonded (separated) from the existing wall for heritage conservation purposes.

The wall lifts will consist of two or more stages of concrete pours to achieve the required wall height. Having concreted the void, all reinforcement required for the first concrete lift of the wall will be tied by a trained steelfixer. The first lift of the wall will be shuttered and concrete will be poured using the excavator and bucket. Refer to Photo 6 in Appendix B, photographs are from previous river wall works on the river Dodder.

The wall shutter will then be removed the following day and scaffolding will be erected to facilitate further works at the concrete base of the wall. Having concreted the first lift of the wall, the steelfixer will tie all reinforcement required for the second, and final, lift of the wall. The second lift of the wall will vary in height depending on the design. As per the first lift, shuttering will be secured for the second lift and the concrete will be poured using the excavator and bucket. The following day the shutter will be removed.

3.2.9 Wall Cladding

Once the structural elements of the wall are complete, it will be cladded with coursed limestone with lime mortar pointing. The cladding will be done from the haul road and scaffolding will be erected where necessary. Where possible the cladding will re-use the stone removed from the existing footpath level river wall.

3.2.10 Reinstatement Works

Once the construction works are completed the footpath adjacent to the river wall will be fully reinstated.

On completion of the works along this section of the river, the haul roads and any temporary sheet piling will be removed. The haul road material will be re-used to reinstate the riverbed where possible, or disposed of off-site to a suitable waste facility. The riverbed will be reinstated to existing (2009) levels with agreement IFI.

The river crossing up-stream of Herbert Park Lane Bridge will be removed on completion of al flood alleviation works on this section of the river and the river bed and normal flow will be restored to pre-construction levels.

3.2.11 Operation Elements

Once the construction works are complete, on-going maintenance will be part of the operational phase of the overall River Dodder Flood Alleviation

Under Section 37 of the Arterial Drainage Act 1945, the Office of Public Works (OPW) is statutorily obliged to maintain all rivers, embankments and urban flood defences on which it has executed works since the 1945 Act, in “proper repair and effective\ condition”.

These works may include minor repairs to the wall or removal of any potential blockages at the HPL Bridge. Any in-stream works required as part of maintenance will be agreed with IFI prior to the works.

3.3 Cumulation with other Proposed Development

Other developments can lead to an elevated effect on the environment, therefore information has been sought on projects that have submitted applications for planning or have been recently approved in the site and surrounding area. Other developments need to be of a sufficient scale or proximity to the development being assessed for cumulative effects to be likely. No development of sufficient scale in the vicinity of the proposed development were identified on the Dublin City Planning List.

The River Dodder Greenway route may potentially intersect access routes for the proposed development. The River Dodder Greenway (Greenway) comprises of a shared cyclist/pedestrian facility that is proposed to loosely follow the River Dodder from Grand Canal Dock in Dublin City Centre to Bohernabreena near Glenasmole.

In the Greenway feasibility study report it was suggested that the proposed route may potentially include the footpath alongside the Herbert Park apartment complex / hotel and continue along the eastern side of Herbert Park. This proposed route intersects the site access point to carry out works to the river wall upstream of Herbert Park Lane Bridge. However, no further progress has been made for this section of the route since the feasibility stage and therefore it is unlikely both developments will be constructed concurrently. Also, as the proposed development consists of works on the right river wall only, the works will not intersect the suggested route on the left bank of the River Dodder at Herbert Park.

As discussed in Section 1.2, the proposed development will be incorporated into the on-going Dodder Flood Alleviation Works Phase 2C to 2E design. There is potential that some of the works approved under Phase 2C-2E (Planning Application 2504/13) will be under construction at the same time as the construction of the proposed development. However, it is not envisioned that there will be significant cumulative environmental effects. The proposed works will utilise existing temporary river crossings and widen the existing haul roads that have previously been constructed for the on-going Phase 2D works at Ballsbridge.

Any on-going approved Phase 2C to 2E flood alleviation works within or in proximity to the proposed works area are unlikely to constructed at the same time as the proposed development given the space constraints within the proposed works area and limited plant and staff resources (the OPW will carry out all Phase 2C-2E flood alleviation works including the proposed works).

3.4 Nature of any Associated Demolition Works

As described in Section 3.2.5, the demolition works will consist of the removal of the footpath level river wall. The materials removed will be re-used where possible for the construction of the new footpath wall.

3.5 Use of Natural Resources

The proposed development will require the following natural resources:

- Fuel to power the generator and construction vehicles.
- Stone for the wall cladding (it is proposed to re-use any removed stone from the footpath level wall where possible).
- Granular material for the haul road (it is proposed to re-use any removed stone from the haul road to reinstate the riverbed where possible).
- Water to power wash the concrete to provide the necessary bond to the next pour, refer to Section 3.2.8.
- Waste resources will be required for sediment and excavated material that will required removal from site.

3.6 Production of Waste, Pollution and Nuisances

The potential waste generated from the proposed development is associated with excavated material generated during the preparation of the L-wall base, disposal of sediment generated during the filtering of water run-off, material generated from the demolition of the wall (at footpath level) and the granular material generated from the removal of the haul road on completion of in-stream works.

The majority of waste is expected to be ‘clean’ material and appropriate mitigation measures would be defined in the construction environmental management plan to promote reuse, recycling and diversion from landfill – e.g. it is expected that the limestone blocks from the excavated areas of the wall would be reused during the cladding works and haul road material would be used as part of the riverbed reinstatement where possible.

Waste generated will be comparable to current operations downstream of the proposed works. The management of waste will be according to the environmental management plan that is in place for the overall Flood Alleviation Works for the River Dodder. The production and disposal of waste will be managed in accordance with the relevant waste legislation.

Nuisances are associated with potential noise and dust generated during the construction works. Noise generated from works (excavation, sheet piling on the haul road, installation of mini piles for the base of the RDS wall, other plant, vehicles, diesel generator) will be on par with the traffic and surrounding urban environment. Piling activity (installation of temporary sheet piles and mini piles, if required) on the haul road will be carried out in stages as each unit of the wall

as it is being built. Dust will potentially be generated from vehicle movements on haul roads and access routes along haul roads in the river channel.

3.7 Risk of major Accidents including Human Health and Natural Disasters

There is the potential for major accidents and natural disasters which may be exacerbated by and impact on the proposed development. Evaluating the risk of accidental events and natural disasters involves the identification of credible scenarios, identification of vulnerabilities in the environment, evaluation of the likelihood of incidents and the assessment of consequences.

Construction will be undertaken in accordance with the Safety, Health and Welfare at Work (Construction) Regulations 2013.

As part of the overall River Dodder Flood Alleviation Works, the OPW have prepared a construction environmental management plan (CEMP). The CEMP sets out the strategy and methodology for mitigating and reacting to credible scenarios.

It is envisaged that the risk of accidents would be very low and appropriate management measures would be in place for any conceivable events during construction. This document will also be used for this proposed development.

From a natural disaster perspective, the most likely risk for the proposed development would be associated with extreme flood events. The necessary precautions associate with such a work environment are set out in the OPW CEMP. These measures include continuous monitoring of the weather and rainfall; when the river level is expected to rise, works will stop, the site will be cleared of personnel, equipment, materials and machinery and the site will be closed; and no works will continue during poor weather conditions. As noted in Section 3.2, the proposed development has been designed to withstand a 1 in 100 year flood event.

4 Location of Proposed Development

4.1 Introduction

This section describes the location of the proposed development with particular regard to environmental sensitivities on site and in the surrounding area.

The second criterion included in the 7th Schedule of the Regulations relates to the environmental sensitivity of geographical areas likely to be affected by proposed development, having particular regard to the existing land use, the relative abundance, quality and regenerative capacity of natural resources in the area and the absorption capacity of the natural environment.

As per Table 1 above, the Guidance for Consent Authorities regarding Sub-threshold Development (DoEHLG, 2003) outlines the information to be considered under this heading as follows:

"The environmental sensitivity of geographical areas likely to be affected by proposed development, having regard in particular to:

- *The existing land use,*
- *The relative abundance, quality and regenerative capacity of natural resources in the area,*
- *The absorption capacity of the natural environment, paying particular attention to the following areas:*

  (a) wetlands,

  (b) coastal zones,

  (c) mountain and forest areas,

  (d) nature reserves and parks,

  (e) areas classified or protected under legislation, including special protection areas designated pursuant to Directives79/409/EEC and 92/43/EEC,

  (f) areas in which the environmental quality standards laid down in legislation of the EU have already been exceeded,

  (g) densely populated areas,

  (h) landscapes of historical, cultural or archaeological significance."

As per Table 2 above, Annex III of the 2014 EIA Directive outlines the information to be considered under this heading as follows:

"The environmental sensitivity of geographical areas likely to be affected by projects must be considered, with particular regard to:

(a) the existing and approved land use;

(b) the relative abundance, availability, quality and regenerative capacity of natural resources (including soil, land, water and biodiversity) in the area and its underground;

(c) the absorption capacity of the natural environment, paying particular attention to the following areas:

(i) wetlands, riparian areas, river mouths;

(ii) coastal zones and the marine environment;

(iii) mountain and forest areas;

(iv) nature reserves and parks;

(v) areas classified or protected under national legislation; Natura 2000 areas designated by Member States pursuant to Directive 92/43/EEC and Directive 2009/147/EC;

(vi) areas in which there has already been a failure to meet the environmental quality standards, laid down in Union legislation and relevant to the project, or in which it is considered that there is such a failure;

(vii) densely populated areas;

(viii) landscapes and sites of historical, cultural or archaeological significance".

4.2 Overview

The site for the proposed development is located on a section of river wall in Ballsbridge, Dublin City. The existing site includes haul roads, footpath along Anglesea Road and the construction compound on Beatty's Avenue. The works will be on the section of the right river wall between Ballsbridge and includes a section of right river wall upstream of the Herbert Park Lane Bridge.

The site is approximately 0.4 hectares and the length of new wall to be constructed is approximately 200m. The site is surrounded by highly urbanised development within an area surrounded by commercial buildings (RDS venue, Herbert Park hotel, apartment complex) and nearby amenity area upstream of the site (Herbert Park). Refer to Figure 2.

The lands adjacent to the left bank of the River Dodder are a mix of apartments, offices and a hotel. There is a footpath along the left side of the river from Ballsbridge to the entrance of Herbert Park on the left side of the river. However, it is currently not possible to access Herbert Park from Herbert Park Lane as this is being used as part of work area No.1 to access the temporary river crossing and carry out works upstream of the proposed development on the right bank. Upstream of Herbert Park Lane Bridge, the left bank has been heavily altered to facilitate the river access point. Refer to existing site photos in Appendix B.

Herbert Park Lane Bridge is the access point for the Herbert Park apartment complex and adjacent commercial building.

Downstream of Herbert Park Lane Bridge, the left bank is landscaped and slopes steeply from the footpath and river wall to the main channel. The left bank contains some trees and scrub with some evidence of planting.

The right river wall runs parallel with a footpath and Anglesea Road. It is a busy section of road which links Donnybrook and Ballsbridge. The Royal Dublin Society (RDS) showgrounds are also along this length of Anglesea Road. The footpaths along either side of this section of Anglesea Road are lined with deciduous trees of varying maturity.

4.3 Existing land use

The site for the proposed development is located within a dense urban area within an area of the city that has areas for recreation/amenity, commercial and residential.

The land use within the area is designated under the Dublin City Development Plan 2016-2022 (Development Plan) and Zoning Map H. The River Dodder has a specific zoning Objective as part of the zoned 'Conservation Areas' in the city. Land to the south of the river includes Anglesea Road and the RDS events venue which is zoned for Z15 ('To protect and provide installation and community uses') and as Z9 ('To preserve, provide and improve recreational amenity and open space and green networks') for the green areas within the venue.

The left bank of the River Dodder, where the existing access is for the works upstream of the Herbert Park Lane Bridge, is zoned for Z9 ('To preserve, provide and improve recreational amenity and open space and green networks'). This

Land north of the river contains the zoning objective Z1 ('To protect, provide and improve residential amenities') for the area where the Herbert Park apartments are to the north of the river and Z4 ('To provide for and improve mixed-services facilities') for the lands where the Herbert Park Hotel and commercial buildings are located, north-east of the proposed development.

The proposed development will be in keeping with existing land use as it consists of the replacement of an existing wall with a new flood defence wall. The proposed works will strengthen the river wall and provide enhanced flood protection to the local area.

The Zoning Objective Map (Map H) shows that the section of the River Dodder adjacent to the works area is identified as a Zone of Archaeological Interest. This is relevant to Ballsbridge (DU018-059----) which is a protected structure and listed in the Dublin City Record of Monuments and Places, refer to Section 5.4.

4.4 Natural Resources

The proposed development works area is a highly urbanised environment. The River Dodder is the primary natural resource as an amenity for walkers who use the adjacent footpaths. There are public footpaths in that follow the river on both banks; the footpath along Anglesea Road and along Herbert Park Lane.

The section of the River Dodder that flows through the proposed development works area has limited amenity value for fishing as the area is inaccessible to the public and the river is highly modified in this section.

The river is an important natural resource for a wide variety of flora and fauna as it provides habitats and food sources, refer to Section 5.3.

The value of the river as a natural resource for flora and fauna depends on water quality. National river surveys have taken place since 1971. The National Rivers Monitoring Programme was replaced by the Water Framework Monitoring Programme from December 2006. As part of the Water Framework Directive (WFD) Monitoring Programme, approximately one third of Ireland's major rivers and their more important tributaries are surveyed and assessed each year by EPA ecologists including the River Dodder. A complete survey cycle is completed every three years. The sites are scored on a five-point system developed by the EPA called the Biological Q-rating system. There are two biological river stations in proximity to the proposed development works area. The upstream river station is adjacent to Beaver Row and most recent Q value for this station was reported to be Q3-4 or "Moderate" for the 2016 monitoring cycle. The downstream river station is at Ballsbridge and most recent Q value for this station was reported to be Q2-3 or "Poor" for the 2016 monitoring cycle. The current reported EPA river water quality status of the river for the 2010-2015 monitoring period under the Water Framework Directive, is reported as having 'moderate' water quality.

Drinking water is abstracted from River Dodder at Bohrnabreena Reservoir in the Wicklow Mountains, upstream of the proposed development.

The area within and in proximity to the proposed development works area has limited natural resources. The soils are highly modified due to development in the area, particularly the left bank where there are apartment blocks and a hotel.

The natural resources aside from the River Dodder itself within the works area are considered to be insignificant in the context of the relative abundance of natural resources in the wider area. However, the site is hydrologically linked to protected biodiversity and heritage sites downstream. The following Natura 2000 sites are downstream of the proposed development:

South Dublin Bay SAC (Site Code 000210) – 1.5km east and 4.6km downstream;

South Dublin Bay and River Tolka SPA (Site Code 004024) – 1.5km east and 4.6km downstream;

North Bull Island SPA (Site Code 004006) 3.5km north east and 7.3km downstream; and

North Dublin Bay SAC (Site Code 000206) 5km north east and 6.8km downstream.

Further to those, the South Dublin Bay pNHA (Site Code 002104) and North Dublin Bay pNHA (Site Code 000206) are 1.5km east and 4km north east respectively from the proposed development. Refer to Figures 4 and 5.

4.5 Absorption Capacity of Natural Environment

Under the Schedule 7 of the Planning and Development Regulations 2001, as amended and Annex III of the 2014 EIA Directive the absorption capacity of the natural environment must be considered with particular attention to:

(a) wetlands,

(b) coastal zones,

(c) mountain and forest areas,

(d) nature reserves and parks,

(e) areas classified or protected under legislation, including special protection areas designated pursuant to Directives79/409/EEC and 92/43/EEC,

(f) areas in which the environmental quality standards laid down in legislation of the EU have already been exceeded,

(g) densely populated areas,

(h) landscapes of historical, cultural or archaeological significance.

The above areas are considered below in terms of the proposed development.

4.5.1 Wetlands

Wetlands can include intertidal marshes and mud, sand or salt flats as well as sand, shingle or pebble shores. There are no such wetlands within or in proximity to the proposed development. The nearest wetlands are located downstream of the proposed development in Dublin Bay area including those located on North Bull Island. Refer to Section 5.3. The downstream wetlands are unlikely to be highly sensitive to the proposed development given the nature of the works and the distance from the proposed development.

4.5.2 Coastal Zones

The proposed development is not located in a coastal zone. The nearest coastal zone is Dublin Bay, downstream of the proposed development. The downstream coastal zones are unlikely to be highly sensitive to the proposed development given the nature of the works and the distance from the proposed development.

4.5.3 Mountain and Forest Areas

The proposed development is not in proximity nor hydrologically linked to any mountain or forest areas.

4.5.4 Nature Reserves and Parks

Other designated sites (aside from those described in Section 4.5.5 below) include Natural Heritage Areas (NHAs) and proposed Natural Heritage Areas (pNHAs), the closest of which is the Booterstown Marsh pNHA (Site Code 001205).

This site is unlikely to be highly sensitive to the proposed development given the nature of the works and the distance from the proposed development.

Herbert Park is located upstream of the proposed development. The proposed development will not have any direct impact on this amenity.

4.5.5 Areas classified or protected under Legislation, including special Protection Areas designated pursuant to Directives 79/409/EEC and 92/43/EEC

Section 5.3.2 discusses the Natura 2000 sites in proximity to the proposed development.

4.5.6 Areas in which the environmental Quality Standards laid down in Legislation of the EU have already been exceeded

The River Dodder flows into the River Liffey estuary at Ringsend, approximately 2.2km downstream, and from there into Dublin Bay. The water at this location is nutrient sensitive and has been designated a Water Framework Directive (WFD) risk score of 'at risk of not achieving good status'. The proposed development is unlikely to impact the nutrient sensitivity of the River Dodder downstream.

4.5.7 Densely Populated Areas

The proposed development is located in a highly urbanised environment. The proposed development will not result in a loss land for residential purposes or otherwise. The works will be restricted to the river channel. As described in Section 3.2.3, it is not envisaged that traffic will be affected by the proposed development.

