

# Proposed Management Works at Mindarie Breakwater **MINDARIE**

Native vegetation clearing permit application  
Supporting documentation

April 2022

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## 1. Introduction

The City of Wanneroo is proposing to undertake the clearing of vegetation located on the Mindarie Breakwater to facilitate the renewal of the breakwater, upgrades to the Clayton's Beach carpark and upgrade of drainage infrastructure along Alexandria View, Mindarie. Detailed land parcel information for the affected land parcel by the proposed clearing works is shown in Table 1 below.

**Table 1: Land ownership and zoning within clearing areas.**

<b>Lot Number</b>	<b>Reserve Number</b>	<b>Address</b>	<b>Land Owner</b>	<b>MRS Zoning</b>	<b>Reserve Purpose</b>
Lot 11169 on Deposited Plan 217421	41659	49 Alexandria Way MINDARIE 6030	Crown Land – City of Wanneroo	Parks and Recreation	Recreation
Lot 15448 on Deposited Plan 40340	20561	34K Long Beach Promenade MINDARIE 6030	Crown Land – Power to Lease	Parks and Recreation	Recreation and Purposes Incidental Thereto
Lot 3050 on Deposited Plan 47951	35890	34 Long Beach Promenade MINDARIE 6030	Crown Land – City of Wanneroo	Parks and Recreation	Public Recreation
N/A	N/A	Alexandria View Road Reserve MINDARIE 6030	N/A	N/A	Road reserve

## 2. Background

The renewal and upgrades to associated infrastructure of the Mindarie Breakwater, Mindarie (Figure 1), has been prioritised by the City of Wanneroo as the structure currently poses a public safety risk.

The Mindarie Breakwater and groyne structures were first constructed in 1988 as part of the Mindarie Keys Breakwater Development under the Mindarie Keys State Agreement (MKSA). The MKSA anticipated that the maintenance, care and control of the structures would be the responsibility of the developer, which was then handed to the Department of Transport (DoT) on behalf of the State until 2005. After this time, the breakwater and groyne were vested to the City, which meant the structures passed into the City's care and control.

During the management of the breakwater by the City, there have been a number of ongoing issues relating to the condition and functionality of the breakwater structures and public safety risks. The current Mindarie Breakwater Management Study was undertaken in 2019 to obtain a better understanding of the current breakwater conditions and issues, and to investigate all potential breakwater maintenance and upgrade options. The outcome of the study is a detailed design of future breakwater management works.



**Figure 1:** Locality map of the Mindarie Breakwater and Clayton's Beach carpark along Alexandria View, Mindarie.

### 3. Scope

The purpose of this document is to provide an assessment against the *Environmental Protection Act 1986* – Ten Clearing Principles to determine whether the proposed clearing is likely to have a significant impact on the environment.

The project involves the renewal of the Mindarie Breakwater, upgrade of the Clayton's Beach carpark and upgrade of drainage infrastructure along Alexandria View. Clearing is proposed to be undertaken in six different areas (Clearing Areas 1-6 (Figure 2)).





**Figure 2:** Proposed clearing of 0.401 hectares for the renewal of the Mindarie Breakwater, upgrades to the Clayton's Beach carpark and upgrades to drainage along Alexandria View, Mindarie. The segmented upgrade works for the Mindarie Breakwater include Clearing Areas 2, 3, 4 and 5. Upgrades to the carpark include Clearing Areas 1 and 6.

