254666-04/12/2025-FI Drainage Assessment Report

SLR

RFI Items 6 & 7 – Drainage Assessment

Sand and Gravel Extraction, Knockroe, Bandon, Co. Cork (Plan. Ref. 25/04666)

Keohane Readymix Ltd.

Prepared by:

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Revision Record

Revision	Date	Prepared By	Checked By	Authorised By
1	28 November 2025	T. Paul	T. Paul	T. Paul

Basis of Report

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1.0 Introduction

This Drainage Assessment report has been prepared to address Items 6 and 7 of a request for further information (RFI) from Cork County Council (CCC) in relation to the planning application 25/04555. The Planning application is for the following;

"Permission for extraction of sand & gravel over an area c3.5 ha; extraction by dry working to a level 2 metres above ground water level at a maximum rate of 100,000 tonnes per year; transport of the extracted sand & gravel to the adjacent Dromkeen pit (plan ref. 23/04780) for use in concrete production; upgrading of the existing internal access road and use of the existing access onto the local road L3204; provision of wheelwash and welfare unit (c8.3sqm) and restoration of the lands to agricultural and natural habitat use, all within an application area of c4.0 hectares. Permission is sought for 15 years plus two years for final restoration (total duration of seventeen years). The planning application will be accompanied by an Environmental Impact Assessment Report (EIAR)".

Item 6 of the Request for Further Information states:

> *Please submit a drainage impact assessment to support this planning application.*

Item 7 of the Request for Further Information states:

> *The overall drainage design for the development shall demonstrate that surface water from the site cannot issue onto the public road/network. Details are also required of how the verge drainage (i.e. at the edge of the public road) will be permanently preserved across the site entrance. Any existing storm water drainage paths through the site serving the public road shall be preserved.*

2.0 Existing Site

2.1 Site Topography

The application site extends to c. 4.0 hectares and currently comprises agricultural lands with an area of woodland to the north, refer to Figure RFI 6-7 enclosed. There is an existing access off the local road L3204 and internal haul road into the woodland area. Site levels over the existing agricultural land range from 21.5 to 26 mOD, with average ground levels being 23 to 24.5 mOD. The land levels fall away steeply to the north and west into the woodland area of the historical sand & gravel pit to a level of c. 3.0 to 5.0 mOD on the local road L3204.

2.2 Subsoil Conditions

The subsoils at the proposed development are Sand & Gravel, deposited by glacial action, from the Devonian/Carboniferous period, refer to extract from EIAR figure 6-4 below.

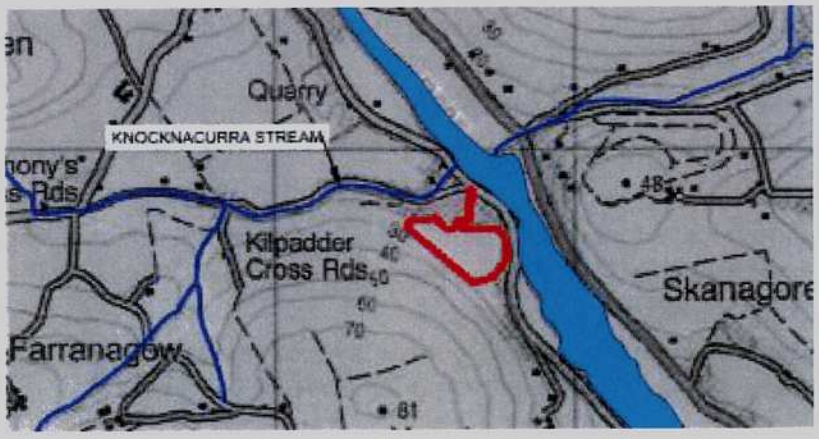
Extract from EIAR Figure 6-4 Subsoil Map

(Green: Sand & Gravel)

The Geological Survey of Ireland (GSI) mapping indicates that the subsoil permeability at the proposed development site is classified at 'High' which reflects the Sand & gravel subsoils.

2.3 Surface Water Environment

There are no surface water bodies located within the application site. The closest surface water bodies to the proposed development are the Upper Bandon estuary, located to the North-East, which flows in a south-easterly direction, and The Knocknacurra Stream to the north of the proposed development, which flows in an easterly direction into the Upper Bandon estuary, refer to extract from EIAR Figure 7-2 below.