4.5.8 Landscapes of Historical, Cultural or Archaeological Significance

The proposed development will not impact any historical, cultural or archaeological aspects of the local environment. The river wall will be built in keeping with the existing cladding and materials. The existing landscape of the River Dodder within the proposed development works area will not be significantly altered. As discussed in Section 3.2.2, the haul roads will be removed and the river channel reinstated on completion of the flood alleviation works.

5 Characteristics of Potential Impacts

5.1 Introduction

The third and final criterion set out in Schedule 7 of the Planning and Development Regulations 2001 as amended for determining whether a development would or would not be likely to have significant effects on the environment relate to the potential significant effects of the proposed development. The aforementioned guidance document (DoEHLG, 2003) describes the information to be considered under this heading as follows:

- *"The extent of the impact (geographical area and size of the affected population),*
- *The transfrontier nature of the impact,*
- *The magnitude and complexity of the impact,*
- *The probability of the impact,*
- *The duration, frequency and reversibility of the impact."*

Similarly, Annex III of the 2014 EIA Directive requires that the potential effects of the proposed development are considered in terms of:

(a) the magnitude and spatial extent of the effect (for example geographical area and size of the population likely to be affected);

(b) the nature of the effect;

(c) the transboundary nature of the effect;

(d) the intensity and complexity of the effect;

(e) the probability of the effect;

(f) the expected onset, duration, frequency and reversibility of the effect;

(g) the cumulation of the effect with the effect of other existing and/or approved projects; and

(h) the possibility of effectively reducing the effect.

An initial screening of the characteristics of the proposed development against potential interactions with the environment has been to identify likely significant effects arising from the proposed development. Environmental aspects of relevance to the proposed development include:

- Population and human health;
- Biodiversity;
- Cultural, architectural and archaeological heritage;
- Landscape and visual environment;
- Soils and geology;

- Water;
- Traffic and transport;
- Air quality and climate;
- Noise and vibration;
- Land use and material assets; and
- Interactive effects.

It is unlikely that there would be any transboundary effects given the nature and scale of the proposed development.

5.2 Population and Human Health

There will be some disruption to nearby residents and pedestrians during the proposed works. These potential impacts will likely be associated with the temporary loss of footpaths and noise and dust generated by the construction activities. These impacts will be localised as the proposed development is confined to a relatively small section of river channel (approximately 200m of the river wall). Refer to Section 3.2.4, 5.9 and 5.10 respectively.

Pembroke Public Library is identified as a potential sensitive receptor to the proposed development. It is located opposite the works site No. 2. Noise from the proposed works is not envisaged to have a significant impact on this facility, the works will be contained to the river channel and on par with the surrounding urban environment. Piling activity (installation of temporary sheet piles and mini piles, if required) will be carried out for each section of wall being built, the duration of which will be short when it occurs. Access to the facility will not be affected by the proposed development.

It will be possible to carry out all demolition works of the existing wall from the haul road in the river channel. Protective hoarding and an exclusion zones will be established at areas of demolition. Pedestrian routes along the river wall will be restricted during the construction works and pedestrians will be directed to use the footpath adjacent to the RDS grounds.

It is not envisaged that the traffic will be significantly impacted during the construction phase. Where a lane closure is required, it will be for a short period of time only and alternative routes will be provided. A section of the street parking may be removed temporarily during the construction work depending on what section of the river wall is under works.

The proposed development will have an overall positive impact on the population and businesses of Ballsbridge. By reinforcing the wall, it will ensure the structural integrity of the river wall, protection and safety from future flood events. Pedestrians will also benefit from a wider pedestrian footpath on the river side of Anglesea Road as is proposed as part of the proposed development design.

5.3 Biodiversity

5.3.1 General Ecology

As outlined in Section 4.3, the proposed development is located within a highly urbanised area.

The River Dodder is the primary habitat within the proposed development works area. The River Dodder is considered a highly significant regional salmonid catchment for species of salmon and trout (Dublin City Biodiversity Action Plan, 2015). Such species travel upstream through the channel within the proposed works area. Fish passage will be maintained for the duration of the works. Preliminary consultation with Inland Fisheries Ireland (IFI) has indicated that the haul road widening is acceptable provided that fish passage is maintained in the river. The riverbed will be reinstated to the existing level (2009 levels) with agreement of IFI. It is proposed to construct/repair the haul road before the end of August 2018 and thus avoid any conflict with the fish-spawning season as has previously been agreed with IFI for such works. Any works that are required outside this timeframe will be agreed with IFI in advance.

Following the works, the haul road will be removed and the riverbed will be restored to its 2009 level as has been previously agreed with IFI for the existing works. These 2009 levels have been recorded as part of the River Dodder catchment flood risk assessment study (CFRAMS).

Riparian habitat such as that on the left bank of river channel within the proposed development works area may be used by species as a corridor to travel up and down the river. Species such as otters which feed on fish in the river, refer to Section 5.3.4 below. The left river bank steeply slopes down to the river channel and consists of some trees, scrub and planted vegetation. It is inaccessible to the public separated by a stone wall set back up to approximately 30m from the channel in some areas.

There is very limited vegetation along the right bank where the works are proposed and only upstream of the Herbert Lane Park Hotel. The trees along Anglesea Road, parallel to the right river wall will be retained.

As discussed in Section 4.4, the ecological value of the river largely depends on water quality. Potential impacts from the proposed development on water quality relate to the potential sediment loading from run-off from the works areas. The impact of run-off will not be significant due to the duration and nature of the works, the buffer provided by the proposed haul road and the construction methodology that will be employed.

The construction works will be carried out in 3m units, as described in Section 3.2.6 and therefore there is low potential for ‘dumping’ of large quantities of sediment into the river channel. Power washing (of the concrete) and excavation activities will take place at the base of the river wall and the haul road and/or temporary sheet piles will provide a buffer (up to 10m) from the open river channel. In addition, run-off will be pumped to a dirt bag to remove sediment before being discharged back into the river channel.

Noise and disturbance during construction, which could have a localised impact on fauna, is predicted to be on par with noise levels in such an urbanised environment and in proximity to high volumes of traffic, i.e. on Anglesea Road.

Piling activity (installation of temporary sheet piles and mini piles, if required) on the haul road will be carried out in stages as the wall is being built. Noise generated will be temporary in duration, confined to normal working hours and is not expected to significantly disturb the local fauna.

Any dust generated will not have a significant impact on flora or fauna given the 'wet' nature of the excavation works. Haul roads will be watered during dry periods to prevent dust generation during dry periods. Refer to Section 5.9.

Other potential impacts include the unlikely risk of a fuel spill entering the river channel. Refuelling will not take place on the haul roads and only at designated areas where the fuel storage containers will be bunded. Therefore, the risk of such an incident occurring is considered to be low.

An ecological survey was carried out in May 2018 by Brian Keeley Wildlife Surveys Ltd. The results of the survey showed that there was no evidence of otter holts, badger setts or kingfisher nests within or in proximity (within 200m up and downstream) to the proposed development. The ecological survey report is included in Appendix C.

5.3.2 Natura 2000 Sites

The proposed development is not located within or in proximity to Natura 2000 sites (European sites). The River Dodder provides a potential hydrological pathway to downstream Natura 2000 sites in proximity to the River Dodder and therefore downstream Natura 2000 sites in proximity to the River Dodder are of relevance to the proposed works, refer to Figure 4. These sites are listed in Table 1.

The main potential downstream impacts relate to increased levels of suspended solids in surface water runoff. However, it is not expected that these impacts will be significant due to the nature, duration and construction methodology of the proposed works. Power washing and excavation activities will take place at the base of the river wall in the dry and the haul road and/or temporary sheet piles will provide a buffer of up to 10m between the potential run-off source and the open river channel. Water pumped during construction (e.g. excavation) will be pumped through a sediment bag to remove any sediment before being discharged into the river channel. The existing haul roads and river crossing will be widened however these will be constructed to minimise any sediment loading as a result of erosion from river flow. As described in Section 3.2.2, imported granular material (clean broken stone) approximately 150mm in size will be placed on the haul roads.

The Natura 2000 sites downstream are not sensitive to sediment loading and are all located in estuarine/ tidal areas in Dublin Bay which are subject to large diurnal tidal flows carrying substantial volumes of sediment. Any habitats or species in these areas are well used to varying levels of salinity, flows and suspended solids.

The distance between the proposed development works area and the closest downstream Natura 2000 sites (4.6km) further reduces the risk of any significant impact if sediment loading or pollution (e.g. fuel spill) was to occur.

This distance, combined with the considerable assimilative capacity of Dublin Bay means that the level of suspended solids from the proposed works which could possibly end up in the Dodder and downstream in the Bay will not have a significant impact on these Natura 2000 sites.

The qualifying interest bird species listed under the Special Protection Areas are unlikely to use the proposed development works area due to the unsuitable nature of the habitats. These species are associated with the wetlands, mudflats and coastal habitats that Dublin Bay provides.

Otters are listed as a species of conservation interest in the Wicklow Mountains SAC (Site Code 004040). The Wicklow Mountains SAC is approximately 10.4km overland or 20km upstream from the proposed development works site. The Dodder tributaries originate in the Wicklow Mountains, providing a potential hydrological pathway for otters to travel downstream. Though uncommon, otters are known to move outside their territories for food. Otters have been recorded along the River Dodder. Otters are protected species under Annex II of the Habitats Directive and their resting place is fully protected and any interference with a holt (burrow) or access to it is prohibited except under derogation.

Roughan O'Donovan (ROD) conducted ecological surveys along the River Dodder as part of the proposed Doddder Greenway. These ecological surveys included the works areas for the proposed RDS wall works. This assessment included an otter survey in April-May 2017. No holts were identified within the proposed development works area. The nearest holts identified were on the northern (left bank) of the River Dodder, approximately 30m upstream of Herbert Park (or approximately 450m upstream of the Herbert Park Lane Bridge.

The online National Biodiversity Data Centre database was checked for recordings of evidence of otter (holts or spraints) within or in proximity to the proposed development works site. One submission[5] was made of evidence of otters present (spraints) along the left bank downstream of the Herbert Park Lane Bridge in 2016.

In May 2018, an ecological survey was carried out by ecologist Brain Keeley (Wildlife Surveys Ltd) on the works area as well as 200m up and downstream of the works area boundary. The ecological survey assessed the works areas for evidence of otter, badger and kingfisher habitats. The results of the surveys found no evidence of otter holts within the works area or within 200m up or downstream of the works area. An ecological report was prepared as part of the survey and is attached to this report in Appendix C.

The 2018 ecological survey found that there was evidence (spraints and sightings reported by local residents) of otters using the works area.

[5] Recording number O178322, date 27/02/2016 (https://maps.biodiversityireland.ie/Species/119290)

Otters were reported using the left bank and haul roads to move up and down the river during previous flood alleviation works at Ballsbridge.

Otters are typically most active in the early mornings and evenings and therefore will not be disturbed by construction works which will take place during the daytime. Fish passage and consequently otter passage will not be impeded by the construction works.

Therefore, it is concluded that the proposed works will not have a significant impact on otters for the following factors:

- There is no evidence of otter holts within or in proximity of the proposed development.
- Reports of otter sightings and spraints suggest the otters have used the works area during previous construction works that have taken place along this section of the River Dodder. The proposed works will be no more intrusive than previous and current operations
- Otter passage will not be impeded by the construction works
- The works will take place during the day and not conflict with the typically active hours of the species.
- The works are unlikely to have a significant negative effect on the water quality of River Dodder.

A screening report for Appropriate Assessment prepared for the proposed development concluded that there is no potential for the proposed development to significantly impact on Natura 2000 sites and that the proposed development, alone or in combination with other projects, is not likely to have significant effects on Natura 2000 sites in view of their conservation objectives. A Stage 2 Appropriate Assessment is therefore not considered necessary, but the competent authority, Dublin City Council, will make the final determination in this regard.

Table 1: Natura 2000 sites within 15km of the proposed development.

Natura 2000 Sites	**Site Code**	**Distance from the proposed development to the Natura 2000 site (over land / hydrological distance) (km)**
South Dublin Bay and River Tolka Estuary SPA	004024	1.3km/4.6km downstream
North Bull Island SPA	004006	4.9km/7.2km downstream
South Dublin Bay SAC	000210	1.4km/4.6km downstream
North Dublin Bay SAC	000206	4.9km/6.8km downstream

Figure 3: Natura 2000 Sites within 15km of the proposed development. | Source NWPS.

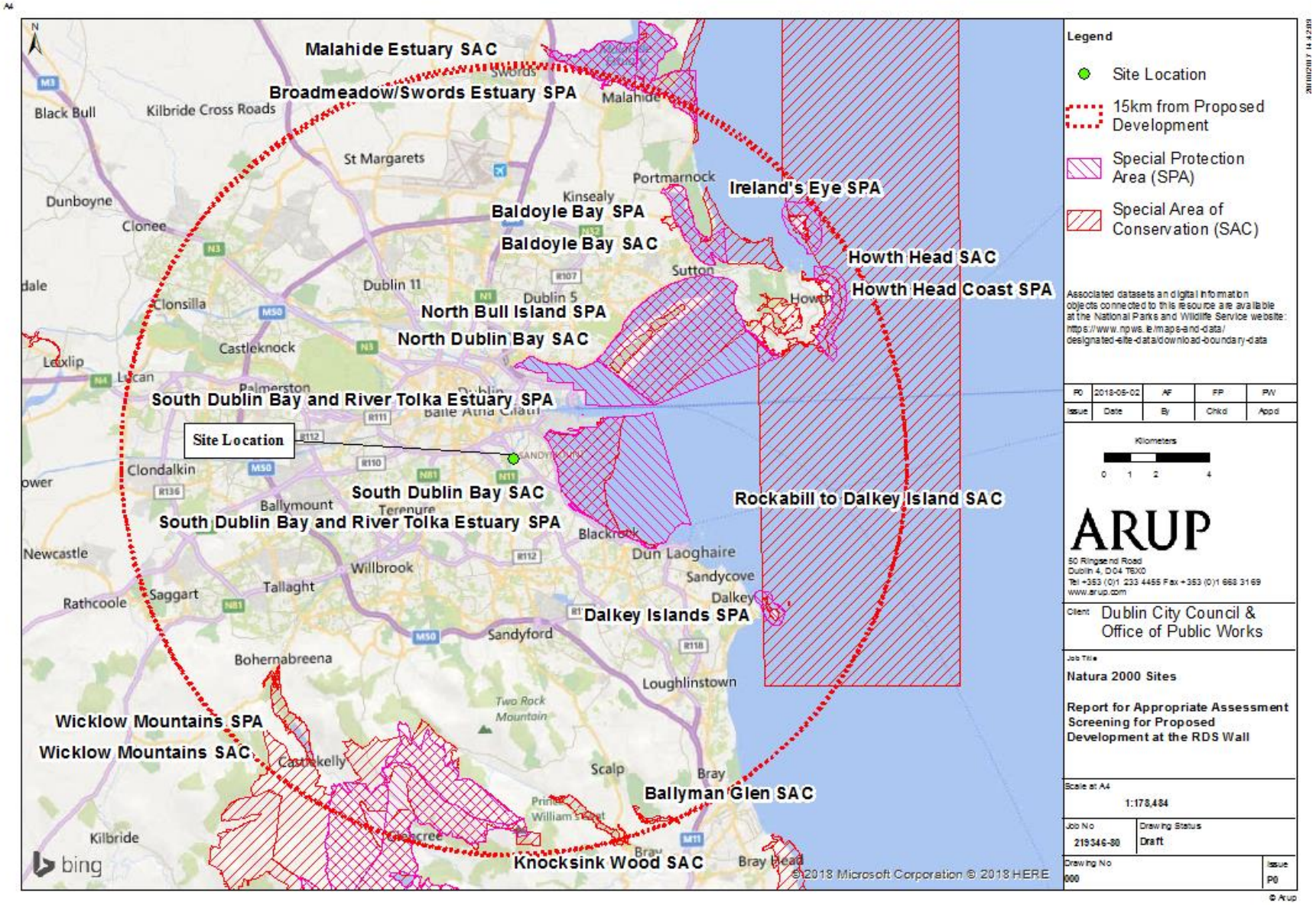
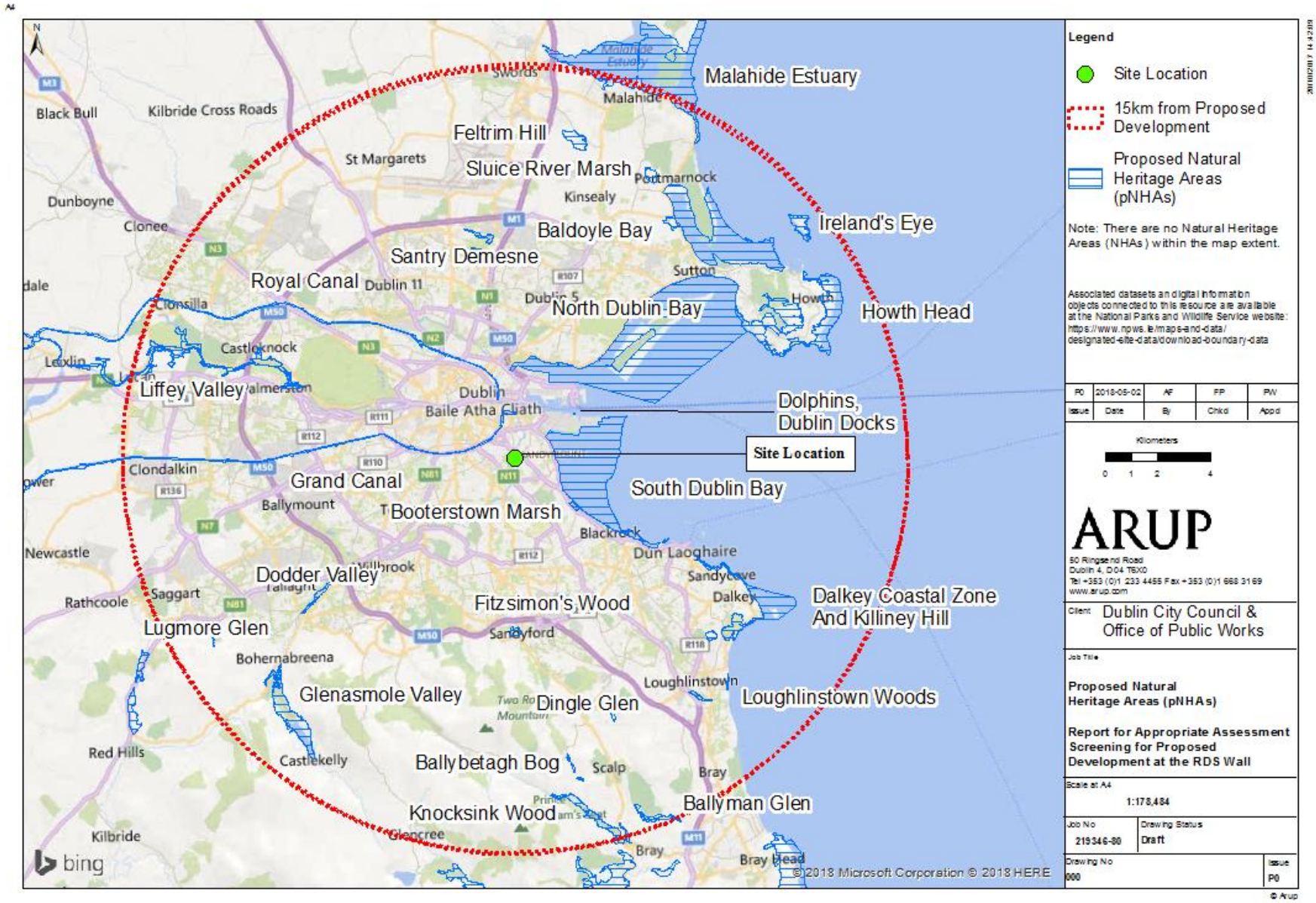


Figure 4: Natural Heritage Areas (none visible) and Proposed Natural Heritage Areas within 15km of the proposed development. | Source NPWS.