The proposed scope of works for the Mindarie Breakwater upgrades has been divided onto six segments and each segment has a different design and scope (Figures 3a and 3b). Clearing Areas 2, 3, 4, and 5 (Figure 2) cover the clearing required for the six segments. A summary of the breakwater management works for each segment is provided below:

- Segment 1
  - Removal of upper slope material and reinstatement of slope with geotextile and two layers of 0.5 tonne armour
  - Increase in lower armour crest level ranging from +4mAHD to +6mAHD using 8 tonne armour
  - Localised reworking/repacking of existing armour rock
- Segment 2
  - Removal of upper slope material and reinstatement of slope with geotextile and two layers of 0.5 tonne armour
  - Increase in lower armour crest level to +6mAHD using 8 tonne armour
  - Localised reworking/repacking of existing armour rock
- Segment 3 – no maintenance works currently required following the completion of Phase 1 works in 2018.
- Segment 4
  - Increase in lower armour crest level to +7mAHD using 10 tonne armour
  - Localised reworking/repacking of existing armour rock
  - Placement of geotextile and secondary armour (0.5 tonne) under and adjacent to the primary armour crest
- Segment 5
  - Increase in lower armour crest level to +6.5mAHD using 10 tonne armour
  - Localised reworking/repacking of existing armour rock
  - Placement of geotextile and secondary armour under the primary armour crest and the breakwater pathway
  - Placement of compacted crushed limestone over secondary armour (0.5 tonnes to create a navigable breakwater pathway
- Segment 6
  - Placement of 2 tonne armour at the crest to create a stable crest at a minimum level of +4.3mAHD
  - Localised reworking/repacking of existing armour rock.





**Figure 3a:** Design plan detailing locations of segments (circled in red).



**Figure 3b:** Design plan detailing locations of segments (circled in red).

The Clayton's Beach carpark is being upgraded due to the loss of 17 parallel parking bays along Alexandria View as a result of the breakwater management works. This loss is being accommodated with the addition of 21 bays within the Clayton's Beach carpark (Clearing Areas 1 and 6 (Figure 2)).

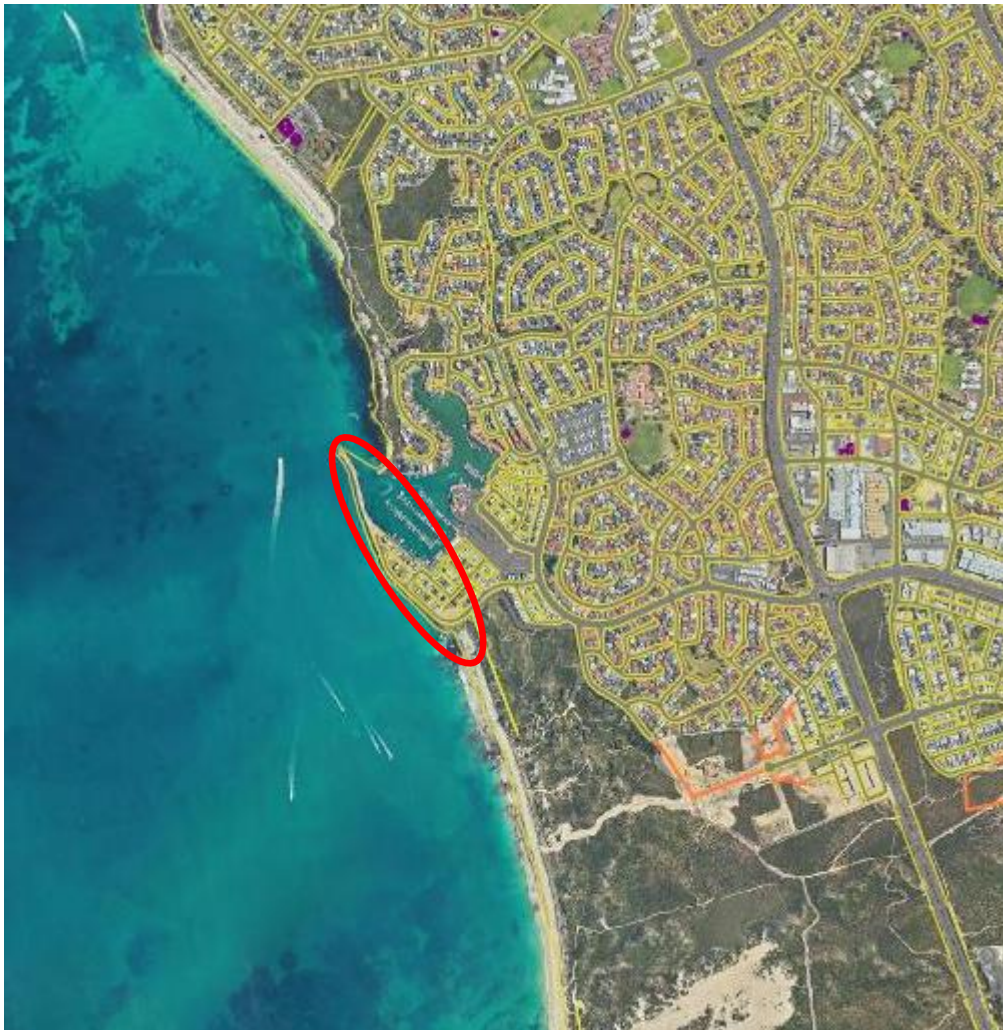
It is proposed the vegetation will be removed by manual means through the use of an excavator.

