

AtkinsRéalis



Stage 1 Flood Risk Assessment

Shankill Property Investments Limited

May 2025

0085142DG0001

SEA GARDENS PHASE 1 BLOCK A

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This document has 15 pages including the cover.

Document history

Document title: Stage 1 Flood Risk Assessment

Document reference: 0085142DG0001

Revision	Purpose description	Originated	Checked	Reviewed	Authorised	Date
Rev 0	Draft	C. Maguire	S. Kamuni	G. Hanratty	G. Hanratty	20/02/2025
Rev 1	Draft Planning	C. Maguire	S. Kamuni	G. Hanratty	G. Hanratty	27/05/2025
Rev 2	Planning	C. Maguire	S. Kamuni	G. Hanratty	G. Hanratty	16/06/2025

Client signoff

Client Shankill Property Investments Limited

Project SEA GARDENS PHASE 1 BLOCK A

Job number 0085142

Client signature/date



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1. Introduction and Background

AtkinsRéalis has been commissioned by Shankill Property Investments Limited to provide Engineering consultancy services for the Sea Gardens Phase 1 Block A located on the Site at the former Bray Golf Club Lands off the Dublin Road and Ravenswell Road, Bray, County Dublin.

The proposed development comprises of a residential development on a site at the former Bray Golf Club Lands off the Dublin Road, Bray, Co. Dublin. The development will complete Phase 1 of the wider Sea Gardens development – the first part of which (Shoreside Park as permitted under ABP-311181-21) is nearing completion and occupation.

The c. 1.38 hectare site is generally bounded to the north by existing public open space at Corke Abbey Valley Park, to the east by the Irish Rail Dublin-Wexford/Rosslare main rail line, to the south by undeveloped lands and to the west by Shoreside Park.

The proposed development will consist of the provision of 159 no. residential units over/around a shared 2-level podium comprising of: 9 no. 4-bedroom, 3 and 4-storey terraced houses with associated private gardens / terraces; and 150 no. apartments in 2 no. blocks ranging in height from 5 to 10-storeys (Block A1) and 6 to 11-storeys (Block A2) and consisting of a total of 48 no. 1-bedroom units, 58 no. 2-bedroom units, 44 no. 3-bedroom units, all with private balconies or terraces. The blocks will also include communal lounge areas; a communal gym in Block A1; refuse storage areas; and associated plant. The shared 2-level podium will include car, motorcycle and bicycle parking, with additional car parking provided within the curtilage of 5 no. of the proposed townhouses. The proposed development will also include: public open space including play areas; communal open space within the central podium courtyard; pedestrian / cycle linkages with adjoining existing and permitted developments; associated connections to the surrounding road network; all associated landscaping and public lighting; an ESB substation; drainage arrangements; utility connections; and all site development works.

1.1 Relevant Guidance

This FRA has been undertaken in consideration with 'The Planning System and Flood Risk Management – Guidelines for Planning Authorities' DOEHLG November 2009, which is the latest guidance document. The guidance has been issued to ensure that flood risk is a key consideration for developers, planning & regional authorities, and the public in preparing and submitting development proposals. The principles of the guidance are as follows:

- Avoid the risk, where possible
- Substitute less vulnerable users, where avoidance is not possible, and
- Mitigate and manage the risk, where avoidance and substitution are not possible.

A staged approach is recommended within the guidance document in relation to identifying and assessing flood risk. The three stages of appraisal and assessment are as follows:

- Stage 1 Flood risk identification
- Stage 2 Initial flood risk assessment
- Stage 3 Detailed flood risk assessment



1.2 Flood Risk

Flood risk can be quantified by relating the probability of the flood event occurring to the consequence of the flood. Probability, in flood event terms, is gauged by potential annual occurrence/return period and flood consequence is dependent on the nature of the flood hazard and the vulnerability of the inundated area. The source-pathway-receptor model considers the components of flood risk.



The source is the hazard with the potential to cause harm through flooding (e.g., rainfall, high sea levels). The pathway is the mechanism by which the source can affect the receptor (e.g., inadequate drainage, overtopping of coastal defences) and finally, the receptor is anything which is affected by the flood event (e.g., people, infrastructure, property).

