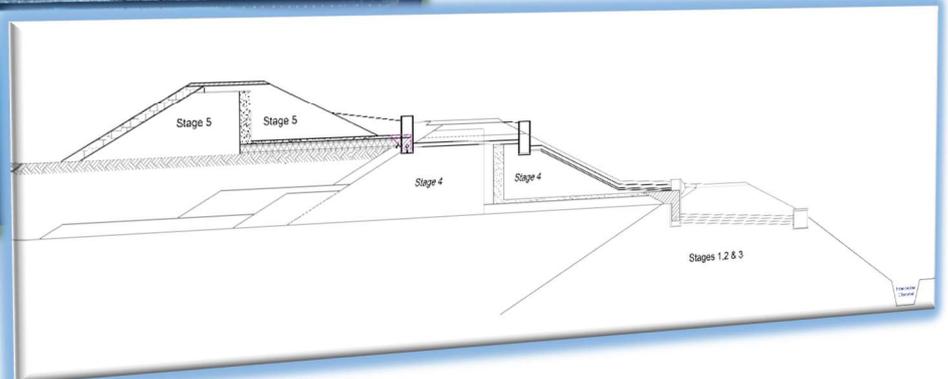


**Environmental Impact Assessment Report (EIAR)  
Tailings Facility Embankment Buttress**

**Appendix 1.B  
Environmental Impact Assessment (EIA) Screening Report**

**Appeal Reference Number: ABP-315173-22**



**Submitted: February 2024**

ENVIRONMENTAL IMPACT ASSESSMENT SCREENING REPORT AS REGARDS  
CONSTRUCTION OF A ROCKFILL AND EARTHEN REINFORCEMENT BUTTRESS TO  
SECTIONS OF THE EXTANT EMBANKMENT WALL OF THE TAILINGS STORAGE  
FACILITY AT RANDALLSTOWN, NAVAN, CO MEATH  
FEBRUARY 2024



Prepared January 2024 by:



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# Table of Contents

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|            |  |           |
|------------|--|-----------|
| 1          | Introduction .....   | 1         |
| 1.1        | Background .....   | 1         |
| 1.2        | Structure of this Report .....   | 1         |
| 1.3        | FERS Company Background .....  | 2         |
| 2          | Overview of EIA screening .....  | 3         |
| 2.1        | Legislation .....  | 3         |
| 2.1.1      | Mandatory EIA .....  | 3         |
| 2.1.2      | Sub-threshold EIA.....   | 3         |
| 2.1.3      | Proposed development screened out of the EIA process.....  | 8         |
| 2.2        | Other Relevant Guidelines .....  | 8         |
| 3          | Site location and Planning Context .....   | 9         |
| 3.1        | Site location .....  | 9         |
| 3.2        | Planning History .....   | 12        |
| 3.2.1      | EIA Portal.....  | 12        |
| 3.2.2      | Pending planning permission applications by BTM .....  | 13        |
| 3.2.3      | Current planning applications within 2 km of proposed development.....   | 13        |
| 3.2.4      | Historical planning at the proposed site location .....  | 14        |
| 3.3        | Overall Planning Context .....   | 15        |
| 3.3.1      | Meath Development Plan (current).....  | 15        |
| 3.3.2      | Meath Climate Action Plan 2024 – 2029 (submissions closed January 2024) Draft.....                                 | 15        |
| 3.3.3      | Meath Biodiversity Action Plan (currently 2015 – 2020).....  | 15        |
| 4          | Is the proposed development of a type requiring mandatory EIA and the preparation and submission of an EIAR? ..... | 16        |
| 4.1        | Development description .....  | 16        |
| 4.1.1      | Rationale .....  | 16        |
| 4.1.2      | Factor of Safety (FoS) .....   | 18        |
| <b>4.2</b> | <b>Plan and Construction Sequence .....</b>  | <b>21</b> |
| 4.2.1      | Sequence of Works.....   | 21        |

|       |   |    |
|-------|---|----|
| 4.2.2 | Preparatory Works .....   | 21 |
| 4.2.3 | Clearance of Work Areas.....  | 21 |
| 4.3   | Conclusion regarding requirement for mandatory EIA and the preparation and submission of an EIAR..... | 22 |
| 5     | Conclusion.....   | 23 |
| 6     | References and Bibliography .....   | 24 |

## EXECUTIVE SUMMARY

*Boliden Tara Mines (BTM) has recently become a member of the International Council for Mining and Metals (ICMM) and is in the process of adopting the Global Industry Standard on Tailings Management (GISTM). A key objective of GISTM is to address the risk of tailings embankment failure through conservative design criteria, independent of trigger mechanisms, in order to minimise potential impacts. In order to increase the factor of safety of the extant embankment walls of the tailings facility a rockfill and earthen buttress will be constructed against sections of the extant embankment walls of the Tailings Storage Facility (TSF). The purpose of this EIA screening report is to provide an assessment as regards the requirement of the preparation of an Environmental Impact Assessment Report (EIAR) for the proposed development.*

*The TSF is an integral component of the mining activities undertaken at Boliden Tara Mines (extraction of minerals within the meaning of the Minerals Development Acts 1940 to 1999). Having regard to the proposed development, which relates to the TSF, mandatory Environmental Impact Assessment (EIA) is required as listed in Part (1) of Schedule 5 of the Planning and Development Regulations, 2001 (as amended).*

*This EIA screening report concludes that the proposed development cannot be screened out and that the mandatory preparation of an EIAR is required.*

# 1 Introduction

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## 1.1 Background

This EIA Screening report provides an assessment of a proposed development at Randallstown Tailings Storage Facility (TSF), Navan, Co. Meath as regards the criteria for determining whether:

- 1) A mandatory EIA is required, necessitating the preparation of an Environmental Impact Assessment Report (EIAR);
- 2) In the case of mandatory EIA **not** being required, does the proposed development trigger a requirement for subthreshold EIA; or
- 3) The proposed development can be screened out of the process.

This assessment is intended to assist the Competent Authority in the carrying out of its determination as to whether Environmental Impact Assessment (EIA) is required for the proposed development.