The clearing and construction is scheduled to commence in October 2022. It is anticipated the clearing and construction will take approximately one and a half years to complete, with a completion date of May 2024.

The clearing of vegetation is proposed within the Mindarie Breakwater, Clayton's Beach carpark and along Alexandria View, totalling 0.401 hectares (Figure 2, Attachment A – Clearing Plan and Attachment B – Shapefiles).



Mindarie Breakwater is surrounded by coastal foreshore and bushland areas, including Long Beach Reserve and Tamala Park to the north; Mindarie Foreshore Reserve, Kinsale Park, and Quinns Rocks Foreshore Reserve to the south; and residential areas and the Mindarie Marina to the east (Figure 4).



**Figure 4:** Proximity of proposed clearing (red circle) in relation to surrounding foreshore reserve and bushland north and south, and the Mindarie Marina and residential housing to the east.

Area 2 of the proposed clearing area overlaps with previously approved clearing under CPS 6661/2 (Figure 5). The clearing under 6661/2 was required for the upgrade to the beach access way at Clayton's Beach (Attachment G and H). The area of the approved clearing under CPS 6661/2 totalled 0.1335 hectares (Attachment G and H), however, only 0.03155 hectares (Figure 6; Attachment I and J) was actually cleared. The actual clearing did not occur within the intersecting area of the proposed clearing and the clearing approved under CPS 6661/2. Clearing under CPS 6661/2 occurred on 10 and 11 June 2020, no further clearing is required under this permit for this site.

The City is proposing to include the overlapping section in this permit application, as the clearing may occur after the expiry of CPS 6661/2 on 31 December 2022.



**Figure 5:** Overlap of Area 2 of the proposed clearing area (red shading) and approved clearing area at Clayton's Beach under CPS 6661/2 (black hatching) for the upgrades to the beach access way.



STAIRCASE CLEARING AREA  
FINAL EXTENT OF CLEARING: 0.03155HA

**Figure 6:** Actual cleared area at Clayton's Beach under CPS 6661/2 (red polygon). Of the approved 0.1335 hectares, only 0.03155 hectares was actually cleared.



## 4. Flora and Vegetation

On 25 October 2021, City's Environmental Officers conducted a vegetation assessment of proposed Clearing Areas 1 through 5. Native vegetation is very sparse throughout the proposed clearing areas, with vegetation in a good to completely degraded condition. Of the total area of Clearing Areas 1-5, approximately 30% consists of native vegetation. The vegetation is dominated by one weed species (*Tetragonia decumbens*) with few dominant native species (*Ficinia nodosa*, *Spinifex longifolius* and *Threlkeldia diffusa*) (Attachment C – Site Photographs, Attachment D – Photograph Locations and Flora List, Table 1).