1.3 Causes of Flooding

The Planning System and Flood Risk Management Guidelines requires a FRA to consider all potential causes of flooding including the following:

- Coastal flooding
- Inland flooding
 - Overland flow
 - River flooding
 - Flooding from artificial drainage systems
 - Groundwater flooding
 - Estuarial flooding
 - Failure of infrastructure

1.4 Floodplains

A river flood plain is a low-lying area which receives excess flood water when the flow within the watercourse exceeds the capacity of the channel. A coastal flood plain is an area which, during high tide or increased sea levels, becomes inundated with sea water.

1.5 Assessing Flood Risk

In the context of the 'Planning System and Flood Risk Management Guidelines, DOEHLG, 2009' three flood zones are designated in the consideration of flood risk to a particular site. The three flood zones are described in Table 1-1 below.

Table 1-1 - Flood Zones

Flood Zone	Description
Flood 'Zone A'	where the probability of flooding from watercourses is the highest (greater than 1% or 1 in 100 year for watercourse flooding or 0.5% or 1 in 200 for coastal flooding).
Flood 'Zone B'	where the probability of flooding from watercourses is moderate (between 0.1% or 1 in 1000 year and 1% or 1 in 100 year for watercourse flooding, and between 0.1% or 1 in 1000 year and 0.5% or 1 in 200 for coastal flooding).
Flood 'Zone C'	where the probability of flooding from watercourses and the sea is low or negligible (less than 0.1% or 1 in 1000 year for both watercourse and coastal flooding). Flood Zone 'C' covers all areas which are not in Zones 'A' or 'B'.

The planning implications for each of the flood zones are:

Zone A - High probability of flooding. Most types of development would be considered inappropriate in this zone. Development in this zone should be avoided and/or only considered in exceptional circumstances, such as in city and town centres, or in the case of essential infrastructure that cannot be located elsewhere, and where the Justification Test has been applied. Only water-compatible development, such as docks and marinas, dockside activities that require a waterside location, amenity open space, outdoor sports and recreation, would be considered appropriate in this zone.

Zone B - Moderate probability of flooding. Highly vulnerable development, such as hospitals, residential care homes, Garda, fire and ambulance stations, dwelling houses and primary strategic transport and utilities infrastructure, would generally be considered inappropriate in this zone, unless the requirements of the Justification Test can be met. Less vulnerable development, such as retail, commercial and industrial uses, sites used for short-let for caravans and camping and secondary strategic transport and utilities infrastructure, and water-compatible development might be considered appropriate in this zone. In general, however, less vulnerable development should only be considered in this zone if adequate lands or sites are not available in Zone C and subject to a flood risk assessment to the appropriate level of detail to demonstrate that flood risk to and from the development can or will adequately be managed.

Zone C - Low probability of flooding. Development in this zone is appropriate from a flood risk perspective (subject to assessment of flood hazard from sources other than rivers and the coast) but would need to meet the normal range of other proper planning and sustainable development considerations.



2. Site Description

2.1 Site Location

The Proposed Site (Block A) is located to the North-Eastern corner of the under construction Bray Sea Gardens Residential Development. The site is bounded by the existing Irish Rail Dart line to the East, the Crinkeen Stream and Woodbrook Glen to the North and the DLRCC / WCC county boundary to the South. The site is access via the Dublin road located to the West.



Figure 2-1 - Site Location

2.2 Topography

The existing topographical levels within the proposed site are relatively flat and range approximately 10mOD to the Northern side of the site and 8mOD to the Southern side.

3. Local Hydrology & Existing Drainage

The immediate hydrological features in the vicinity of the site are the Dargle River to the South, the Crinkeen Stream to the North and the Irish Sea coastline to the East as shown in Figure 3-1 below.