This assessment has afforded due regard to the criteria listed in Annex IIA and Annex III of Directive 2014/52/EU.

This assessment has also afforded due regard to the document “Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment” (2018)<sup>1</sup>.

## 1.2 Structure of this Report

This Report is structured as follows:

- Section 2 provides an overview of the relevant legislation, guidelines, criteria, and methodology of Screening for Environmental Impact Assessment;
- Section 3 describes the site location and planning context of the application site including an overview of the planning history and planning policy context of the site;
- Section 4 examines the proposed development, having regard to requirement for mandatory EIA or requirement for sub-threshold EIA; and
- Section 5 provides a concluding statement as regards EIA screening

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<sup>1</sup> Prepared by the Department of Housing, Planning and Local Government

### 1.3 FERS Company Background

FERS Ltd has been undertaking ecological surveys and research since the company's formation in 2005 by Dr Patrick Moran and Dr Kevin Black. Dr Moran, the principal ecologist with FERS, holds a 1<sup>st</sup> class honours degree in Environmental Biology (UCD), a Ph.D. in Ecology (UCD), a Diploma in EIA and SEA management (UCD), a M.Sc. in GIS (University of Ulster, Coleraine) and an Advanced Diploma in Planning and Environmental Law (King's Inns). Patrick has in excess of 20 years of experience in carrying out ecological surveys on both an academic and a professional basis. Dr Emma Reeves, a Senior Ecologist with FERS Ltd. holds a 1<sup>st</sup> class honours degree in Botany (UCD), and a Ph.D. in Botany (UCD). Emma has in excess of 15 years of experience in carrying out ecological surveys on both an academic and a professional basis. Ciaran Byrne a Senior Ecologist with FERS holds a first-class honours degree in Environmental Management (DIT) and a M.Sc. in Applied Science/Ecological Assessment (UCC). Ciaran has in excess of 10 years of experience in carrying out ecological surveys on both an academic and a professional basis.

FERS client list includes National Parks and Wildlife Service, An Bord Pleanála, Coillte, Teagasc, numerous County Councils, the Heritage Council, University College Dublin, the Environmental Protection Agency, Inland Waterways Association of Ireland, the Department of Agriculture, and the Office of Public Works.

## 2 Overview of EIA screening

---

### 2.1 Legislation

Environmental Impact Assessment Screening is the term used to describe the process for determining whether a proposed development is likely to have a significant effect on the environment and if it requires an Environmental Impact Assessment Report (EIAR) by reference to the type and scale of the proposed development and the significance or the environmental sensitivity of the receiving environment.

Directive 2011/92/EU, as amended by Directive 2014/52/EU details the requirements for the screening of projects for Environmental Impact Assessment (EIA). In this regard, recital (27) of Directive 2014/52/EU states that:

*'...The screening procedure should ensure that an environmental impact assessment is only required for projects likely to have significant effects on the environment...'*

---

#### 2.1.1 Mandatory EIA

As regards the mandatory requirement for EIA, Part 2 of Schedule 5 of the Planning and Development Regulations 2001 (as Amended) indicates the categories of development and thresholds for activities that require the mandatory EIA and the preparation and submission of an EIAR.

The first question to be addressed must be –

**Does the proposed development require mandatory EIA?**

---

#### 2.1.2 Sub-threshold EIA

Section 172 (1)(b) of the Planning and Development Act 2000 (as Amended), details that EIAR will be required where a proposed development would be of a class specified in Part 2 of Schedule 5 of the Planning and Development Regulations 2001 (as amended) but does not equal or exceed the relevant threshold specified in that part, and it is concluded, determined or decided by the competent body *'...that the proposed development is likely to have a significant effect on the environment...'*

Article 103(3) of the Planning and Development Regulations 2001 (as Amended) indicates the criteria for determining whether a proposed development would or would not be likely to have a significant effect on the environment, has been substituted by article 67 of European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018 (European EIA Regulations) to read as follows:

*'103. (1) (a) Where a planning application for sub-threshold development is not accompanied by an EIA, the planning authority shall carry out a preliminary examination of, at the least, the nature, size, or location of the development.*

*(b) Where the planning authority concludes, based on such preliminary examination, that—*

*(i) there is no real likelihood of significant effects on the environment arising from the proposed development, it shall conclude that an EIA is not required,*

*(ii) there is significant and realistic doubt in regard to the likelihood of significant effects on the environment arising from the proposed development, it shall, by notice in writing served on the applicant, require the applicant to submit to the authority the information specified in Schedule 7A for the purposes of a screening determination unless the applicant has already provided such information, or*

*(iii) there is a real likelihood of significant effects on the environment arising from the proposed development, it shall—*

*(I) conclude that the development would be likely to have such effects, and*

*(II) by notice in writing served on the applicant, require the applicant to submit to the authority an EIA and to comply with the requirements of article 105.*

*(1A) (a) Where an applicant is submitting to the planning authority the information specified in Schedule 7A, the information shall be accompanied by any further relevant information on the characteristics of the proposed development and its likely significant effects on the environment, including, where relevant, information on how the available results of other relevant assessments of the effects on the environment carried out pursuant to European Union legislation other than the Environmental Impact Assessment Directive have been taken into account.*

*(b) Where an applicant is submitting to the planning authority the information specified in Schedule 7A, the information may be accompanied by a description of the features, if any, of the proposed development and the measures, if any, envisaged to avoid or prevent what might otherwise have been significant adverse effects on the environment of the development.*

*(1B) (a) Where a planning application for sub-threshold development is not accompanied by an EIAR but is accompanied by the information specified in Schedule 7A and sub-article (1A), or where an applicant submits to the planning authority such information pursuant to a requirement issued under sub-article (1)(b)(ii), the planning authority shall carry out an examination of, at the least, the nature, size, or location of the development for the purposes of a screening determination.*

*(b) The planning authority shall make a screening determination and—*

*(i) if such determination is that there is no real likelihood of significant effects on the environment arising from the proposed development, it shall determine that an EIA is not required, or*

*(ii) if such determination is that there is a real likelihood of significant effects on the environment arising from the proposed development, it shall—*

*(I) determine that the development would be likely to have such effects, and*

*(II) by notice in writing served on the applicant, require the applicant to submit to the authority an EIAR and to comply with the requirements of article 105.*

Schedule 7A of the Planning and Development Regulations, 2001 as amended sets out information to be provided by the applicant or developer for the purposes of screening sub-threshold development for environmental impact assessment. A summary of this information is provided in Section 6.