Extract from EIAR Figure 7-2 Surface Water Bodies Map

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3.0 Proposed Development

3.1 Overall Description

The proposed development comprises:

- Extraction of sand & gravel over an area of c.3.5 Ha.
- Extraction by dry working to 2 metres above the groundwater level, at a maximum rate of 100,000 tonnes per year.
- Transport of the extracted sand & gravel to the adjacent Dromkeen Pit (Plan. Ref. 23/04780) for use in concrete production;
- Upgrading of the existing internal access road and use of the existing access onto the local road L3204.
- Provision of wheelwash and welfare unit (c.8.3 sq.m).
- Restoration of the lands to agricultural and natural habitat use;
- All within an application area of c.4.0 hectares.

The proposed development being applied for under this planning application is shown on Figure RFI 6-7 enclosed.

3.2 Sand & Gravel Extraction

The proposed development will comprise sand & gravel extraction from existing agricultural lands c 3.5 hectares, refer to Figure RFI 6-7.

Sand & gravel will be carried out by Dry Working (i.e. above the groundwater table) and will use an excavate, load and haul method. An excavator will be used to extract the sand & gravel materials from the working face and load them onto a truck for transport to the existing Dromkeen Pit operated by Keohane Readymix Ltd., for use in concrete production.

3.3 Site Infrastructure / Access

The layout of the site infrastructure is shown on EIAR Figure 2-2 and Figure RFI 6-7 enclosed.

There is an existing access to the site from the L3204 local road. This existing access to the site will be used. All truck traffic turns left on exiting the site and travels north on the L3204 road for c.0.5km to the Dromkeen Pit.

The access will be surfaced with suitable gradients / drainage to ensure that no surface water run-off drainage flows from the site onto the public road network.

The existing internal road from the site access to the proposed extraction area will be used. It is well screened by the existing woodland area that will be retained.

3.4 Restoration (Reinstatement to Agricultural and Natural Habitat Use)

Following cessation of extraction to the extraction area will be restored to agricultural and natural habitat use (refer to EIAR Figure 2-5).

4.0 Site Drainage

4.1 Overall Site Drainage

Rain falling across the application site percolates down through the existing ground surface as recharge to groundwater.

The final pit floor level will be maintained at 2 metres above the groundwater level. Surface water arising from rainfall over the extraction area will percolate naturally into the underlying ground.

There will be no off-site discharges to the Bandon River or the Knocknacurra Steam located to the east and north of the site, respectively.

A Site Drainage Plan is shown on Figure RFI 6-7 enclosed.

A hydrological / hydrogeological assessment has been carried out to determine what the requirements are for the proposed development, with regard to a water regime. It addresses mitigation measures to eliminate and/or minimise the potential impacts, if any, on surface water and groundwater. These measures will be incorporated into the pit design and operation, (refer to EIAR Chapter 7 – Water).

4.2 Extraction Area

The proposed extraction area is shown on Figure RFI 6-7 enclosed. It comprises an area of c. 3.5 hectares. Extraction will be carried out by Dry Working (i.e. above the groundwater table).

As stated above any rainfall within the extraction area will continue to drain by natural infiltration to ground and there will be no surface water run-off arising from the extraction area, outside the extraction area boundary, refer to Figure RFI 6-7 enclosed.

The sand & gravel subsoil beneath the site is classified as "High" permeability, refer to Section 2.2 above and this confirms sufficient infiltration capacity for any rainfall arising over the operational life of the development.

4.3 Internal Access Road

There is an existing internal access road to the site from the L3204 local road. It is proposed to surface the internal access road from the proposed wheelwash to the site entrance.

The internal access road will surfaced with suitable gradients to accommodate lateral over the edge drainage, as indicated on Figure RFI 6-7 enclosed. Gravel drains (c. 300 wide x 300 mm deep) will be provided along the edge of the internal access road to facilitate efficient drainage of the road surface.

Any surface water run-off from the internal access road will infiltrate naturally into the adjoining historical sand & gravel pit workings that have recolonised into natural woodland.