5.3.3 Other Designated Sites

Natural Heritage Areas (NHAs) and Proposed Natural Heritage Areas (pNHAs) can be considered to be 'stepping stones' between Natura 2000 sites. The proposed development is not within or in proximity to any pNHA or NHA. The Grand Canal pNHA (site code 002104) is the nearest pNHA or NHA site, approximately 1.1km north of the proposed development. Refer to Figure 5.

North Dublin Bay pNHA and South Dublin Bay pNHA overlap the North Dublin SPA and South Dublin Bay and River Tolka Estuary SPA respectively. As discussed for these sites in Section 4.5.1, the proposed development does not contain any habitats that would likely be used by bird species at these sites for nesting or feeding. There is a hydrological link between the proposed development and these downstream sites, however it is unlikely that the proposed development will have a significant impact on these habitats or species given the distance of the hydrological link between the sites.

Table 2: Proposed Natural Heritage Areas (pNHAs) within 15km of the proposed development.

Proposed Natural Heritage Area	Site Code	Distance from closest section of proposed development (km)
Grand Canal pNHA	002104	1.1
South Dublin Bay pNHA	000210	1.3
Booterstown Marsh pNHA	001205	2.7
Royal Canal pNHA	002103	2.3
Dolphins, Dublin Docks pNHA	000201	2.7
North Dublin Bay pNHA	000206	3.7
Fitzsimon's Wood pNHA	001753	6.4
Dalkey Coastal Zone And Killiney Hill pNHA	001206	7.9
Dodder Valley pNHA	000991	7.9
Santry Demesne pNHA	000178	7.7
Liffey Valley pNHA	000128	8.4
Howth Head pNHA	000202	10.2
Dingle Glen pNHA	001207	10.2
Baldoyle Bay pNHA	000199	10.2
Loughlinstown Woods pNHA	001211	11.2
Ballybetagh Bog pNHA	001202	11.5
Glenasmole Valley pNHA	001209	12.0
Sluice River Marsh pNHA	001763	11.6
Feltrim Hill pNHA	001208	11.9
Knocksink Wood pNHA	000725	13.1
Lugmore Glen pNHA	001212	13.2
Ireland's Eye pNHA	000203	13.7
Malahide Estuary pNHA	000205	13.9
Ballyman Glen pNHA	000713	14.0

5.3.4 Protected Species

The River Dodder is known to provide habitats for a wide variety of species. Those of particular concern in terms of impact from proposed development are species listed under the Wildlife Act 1976-2012, as amended; the European Habitats Directive 1992/43/EEC, as amended and; the European Birds Directive 1979/409/EEC, as amended.

5.3.4.1 Birds

The Fourth Schedule of the Wildlife Act 1976, as amended, lists protected bird species found in Dublin City (Dublin City Biodiversity Action Plan, 2015) including the Peregrine Falcon and Short-eared Owl.

These species are unlikely to be impacted by the proposed development. Noise generated during the construction works will be temporary and on par with the existing noise of the urban environment and high volumes of traffic.

The Kingfisher (*Alcedo atthis*) is listed in Annex I of the Birds Directive (2009/147/EC). They have been recorded previously along the Dodder. As described in Section 5.3.1, an ecological survey was carried out for the proposed development in May 2018. The results of the surveys found no evidence of Kingfisher nests within the works area or within 200m up or downstream of the works area. An ecological report was prepared as part of the survey and is attached to this report in Appendix C.

5.3.4.2 Bats

There are nine bat species found in Ireland and all are protected under the Wildlife Act 1976, as amended. It is illegal to kill or injure bats in the wild and the Act makes it an offence to wilfully interfere with, or destroy, their breeding and resting places. The Lesser Horseshoe bat is additionally listed in Annex II of the Habitats Directive 92/43/EC requiring the designation of Special Area of Conservation to secure its conservation and protection however the known range of this species is restricted to the south-western and western counties.

The National Biodiversity Data Centre online database has a recorded of submissions made on species identified around the country. This database was used to check for any recording of protected species within or in proximity to the proposed development.

Bat surveys conducted by ROD in 2016 between Donnybrook and Grand Canal Dock showed bat activity of the following species within or in proximity the proposed development site:

Leisler's bat *Nyctalus leisleri*

Nathusis' Pipistrelle *Pipistrellus nathusii*

Common Pipistrelle *Pipistrellus pipistrellus*

Soprano Pipistrelle *Pipistrellus pygmaeus*

Surveys carried out in June 2008 by Scott Cawley for an EIA survey were recorded in the National Biodiversity Data Centre online database. Three bat species were record at Ballsbridge, downstream of the proposed works area (Daubenton's bat *Myotis daubentonii;* Leisler's bat *Nyctalus leiseri*; Common Pipistrelle *Pisistrelle pipistrelle*).

Given the nature of the works it is unlikely the proposed development will significantly impact any bat species. The works will be limited to the right river wall and will exclude the bridge structure. All of the trees along Anglesea Road will be maintained. Previous wall repair works have in-filled any significant voids in the existing river wall and no significant vegetation will be removed from the works area.

5.3.4.3 Other Mammals

As described in Section 5.3.1, Otters are listed under Annex II and Annex IV of the EU Habitats Directive as well as being protected under the Irish Wildlife Act 1976-2012. Badgers are protected under the Wildlife Act 1976, as amended. The Kingfisher is associated with riparian habitat and is protected under Annex I of the European Birds Directive 1979/409/EEC, as amended. The presence of otters on the River Dodder is discussed in further detail Section 5.3.2.

An ecological assessment was undertaken by ROD between 2016-2017 for the Dodder Greenway project. The project is a proposed shared cyclist/pedestrian route that loosely follows the River Dodder from Grand Canal Dock in Dublin city centre upstream to Bohernabreena near Glenasmole. A number of surveys carried out for this ecological survey included the proposed development works area but no evidence of otter holts or badger setts were identified within or in close proximity to the proposed development works area (within 200m up and downstream) were identified. The nearest holts identified were on the northern (left bank) of the River Dodder, approximately 30m upstream of Herbert Park (or approximately 450m upstream of the Herbert Park Lane Bridge.

As described in Section 5.3.2, an ecological survey was carried out in May 2018 by Brian Keeley of Wildlife Surveys Ltd for the proposed development. The survey extent included areas up to 200m up and downstream of the proposed development works area. The survey area was assessed for evidence of otter, badger setts and kingfisher habitats within or in proximity to the proposed development works area. No evidence of otter holts, badger setts or kingfisher nests were recorded within or in proximity to the proposed development works area during the surveys. There will be no direct risk to these protected species from the proposed work. There will be no loss of dwelling places or protected structures sheltering these species. Otter is not present within the site but is a regular visitor to the area. The ongoing flood defence works along this section of the Dodder are being tolerated by the local otters. It is likely that the continuing work will be no more intrusive than previous and current operations.

Refer to section 5.3.1 above for details on fisheries.

5.3.5 Invasive Alien Plant Species

Particular alien invasive plant species (IAPS) are listed under the Third Schedule of the European Communities (Birds and Natural Habitats Regulations 2011 (S.I. 477 of 2015) have been recorded along the River Dodder (ROD, 2017), no specific locations were shown. These species included Knotweed species, Himalayan Balsam and Giant Hogweed. There is ongoing treatment of Japanese Knotweed upstream of the proposed RDS wall at locations where the flood alleviation works have taken place.

Regulation 49 of these Regulations includes legislative measures to deal with the dispersal and introduction of IAPS and deals with the prohibition on introduction and dispersal of certain species.

Due the location of the proposed development, existing haul roads and river crossing the proposed development will have a low potential to disturb any existing IAPS vegetation within the works areas. No impact from the spread of invasive species is predicted to occur.

To protect the site and river from incoming invasive species, any machinery coming from external sites will be checked and those previously working in aquatic environments will apply the necessary biosecurity measures to ensure machinery does not potentially bring invasive species to site.

5.4 Cultural, Archaeology and Architecture Heritage

There are no recorded archaeological sites or recorded protected structures within the site boundary. Ballsbridge (DUB018-059----), downstream of the works area is listed in the Record of Monuments and Places (RMP). There is zone of notification as part of the Ballsbridge designation. The works will not impact this site however, under Section 12 of the National Monuments Act (1930-2004),

Sites listed on the RMP are protected under the National Monuments Acts (1930-2004). Due to the proximity of the proposed development site to Ballsbridge RMP, Ministerial notification will be given to the National Monuments Service in advance of the works as required.

As described in Section 4.3, the Zoning Objective Map (Map H) of Dublin City Council Development Plan 2016 - 2022 shows that the section of the River Dodder adjacent to the works area is identified as a Zone of Archaeological Interest. This is relevant to Ballsbride (DU018-059----) which is a protected structure and listed in the Dublin City Record of Monuments and Places (RMP).

5.5 Landscape and Visual Environment

The proposed development will have a temporary impact on the landscape and visual environment during construction. Hoarding will be required along Anglesea Road during the removal of the wall, rebuilding and reinstatement of the footpath.

On completion of the structural works, the river wall will be clad with coursed limestone with lime mortar pointing in keeping with the existing cladding. There will be no impact during operation.

5.6 Soils and Geology

The proposed development will have an impact on the riverbed soils. Excavation works will be required to construct the wall base. The excavated materials may be re-used to reinstate the river bed where possible or disposed off-site at a suitable waste facility. The volume of material excavated will not be significant given the extent of the proposed development.

There will be no impact on soils or geology during operation.

5.7 Water

The potential impacts of the proposed development on the water environment are associated with the River Dodder and downstream Natura 2000 sites (refer to Table 1).

The proposed works will generate run-off as a results of construction activities; pumping of water during the excavation of the riverbed at the base of the existing RDS wall and power washing of each unit of set concrete before the next concrete pour. However, it is not expected that the levels of run-off will be significant due to the nature and short duration of the proposed works. The length of wall to be constructed is just 200m and will be constructed in stages as each section of the wall is constructed. The quantities of daily run-off material that will be generated as a result of these activities will not be significant. The presence of the haul road (and temporary sheet piles, if required) will act as a buffer and will facilitate the drainage of any run-off containing sediment.

All water generated on-site will be pumped directed to a ‘dirt bag’ or sediment bag that will filter sediment from the water, as is standard practice for this type of construction project. This filtered water will be allowed to discharge back into the River Dodder. The system will be reviewed regularly during the working shift to monitor the effectiveness of the system. Pump sumps will be formed within the haul road to avoid impacting fish.

Any oils, lubricants or potentially harmful liquids will be stored in dedicated temporary bunded area. Refuelling of construction vehicles will take place in a designated area. Plant used on haul roads within the channel shall be moved to the top of the bank to a designated refuelling location. All equipment and machinery will undergo regular checking for leakages and quality of performance.

In-stream works will be required to extend the existing haul roads to up to 10m in width from the RDS wall for the enabling works. As described in Section 3.2.2, the haul road will be extended by placing imported granular material (clean broken stone) approximately 150mm in size. The haul road will be 300mm above the general bed level.

As discussed in Section 5.3.2, the Natura 2000 sites downstream are not sensitive to sediment loading and are all located in estuarine/ tidal areas in Dublin Bay which are subject to large diurnal tidal flows carrying substantial volumes of sediment. Any habitats or species in these areas are well used to varying levels of salinity, flows and suspended solids. The distance between the proposed development works area and the closest downstream Natura 2000 sites (4.6km) further reduces the risk of any significant impact if sediment loading or pollution (e.g. fuel spill) was to occur.

This distance, combined with the considerable assimilative capacity of Dublin Bay means that the level of suspended solids from the proposed works which could possibly end up in the Dodder and downstream in the Bay will not have a significant impact on these Natura 2000 sites.

The proposed development will not alter the permanent hydrology of the River Dodder. No additional river crossing will be required for the construction and haul roads have been established previously. During high flow the haul roads will be allowed to flood. Works will not be carried out on submerged haul roads during times of elevated river levels/flow. Where flood events are forecasted, works will stop add all machinery and plant will be removed from the haul roads and secured safely away from the river channel within the construction compounds.

5.8 Traffic and Transport

With regard to traffic and transportation, the majority of the works will be carried out within the river channel. It is not likely that there will be significant impacts on the local traffic e.g. Anglesea Road. Some roadside street parking along Anglesea Road is likely to be removed to allow for the removal of the river wall to footpath level. It is not envisaged that there will be a need for lane closures during the works.

There will be some movement between the works site and the construction compound on Beatty's Avenue however this will not be significant and not expected to cause significant disruption to local traffic.

The road will be visually surveyed regularly to ensure the road is cleaned when necessary. When necessary, road sweeping will be carried out, employing a suction sweeper to remove any project related dirt and material deposited on the road network by construction related vehicles.

Works Area No. 1 in Figure 2, will be used to access the RDS wall and temporary river crossing upstream of the HPL Bridge. To allow safe access to the river crossing and works area, access has been temporarily restricted for cyclists and pedestrians to use the path that connects Donnybrook to Herbert Park Lane. This will continue for proposed development construction works to facilitate use of the river cross to access the RDS wall. Access will be restored on completion of flood alleviation works in this section of the river.

5.9 Air Quality and Climate

The impacts associated with the proposed development derive from the potential generation of dust from the excavation of the river wall to footpath level and vehicle movements on the haul roads during dry periods. The wall will be removed to footpath level in stages as the construction of the wall progresses and the impact is not likely to be significant. The area is expected to be screened off during excavation. Haul roads will be watered during dry periods to minimise dust generation.

There is potential for emissions arising from the exhausts of construction plant, machinery, equipment and transport vehicles.

These emissions will be elevated during construction, temporary in nature and marginal in the context of existing traffic levels and pollutant levels in Dublin city. Exhaust emissions are not expected to be significant and would be controlled through the implementation of best practice construction mitigation measures.

There will be no direct emissions from the proposed development during operation.

The proposed development will not significantly affect nor be significantly affected by the climate. The proposed development has been designed to accommodate the 1 in 100 year fluvial event.

5.10 Noise and Vibration

There is the potential for noise and vibration effects arising from the construction activities such as excavation and demolition of the river wall to footpath level as well as construction vehicles. The site is located in a central, dense urban location. The site is to relatively high ambient noise conditions associated with significant levels of traffic along Anglesea Road.

Noise generated from excavation, truck movements will be limited and on par with the urbanised environment and high volumes of traffic from Anglesea Road. Piling activity (installation of temporary sheet piles and mini piles, if required) on the haul road will be carried out in stages as each unit of the wall as it is being built. Noise generated will be temporary, confined to normal working hours and is not envisioned to significantly disturb nearby sensitive receptors.

There are sensitive receptors upstream, of the works in the local area. All night time construction works are not proposed but if the need arises, these would be approved and advertised prior to the commencement of works. Any adverse noise and vibration would be temporary in nature and controlled by the implementation of best practice construction mitigation measures. As such, it is unlikely that the proposed development would lead to significant noise and vibration effects during construction.

It is unlikely that there would be any significant noise and vibration effects during the operation of the proposed development. Maintenance activities may be required during operation however these are unlikely to have a significant impact on noise or vibration.

5.11 Land Use and Material Assets

Land use zoning in the area would remained unchanged during construction and operation and would not be impacted by the proposed development. The land use would be in keeping with the zoning and objectives prescribed in the Development Plan (refer to Section 4.3).

It is unlikely that the proposed development would cause significant effects on material assets during construction and operation. No properties, occupied premises or intrinsic resources would be affected by the proposed development.

The proposed development has been designed to avoid impacting services (located on Anglesea Road and footpath) and no disruption to services is envisaged during the construction of the proposed development.

5.12 Interactive Effects

Interactive effects occur when a receptor is impacted by multiple effects. Where appropriate, likely interactive effects have been detailed in Sections 5.2 – 5.10. Potential interactive effects on the environment include:

- Concurrent landscape and visual and archaeological heritage impacts on amenity associated with the erection of hoarding and presence of plant and equipment on site for the duration of the construction works;
- Elevated dust and noise emissions may exacerbate nuisance and perceived impacts temporarily during the demolition of the river wall at the footpath level;
- Potential pedestrian and cyclist diversions during construction; and
- Elevated risk of accidental discharge to soil, water bodies, drainage networks and/or groundwater associated with the storage of plant, equipment during construction.