An additional vegetation assessment was undertaken on 23 March 2022 after it was identified that the additional Clearing Area 6 was required to facilitate the additional carparking. The proposed clearing area is in Very Good condition, with the dominant species being *Spinifex longifolius* and *Scaevola crassifolia* (Attachment C – Site Photographs, Attachment D – Photograph Locations and Flora List, Table 1). The site was observed to have low levels of weed cover, with the dominant weed species being *Tetragonia decumbens*.

The clearing area is approximately 0.401 hectares (Attachment A – Clearing Plan and Attachment B – Shapefiles). A total of 25 flora species were identified during the survey, including eight native flora and 11 weed species.

Clearing Area 6 consisted of the highest diversity in species, with nine native species present. No native species were noted in Clearing Area 4 during the site assessment. Clearing Area 1 consisted of six native species, Clearing Area 2 consisted of four native species, and Clearing Areas 3 and 5 consisted of three native species (Attachment D – Photographs Locations and Flora List).

**Table 2: Species identified during the vegetation assessment on 25/10/2021 and additional assessment on 23/03/2022.**

NATIVE SPECIES	WEED/PLANTED SPECIES
<i>Acacia rostellifera</i>	<i>Arctotheca calendula</i>
<i>Carprobrotus</i> sp.	<i>Bromus diandrus</i>
<i>Cassytha</i> sp.	<i>Cynodon dactylon</i>
<i>Ficinia nodosa</i>	<i>Erigeron bonariensis</i>
<i>Hardenbergia comptoniana</i>	<i>Medicago polymorpha</i>
<i>Lepidosperma gladiatum</i>	<i>Oenothera drummondii</i>
<i>Leucophyta brownii</i>	<i>Pelargonium capitatum</i>
<i>Myoporum insulare</i>	<i>Sonchus oleraceus</i>
<i>Olearia axillaris</i>	<i>Tetragonia decumbens</i>
<i>Rhagodia baccata</i>	<i>Thinopyrum distichium</i>
<i>Scaevola crassifolia</i>	<i>Trachyandra divaricata</i>
<i>Spinifex longifolius</i>	<i>Tribulus terrestris</i>
<i>Threlkeldia diffusa</i>	



## 5. Fauna

During the aforementioned vegetation survey on 25 October 2021, two avian species, *Anhinga novaehollandiae* (Australasian darter) and *Chroicocephalus novaehollandiae* (Silver Gull), were documented within the extent of the proposed clearing areas. The conservation status of *Anhinga novaehollandiae* is considered to be least concern with a stable population status (BirdLife International, 2022). The conservation status of *Chroicocephalus novaehollandiae* is considered to be secure (BirdLife Australia, 2022).

No fauna species were documented during the vegetation survey on 23 March 2022.

The WALGA Environmental Planning Considerations Report (EPCR) (Attachment E) and City of Wanneroo's Intramaps EPCR (Attachment F) did not identify any instances of threatened or priority fauna species within the selected footprint. Protected fauna species were however identified within a 5km radius of the selected area (Attachment E and F).

The WALGA and City's EPCR did not identify the selected area as being located within a Carnaby's cockatoo (*Calyptrorhynchus latirostris*) roosting or breeding area buffer. The EPCR did identify that the proposed clearing area was within or adjacent to a Key Biodiversity Area for birds.

## 6. Avoidance and Mitigation Measures

Clearing within the proposed project area will be limited to what is required for works.

Clearing Area 1 will be cleared of all existing vegetation and replaced with additional car parking bays. The placement of parking bays within this area will have the smallest impact on surrounding native vegetation. Avoiding the vegetation in this area will not allow for a sufficient number additional parking bays within the Clayton's beach carpark to account for the loss of parallel parking bays currently along Alexandria View, as a result of the breakwater management works. Other options have been considered, including expanding the carpark to the north-east, however this will have a greater impact on native vegetation.