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Cork

4.4 Site Entrance

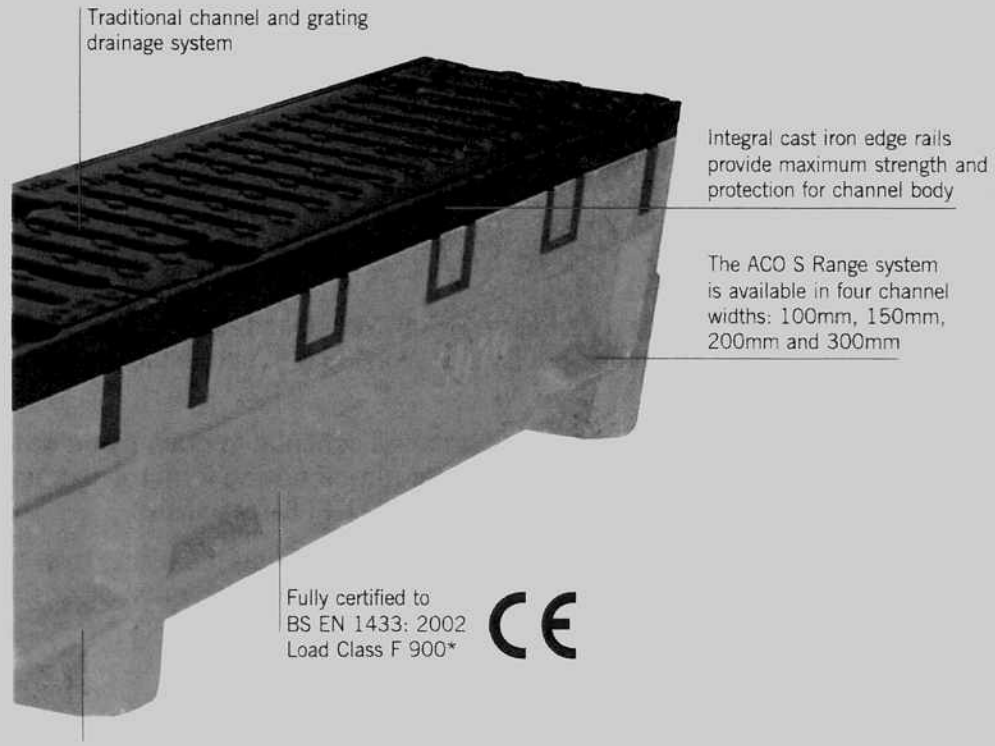
With the proposed drainage design for the internal access road (lateral over the edge drainage and natural infiltration) there will be no surface run-off from the internal access road onto the public road.

Furthermore, any existing verge drainage at the edge of the public road will be preserved across the site entrance and any existing stormwater drainage paths at the entrance area through the site serving the public road will be preserved.

Notwithstanding the above as a precautionary measures, a drainage channel will be installed across the site entrance.

4.4.1 Drainage Channel

It is proposed to install an ACO S200 drainage channel or a length of c. 25 metres across the site entrance area, refer to Figure RFI 6-7 enclosed.



ACO S Range – Drainage Channel

The ACO S Range is specifically designed for heavy-duty and industrial applications fully certified to BS EN 1433:2002 for applications up to and including F 900*.

Any surface water run-off collected in the drain will be directed to flow into the site and infiltrate naturally within the historical sand & gravel pit area recolonised into natural woodland, refer to Figure RFI 6-7 enclosed.

4.4.2 Drainage Channel Design

The drainage channel will be designed for a rainfall intensity of 75 mm per hour and assuming a length of 20 metres to the outlets at either end (conservative) this will enable a maximum area of 50/75 x 2115 m2 = c. 1410 m2 to be drained by the ACO S200 channel, refer to ACO S200 design table below. This maximum drainage area exceeds the internal access road area and site entrance area combined.

Notes for ACO S200 and S300 hydraulic tables

The tables opposite shows the maximum capacity of the unit, assuming uniform lateral inflow. The capacity will depend on the length of the unit to the outlet and on any slope along the unit.

Q (l/s) is the maximum total flow that the channel can carry.

q (l/s/m) is the maximum possible lateral inflow.

A (m^2) is the maximum area that can be drained and will depend on the design rainfall intensity chosen.

The tabulated areas are for a rainfall of 50mm/hr (0.014 l/s/m^2) and will generally comply with the requirements stated in guidance to The Building Regulations (Part H 2002). Where the project must comply with the National Standards for Sustainable Drainage Systems, multiple rainfall events using design rainfall specific to the geographical location of the site must be analysed. The ACO Water Management Design Services Team will be able to assist with this process.