Schedule 7A provides as follows:

*'1. A description of the proposed development, including in particular—*

*(a) a description of the physical characteristics of the whole proposed development and, where relevant, of demolition works, and*

*(b) a description of the location of the proposed development, with particular regard to the environmental sensitivity of geographical areas likely to be affected.*

*2. A description of the aspects of the environment likely to be significantly affected by the proposed development.*

*3. A description of any likely significant effects, to the extent of the information available on such effects, of the proposed development on the environment resulting from—*

- (a) *the expected residues and emissions and the production of waste, where relevant, and*
- (b) *the use of natural resources, in particular soil, land, water and biodiversity.*

4. *The compilation of the information at paragraphs 1 to 3 shall take into account, where relevant, the criteria set out in Schedule 7.'*

Schedule 7, as referenced under Schedule 7(A)(4), sets out the criteria for determining whether development listed in Part 2 of Schedule 5 should be subject to EIA.

*1 Characteristics of proposed development*

*The characteristics of proposed development, in particular—*

- (a) *the size and design of the whole of the proposed development,*
- (b) *cumulation with other existing development and/or development the subject of a consent for proposed development for the purposes of section 172(1A)(b) of the Act and/or development the subject of any development consent for the purposes of the Environmental Impact Assessment Directive by or under any other enactment,*
- (c) *the nature of any associated demolition works,*
- (d) *the use of natural resources, in particular land, soil, water and biodiversity,*
- (e) *the production of waste,*
- (f) *pollution and nuisances,*
- (g) *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, and*
- (h) *the risks to human health (for example, due to water contamination or air pollution).*

*2 Location of proposed development*

*The environmental sensitivity of geographical areas likely to be affected by the proposed development, 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 legislation, including Natura 2000 areas designated pursuant to the Habitats Directive and the Birds Directive and;*
- (vi) areas in which there has already been a failure to meet the environmental quality standards laid down in legislation of the European Union 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 Types and characteristics of potential impacts*

*The likely significant effects on the environment of proposed development in relation to criteria set out under paragraphs 1 and 2, with regard to the impact of the project on the factors specified in paragraph (b)(i)(I) to (V) of the definition of ‘environmental impact assessment report’ in section 171A of the Act, taking into account—*

- (a) the magnitude and spatial extent of the impact (for example, geographical area and size of the population likely to be affected),*
- (b) the nature of the impact,*
- (c) the transboundary nature of the impact,*
- (d) the intensity and complexity of the impact,*
- (e) the probability of the impact,*
- (f) the expected onset, duration, frequency and reversibility of the impact,*
- (g) the cumulation of the impact with the impact of other existing and/or development the subject of a consent for proposed development for the purposes of section 172(1A)(b) of the*

*Act and/or development the subject of any development consent for the purposes of the Environmental Impact Assessment Directive by or under any other enactment, and*

*(h) the possibility of effectively reducing the impact.*

If the proposed development is not of a type requiring mandatory EIA, the second question that must be addressed is

### **Does the proposed development require sub-threshold EIA?**

---

#### *2.1.3 Proposed development screened out of the EIA process*

A proposed development can only be “screened out” of the EIA process if:

- 1) The development is not of a type requiring mandatory EIA, and
- 2) The development does not require sub-threshold EIA.

## **2.2 Other Relevant Guidelines**

This Screening Report has been prepared having regard to the following guidance documents:

- Environmental Impact Assessment - Guidelines for Planning Authorities and An Bord Pleanála (August 2018)
- Guidelines on the information to be contained in Environmental Impact Assessment Reports, Environmental Protection Agency, 2022.
- European Commission guidance documents on the implementation of the EIA Directive (Directive 2011/92/EU as amended by 2014/52/EU), as follows:
  - Environmental Impact Assessment of Projects: Guidance on Screening, European Commission, 2017.
  - Environmental Impact Assessment of Projects: Guidance on Scoping, European Commission, 2017 (not considered relevant at Screening Stage).
  - Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report, European Commission, 2017 (not considered relevant at Screening Stage).

## 3 Site location and Planning Context

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### 3.1 Site location

The proposed development is located at the Randallstown TSF, Navan, Co. Meath. The TSF is located approximately 3km north of the mine site in Navan. The facility is constructed as a ring-dike configuration, with stages 1 to 5 enclosed by earth fill embankment walls constructed from locally sourced natural materials, while stage 5 is composite lined. The approximate location of the proposed development is illustrated in Figure 1, Figure 2, Figure 3 and

Figure 4.