Figure 3-1 - Hydrological Features

4. Flood Risk Identification of the Site

In accordance with the planning guidelines, a Stage 1 Flood risk identification is required to be undertaken to identify if there are any flooding or surface water management issues related to the proposed site that may warrant further investigation. Initially, the following possible flood mechanisms for the site have been identified:

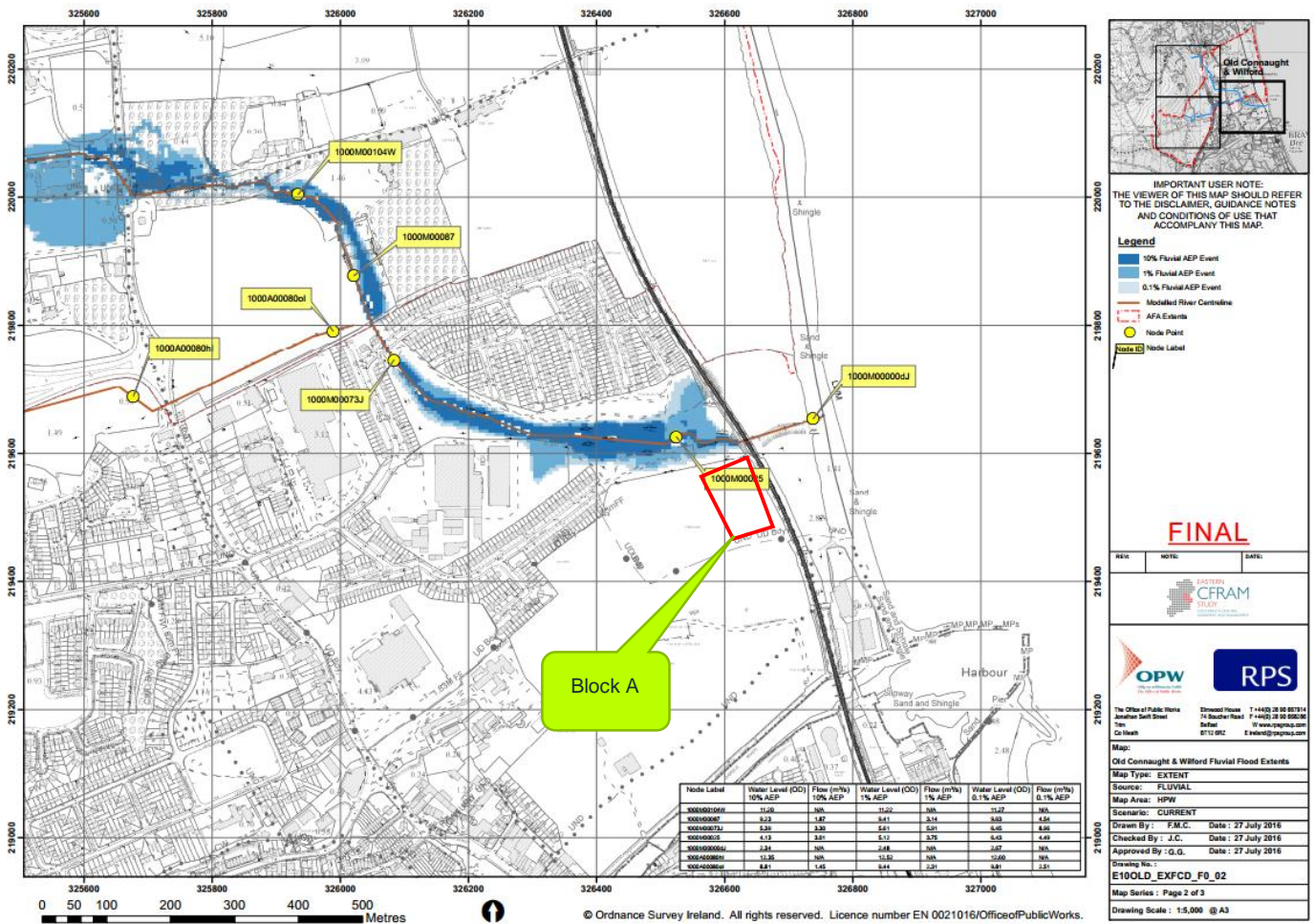
Table 4-1 - Possible Flooding Mechanisms