6 Screening Checklist

The potential environmental impacts associated with the proposed development have been outlined in previous sections of this report.

The EC Guidance on EIA Screening (EC, 2017) provides a checklist to help users decide whether EIA is required based on the characteristics of a project and its environment. This screening checklist is included in Table 5.

Table 5: Screening Checklist to determine if EIA is required based on the characteristics of a project and its environment

Brief Project Description	**Yes/ No**	**Is this likely to result in a significant impact Yes/No - Why**
1. Will construction, operation or decommissioning of the project involve actions which will cause physical changes in the locality (topography, land use, changes in waterbodies, etc.)?	No	No. Works will be limited to the existing river wall. Earlier works along this section of the river mean there are existing haul routes that can be used during construction.
2. Will construction or operation of the project use natural resources such as land, water, materials or energy, especially any resources which are non-renewable or in short supply?	Yes	No. It will be required to extend the haul road from the RDS wall into the River Dodder to a maximum total width of 10m from the RDS wall, along the length of the RDS wall where the works are proposed. No additional land will be required during construction or operation. Construction materials will include concrete, concrete shuttering, concrete 'kelly' blocks, steel (rebar), limestone (for cladding), water (concrete washing) and fuel (machinery). It is not considered that there will be significant use of these resources as part of the proposed development A screening report for Appropriate Assessment prepared for the proposed development concluded that the development will not have a significant impact on qualifying interests or conservation objectives for Natura 2000 sites. No significant indirect, direct or cumulative impacts on Natura 2000 sites were identified. A Stage 2 Appropriate Assessment is therefore not considered necessary, but the competent authority, Dublin City Council, will make the final determination in this regard.

Brief Project Description	Yes/ No	Is this likely to result in a significant impact Yes/No - Why
3. Will the project involve use, storage, transport, handling or production of substances or materials which could be harmful to human health or the environment or raise concerns about actual or perceived risks to human health?	Yes	No. The types of standard construction materials that will be used will not be harmful to human health or the environment. The contractor will ensure that the proposed works are carried out in accordance with the Safety, Health and Welfare at Work (Construction) Regulations 2013 (S.I. No. 291 of 2013). It is envisaged that the risk of accidents, having regard to substances or technologies used is very low and therefore will not result in significant environmental impacts.
4. Will the project produce solid wastes during construction or operation or decommissioning?	Yes	No. Inert construction and demolition waste generated will be removed from the site areas and disposed of at a suitable licensed facility. The production of waste will be managed in accordance with the relevant waste legislation. Where possible, excavated materials will be re-used for the construction of the wall and the reinstatement of the riverbed. Small quantities of domestic waste will also be produced during the proposed works. This will be managed in accordance with waste legislation.
5. Will the project release pollutants or any hazardous, toxic or noxious substances to air or lead to exceeding Ambient Air Quality standards in Directives 2008/50/EC and 2004/107/EC?	Yes	No. It is expected that dust will be emitted during construction and construction fumes from construction plant and vehicles will arise during the construction phase but these will be minimal. The employment of good construction management practices for the proposed development will serve to minimise the risk of dust emissions. Excavation material is from the base of the river wall and will be semi-saturated and therefore limited dust emissions. The demolition of the river wall at the footpath will be done in stages. Haul roads will be watered during dry periods to minimise dust generation.

Brief Project Description	Yes/ No	Is this likely to result in a significant impact Yes/No - Why
6. Will the project cause noise and vibration or release of light, heat energy or electromagnetic radiation?	Yes.	No. Standard construction noise is expected and associated with excavation, piling activity, demolition, water pumps and movement of construction machinery. However, such activities will take place during day time hours, will be controlled by the implementation of best construction practice and in the case of the piling activity be carried out in stages and short in duration. Examples of measures to be employed include the selection of quiet plant, not leaving plant idling and maintenance of plant to minimise noise generation. A full list of proposed measures are listed in the OPW construction environmental management plan that was prepared for the River Dodder Flood Alleviation Works. These measures will be adhered to for the proposed development.
7. Will the project lead to risks of contamination of land or water from releases of pollutants onto the ground or into surface waters, groundwater, coastal wasters or the sea?	Yes.	No. During the construction phase, any potentially polluting substance will be stored and discharged appropriately by the contractor. Refuelling of machinery and plant will be done in a designated area and all fuel storage will be bunded. Construction machinery or plant will not be left on haul roads when not in use. Any water pumped during construction will be directed to a sedimentation 'dirt' bag to be filtered before being discharged back into the river.
8. Will there be any risk of accidents during construction or operation of the project which could affect human health or the environment?	Yes	No. A "Project Supervisor for the Construction Stage" (PSCS) will be appointed to manage safety issues during construction. Construction activities would be undertaken with due regard to occupational health and safety. The site PSCS would be responsible for the management of health and safety on site during construction. The proposed design has been developed in accordance with the standards to reduce the risk of accidents during operation. The weather forecast will be closely monitored and works will stop if any flooding is predicted due to rainfall.
9. Will the Project result in social changes, for example, in demography, traditional lifestyles, employment?	No.	No. Demography, traditional lifestyles and employment would not be affected by the proposed development.

Brief Project Description	Yes/ No	Is this likely to result in a significant impact Yes/No - Why
10. Are there any other factors which should be considered such as consequential development which could lead to environmental effects or the potential for cumulative impacts with other existing or planned activities in the locality?	Yes.	No. The design of the proposed development has been undertaken with due regard to the on-going River Dodder Flood Alleviation Works Phase 2C-2E. The proposed Dodder Greenway is unlikely to commence construction during the construction of the proposed development.
11. Is the project located within or close to any areas which are protected under international, EU, or national or local legislation for their ecological, landscape, cultural or other value, which could be affected by the project?	Yes.	No. The nearest Natura 2000 site (South Dublin Bay and River Tolka Estuary SPA, site code 004024) is approximately 4.6km downstream from the proposed development. The distance of these sites from the proposed development, the low ecological sensitivity of these sites to sediment loading and the nature of the works will ensure that these sites will not be significantly impacted by the proposed development.
12. Are there any other areas on or around the location which are important or sensitive for reasons of their ecology e.g. wetlands, watercourses or other waterbodies, the coastal zone, mountains, forests or woodlands, which could be affected by the project?	Yes.	No. The River Dodder is the primary sensitive receptor. The haul roads will require widening however the river channel flow will be maintained to allow the passage of fish. There is an existing river crossing established upstream of the Herbert Park Lane Bridge. The riverbed will be reinstated on completion of the works.
13. Are there any areas on or around the location which are used by protected, important or sensitive species of fauna or flora e.g. for breeding, nesting, foraging, resting, overwintering, migration, which could be affected by the project?	Yes	Refer to Section 5.3 for details. There are no mud or sand flats in the vicinity of the site to support wintering birds and the terrestrial environment is highly urbanised with no significant habitats or flora species evident in close proximity to the site. Further, there is no evidence of any rare or protected fauna species being present within the site. Only a very limited amount of vegetation will require to be removed from the RDS wall upstream of the HPL Bridge. Ecological surveys carried out within the proposed development works area (and in proximity) have found no evidence of otter holts, badger setts or kingfisher nests.

Brief Project Description	Yes/ No	Is this likely to result in a significant impact Yes/No - Why
14. Are there any inland, coastal, marine or underground waters (or features of the marine environment) on or around the location that could be affected by the project?	Yes.	No. The construction activities associated with the proposed development will not result in any significant impacts on inland waters (i.e. River Dodder). The haul roads will be widened to facilitate the works. Only clean granular material will be used to construct the haul roads. Run-off and sediment loading will be limited as the 10m wide haul roads will act as a buffer, excavation and power washing activities will be done on gradual basis and run-off will be directed through sedimentation 'dirt bags' before being discharged to the river. The river channel will be restored and river bed reinstated on completion of the works.
15. Are there any areas or features of high landscape or scenic value on or around the location which could be affected by the project?	No.	No. The proposed development is located within a high developed, urbanised area within Dublin city centre. There are no features of high landscape or scenic value. The proposed development will not permanently alter the landscape or visual aspects of the area.
16. Are there any routes or facilities on or around the location which are used by the public for access to recreation or other facilities, which could be affected by the project?	Yes.	Yes. The proposed works will require the use of a section of cycle and pedestrian path near Herbert Park to facilitate a construction compound on the left side of the river. This construction compound has been established as part of upstream wall works. The compound blocks the access to Herbert Park from Herbert Park Lane. This is a temporary measure and this route will be accessible on completion of the construction works at this section of the River Dodder. The Pembroke library is in proximity to works area No.2. The works are not envisaged to impact this facility.
18. Is the project in a location where it is likely to be highly visible to many people?	Yes.	No. The proposed development would be located in Dublin city centre, however construction works are common place in this urban environment and majority of construction work will be carried out within the channel and will therefore below ground level and partially hidden. Temporary screening will be installed along Anglesea Road during the removal of the existing floodwall to footpath level.

Brief Project Description	Yes/ No	Is this likely to result in a significant impact Yes/No - Why
19. Are there any areas or features of historic or cultural importance on or around the location which could be affected by the project?	Yes.	No. Ballsbridge is a bridge listed on the Record of Monuments and Places (RMP) which affords it protection under the National Monuments Acts. The works are not around or in the vicinity of the bridge. It is not envisaged there will be any impact on the bridge.
20. Is the project located in a previously undeveloped area where there will be loss of greenfield land?	No.	No. The site is located in a highly urbanised area within Dublin city and the works will not result in the loss of any greenfield land.
21. Are there existing land uses on or around the location e.g. homes, gardens, other private property, industry, commerce, recreation, public open space, community facilities, agriculture, forestry, tourism, mining or quarrying which could be affected by the project?	Yes.	No. There may be some minor inconvenience and nuisance for adjoining properties temporarily during construction. Any construction activities that may impact on local properties would be communicated in advance and managed through measures outlined in the construction environmental management plan and traffic management plan.
22. Are there any plans for future land uses on or around the location which could be affected by the project?	Yes.	No. It is proposed to include the path parallel to the left bank as part of the Dodder Greenway. The proposed works will have no impact on the proposed Greenway development.
23. Are there any areas on or around the location which are densely populated or built-up, which could be affected by the project?	Yes.	No. The proposed development is located in a densely populated, built environment within Dublin city centre. There is a large apartment complex near to the left bank of the River Dodder and overlooking the proposed development works site. However, the OPW will employ ‘good housekeeping’ and outline appropriate measures in the construction environmental management plan, traffic management plan and works methods statement to minimise impacts on the population.
24. Are there any areas on or around the location which are occupied by sensitive land uses e.g. hospitals, schools, places of worship, community facilities, which could be affected by the project?	Yes.	No. Pembroke public library is located opposite the site entrance on Anglesea Road, however it is not envisaged that the proposed development will have any impact on the library users. Access to the library will not be affected.
25. Are there any areas on or around the location which contain important, high quality or scarce resources e.g. groundwater, surface waters, forestry, agriculture, fisheries, tourism, minerals, which could be affected by the project?	No	No.

Brief Project Description	Yes/ No	Is this likely to result in a significant impact Yes/No - Why
26. Are there any areas on or around the location which are already subject to pollution or environmental damage e.g. where existing legal environmental standards are exceeded, which could be affected by the project?	No.	No.
27. Is the project location susceptible to earthquakes, subsidence, landslides, erosion, flooding or extreme or adverse climatic conditions e.g. temperature inversions, fogs, severe winds, which could cause the project to present environmental problems?	Yes.	No. Due to the location of the construction works for the proposed development there is a risk of flooding and erosion of the constructed haul roads. During high rainfall, works will be abandoned and all personnel, machinery, equipment, plant and materials will be removed from potentially affected areas. The haul roads have been constructed with large stone and boulders. This is to ensure any erosion will not result in significant quantities of sediment entering the river as a result of erosion of the haul roads.

7 Conclusions

The prescribed classes of development and thresholds that trigger a mandatory Environmental Impact Assessment are set out in Schedule 5 of the Planning and Development Regulations, 2001 as amended. A review of the project types listed in Schedule 5 of the Planning and Development Regulations 2001, as amended has been carried out. It is considered that the proposed works to the RDS Wall as part of the overall River Dodder Flood Alleviation Works 2D is a type of development listed in Part 2 Class 10 of Schedule 5 but does not meet the threshold

Part 2: Class 10

(f)(ii) *Canalisation and flood relief works, where the immediate contributing sub-catchment of the proposed works (i.e. the difference between the contributing catchments at the upper and lower extent of the works) would exceed 100 hectares or where more than 2 hectares of wetland would be affected or where the length of river channel on which works are proposed would be greater than 2 kilometres.*

The proposed development can be defined as flood relief works. However, the proposed development does not exceed the relevant quantity, area or other limit specified in Class 10 as the immediate contributing sub-catchment of the proposed works to the RDS wall is 18 hectares (threshold is greater than 100 hectares), no wetland is affected (threshold is greater than 2 hectares) and the length of channel on which the works are proposed is approximately 200m (threshold is greater than 2km). Therefore, the proposed development does not exceed these thresholds and does not trigger a mandatory EIA (and subsequently the preparation of an EIS (EIAR))[6] under Schedule 5 of the Planning and Development Regulations 2001, as amended.

Section 92 of the Planning and Development Regulations, 2001, as amended define sub-threshold development as follows:

"*sub-threshold development' means development of a type set out in Schedule 5 which does not exceed a quantity, area or other limit specified in that Schedule in respect of the relevant class of development*;"

Therefore, the proposed development is considered to be a sub-threshold development.

The EIA screening contained herein includes an examination of whether the proposed development would or would not, individually and in combination with other developments, be likely to have significant effects on the environment having regard to the criteria set out in Schedule 7 of the Planning and Development Regulations 2001, as amended. Consideration has also been given in relation to the requirements of Annex III of Directive 2014/52/EU.

[6]An Environmental Impact Statement (EIS) is now referred to as an Environmental Impact Assessment Report (EIAR) in Directive 2014/52/EU.

In this respect, it is considered that the proposed development is not likely to have significant effects on the environment having regard to the criteria set out in Schedule 7 of the Planning and Development Regulations 2001, as amended, and Annex III of Directive 2014/52/EU.

Ecological surveys carried out in May 2018 of the proposed development and areas in proximity, up and downstream of the works areas showed no evidence of protected species using the works area that might potentially be significantly impacted by the construction works i.e. otter holts, badger setts or kingfisher nests.

On the basis of the information provided in this EIA screening report, it is the view of Arup that there is no potential for any significant impacts arising from the proposed development. Therefore, it is the view of Arup that an EIA is not required for the proposed development.

The final determination as to whether an EIA is required will be made by DCC, as the competent authority, in its determination. In the event that DCC determines that an EIA is not required, approval for the proposed development will be pursued in accordance with Part 8 of the Planning and Development Act, 2000, as amended.

8 References

Department of Housing, Planning, Community and Local Government (DoHPCLG), 2017. *Transposition of 2014 EIA Directive (2014/52/EU) in the Land Use Planning and EPA Licencing Systems*. Dublin, Ireland.

DoHPCLG, 2017. *Implementation of Directive 2014/52/EU on the effects of certain public and private projects on the environment (EIA Directive): Advice on the Administrative Provisions in Advance of Transposition*. Dublin, Ireland.

Department of the Environment, Community and Local Government (DoECLG), 2013. *Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment*. Dublin, Ireland.

Department of the Environment, Heritage and Local Government (DoEHLG), 2003. *Environmental Impact Assessment (EIA) Guidance for Consent Authorities regarding Sub-threshold Development*. Dublin, Ireland.

European Commission (EC), 2017. *Environmental Impact Assessment of Projects – Guidance on Screening*. Office for Official Publications of the EC, Luxembourg.

European Communities (Environmental Impact Assessment) (Amendment) Regulations (S.I. No. 93 of 1999).

Environmental Protection Agency (EPA), 2015. *Draft Revised Guidelines on the Information to be contained in Environmental Impact Statements.*

EPA, 2015. *Draft Advice Notes for preparing Environmental Impact Statements.*

EPA, 2003. *Advice Notes on Current Practice in the Preparation of Environmental Impact Statements*. Johnstown Castle Estate, Wexford, Ireland.

EPA, 2002. *Guidelines on the Information to be contained in Environmental Impact Statements*. Johnstown Castle Estate, Wexford, Ireland.

Planning and Development Act, 2000 (No. 30 of 2000).

Planning and Development Regulations, 2001 (S.I. No. 600 of 2001).