Clearing Area 2 is likely to be considerably larger than the actual clearing footprint. It has been selected conservatively to account for all possible Contractor access points to the breakwater structure. During the process of selecting a contractor, those with construction methodologies aiming to minimise the clearing of native vegetation will be looked upon favourably.

Clearing Areas 3, 4 and 5 will also be cleared of all existing vegetation in order to stabilise the breakwater with additional imported limestone material. These works are unavoidable and without it, the structural stability of the breakwater is expected to be compromised over time. This will result in the material supporting the vegetation becoming unstable which may negatively impact the native vegetation.

Clearing Area 6 is also likely to be considerably larger than the actual clearing footprint. This clearing has been included due to the modifications being undertaken in the carpark and the potential of disturbing the natural area during construction. A structure to retain the dune and vegetation will be installed, however, it is not anticipated that the whole proposed clearing area will be required.

## 7. Clearing Principles

A WALGA 'Environmental Planning Considerations Report' (Attachment E) was generated by the City as supporting documentation for the below clearing principle assessment. This, along with additional data sources provided by various state and federal departments, were reviewed to determine the level of impact and the level of variance to the clearing principles.

The following table summarises the identified environmental impacts and the level of variance against the clearing principles.

**Table 2: Identified Impacts against Clearing Principles**

Clearing Principle	Proposed Project Impacts
<p><b><i>Principle (a) – Native vegetation should not be cleared if it comprises a high level of biological diversity</i></b></p>	<p>The City Environmental Officers undertook a vegetation assessment of the proposed clearing area on 25 October 2021 and 23 March 2022. The survey identified the proposed project area contains few native species, found sparsely across the project area.</p> <p>The proposed clearing area is located within Bush Forever Site 322 (DPLH, 2019) and is a mapped Environmentally Sensitive Area (ESA).</p> <p>WALGA's (Attachment E) and the City's (Attachment F) EPCR identifies the following flora and fauna attributes for the proposed clearing site:</p> <ul style="list-style-type: none"> <li>• No records of Federal or State TECs, PECs, Threatened and Priority Flora records or Threatened and Priority Fauna records within the selected site boundaries</li> <li>• The proposed clearing area is within an important birding area (Northern Swan Coastal Plain IBA).</li> </ul> <p>WALGA's (Attachment E) and the City's (Attachment F) EPCR identifies the following flora and fauna attributes within 5kms of the proposed clearing site:</p> <ul style="list-style-type: none"> <li>• Federal and State listed TECs and PECs (or their buffers) located within a 5km radius of the proposed clearing site</li> <li>• State listed Priority Flora records located within a 5km radius of the proposed clearing site</li> <li>• Federal and State listed Threatened and Priority Fauna and Fauna Habitat records located within a 5km radius of the proposed clearing site</li> </ul> <p>In relation to clearing principle (a), the proposed small clearing area of 0.401 hectares of both remnant vegetation and weed species with a portion of the located within Bush Forever Site 322 and an ESA may be at variance to this principle.</p>
<p><b><i>Principle (b) – Native vegetation should not be</i></b></p>	<p>WALGA's (Attachment E) and the City's (Attachment F) EPCR identified the proposed clearing area is within an important birding area (Northern Swan Coastal Plain IBA). It does not</p>