Source/Pathway	Significant?	Comment/Reason
Tidal/Coastal flooding	Yes	The site is not at a coastal location
Overland flow	No	The surrounding topography is relatively shallow
Fluvial/River flooding	Yes	The Dargle River is located 230m to the South of the site and the Crinkeen Stream located 30m to the North of the site.
Flooding from artificial drainage systems	No	There is no existing urban drainage infrastructure within the site and in the immediate vicinity of the site
Groundwater flooding	No	There are no significant springs or groundwater discharges recorded in the immediate vicinity of the site
Estuarial flooding	No	The site is not at an estuarial location
Failure of infrastructure	No	There are no hydraulic structures in the direct vicinity of the site

4.1 Flood Risk Investigation

4.1.1 OPW Flood Maps

The Office of Public Works (OPW) interactive map viewer (<http://www.floodinfo.ie/map/floodmaps/>) displays the predicted flood extents for both rivers and coastal areas over various return periods. The viewer was consulted in relation to the proposed site location and there was no information available on the proposed site. Areas adjacent to the site were indicated as “under review”. However, based on existing site levels the proposed site is not a risk from fluvial flooding from the Dargle stream for any return period or flood event as indicated in the CFRAM mapping below.



4.1.2 Historical Flood Records

The OPW Flood Hazard Mapping website (www.floodmaps.ie) was consulted in relation to available historical or anecdotal information on any flooding incidences or occurrences in the vicinity of the site. The Flood Hazard Mapping Report does not indicate any flood points within the vicinity of the site. Figure 3-1 and Figure 3-2 below illustrates the historic map for the site environs.

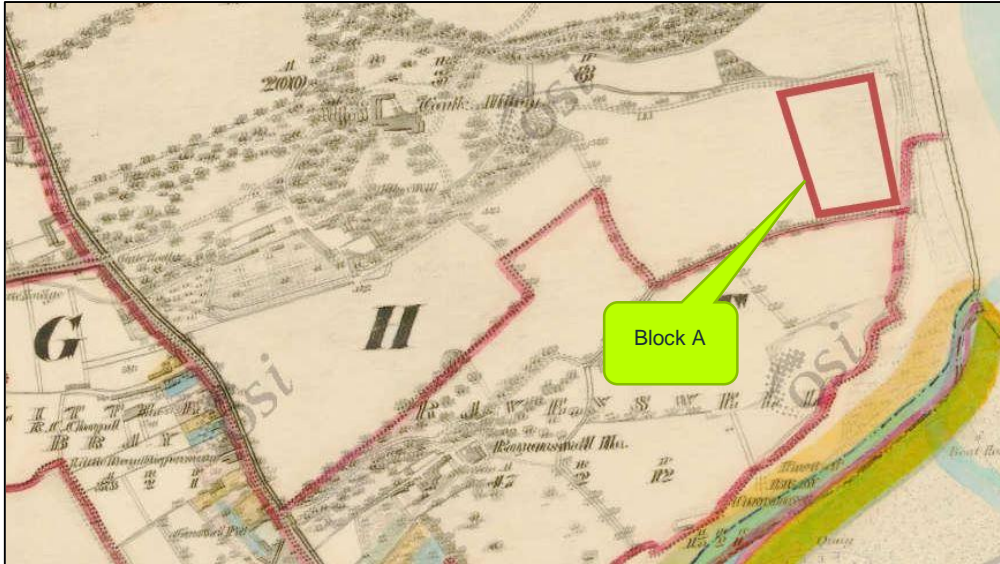


Figure 4-1 - OSI 6 Inch Colour Map



Figure 4-2 - OSI 25 Inch Map

With reference to the pre-1900's historic maps and the flood maps layer, no indication of historical or anecdotal instance of flooding were observed within the environs of the site.

4.1.3 Geological Survey of Ireland Mapping

The soils maps of Geological Survey of Ireland (GSI) were consulted to determine the presence of alluvium deposits in the vicinity of the site. Deposition of Alluvium can be an indicator of areas which have flooded in the recent geological past.