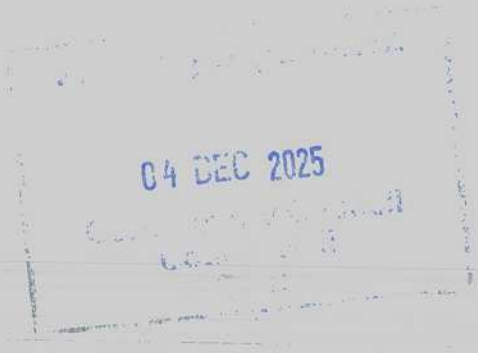
At other rainfall intensities, the area can be determined by proportion, e.g. at 75mm/hr, the maximum area drained will be the tabulated area x 50/75.

ACO S200 constant depth channels

ACO S200									
Length to Outlet (m)	Slope 0%								
	0%			0.5%			1%		
	Q (l/s)	q (l/s/m)	A (m^2)	Q (l/s)	q (l/s/m)	A (m^2)	Q (l/s)	q (l/s/m)	A (m^2)
10	30.9	3.09	2228	38.2	3.82	2749	43.7	4.37	3144
20	29.4	1.47	2115	41.3	2.06	2971	49.3	2.46	3547
30	28.2	0.94	2034	43.5	1.45	3133	53.2	1.77	3829
40	27.3	0.68	1964	45.2	1.13	3255	56.2	1.40	4044
50	26.4	0.53	1903	46.5	0.93	3348	58.4	1.17	4203
60	25.7	0.43	1848	47.6	0.79	3425	60.2	1.00	4332
70	25.0	0.36	1798	48.4	0.69	3484	61.6	0.88	4434
80	24.3	0.30	1752	49.1	0.61	3534	62.8	0.79	4522
90	23.8	0.26	1710	49.7	0.55	3575	63.9	0.71	4599
100	23.2	0.23	1671	50.2	0.50	3611	64.8	0.65	4664
120	22.2	0.19	1601	51.0	0.42	3669	66.3	0.55	4773
140	21.4	0.15	1540	51.6	0.37	3713	67.5	0.48	4857
160	20.6	0.13	1485	52.1	0.33	3748	68.4	0.43	4925
180	19.9	0.11	1436	52.5	0.29	3777	69.2	0.38	4980
200	19.3	0.10	1391	52.8	0.26	3801	69.8	0.35	5024

ACO S300 constant depth channels

ACO S200 Heavy Duty Interceptor Drain – Design Tables



5.0 Conclusions

This Drainage Assessment confirms that:

i) The site is located within an area of significant sand & gravel subsoil deposits with a High permeability, suitable for natural infiltration of rainfall. Extraction of sand and gravel will take place by Dry Working (i.e. above the groundwater table), thereby facilitating ongoing surface water drainage by natural infiltration.

ii) Any surface water run-off arising from rainfall within the proposed extraction area, the internal access road and the site entrance can be managed within the site and there is no requirement for any discharge off-site to surrounding surface water bodies.

iii) With the proposed drainage design for the internal access road (lateral over the edge drainage and natural infiltration) there will be no surface run-off from the internal access road onto the public road.

iv) Any existing verge drainage at the edge of the public road will be preserved across the site entrance and any existing stormwater drainage paths at the entrance area through the site serving the public road will be preserved.

v) Notwithstanding the above, as a precautionary measure, a drainage channel will be installed across the site entrance.

vi) It is proposed to install an ACO S200 drainage channel or a length of c. 25 metres across the site entrance area. The ACO S Range is specifically designed for heavy-duty and industrial applications fully certified to BS EN 1433:2002 for applications up to and including F 900*.Any surface water run-off collected in the drain will be directed to flow into the site and infiltrate naturally within the historical sand & gravel pit area. The drainage channel will be designed for a rainfall intensity of 75 mm per hour and assuming a length of 20 metres to the outlet (conservative) this will enable a maximum area of 50/75 x 2115 m2 = c. 1410 m2 to be drained. This maximum drainage area exceeds the internal access road area and site entrance area combined

With implementation of the above drainage measures the proposed development will not have any significant impact on the drainage in the vicinity of the site. Specifically, the drainage measures will ensure that surface water from the site cannot issue onto the public road network.