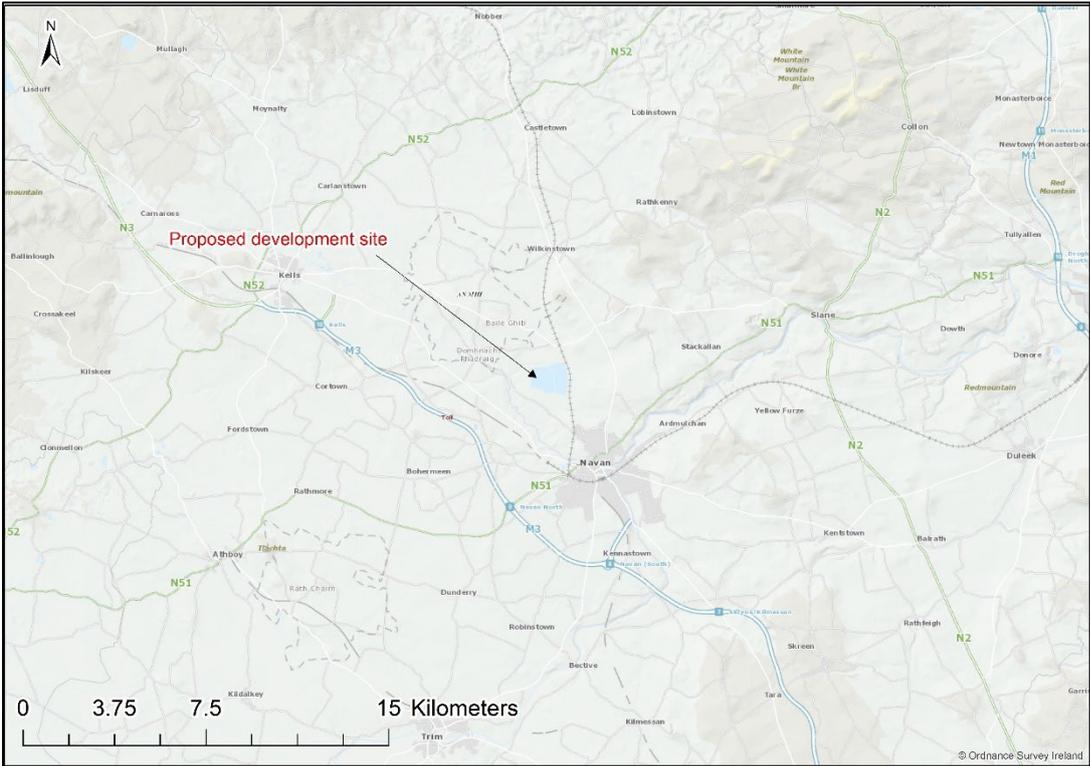


Figure 1: Location 1 in 150,000

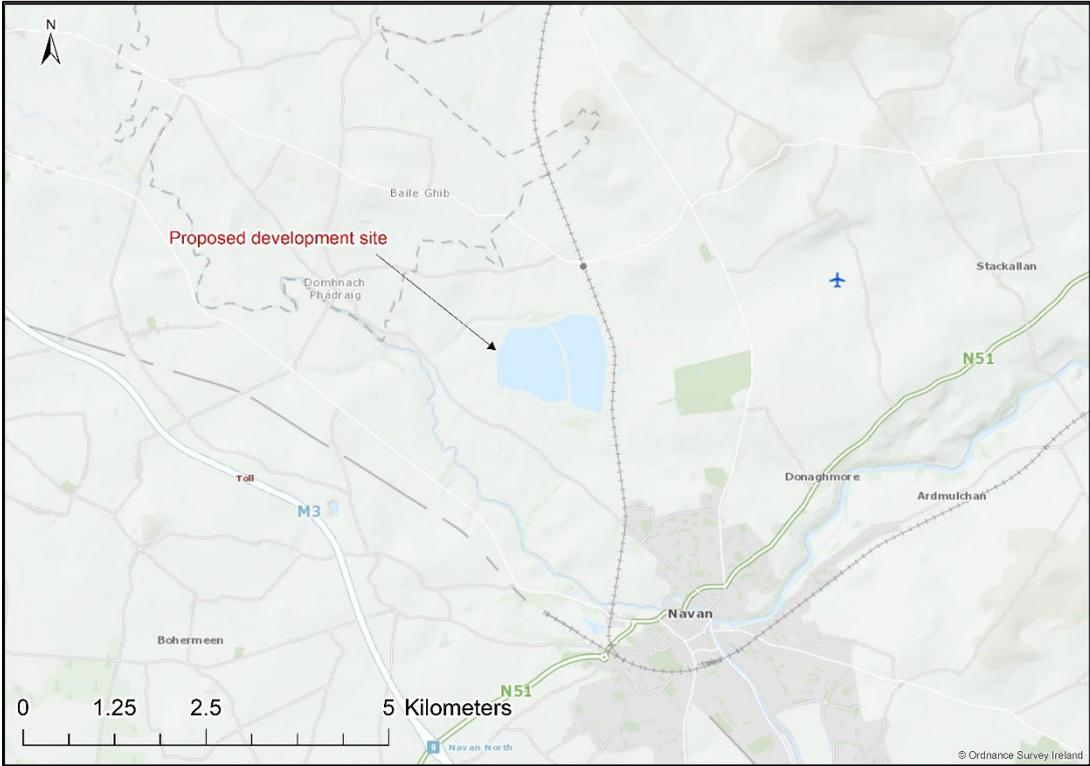


Figure 2: Location 1 in 50,000

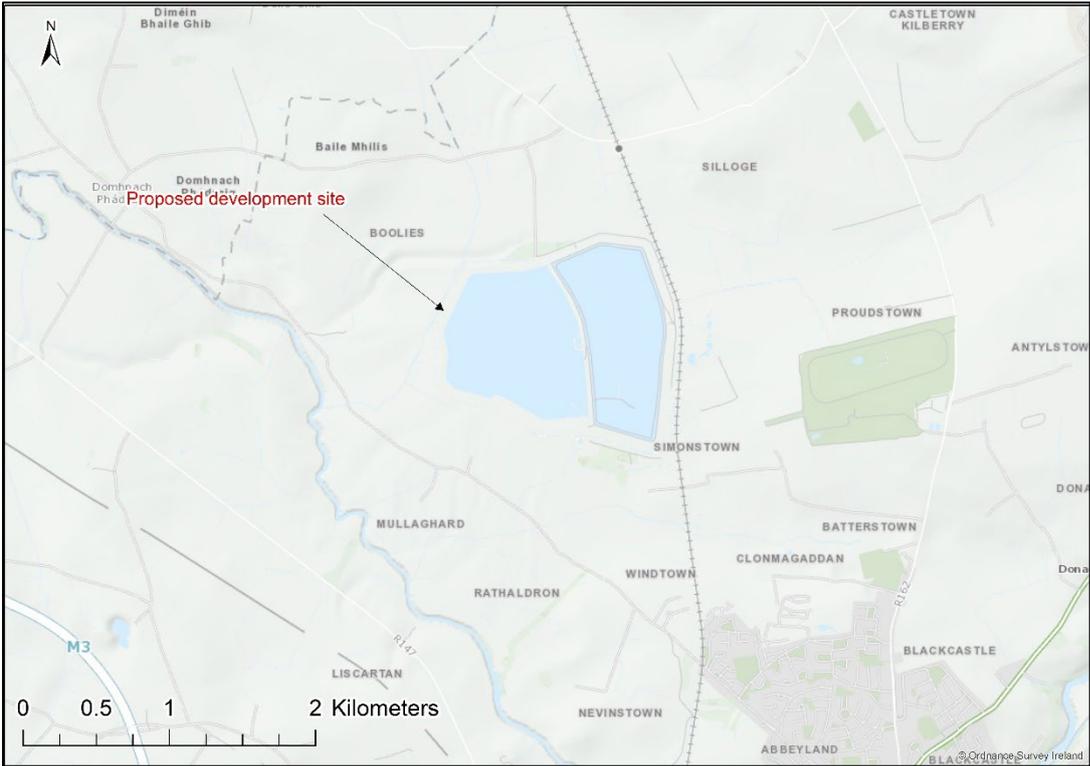


Figure 3: Location 1:25,000



Figure 4: Satellite imagery indicating approximate location of proposed works (1:12,500)

## 3.2 Planning History

A synopsis of the planning history of the site is presented in the following paragraphs.

### 3.2.1 EIA Portal

A query of the EIA portal<sup>2</sup> would indicate that there are a number of recent projects requiring EIAR (see Figure 5). Owing to the dependence of the Qualifying Interests of the River Boyne and River Blackwater SAC/SPA either directly, or indirectly on water quality, it is key that the proposed development have no significant negative impact on local hydrology/water quality. A comprehensive hydrological assessment of the proposed development has been undertaken as a component of the Chapter 7 of the EIAR, which concludes that “...*This assessment has examined the potential impacts of the proposed buttress and its construction on water levels and water quality at the TSF and in the surrounding local water environment. Following implementation of the mitigation measures outlined in Section 7.7, no significant adverse impacts are anticipated as a result of the proposed works...*”

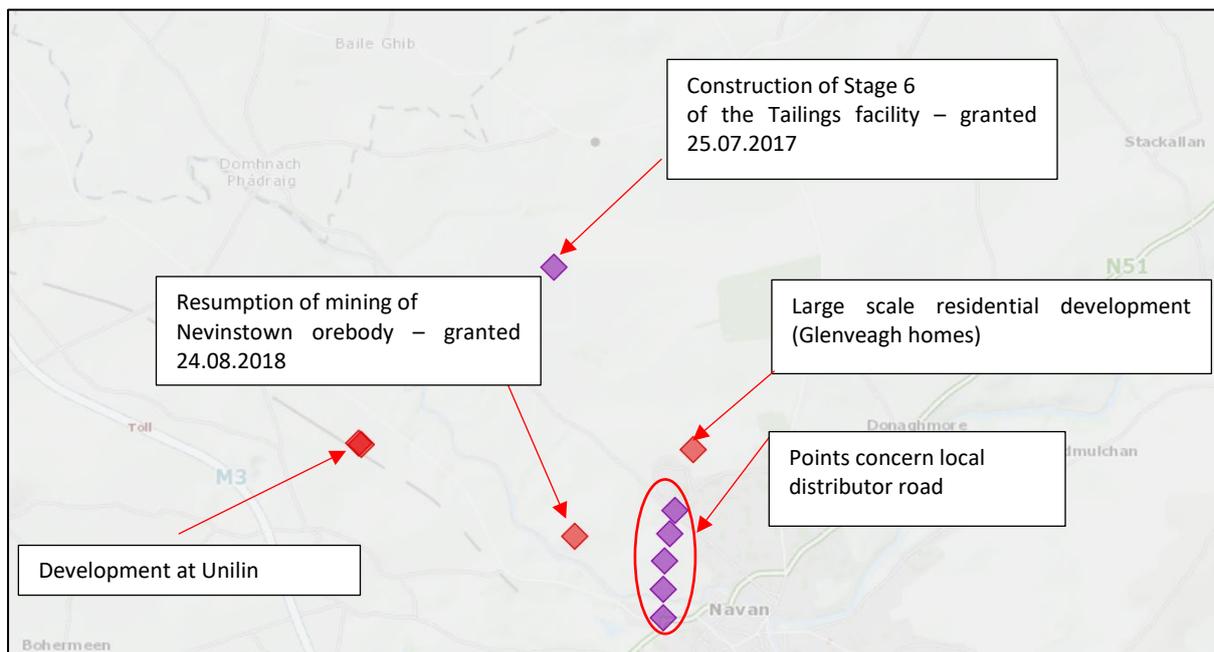


Figure 5: Query of EIA portal for projects requiring EIA in the vicinity of the proposed buttressing works

<sup>2</sup> <https://housinggov.ie/maps/arcgis.com/apps/webappviewer/index.html?id=d7d5a3d48f104ecbb206e7e5f84b71f1>

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### 3.2.2 Pending planning permission applications by BTM

BTM intend to lodge an application in the immediate future for a solar farm to generate renewable electricity for use within the BTM Knockumber site providing for an electrical capacity of approximately 18-megawatts (advertised in Meath Chronicle date Saturday February 3<sup>rd</sup>). The development will consist of a ten-year planning permission for a solar energy development with the proposed development site extending to a total area of approximately 34 ha comprising (i) photovoltaic solar panels on steel mounting frames; (ii) electrical inverters; (iii) electrical power stations; (iv) an electrical control building and associated electrical apparatus; (v) underground electrical and communications cabling; (vi) on-site access tracks; (vii) a temporary construction compound; (viii) security fencing and security gates; (ix) pole-mounted security cameras; and (x) all associated and ancillary site development, landscaping and reinstatement works. The operational lifetime of the proposed development is 35-years. The proposed development is related to an activity requiring an Industrial Emissions Licence. This planning application will be accompanied by an Environmental Impact Assessment Screening Report and a Natura Impact Statement.

---

### 3.2.3 Current planning applications within 2 km of proposed development

An online review of the Meath Planning resource<sup>3</sup> indicates that there are two significant planning permissions within a distance of 2km of the proposed development (see Table 1). A review of historical planning permissions relating to the proposed development site is indicated in Table 2.