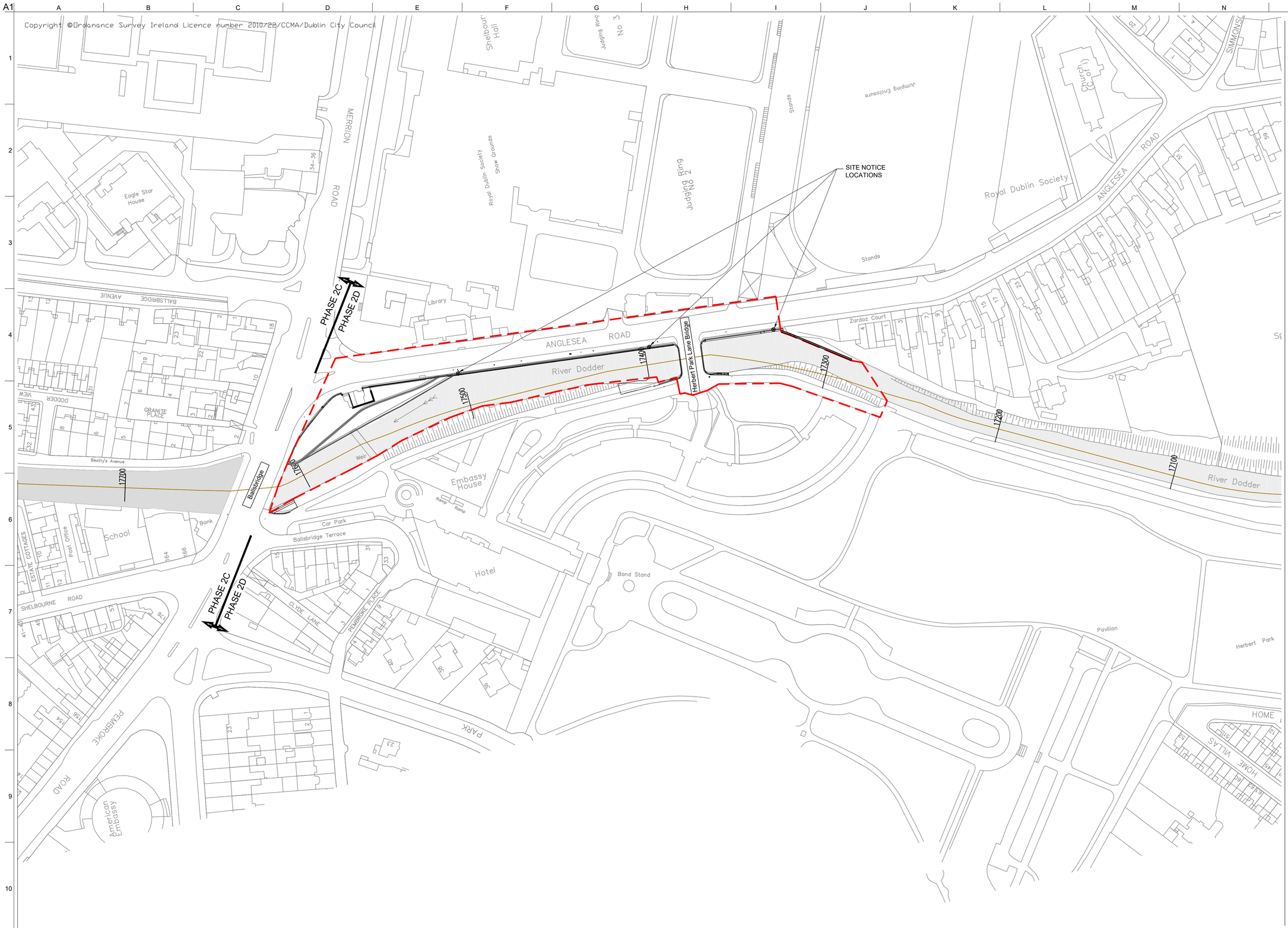
Transport Infrastructure Ireland, 2014. *Good Practice Guidance for the Treatment of Noise during the Planning of National Road Schemes.*

Appendix A

Engineering Drawings

A1 Engineering Drawings

A1

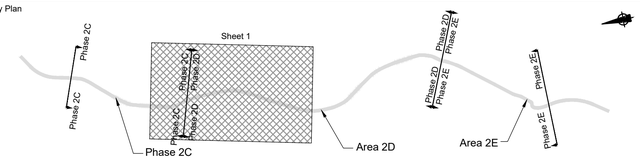


FOR PLANNING

Legend:

- Proposed Site Boundary
- Site Notice Location

Key Plan



Issue	Date	By	Chkd	Appd
P02	20/06/2018	PW	BT	IA
P01	18/06/2018	PW	BT	IA

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Civic Offices,
Wood Quay,
Dublin 8.

Contractor

OPW
The Office of Public Works
Oifig na nOibreacha Poibli

Project Title
Dodder Flood Alleviation Project

Scale at A1 1:1000

Date: June 2018

Consultant

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Dublin 4
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Drawing Title
RDS Wall Planning
Location Map

Drawing Status
For Planning

Project No	Drawing No	Issue
219346	D-DR-W-0200	P02

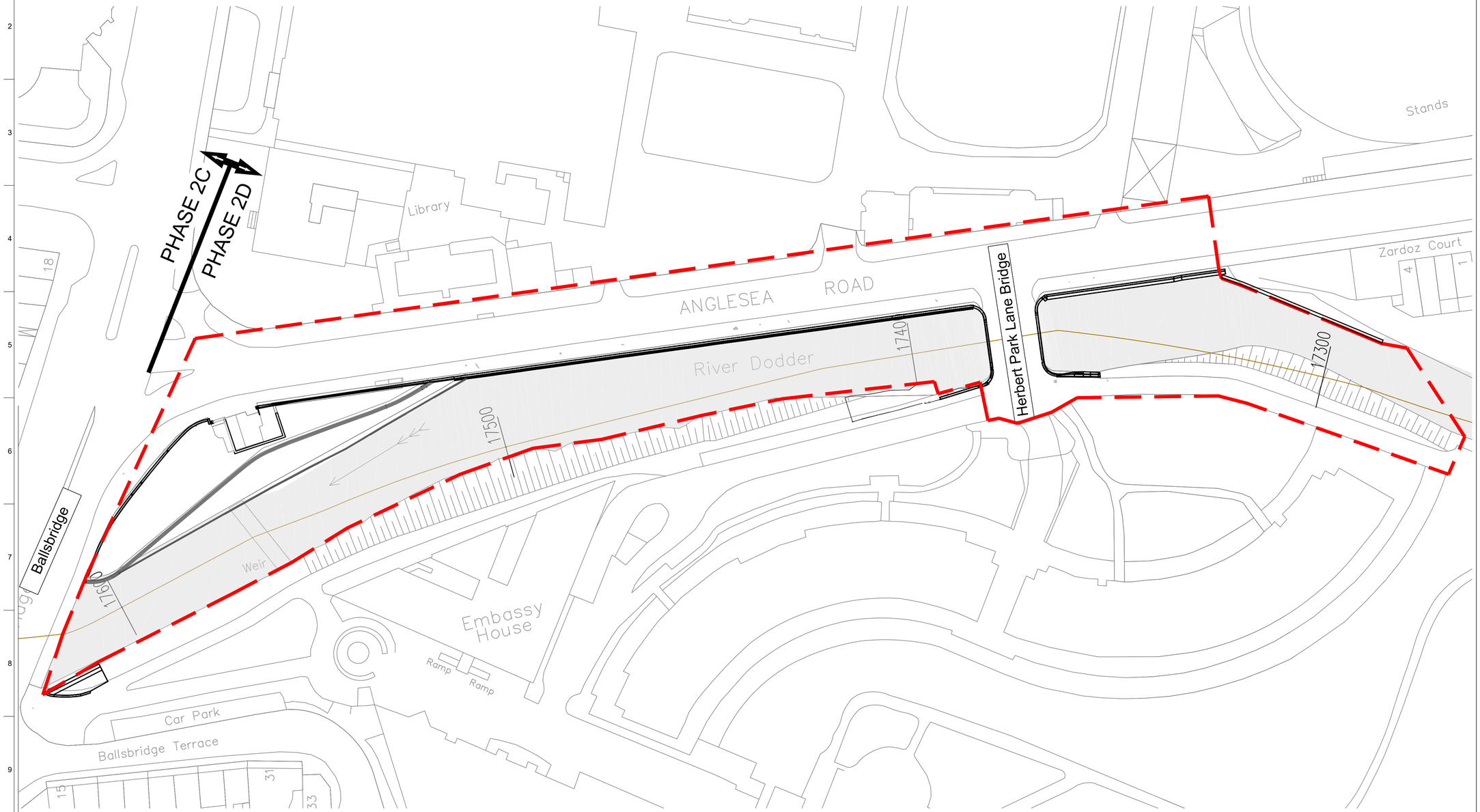
Do not scale

A1

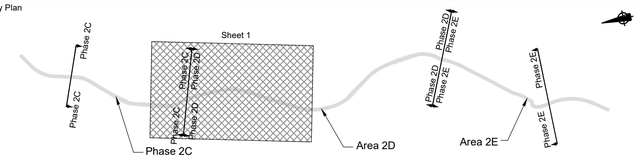
FOR PLANNING

Legend:

Proposed Site Boundary



Key Plan



P01	18/06/2018	PW	BT	IA
Issue	Date	By	Chkd	Appd

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Wood Quay,
Dublin 8.

Contractor

OPW
The Office of Public Works
Oifig na nOibreacha Poibli

Project Title

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Scale at A1 1:500

Date: June 2018

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Drawing Title

RDS Wall Planning
Site Layout

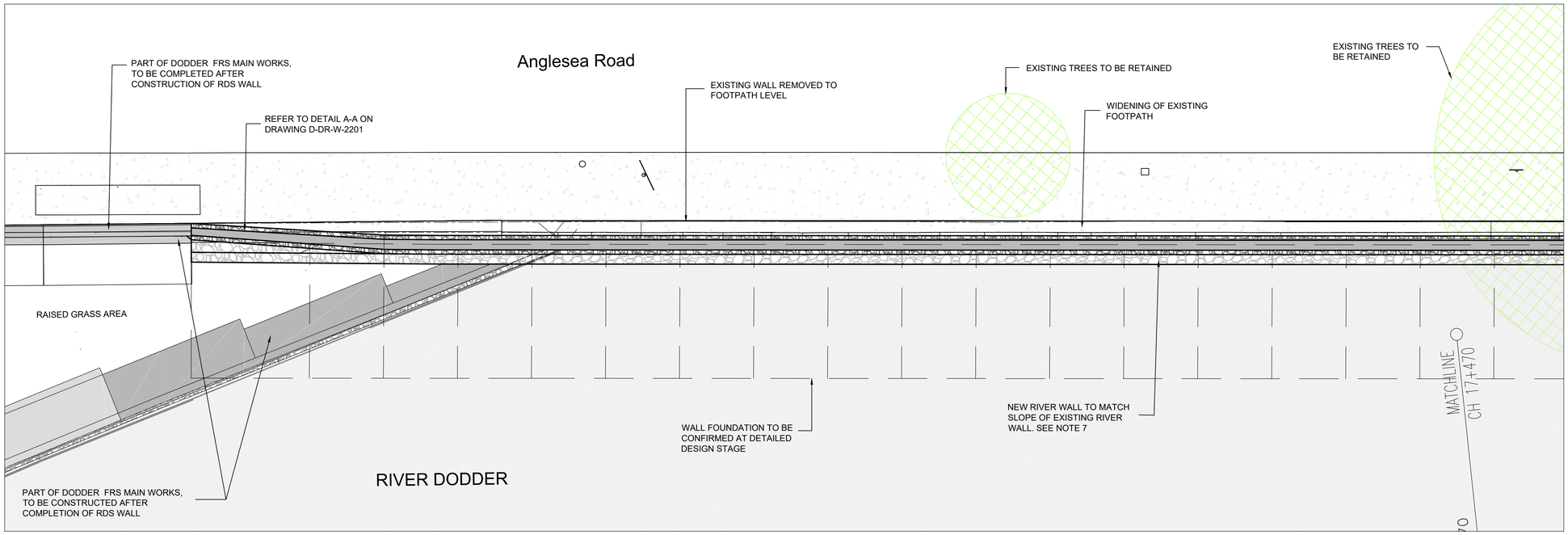
Drawing Status

For Planning

Project No	Drawing No	Issue
219346	**D-DR-W-0201**	**P01**

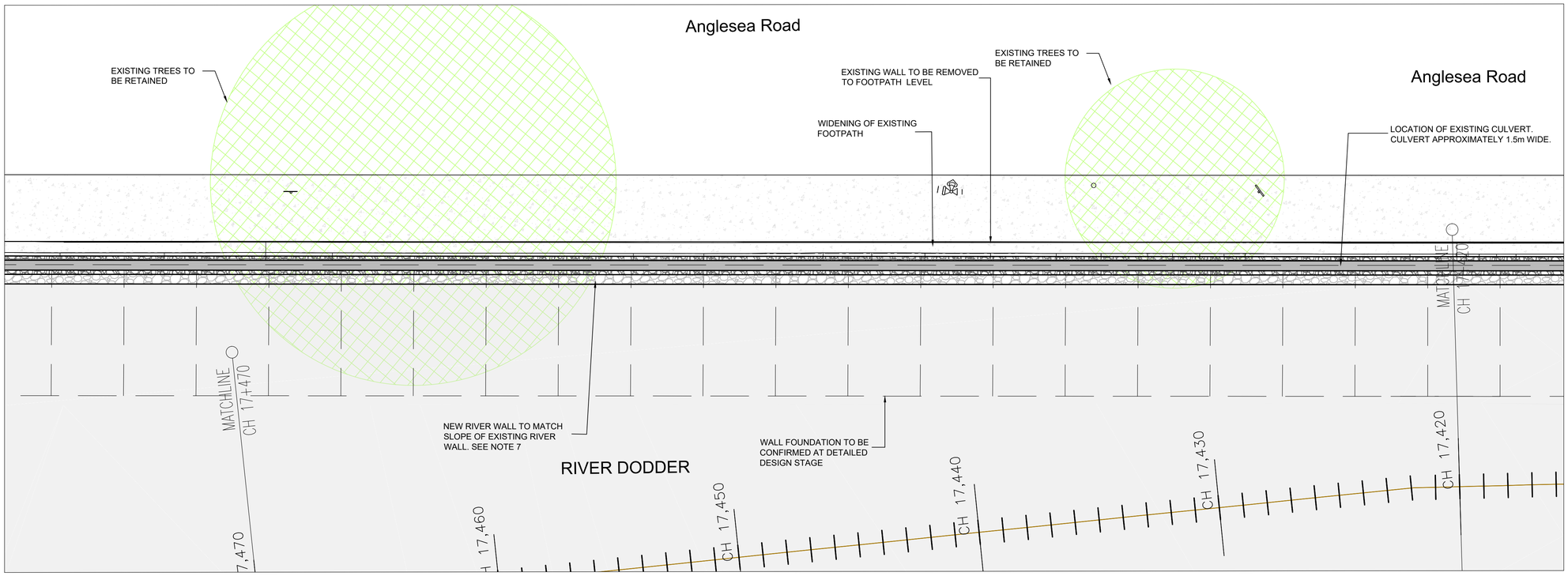
Do not scale

A1



PLAN

Scale 1:100



PLAN

Scale 1:100

FOR PLANNING

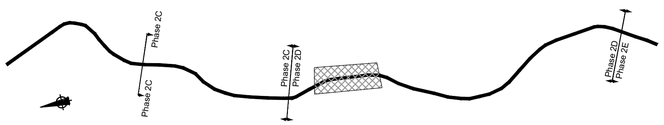
NOTES :

1. ALL LEVELS ARE IN M ABOVE O.D. MALIN.
2. ALL DIMENSIONS IN mm UNLESS OTHERWISE NOTED.
3. REFER TO DRAWING NO. D-DR-W-2200 FOR TYPICAL SECTION
4. CONCRETE CLASS SHALL BE C40/50.. CONCRETE EXPOSURE SHALL BE XS2.
5. DO NOT SCALE FROM DRAWINGS, USE FIGURED DIMENSIONS ONLY.
7. EXISTING TREES TO BE RETAINED
8. NEW WALL TO BE CLAD WITH 200mm THICK COURSED LIMESTONE WITH LIME MORTAR POINTING TO MATCH EXISTING
9. ORIGINAL STONE WALL WILL BE REUSED WHERE POSSIBLE FOR THE CLADDING.
10. WIDTH AT THE TOP OF THE STEM CAN BE CURTAILED TO BE A MINIMUM OF 650MM.
11. NEW WALL TO HAVE A ROUNDED COPING IN KEEPING WITH SURROUNDING FLOOD DEFENCES
12. ALL EXISTING OUTFALLS WILL BE CARRIED THROUGH THE NEW RIVER WALL AND WILL BE FITTED WITH FLAP VALVES. FLAP VALVES WILL ALSO BE FITTED ON WEEP HOLES AS REQUIRED.
12. ORIGINAL EXISTING RIVERBED LEVEL TO BE REINSTATED FOLLOWING CONSTRUCTION
13. DODDER FRS MAIN WORKS REFERS TO THE PHASE 2D WORKS CURRENTLY UNDERWAY UNDER A PREVIOUSLY GRANTED PLANNING PERMIT
14. DIMENSIONS OF WALL FOUNDATION TO BE CONFIRMED AT DETAILED DESIGN STAGE

LEGEND:

- EXISTING WALL
- REINFORCED CONCRETE L-WALL
- MASONRY CLADDING
- FOOTPATH

Key Plan



Issue	Date	By	Chkd	Appd
P02	21/06/2018	PW	BT	IA
P01	18/06/2018	PW	BT	IA

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Civic Offices,
Wood Quay,
Dublin 8.