FIGURE RFI 6-7
Site Drainage Plan

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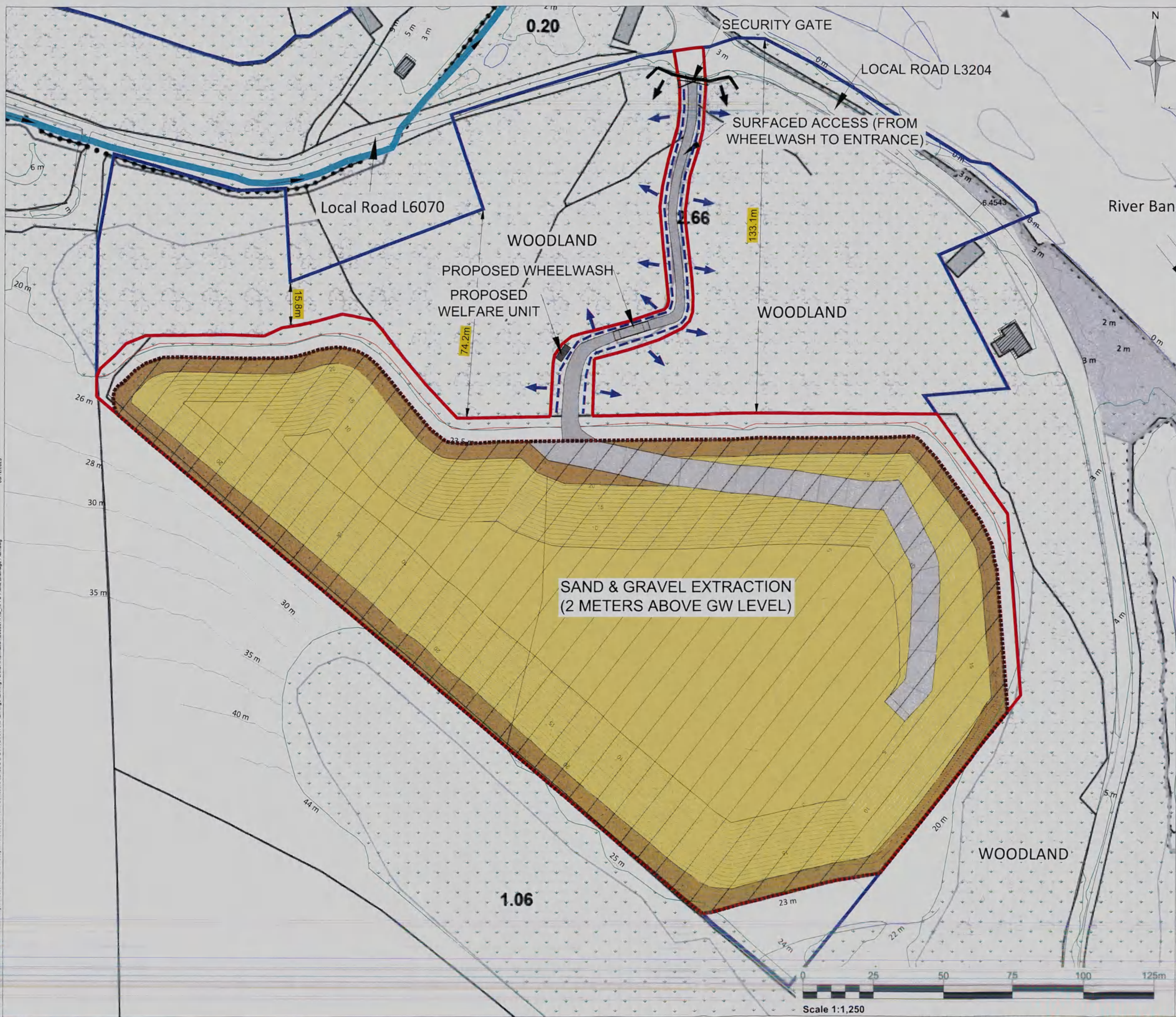

Notes:

1. EXTRACT FROM TAILTE EIREANN DIGITAL MAPPING 1:2,500 SCALE, MAP. NO. 6578
2. REFER TO DRAWING PL06 FOR CROSS SECTION DETAILS.

Legend:

- LAND INTEREST BOUNDARY
- PLANNING APPLICATION AREA (c.4.0 Hectares)
- EXTRACTION AREA (c.3.5 Hectares)
- CONTOURS

DRAINAGE

- NATURAL INFILTRATION OVER EXTRACTION AREA
- OVER THE EDGE DRAINAGE FOR INTERNAL ACCESS ROAD
- DRAINAGE INTERCEPTOR CHANNEL (TO ENSURE NO SURFACE WATER RUNOFF FROM THE SITE ENTRANCE FLOWS ONTO THE PUBLIC ROAD)
- DRAINAGE PATHS MAINTAINED WITHIN THE SITE

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Rev	Amendments	Date	By	Chk	Auth

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Drawing Status & Suitability Code: **FINAL**

Client: KEOHANE READYMIX LTD.