Table 1: Significant development seeking planning permission within 2km of the proposed development

| Application Number | Development Description   | Address   | App distance from site (m) | Application Status    |
|--------------------|---|---|----------------------------|-----------------------|
| 221558             | Amendments to the south-eastern portion (0.71ha) of a residential development permitted under Meath County Council Reg. Ref. NA/181326. | Lands to the north of the Clonmagaddan Road, Clonmagaddan, Navan Co Meath | 1500                       | APPEALED              |
| 22924              | Large scale residential development   | Lands north of Clonmagaddan Road, Clonmagaddan , Navan                    | 850                        | APPLICATION FINALISED |

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<sup>3</sup> <https://housinggovie.maps.arcgis.com/apps/webappviewer>

In addition, Meath Co. Council recently granted planning permission (Planning Application Reference 23341) for the construction of a water treatment plant and ancillary infrastructure within the mine site complex at Knockumber. This planning permission relates to an activity covered by the Company's Industrial Emissions Licence Ref. No. PO 516-04. This granting of planning permission is currently being appealed.

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### *3.2.4 Historical planning at the proposed site location*

The TSF at Randallstown has been constructed in six main stages during the period 1974 – present (Table 2). The facility is constructed as a ring-dike configuration, with Stages 1 to 6 enclosed by earth fill embankment walls constructed from locally sourced natural materials, while Stage 6 is a composite lined facility. The storage facility has an area of approximately 250 Hectares.

*Table 2: Historical planning at the site*

| <b>Tailings facility Planning by Stage</b> | <b>Planning ref #</b>    | <b>Construction Period</b> | <b>Status</b>   |
|--|--------------------------|----------------------------|---|
| 1  | P 73/125                 | 1975 to 1978               | Filled and re-vegetated in 1988   |
| 2  | P 74/732                 | 1980 to 1983               | Filled and re-vegetated in 1988   |
| 3  | P 83/464                 | 1985 to 1987               | Filled in 2003  |
| 4  | P 96/919                 | 1998 to 2006               | Raised facility over Stage 1, 2 and 3 tailings. Filled in 2006              |
| 5  | NA 901452                | 2011 to 2016               | Raised Facility over Stage 4A tailings. Filled in 2020                      |
| 6  | NA/160408<br>PL17.247707 | 2017 to 2022               | Lateral extension to Stages 1 to 5 in a northern direction. Filling ongoing |

### 3.3 Overall Planning Context

The relevant primary plans as relate to the application site are:

- Meath Development Plan 2021 – 2027;
- Meath Climate Action Plans; and
- Meath Biodiversity Action Plans.

---

#### 3.3.1 Meath Development Plan (current)

The Meath County Development Plan 2021-2027 sets out the policies and objectives and the overall strategy for the development of the County over the plan period 2021-2027.

*“... ‘To improve the quality of life of all citizens in Meath by creating an environment that supports a vibrant growing economy and a well-connected place to live, learn and do business’ ...”.*

It is assumed that the proposed development is in compliance with all aspects of the current Meath Development Plan.

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#### 3.3.2 Meath Climate Action Plan 2024 – 2029 (submissions closed January 2024) Draft

The Draft Meath Climate Action Plan 2024 – 2029 sets out how Meath Co. Council will promote a range of mitigation, adaptation, and other climate action measures, to help deliver on the National Climate Obligations and the Government’s overall National Climate Objective, which seeks to pursue and achieve, by no later than the end of 2050, the transition to a climate resilient, biodiversity rich, environmentally sustainable and climate neutral economy. Given the nature of the proposed development, which entails adaptation of the existing Tailings Storage Facility (through increasing the factor of safety) in light of increased rainfall events associated with climate change, the proposed development is in compliance with the Climate Action Plan.

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#### 3.3.3 Meath Biodiversity Action Plan (currently 2015 – 2020)

The main function of the Meath Biodiversity Action Plan is to provide a framework and series of actions to conserve, enhance and raise awareness of Meath’s rich biodiversity and to maximise the contribution that it makes to the social, economic and environmental well-being of the county, taking into account local, national and international, including European priorities. A series of mitigation measures are outlined in the EIAR of the proposed development, which aim to maintain and enhance the biodiversity resource present.

## 4 Is the proposed development of a type requiring mandatory EIA and the preparation and submission of an EIAR?

---

The first question that must be addressed within the EIA screening process regards the nature of the project, relative to Part 2 of Schedule 5 of the Planning and Development Regulations 2001 (as Amended), which indicates the categories of development and thresholds for activities that require mandatory EIA and the preparation and submission of an EIAR.

### 4.1 Development description

#### 4.1.1 Rationale

BTM has recently become a member of the International Council for Mining and Metals (ICMM) and is in the process of adopting the Global Industry Standard on Tailings Management (GISTM).

A key objective of GISTM is to address the risk of tailings embankment failure through conservative design criteria, independent of trigger mechanisms, in order to minimise potential impacts.

To this end a suitable conservative approach must be taken in terms of the factors of safety to be adopted in scenarios relating to the liquefaction / brittleness of the tailings.

The proposed buttress will be constructed against the extant embankment walls of the Tailings Storage Facility.

- The extant embankment walls have been designed and assessed to meet a target design criterion, for long-term static slope stability, with a Factor of safety (FoS) of  $\geq 1.5$  using effective strength parameters.
- The buttressing works will increase the Factor of Safety to
  - $\geq 1.5$  for the peak strength undrained scenario and to
  - $\geq 1.1$  for the residual strength undrained scenario which is now required

The Tailings Facility is located approximately 3 km north of the mine site in Navan. The facility is constructed as a ring-dike configuration, with stages 1 to 5 enclosed by earth fill embankment walls constructed from locally sourced natural materials, while Stage 6 is composite lined. The facility encloses an area of c. 250 Hectares. It is proposed to construct a buttress to a selection of the existing embankment walls to increase their strength thus reducing the risk of failure.