Contractor

OPW
The Office of Public Works
Oifig na nOibreacha Poibli

Project Title

Dodder Flood Alleviation Project

Scale at A1: 1:100

Date: June 2018

Consultant

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Drawing Title

Area 2D - RDS River Wall
Proposed Flood wall
Plan Layout Chainage 17520 - 17420

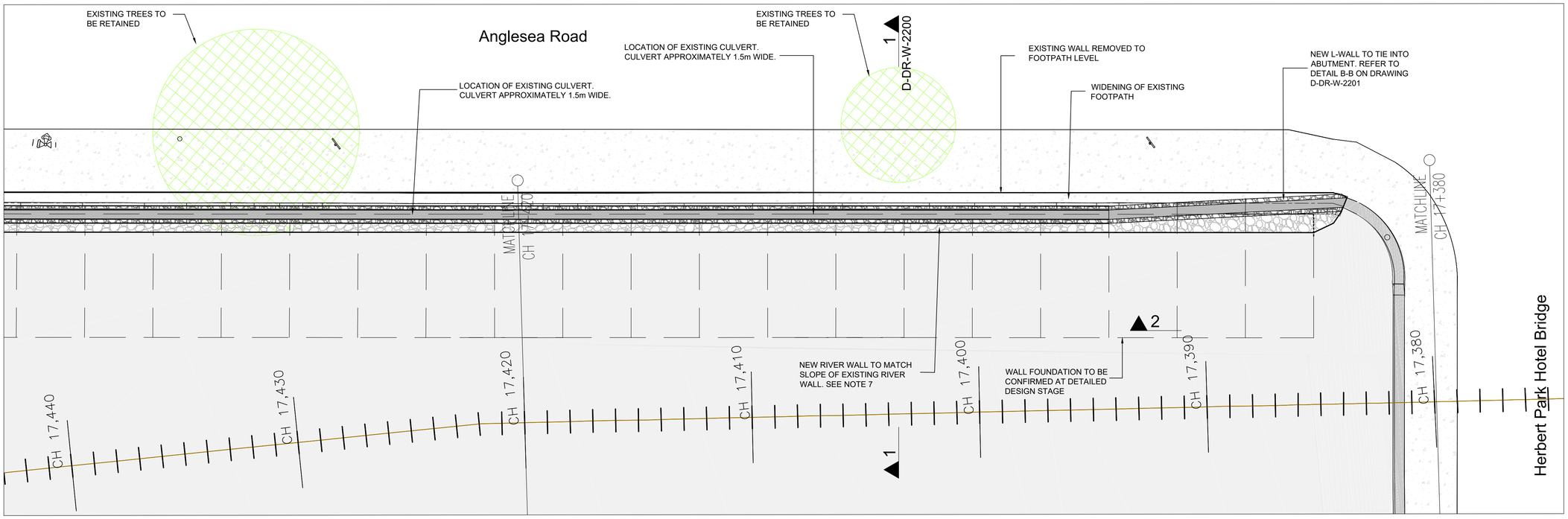
Drawing Status

Planning

Project No	Drawing No	Issue
219346	**D-DR-W-0202**	**P02**

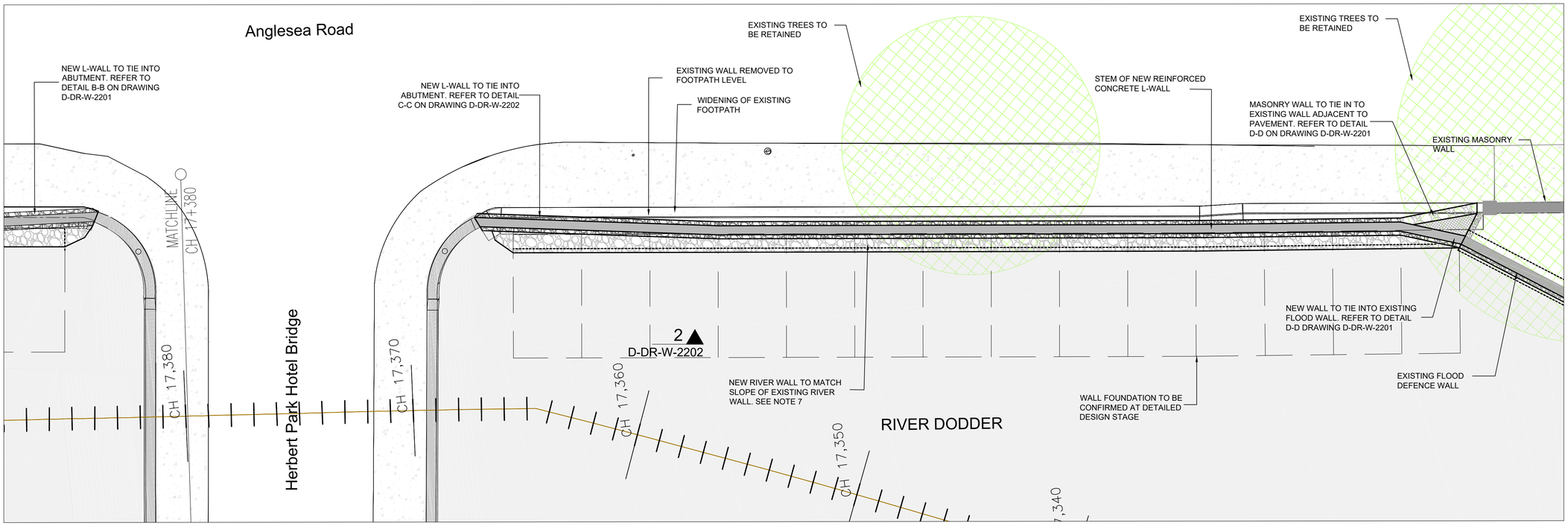
Do not scale

A1



PLAN

Scale 1:100



PLAN

Scale 1:100

FOR PLANNING

NOTES :

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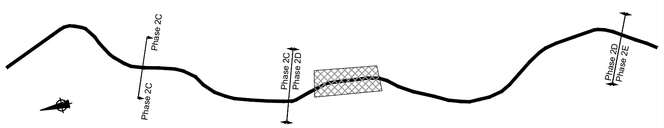
13. DODDER FRS MAIN WORKS REFERS TO THE PHASE 2D WORKS CURRENTLY UNDERWAY UNDER A PREVIOUSLY GRANTED PLANNING PERMIT
14. DIMENSIONS OF WALL FOUNDATION TO BE CONFIRMED AT DETAILED DESIGN STAGE

LEGEND:

- EXISTING WALL
- REINFORCED CONCRETE L-WALL
- MASONRY CLADDING
- FOOTPATH

Key Plan



Issue	Date	By	Chkd	Appd
P02	21/06/2018	PW	BT	IA
P01	18/06/2018	PW	BT	IA

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Civic Offices,
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Dublin 8.

Contractor

OPW
The Office of Public Works
Oifig na nOibreacha Poiblí

Project Title

Dodder Flood Alleviation Project

Scale at A1: 1:100

Date: June 2018

Consultant

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Drawing Title

Area 2D - RDS River Wall
Proposed Flood wall
Plan Layout Chainage 17440 - 17330

Drawing Status

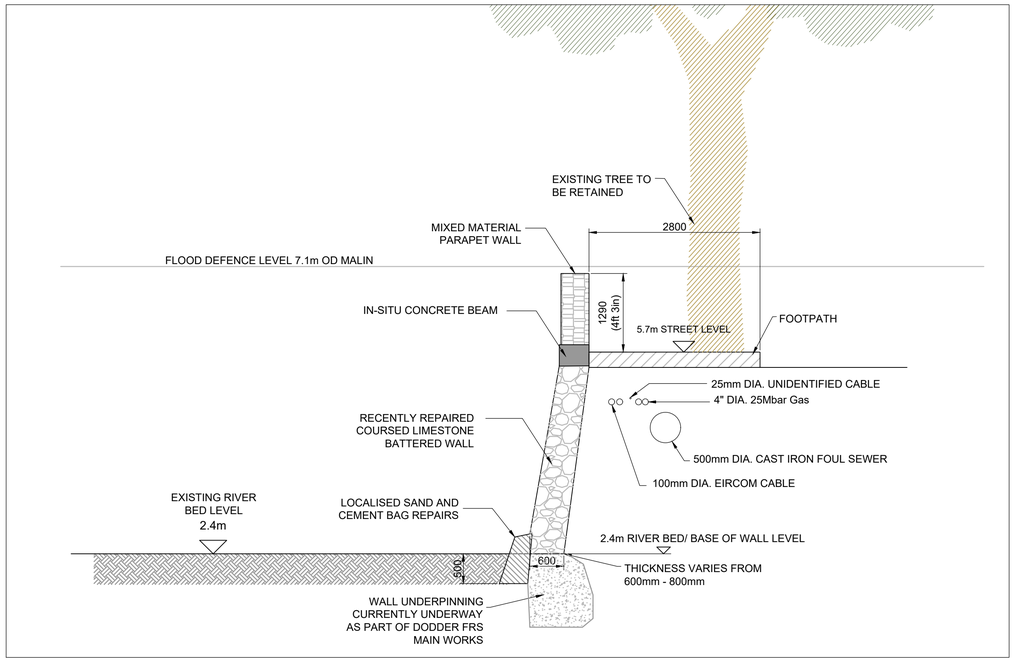
Planning

Project No	Drawing No	Issue
219346	D-DR-W-0203	P02

Do not scale

COMMENTARY ON EXISTING WALL:

- NO FOUNDATION ON EXISTING WALL
- NO SCOUR PROTECTION PRESENT
- SIGNIFICANT SETTLEMENT OF THE EXISTING WALL
- COLLAPSING CULVERT AND OUTFALL
- SPALLING AND CRACKING EVIDENT THROUGHOUT DUE TO PRESENCE OF TREE ROOTS AND SETTLEMENT
- LOSS OF MORTAR AND LARGE STONES RECORDED THROUGHOUT
- UPPER PARAPET HAS BECOME SEPARATED FROM THE SETTLED LOWER WALL
- LOWER WALL WAS FOUND TO HAVE INSUFFICIENT WALL THICKNESS AND HENCE STRUCTURAL STRENGTH OF THE EXISTING WALL IS INSUFFICIENT TO WITHSTAND DESIGN CONDITION
- LOSS OF MORTAR AND LARGE STONES RECORDED THROUGHOUT
- WALLS REPAIRS WERE CARRIED OUT IN NOVEMBER 2017 AND CONSISTED OF VEGETATION REMOVAL, LOCALISED REPOINTING AND FILLING OF SIGNIFICANT VOIDS

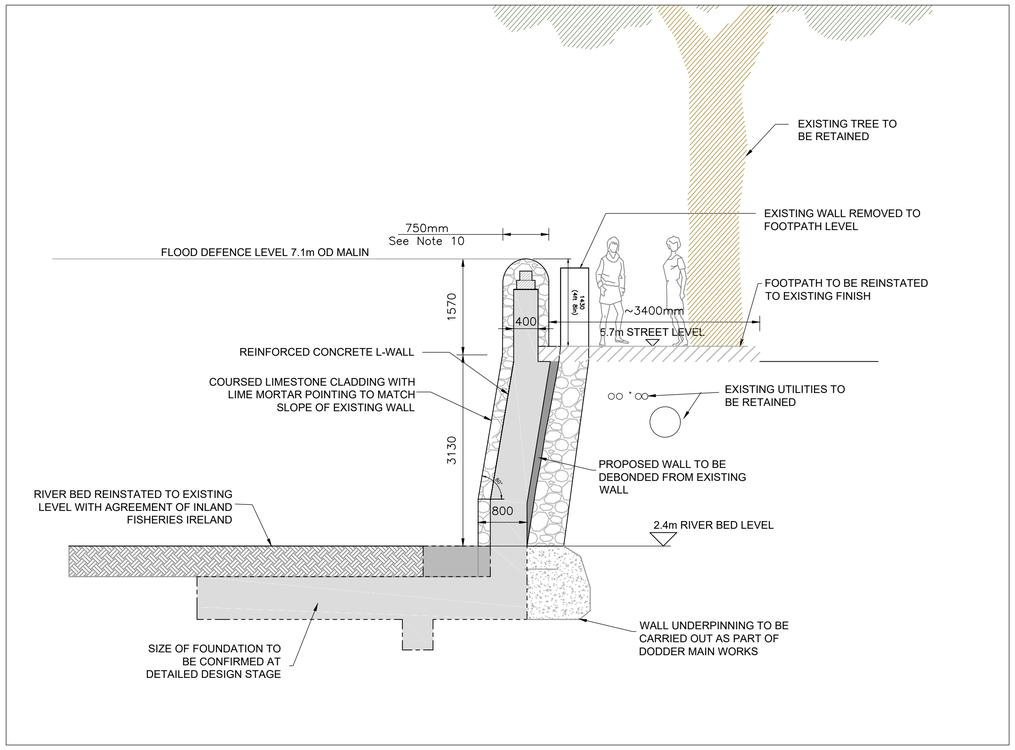


EXISTING RIVER WALL

(1:50)

COMMENTARY ON PROPOSED REPLACEMENT L-WALL:

- WIDTH OF THE FOOTPATH WILL INCREASE FROM 2.8m WIDE TO A MAXIMUM OF APPROXIMATELY 3.4m WIDE
- EXISTING TREES WILL BE RETAINED
- EXISTING SERVICES WILL BE UNAFFECTED
- EXISTING WALL TO BE REMOVED ABOVE FOOTPATH LEVEL
- NEW WALL WILL BE CLAD WITH 200mm THICK COURSED LIMESTONE WITH LIME MORTAR POINTING
- NEW WALL WILL HAVE A ROUNDED COPING IN KEEPING WITH SURROUNDING FLOOD DEFENCES
- ORIGINAL EXISTING RIVERBED LEVEL WILL BE REINSTATED FOLLOWING CONSTRUCTION
- CLADDING ON ROADSIDE FACE OF WALL WILL BE ALIGNED FLUSH WITH ADJACENT RIVER WALL



PROPOSED REPLACEMENT L WALL IN THE RIVER

(1:50)

FOR PLANNING

NOTES :

1. ALL LEVELS ARE IN M ABOVE O.D. MALIN.
2. ALL DIMENSIONS IN mm UNLESS OTHERWISE NOTED.
3. REFER TO DRAWING NO. D-DR-W-0202 FOR PLAN LAYOUT
4. CONCRETE CLASS SHALL BE C40/50.. CONCRETE EXPOSURE SHALL BE XS2.
5. DO NOT SCALE FROM DRAWINGS, USE FIGURED DIMENSIONS ONLY.
7. EXISTING TREES TO BE RETAINED
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14. DIMENSIONS OF WALL FOUNDATION TO BE CONFIRMED AT DETAILED DESIGN STAGE

Key Plan

Issue	Date	By	Chkd	Appd
P02	21/06/2018	PW	BT	IA
P01	18/06/2018	PW	BT	IA

Clients

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ENVIRONMENT AND ENGINEERING DEPARTMENT
An Roinn Comhshaoil agus Innealtoireachta

Civic Offices,
Wood Quay,
Dublin 8.

Contractor

OPW
The Office of Public Works
Oifig na nOibreacha Poibli

Project Title
Dodder Flood Alleviation Project

Scale at A1 1:25

Date: June 2018

Consultant

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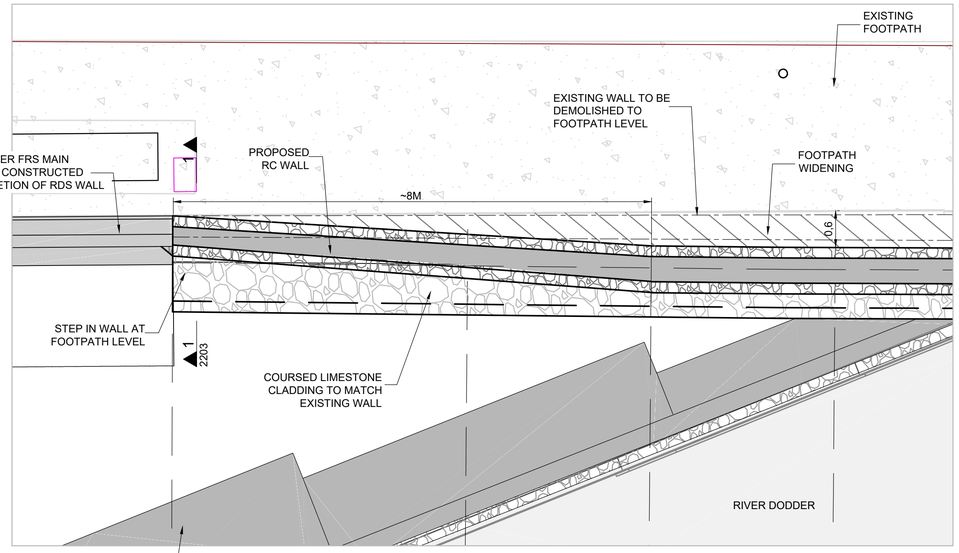
Drawing Title
Area 2D - RDS River Wall
Proposed Flood Wall
Representative Sections at Ch 17420