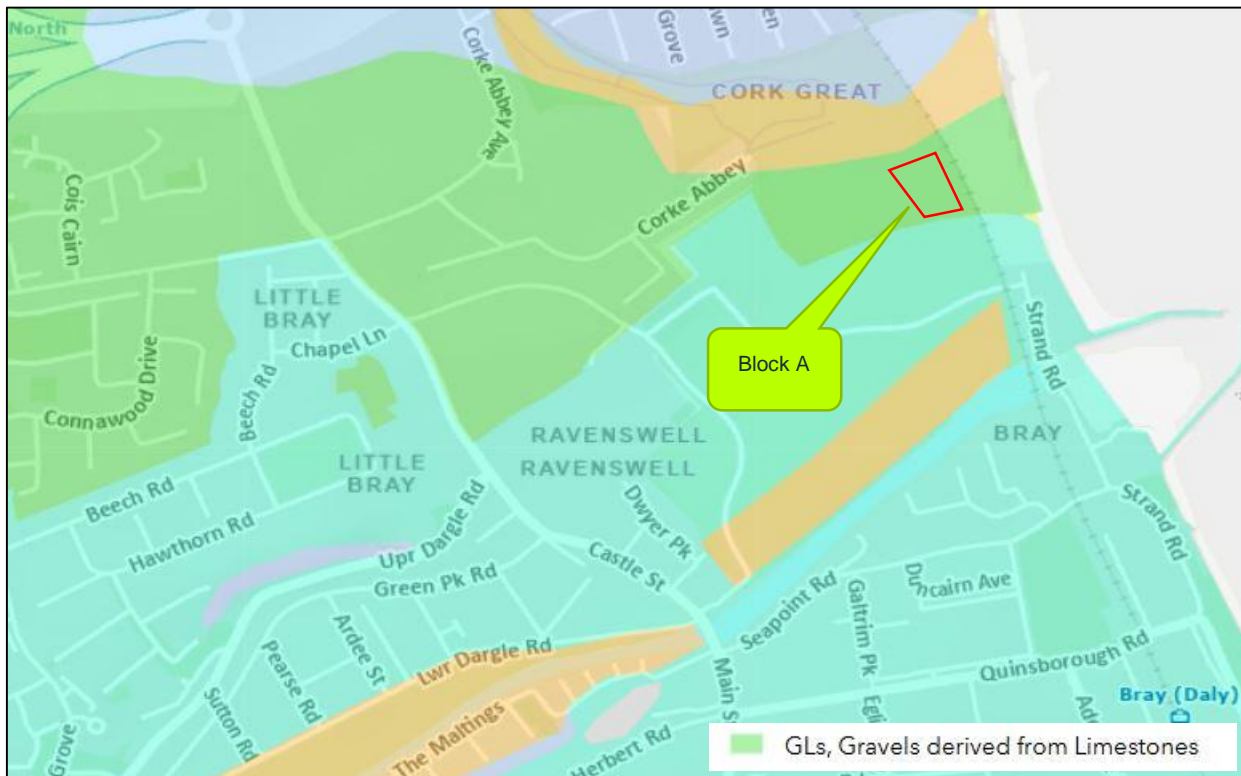


Figure 4-3 - GSI Soil Map

Figure 4-3 above shows the soils mapping for the proposed development site contains Gravels derived from Limestones which does not indicate alluvium deposits within the proposed development site.

4.1.4 DLR CDP SFRA 2022-2028

The Strategic Flood Risk Assessment (SFRA) produced as part of the County Development Plan (CDP) 2022-2028 for the Dun Laoghaire – Rathdown County Council District Area includes Flood Zone Maps, which covers the proposed development site. Figure 4-4 below indicates the proposed development site to be outside Flood Zone A (1% Annual Exceedance Probability) and Flood Zone B (0.1% Annual Exceedance Probability).