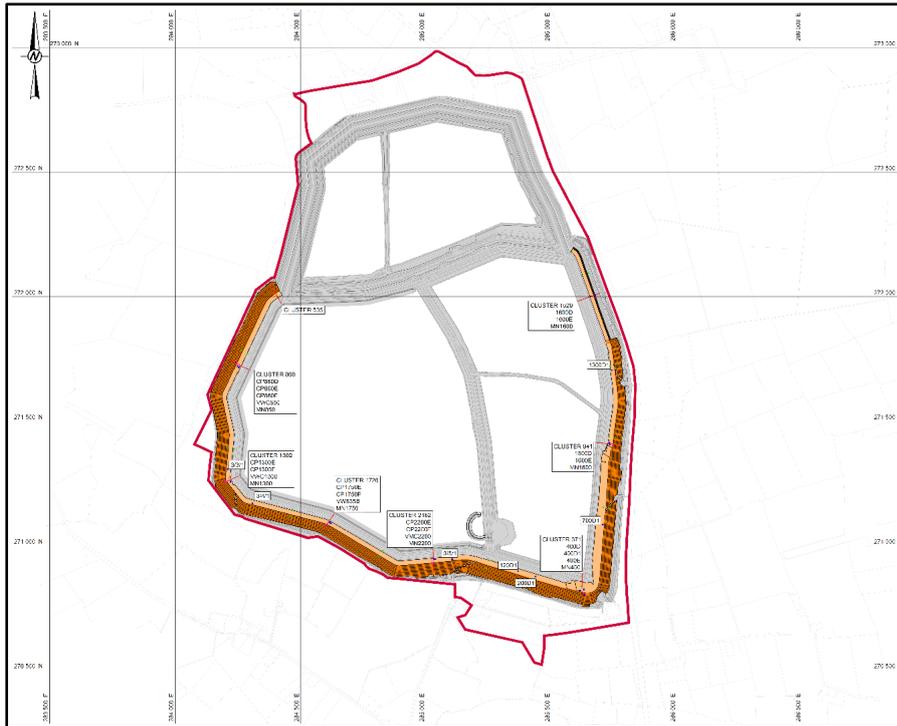


Figure 6: Tailings Facility layout plan

The TSF has been constructed in six main stages during the period from 1974 to present.

- Stages 1, 2 and 3 were built at ground level to a height of c.12 metres.
- Stages 4 and 5 were upstream vertical raises over Stages 1,2 and 3 (6m and 4m respectively).
- Stage 6 is a lateral extension to the north of stages 1,2,3,4 & 5.

Refer to Figure 7, Figure 8 and Figure 9.



Figure 7: Embankments side profile

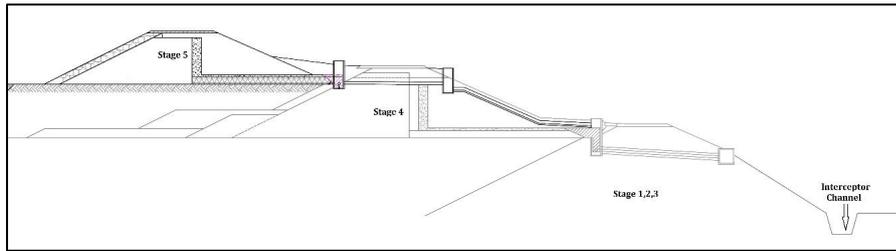


Figure 8: Cross section – extant facility embankment

The proposed buttress, to be constructed on the downstream slope of and at the crest of the Stage 1, 2 and 3 starter Embankments, see Figure 9, will provide additional support to the Stage 4 dam embankment wall in order to increase the overall stability of the upstream raises i.e. Stage 4 and Stage 5.

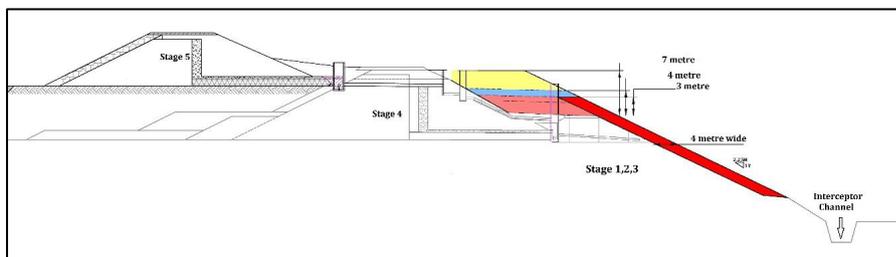


Figure 9: Cross section – facility embankment with buttress

#### 4.1.2 Factor of Safety (FoS)

BTM has undertaken a comprehensive liquefaction assessment using Cone Penetration Tests (CPT) and laboratory testing on the existing tailings.

As with all loose tailings, the tailings at Randalstown could potentially liquefy either during dynamic or static liquefaction.

- Dynamic liquefaction occurs as a result of seismic activity, the risk of which is very low in Ireland.
- Static liquefaction occurs when the dam wall has already failed for other reasons and the tailings statically liquefy under the large strains as a result of loss of confinement.

In engineering, a factor of safety (FoS) indicates how much stronger a structure actually is compared to what it needs to be for an intended load.

The original facility design and stability analyses were undertaken using effective strength parameters and monitored piezometric levels in the stack wall which is the traditional procedure. The facility was originally designed and assessed to meet a target design criterion for long-term static slope stability of FoS > 1.5 using effective strength parameters.

However, current industry best practice is to evaluate the stability using peak undrained shear strengths and with further analysis using residual undrained shear strengths. Tailings undrained strength parameters simulates excess pore pressure within the tailings and is therefore, a more conservative analysis.

The undrained stability analysis indicates that a buttress is required at the toe of the Stage 4 embankment to achieve a factor of safety of 1.5 based on peak undrained shear strength of the fine tailings.

The buttress will provide additional support to the Stage 4 dam embankment wall in order to increase the overall stability of the upstream raises i.e Stage 4 and Stage 5.

For the stability analysis based on residual undrained shear strength, the buttress size will need to be increased in height to achieve the required factor of safety of 1.1. In order to achieve this increase in height, it is necessary to construct a buttress to the toe of starter embankments 1, 2 and 3 to facilitate the further increase in height.