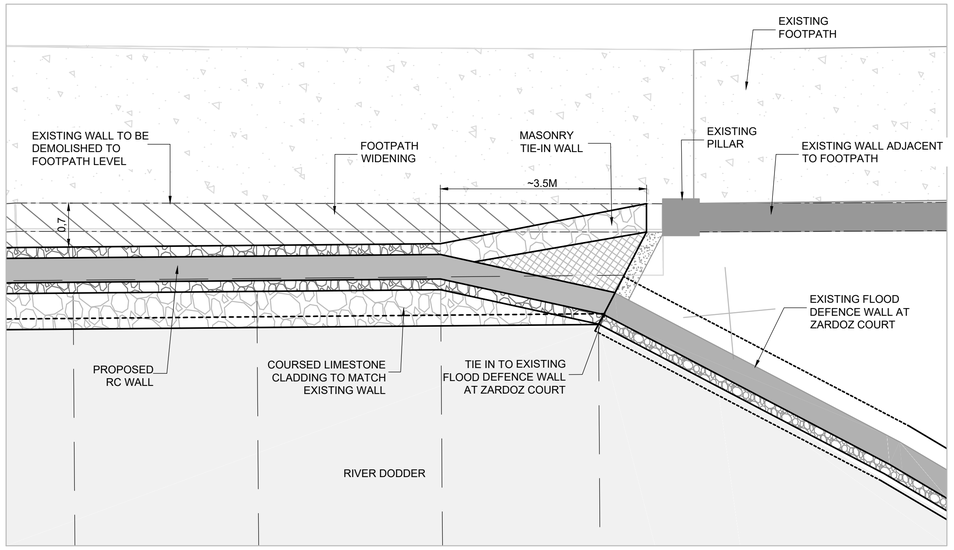
Drawing Status
For Planning

Project No	Drawing No	Issue
219346	D-DR-W-2200	P02

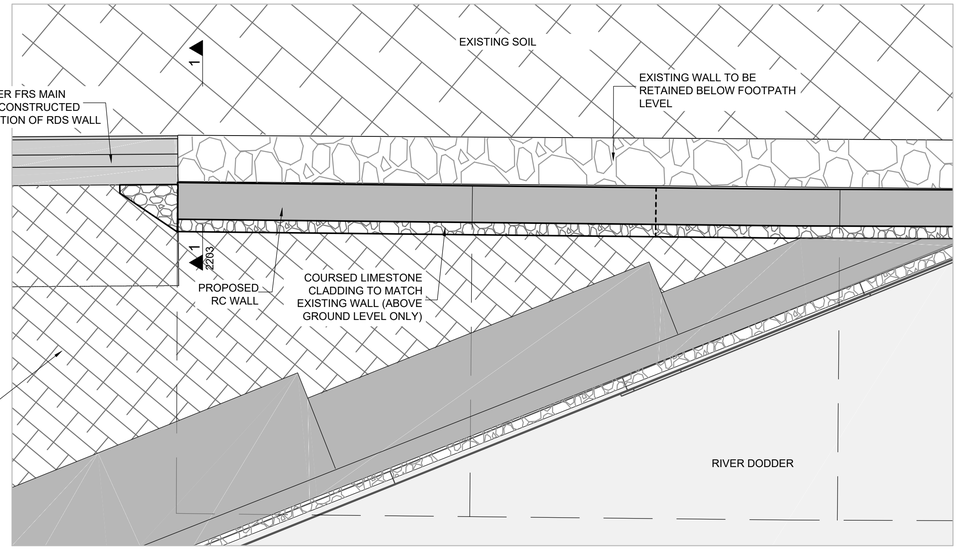
Do not scale



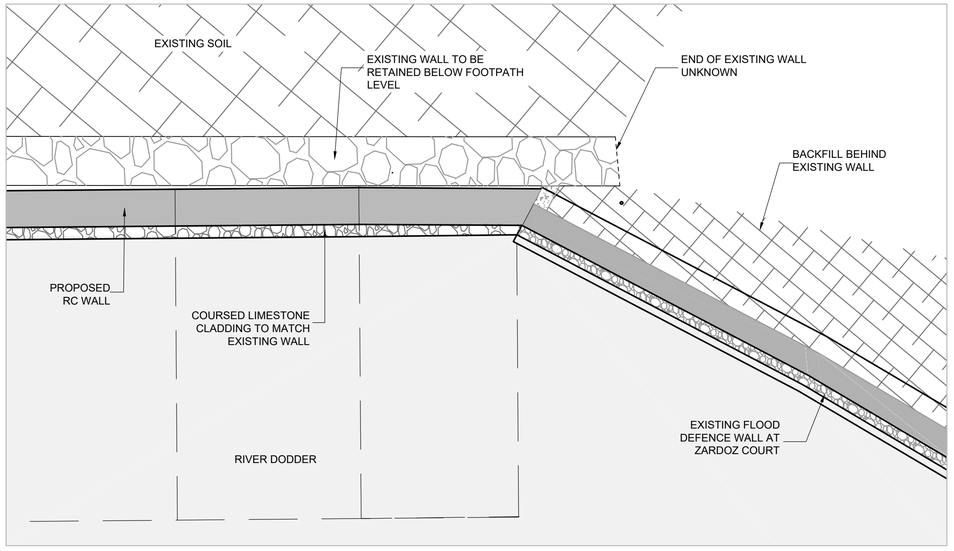
Detail A-A, Upper
at 6.0m OD Malin
Scale 1:50



Detail D-D, Upper
at 6.0m OD Malin
Scale 1:50



Detail A-A, Lower
at 3.1m OD Malin
Scale 1:50



Detail D-D, Lower
at 3.1m OD Malin
Scale 1:50

FOR PLANNING

NOTES :

1. ALL LEVELS ARE IN M ABOVE O.D. MALIN.
2. ALL DIMENSIONS IN mm UNLESS OTHERWISE NOTED.
3. REFER TO DRAWING NO. D-DR-W-0202 AND 0203 FOR PLAN LAYOUT.
4. CONCRETE CLASS SHALL BE C40/50.. CONCRETE EXPOSURE SHALL BE XS2.
5. DO NOT SCALE FROM DRAWINGS, USE FIGURED DIMENSIONS ONLY.
7. EXISTING TREES TO BE RETAINED
8. NEW WALL TO BE CLAD WITH 200mm THICK COURSED LIMESTONE WITH LIME MORTAR POINTING TO MATCH EXISTING
9. ORIGINAL STONE WALL WILL BE REUSED WHERE POSSIBLE FOR THE CLADDING.
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12. ORIGINAL EXISTING RIVERBED LEVEL TO BE REINSTATED FOLLOWING CONSTRUCTION
13. DODDER FRS MAIN WORKS REFERS TO THE PHASE 2D WORKS CURRENTLY UNDERWAY UNDER A PREVIOUSLY GRANTED PLANNING PERMIT
14. DIMENSIONS OF WALL FOUNDATION TO BE CONFIRMED AT DETAILED DESIGN STAGE

Key Plan

Issue	Date	By	Chkd	Appd
P02	21/06/2018	VB	BT	IA
P01	18/06/2018	VB	BT	IA

Clients

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An Roinn Comhshaoil agus Innealtoireachta

Civic Offices,
Wood Quay,
Dublin 8.

Contractor

OPW
The Office of Public Works
Oifig na nOibreacha Poiblí

Project Title
Dodder Flood Alleviation Project

Scale at A1 1:50
Date: June 2018

Consultant

ARUP

Arup, 50 Ringsend Road
Dublin 4
Tel +353(0)1 233 4455 Fax +353(0)1 668 3169
www.arup.ie

Drawing Title
Area 2D - RDS River Wall Connection details to Herbert Park Hotel Bridge

Drawing Status
For Planning

Project No	Drawing No	Issue
219346	D-DR-W-2201	P02

Do not scale

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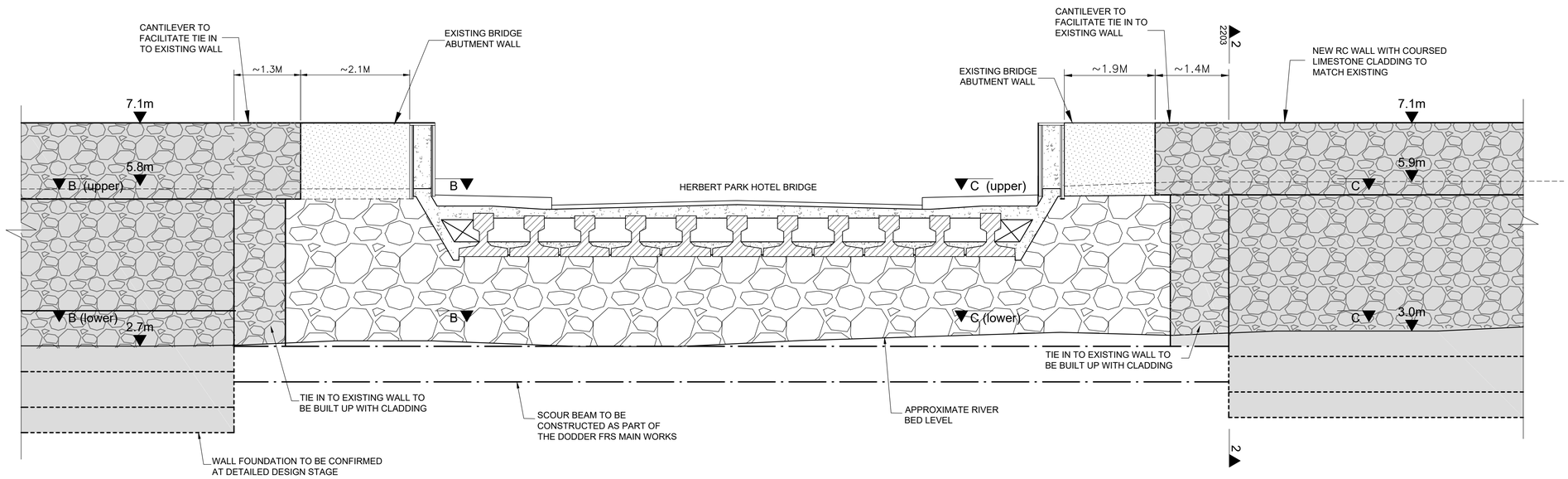
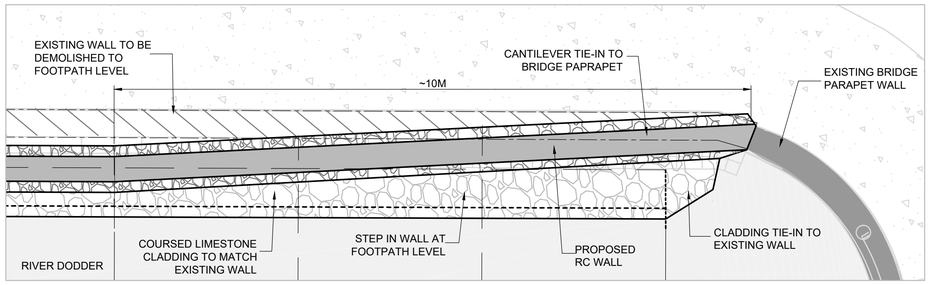


PROPOSED ELEVATION AT BRIDGE
NTS



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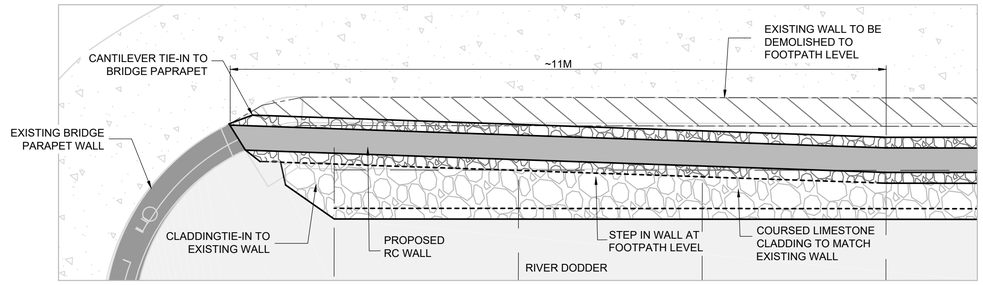
Scale 1:50



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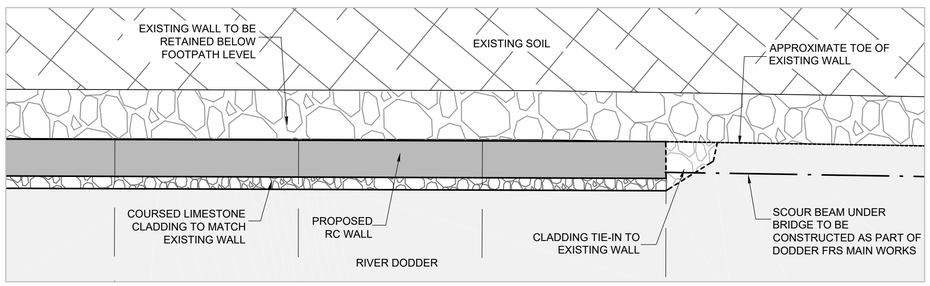

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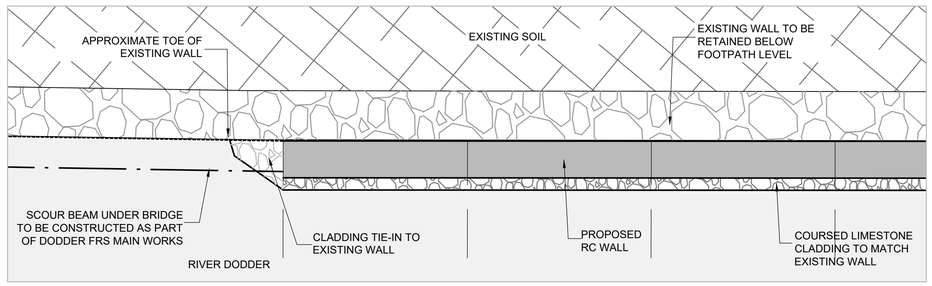

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Scale 1:50

Key Plan

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Drawing Status
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Project No	Drawing No	Issue
219346	D-DR-W-2202	P01

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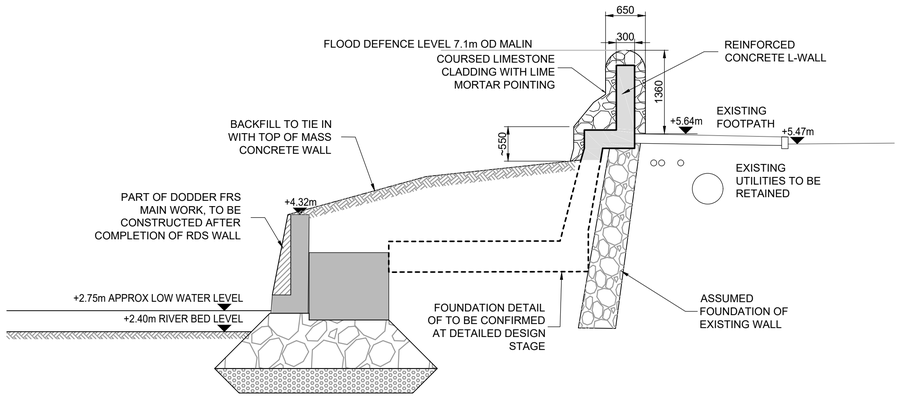
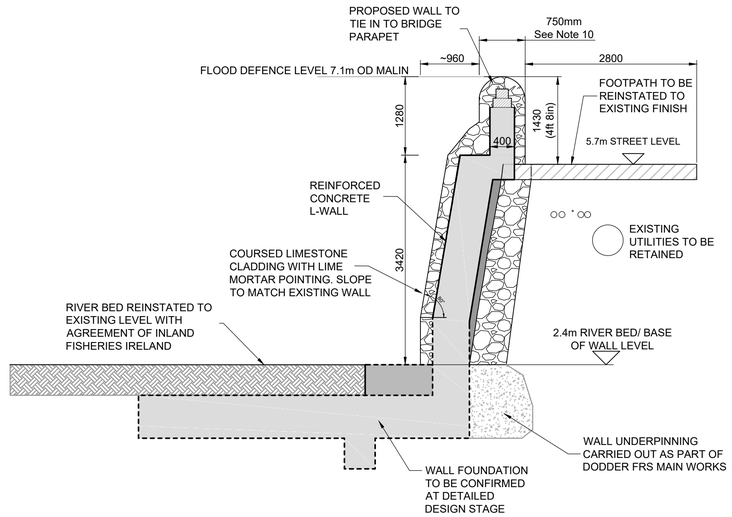


SECTION 1-1 (CAFE WALL JUNCTION DETAIL)

Scale 1:50



SECTION 2-2 (BRIDGE CONNECTION DETAIL)

Scale 1:50

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Drawing Title
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Drawing Status
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Project No	Drawing No	Issue
219346	D-DR-W-2203	P02

Do not scale

Appendix B

Photographs

B1 Photographs

Appendix B

Site photographs and examples of proposed construction methodology for the proposed development.

Photo 1: Works area No. 1. River crossing from the left bank, upstream of Herbert Park Lane bridge and works area No. 1. | Photo taken April 2018.

Photo 2: Works area No.2. Right bank downstream of the Herbert Park Lane Bridge. | Photo taken April 2018.

Photo 3: Works area No.1 access point and haul road | Photo taken April 2018.

Photo 4: Works area No.1: Upstream of Herbert Park Lane bridge. | Photo taken April 2018.

Photo 5: Example of ‘Kelly blocks’ used to shutter base of concrete wall for concrete pour. Note – this photo is for illustration only, it does not represent the exact layout of the proposed works.

Photo 6: Example of methology for concrete pour using bucket and excavator. Note – this photo is for illustration only, it does not represent the exact layout of the proposed works.

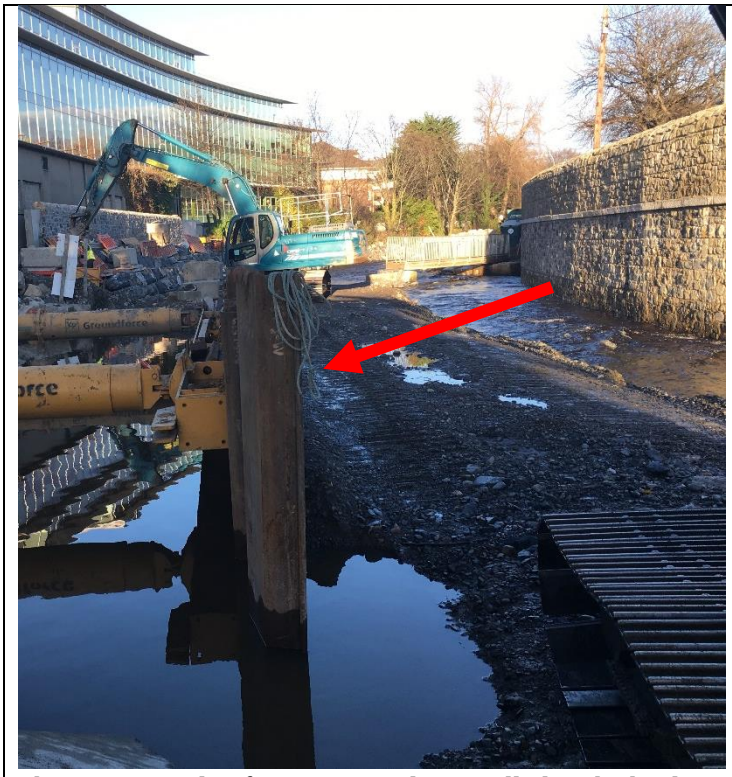


Photo 7 Example of temporary piles installed in the haul road during works. Note – this photo is for illustration only, it does not represent the exact layout of the proposed works.

Photo 8 Example of a trench box during construction of the shear key. Note – this photo is for illustration only, it does not represent the exact layout of the proposed works.

Appendix C

Ecological Survey Report

C1 Ecological Survey Report

Dodder Ecological Survey In Advance of Alterations to the Flood Relief Wall at Herbert Park, Ballsbridge, Dublin 4

Brian Keeley B.SC. (Hons) in Zool. MCIEEM June 2018

Project background:

Approximately 200m of the west river wall along Anglesea Road from Ballsbridge to an area immediately upstream of Herbert Park Lane bridge requires a new reinforced concrete L-wall to be built. The existing wall will be removed to footpath level and new wall will be built in front of this. It is proposed that the proposed works will be carried out under a Part 8 planning application as per the Planning and Development Regulations 2001-2015, as amended, as part of the overall River Dodder Flood Alleviation Works Phase 2C-2E.