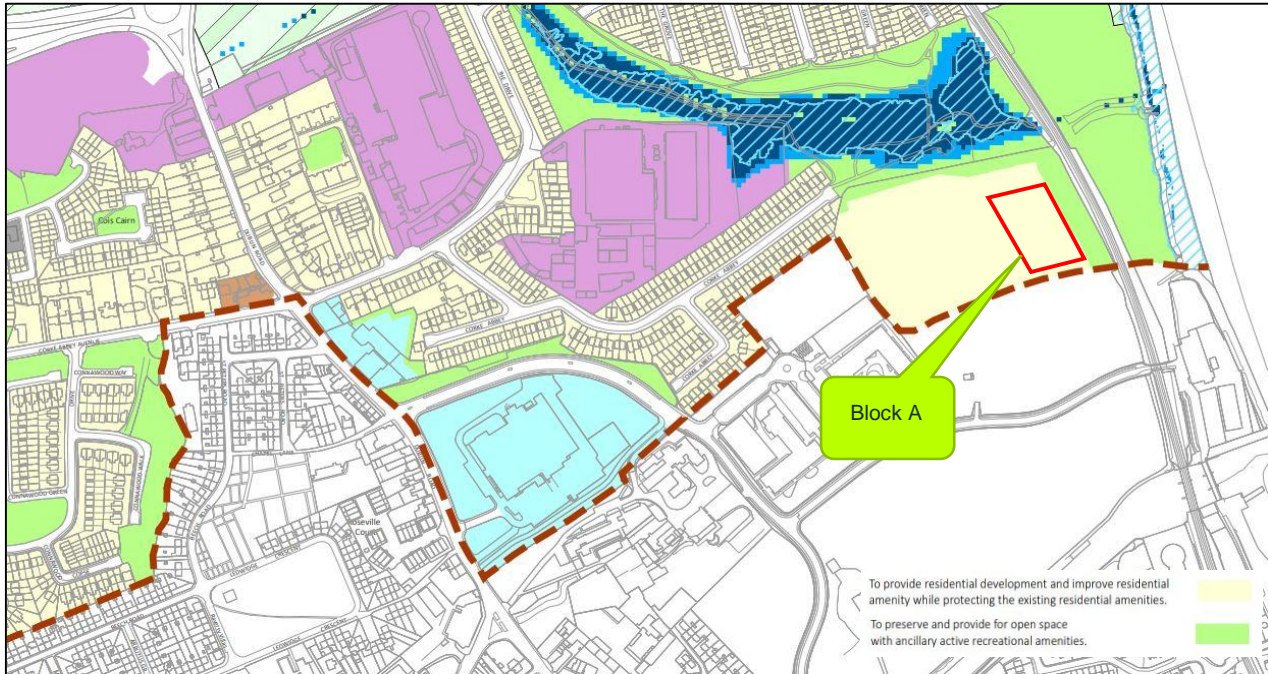


Figure 4-4 - DLR SFRA Predicted Flood Map

5. Conclusion and Recommendations

5.1 Conclusion

The purpose of the Stage 1 Flood risk identification process is to establish whether a flood risk issue currently exists or may exist in the future. If a potential flood risk issue is identified the risk will be investigated in further detail by undertaking a Stage 2 – Initial flood risk assessment. However, if no potential flood risk is identified then the overall assessment can conclude at this point. In relation to the proposed Sea Gardens, Block A, Bray, based on the Stage 1-Flood Risk identification findings discussed above, the flood risk study shall be concluded at this point as the proposed site is not at risk from flooding.

A Stage 1 flood risk assessment has been completed in accordance with The Guidelines the following conclusions can be drawn;

- There is no historic risk of flooding at the site.
- The OPW CFRAM flood extent maps studies have been carried out in the area of the site and therefore do not show any flood risk at the site. On the basis of the maps the site could be considered to be located within Flood Zone C, low probability of flooding.
- Given that the proposed development site is located in Flood Zone C, low probability of flooding, it is meeting the normal range of proper planning and sustainable development requirements.
- The proposed development is not at risk of flooding from the 1% AEP event (Zone C).
- Surface water runoff can be managed through the used of SuDS prior to discharged to the Dargle River if seemed suitable based on the final storm drainage design.

5.2 Recommendations

The following recommendations should be considered.

- Appropriate Sustainable Drainage systems are to be used within the proposed development to reduce surface water runoff from the site where feasible and designed in accordance with DLRCC Stormwater Management Policy and WCC requirements.
- It is noted that the previous agreement with WCC in relation to the Bray Sea Gardens Phase 1 was to allow for free discharge to the Dargle River without any flow control in place. This is based on the River being Tidal at the point of outfall and following guidance set out in DLRCC Development Plan. This does not increase flood risk and therefore deemed acceptable at this site location.



AtkinsRéalis



Garry Hanratty
AtkinsRéalis (WS) Limited
150-155 Airside Business Park
Swords
Co. Dublin
K67 K5W4

Tel: +353 1 810 8000

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