It has been determined that the addition of a rock fill buttress at the downstream toe of the Stage 4 dam would meet the necessary requirements (endorsed by Independent Tailings Review Board (ITRB)).

- The minimum required FoS of 1.5 is achievable for all static and seismic loading conditions and all failure surface locations when the peak undrained strength of the tailings was considered.
- In order to meet the FOS of 1.1 for the residual undrained strength scenario the analysis indicated that a 4 m wide buttress to the starter dam is required for the majority of the perimeter wall. At the starter dam crest level, the height of the buttress will vary between 3 and 7 m.

The proposed buttress will be approximately 12 m wide at the base and will have an outer slope of 1 V: 2.75 H. This slope will be similar to the downstream slope of the Stage 4 dam wall as well as the downstream slope of the Starter Dams (Stages 1, 2 and 3) at most locations. It should be noted that where the Starter Dam height is greater than 14 m, the slope will be 1 V: 2.5 H. In these scenarios, the outer slope of the buttress will match the more shallow slope of the Starter Dam.

The proposed buttress would be sequenced in two phases which may run concurrently:

- Phase 1 will proceed on a horizontal basis along Stage 4 of the tailings dam. Works will begin at the level of the toe of the Stage 4 upstream raise against the embankment wall and will vary between 3, 4 and 7 metres in height. The material will be placed in layers along 500m sections, with each 500 m section taking approximately one month to complete. It is envisaged that the Phase 1 works will take approximately 30 weeks; and
- Phase 2 will proceed on a horizontal basis at ground level against the embankment wall of stages 1,2 and 3 (starter dams). The material will be placed in layers along 500m sections, with each 500 m section taking approximately one month to complete. It is envisaged that the Phase 2 works will take approximately 80 weeks.

Construction quantities:

| Rock Fill (m3) | Soil (m3) | Total (m3) |
|----------------|-----------|------------|
| 265,690        | 295,650   | 561,340    |

## 4.2 Plan and Construction Sequence

The following items are designed and specified for the Works and are listed in order of the proposed

### 4.2.1 Sequence of Works.

- 1) Preparatory Works including cleaning the crest of the Starter Dams, removal of any topsoil, shrubs / scrub from the side-slopes over the footprint of the proposed buttress and to facilitate plant access; and
- 2) Installation of the Phase 1 Buttress (toe of stage 4)
- 3) Installation of the Phase 2 Buttress (at ground level starter embankments)

### 4.2.2 Preparatory Works

#### Accommodation of Monitoring Instrumentation

The construction of the buttress will require the extension or otherwise accommodation of a number of geotechnical instruments which will be impacted by the works. These instruments include Casagrande standpipes, environmental monitoring wells, vibrating wire piezometers and flow measurement weirs.

### 4.2.3 Clearance of Work Areas

The proposed Phase 1 buttress overlies the crest of the Starter Dams, (Stages 1, 2 and 3). The crest of this road includes a layer of rockfill material as capping and surface dressing. It is proposed that this material be salvaged where possible and where the quality of the material permits. This shall be done by either stockpiling the material temporarily for re-use or preferably, through the re-use of the material as a capping layer on a section where the buttress works have already been completed.

Removal of topsoil from the footprint of the area adjacent to the crest road, i.e. the area above the Stage 4 toe drain and the Stage 4 slope shall be completed prior to commencement of the buttressing works.

For the Phase 2 buttress, it will be necessary to remove the topsoil from the entirety of the starter dam perimeter slope as well as the footprint of the buttress at the toe.

Topsoil shall be either stockpiled temporarily for re-use or preferably, through the direct re-use of the topsoil on sections where the buttressing works have already been completed. Following excavation to the Formation Level, the footprint will require trimming, grading and compaction prior to the placement of the compacted fill. The final excavated surfaces shall be trimmed and rolled to provide

a clean, even and firm foundation to permit the movement of construction vehicles without causing rutting or other deleterious effects. Benching will be employed where buttress materials are being placed onto slopes to ensure that a sufficient key-in is achieved between the buttress and the dam walls.

A specified number of passes of a suitable vibratory roller will be required for the underlying soils. Soft spots and areas of unsuitable materials identified shall be excavated and replaced with suitable material placed and compacted and / or shall be improved *in-situ* via compaction or the installation of appropriate geosynthetics as approved by the engineer.

As part of the Phase 1 buttress construction works, the material which overlies the Stage 1,2 and 3 chimney drains shall be removed intermittently. This will allow sub-surface water drainage in the section to drain into the Stage 1,2 and 3 chimney drain. This water will then report into the Perimeter Interceptor Channel (PIC) and from there will be returned back to the tailings facility.

#### **4.3 Conclusion regarding requirement for mandatory EIA and the preparation and submission of an EIAR**

*According to the EPA Guidelines "...The project needs to be considered in its entirety for screening purposes. This means that other related projects need to be identified and assessed at an appropriate level of detail. This will identify the likely significance of cumulative and indirect impacts, thus providing the CA with a context for their determination..."*

The purpose and nature of the proposed development relates to the Tailings Storage Facility at Randallstown, Navan, Co. Meath – which is an integral component of the overall mining activities undertaken by Boliden Tara Mines. It is identified under Class 2(c) of Part 2 of Schedule 5 of the Planning and Development Regulations 2001 (as amended) that mandatory EIA is required for

*"...All extraction of minerals within the meaning of the Minerals Development Acts, 1940 to 1999..."*

As such, mandatory EIA and the preparation and submission of an EIAR is required in respect of the proposed development.

Furthermore, the proposed development would trigger a requirement for a subthreshold EIA under Class 10(g) of Part 2. Schedule 5 of the Planning and development Regulations 2001, as amended.

## **5 Conclusion**

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Having regard to 2(c) of Part 2 of Schedule 5 of the Planning and Development Regulations 2001 (as amended), Mandatory EIA and the preparation and submission of an EIAR is required in respect of the proposed development. It is not necessary, therefore, to proceed to the issue of addressing if the proposed development is sub-threshold as regards the preparation of an EIAR.

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