Project: SAND & GRAVEL PIT
KNOCKROE, BANDON, CO. CORK

Drawing Title: RFI ITEMS 6&7
SITE DRAINAGE PLAN

Scale	SLR Project No.		
1:1,250 @ A3	065557.00001		
Designed	Drawn	Checked	Authorised
EW	EW	TP	TP
Date 11/25	Date 11/25	Date 11/25	Date 11/25

Drawing Number: FIGURE RFI 6-7 — Rev: 1

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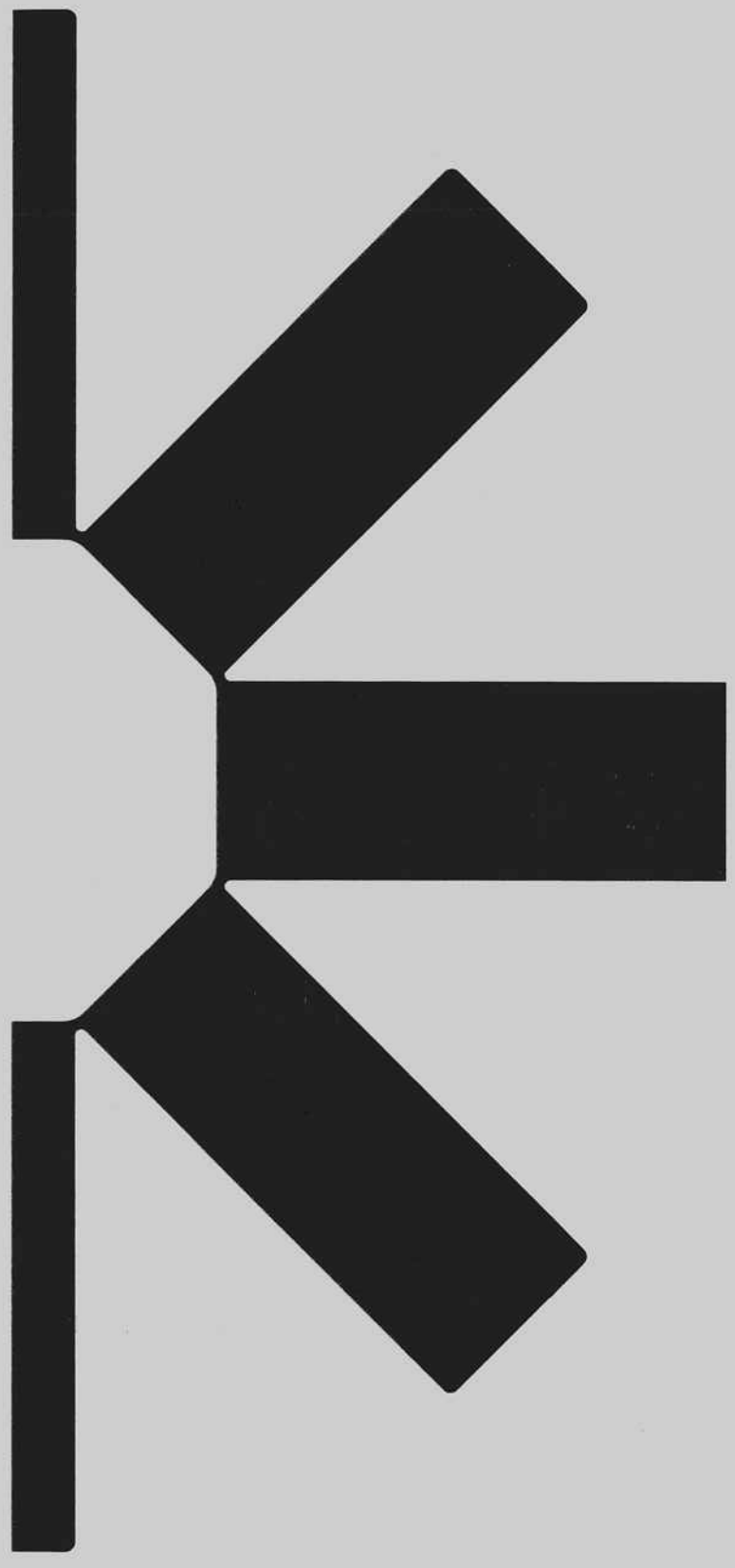

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