This assessment examines the potential for the following protected species within or adjacent to the site and discusses the potential for disturbance to these species from the proposed works: otter, badger and kingfisher.

Otter Ecology

The otter is a mammal within the order Carnivora and the family Mustelidae related to the badger, stoat and pine marten (and introduced American mink). Ireland has remained a refuge for otters through a period when they disappeared from huge areas of Europe. However, this slowing in the decline of this species in Ireland should not be cause for complacency. In previous surveys across the island, positive signs of their presence have been found in up to 92% of sites.

A number of subsequent national surveys of otters have been conducted in the Republic of Ireland. In 1980/81 otter signs were noted at 88% of the sites surveyed. In 1990, otter presence decreased to 75%. The population is estimated to be 10,000 adults (Vincent Wildlife Trust) or up to 12,000 (National Parks and Wildlife Service). The favourable reference population is set at 6464 female otters, a 10.2% increase on the 2009 level estimated by NPWS. Thus, there is a perceived need in the Threat Response Plan drawn up by NPWS to improve the conditions for otters.

In the Netherlands, otters became extinct in 1988 and otters disappeared in Belgium, Luxembourg and Liechtenstein also. Swiss extinction was averted by the introduction of otters from Bulgaria. In Germany, otters survived best in the former East German state due to lower intensification of agriculture and industry and the presence of large hunting estates. In England, otters dwindled to a number of individuals.

By 2015, otters had returned to much of the lost range including England and the Netherlands. The importance of populations such as those of Ireland has been highlighted by the Council of Europe as being a vital link in protecting the future of this species. The protection of otters is enhanced by the inclusion of this species within the list of species requiring special protection measures including Special Areas of Conservation under Annex II of the Habitats Directive. This provides otters with the same level of protection as lesser horseshoe bats; found only in the west and south of the island. This alone identifies the presence of otters in urban areas as a highly significant element of European biodiversity and conservation measures.

Otters live a mainly aquatic-dependent life, feeding and commuting along rivers, canals, lakes as well as travelling across land and living along the seashore. In Dublin, rivers and canals are the most common sites while some lakes (natural and artificial) are also used to feed and shelter.

Otters live in underground burrows (holts) often excavated around tree roots in riverbanks or burrows of other mammals such as badger setts, fox earths or rabbit warrens.

Otter may also rest above ground in long grass or scrub (including rhododendron, reeds etc.). They have even been known to clamber on to boats to sleep.

Otters feed mostly on bottom-dwelling fish but will also eat frogs, crayfish, birds, small mammals and in coastal areas, crabs and marine fish and invertebrates.

Otters are relatively large in terms of Irish mammals with an overall length of 1.2 metres for adult males and 1 metre for females. Males may weigh around 10 kg (7-16 kg) while females are lighter (7 kg (5-9 kg)).

Otters are solitary and while there may be a loosely affiliated group of females (probably genetically related to each other) in a single feeding area, males and females do not associate except to mate. Where more than one otter is seen, it is usually a female and her cubs or the siblings of a litter. Females establish and protect core areas within the overall territory to breed and other females will not enter lightly into this area. Males may range over enormous distances with the larger territories for this species being 80 km of stream.

The otter pregnancy is short; lasting on average 63 days. In comparison, the American mink may have a spring pregnancy of between 39 and 76 days with shorter pregnancies in late spring. Otter young are more commonly born in spring or summer in Ireland but throughout their range, otter cubs may be born at any time in the year.

The natal holt (breeding holt) may be near or far from water and may show no distinctive features to denote its greater significance in the ecology of this species. There are typically fewer spraints close to natal holts. Holts may be very simple in freshwater areas but in coastal areas, they may have an extensive network of tunnels usually 10 to 20 metres in length.

Bedding is introduced to line some of the chambers. Often, there are small pools of fresh water within holts where freshwater is a limiting factor. The two to three young are born blind and covered in fur and are suckled for 14 weeks. Solid food starts at 7 weeks. The first swim is at 12 weeks. By 16 weeks, the cubs leave on swimming trips with the mother. The young remain with the mother for 10 months with increasing independence in the last two months.

Otters may range over tens of kilometres with males travelling further than females and all overlapping the territories of other individuals. Ranges of up to 48 km have been noted for males but more commonly 20 km and upwards and this brings them into several female group areas. Much of the information on otters comes from Scottish studies where otters appear to travel further. Based on Irish studies, females may have home ranges of 7.5 km to 9 km and this is inversely related to river width.

Otters are very short-lived in the wild with males living on (an European) average 3 years and females up to 3.6 years. In Ireland, they may live up to 5 years on average. Captive otters can live up to 15 years and a record of a wild 16 year old female is known from Scotland.

The main risks that otters face in terms of survival include habitat loss, pollution, availability of prey, road-kill, conflict with fish farmers and gamekeepers and water quality. The three categories habitat loss, water pollution and illegal and unintentional killing make up almost 75% of the major threats with habitat loss being the principal threat. River and wetland drainage and Pollution (organic and industrial) have similarly considerable impacts (17%, and 14% each respectively).

Interruption to an otter's movement along a river or canal may lead to the individual entering public roads. This may in turn lead to fatality. In the urban setting, roads are clearly a major challenge while the presence of many dogs close to their feeding areas and especially their holts may pose a major risk. In coastal areas, fishing nets may be a major risk while on rivers and canals, fishing line and hooks may lead to serious injury. Along the River Dodder between Donnybrook and Ballsbridge, illegal fishing may create some disturbance. But since the commencement of works upon the Flood Alleviation programme for Dublin City along the Rover Dodder, there has been considerable disturbance from partial damming of the river, the construction of temporary pontoons and bridges, construction equipment, human activity, the operation of pumps, generators, lighting in addition to

stonemasonry associated with walls and bridges. These unavoidable activities (to provide safety for the human population of the area) add to the usual disturbances faced by urban otters.

Otters have been recorded from numerous locations along the Dodder and Grand Canal and are present in Grand Canal Dock and Basin and where the Dodder meets the River Liffey. Otters have historically been recorded at O'Connell Bridge and have been photographed at Lansdowne New Bridge. Sightings for the species include a new rock embankment downriver of Ballsbridge, an access track opposite Ballsbridge library, the riverbank close to the Dunluce apartments, Smurfit's Weir upriver of Donnybrook Bridge. Reports from Waterways Ireland and from Conservation Ranger Terry Doherty indicate that otters are present within Grand Canal Dock and are breeding here. Discussions with residents close to Grand Canal Basin also indicate that otters were resident close to a former naval vessel.

Previously otter spraints have been noted at Grand Canal Dock, the riverbank close to Ballsbridge library, lock gates along the Grand Canal and within Grand Canal Basin.

Examinations of the riverbank behind Dunluce apartments site in 2015 provided evidence of an otter holt at this time. However, this was washed away by drainage carried out within the apartments.

Badger Ecology

There is some overlap in the ecology of badgers and otters given their relatedness (as mustelids), and their creation of burrows within which to rest. This digging is much more advanced and essential to badgers and the dwelling place (sett) is of huge significance. Badgers do not travel over the same distances as otters (in particular male otters) and the setts are probably more faithfully used and maintained. Badgers may establish substantial setts that may have dozens of tunnels and chambers and with tens of entrances. In an area such as Ballsbridge or Donnybrook or other urban areas, there may be a greater restriction on the size of sett, the size of territory and the number of badgers. However, supplementary feeding and exploitation of leftovers and waste may reduce the area required to sustain badgers. Discussions with residents disclosed that badgers in the area are given scraps and have been recorded on surveillance cameras to scramble over walls into gardens. Digging within Herbert Park on football pitches was reported by one resident.

Badgers within this area are known to have established setts within the Dunluce property, within the grounds of the Licensed Vintners Association, in the grounds of Old Wesley Rugby Club and may be present over a wider area in surrounding gardens.

Kingfisher Ecology

The kingfisher is an iconic bird species that is well regarded by all but only rarely seen by most. The population in Ireland is Amber-listed and BirdLife International considers the European population to be depleted. This species is very sedentary in its habits and would not be long-distance traveller or migrator. The species avails of vertical banks along streams and rivers to excavate a near-horizontal tunnel to nest and rear the annual brood. In some areas, a second brood may also be hatched up to 700 metres from the first in a new tunnel. In an extensive study undertaken by the OPW, kingfisher nests were found predominantly in clay banks (as opposed to sand) or tall vertical loamy banks. This species is dependent upon a supply of species of small fish such as stickleback, minnow, chub as well as larger aquatic invertebrates.

Hunting is usually done from an overhanging branch followed by a dive on to the prey and capture under water. The adult can align several fish in its beak to return to feed the young in the tunnel.

Survey Methodology:

The site as shown in Figure 1 was examined on 23rd May 2018 and was supplemented by observations prior to this evaluation and also subsequent to it on 25th May 2018. Surveying involved a thorough inspection of all accessible areas from both riverbanks to identify the presence of otter or badger signs or holts or setts respectively and the potential for the presence of kingfisher nests or suitable sites for such nests. The river was examined upriver and downriver of the site to a distance of 200 metres (minimum) for all of the above signs. Where residents were encountered along the riverbank, they were questioned on observations of these species. Any other records from discussions with residents are also included within this report.

Results of surveys for otters, badgers and kingfisher

Otters

There were no otter holts noted within Site 1 or Site 2. There were a number of otter prints that were less than one week old in Site 1 and it is clear that this species enters the site on a regular basis. In November 2017, two otters were noted to take cover within a rockpile that formed part of the access track for OPW equipment level with Ballsbridge library by OPW staff.

Otter prints were noted on the shoreline behind the Dunluce apartments and the Merrion Cricket Club. An otter was seen in the area beyond Site 1 and level with Site 2 to the rear of Dunluce apartments within one month of the survey (mid-April). Otters have been noted on an occasional basis emerging from and standing on rocks on the west bank downriver of Ballsbridge north of the proposed compound (currently in use as a compound for other flood relief operations.

Otters are noted south of the site at Donnybrook close to Smurfit's Weir as well as north of the site where the Dodder joins the River Liffey.

Overall, this area is regularly used by otters but no holts were noted within the area that will be directly affected by the proposed operations.

Discussions with local wildlife watchers and residents indicates that otters are also regularly seen in the Milltown to Dartry Park area and holts have been noted in this area. Holts have been reported along the Greenway route but the presence of otters at these holts was not confirmed.

Badgers

There were no signs of badgers within the site. Badger setts and some evidence of activity were noted within the LVA grounds, at Old Wesley and a sett was noted close to Anglesea (Donnybrook) Bridge. This species was reported to visit Herbert Park and has been recorded on camera as still present at the LVA to the south of the proposed construction site.

Badgers will not be affected by the proposed work.

Kingfisher

There is no suitable river bank within the proposed construction site. No kingfishers were noted on 23rd or 25th May 2018. Kingfisher observations within this stretch have been scarce during examinations of the river between 2015 and 2018 and discussions with local residents and nature watchers identify the upriver section of the river as the area known for nesting by this species. The main area of interest is at Dartry Park and a kingfisher nest was present here in 2017.

Summary of findings

There were no otter holts, badger setts or kingfisher nests within the areas within which the construction work will be undertaken. There are therefore no direct risk to these protected species from the proposed work. There will be no loss of dwelling places or protected structures sheltering these species.

At present, there is constant construction work in the area around Ballsbridge that includes hugely intrusive operations such as cutting stone with an angle grinder, movement of stones, wall construction etc. with which the otters in this area have been dealing for over 2 years. The otter holt provided to the rear of Dunluce has not been occupied to date. The otter holt at Lansdowne, to the rear of the Aviva Stadium was used prior to 2015 and may be used occasionally but is not in constant use.

Otters are potentially occupying the rocks placed along the west riverbank approximately 190 metres from the edge of the site and have been seen to hide within rocks within the site when disturbed.

Badgers have been consistently in areas upriver of the proposed work and are not directly affected by the works.

Kingfishers are even further upriver towards Milltown and on to Rathfarnham. This species will not be directly affected on a daily basis and there is very limited impact, if any, upon feeding on a daily basis.

The habitats within which the works will take place are:

FW2 Depositing/lowland river

BL1 Stone walls and other stonework

BL3 Buildings and artificial surfaces

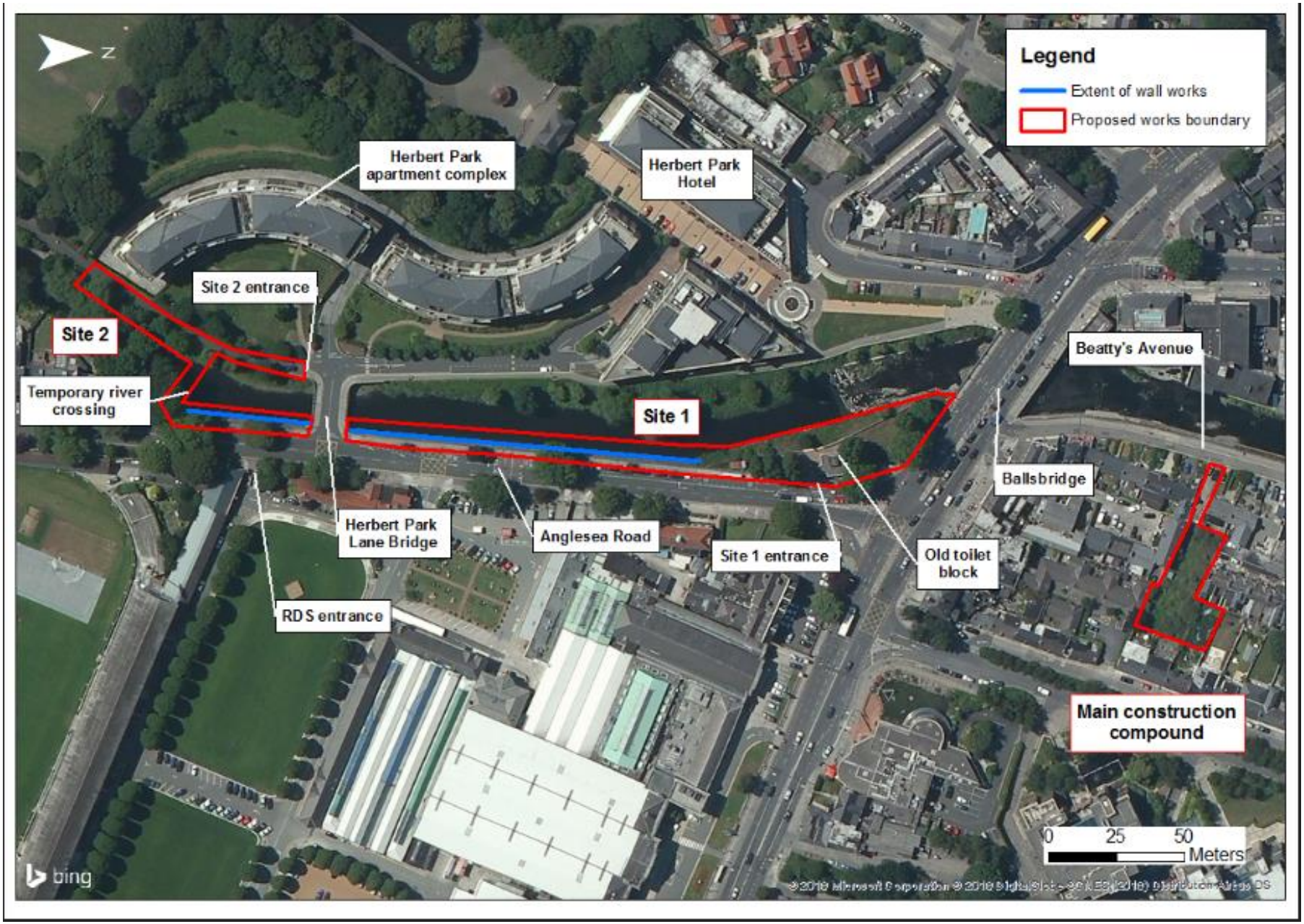
The riverbank on the west side, south of the hotel holds a Treeline WL2. To the rear of the works there is Amenity grassland (improved) GA2. The river bank towards the RDS side (east) holds Mixed broadleaved/conifer woodland WD and amenity grassland GA2 as well as BL1 and BL3 (built environment).

Recommendations

It is clear that the only species of the three discussed in this report potentially affected by the proposed work is the otter. This species is not present within the site but is clearly a regular visitor to the area and may avail of lands adjacent to the site as resting places.

The ongoing operations along this section of the Dodder and including the bridge to Herbert Park Hotel are intrusive but are being tolerated by the local otters. It is likely that the continuing work will be no more intrusive than previous and current operations.

It is proposed that a licence to disturb is not required given that this work will not encroach upon any holts, setts or kingfisher nests.


N
Legend
Extent of wall works
Proposed works boundary
Herbert Park apartment complex
Herbert Park Hotel
Site 2 entrance
Site 2
Temporary river crossing
Site 1
Beatty's Avenue
Ballsbridge
Herbert Park Lane Bridge
Anglesea Road
Site 1 entrance
Old toilet block
RDS entrance
Main construction compound
0 25 50
Meters
bing

Otter signs along the River Dodder close to the proposed operations at Ballsbridge, Dublin 4

Legend

1. Artificial otter holt
2. Artificial otter holt
3. Regular Otter Sightings
4. 2 otters seen November 2017
5. Otter holt destroyed during drainage by construction company
6. Artificial otter holt

Area within which construction works will occur

Compound for construction

Otter spraints and paw prints within the proposed site


Otter spraints and paw prints within the proposed site

Considerable construction and operations at and around the proposed works crating a disturbance but still visited by otters

Otter spraints and paw prints

Badger setts and tracks upriver of the site

Badger setts and tracks upriver of the site

Badger setts and tracks upriver of the site


Badger setts and tracks upriver of the site


Examples of banks with kingfisher nests (not along the River Dodder)