<p><b><i>cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna indigenous to Western Australia</i></b></p>	<p>identify that the project area is within Carnaby's Cockatoo habitat areas.</p> <p>The City's Vegetation Assessment did not identify the presence of any trees within the proposed 0.401 hectares clearing area, as such, no hollows suitable for nesting are present.</p> <p>Considering the above, the application area is not likely to be at variance with clearing principle (b).</p>
<p><b><i>Principle (c) – Native vegetation should not be cleared if it includes or is necessary for the continued existence of, rare flora.</i></b></p>	<p>WALGA's (Attachment E) and the City's (Attachment F) EPCR identified there are priority flora species within a 5km radius of the application area, however no Federal or State threatened or priority flora species are identified within the application area.</p> <p>Considering the application area does not contain rare flora and the vegetation contains both weed species and remnant flora ranging from a majority Degraded to small areas of Good condition, the application area is not likely to be at variance with clearing principle (c).</p>
<p><b><i>Principle (d) - Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of a Threatened Ecological Community.</i></b></p>	<p>WALGA's (Attachment E) and the City's (Attachment F) EPCR identified both Federal and State Threatened Ecological Communities (and buffers) within a 5km radius of the application area, however no threatened or priority communities are present within the City's proposed 0.401 hectare clearing area.</p> <p>Due to the absence of an identified TEC within the application area, the City's proposed clearing is not likely to be at variance to clearing principle (d).</p>
<p><b><i>Principle (e) - Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been significantly cleared.</i></b></p>	<p>The vegetation proposed for clearing to facilitate the works at the Mindarie Breakwater and associated infrastructure contains remnant native vegetation belonging to the Quindalup Complex.</p> <p>In accordance with DBCA's South West Vegetation Complex Statistics, vegetation representation within the Quindalup Complex is greater than 30%, with 60.49% currently persisting (DBCA, 2018).</p> <p>Within the proposed clearing boundary, approximately 30% contains native remnant vegetation. Native species are spread sparsely throughout the proposed clearing area.</p> <p>The City's proposed clearing is not likely to be at variance with clearing principle (e) due to the current extent of the Vegetation Complex and the small clearing requirement of 0.401 hectares.</p>
<p><b><i>Principle (f) - Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or a wetland</i></b></p>	<p>Wetlands or watercourses are not located within the application area, or within 50 metres of the application area (Attachment E and F).</p> <p>The coastal heath vegetation within the application area is therefore not growing in association with a wetland or watercourse.</p> <p>Considering the above, the proposed clearing is therefore not at variance to clearing principle (f).</p>



<p><b><i>Principle (g) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.</i></b></p>	<p>The proposed clearing of 0.401 hectares of remnant vegetation and weed species is not located within an Acid Sulfate Soil risk area (DWER, 2022; DWER, 2017).</p> <p>The Groundwater Salinity (Total Dissolved Solids) at the proposed clearing site is considered to be Marginal with a salinity range of between 500 - 1000mg/L (DWER, 2022; DWER, 2018).</p> <p>DWER's Perth Groundwater Map identifies the surface geology within the application area as Safety Bay Sand: Aeolian and beach lime sand (DWER, 2022).</p> <p>The Natural Resource Information (WA) mapping tool identifies three soil landscape types within the application area:</p> <ul style="list-style-type: none"> <li>• Quindalup South third dune Phase (211QU_Q3) – irregular dunes with high relief and slopes up to 20%. Loose calcareous sand with little surface organic staining and incipient cementation at depth</li> <li>• Quindalup South youngest dune Phase (211Qu_Q4) – irregular dunes with slopes up to 20%. Loose pale brown calcareous sand with no soil profile development</li> <li>• Quindalup South water, beach Phase (211QuU_BEACH) – beach (DPIRD, 2022; DPIRD 2019).</li> </ul> <p>Given the above hydrogeological conditions and absence of risk factors associated with clearing within these hydrogeological features, it is not likely for the clearing to result in appreciable land degradation and therefore is not likely to be at variance to clearing principle (g).</p>
<p><b><i>Principle (h) - Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.</i></b></p>	<p>The proposed clearing area is within the Yanchep Foreshore Reserve and is both, an Environmentally Sensitive Area, and Bush Forever 322 (DPIRD, 2022; DPLH, 2019).</p> <p>Due to the high value of remnant vegetation available throughout the Mindarie/Quinns Rocks Foreshore Reserve and vegetation within the large extents of Bush Forever 322 Site, it is not likely for the proposed clearing to be at variance to clearing principle (h).</p>
<p><b><i>Principle (i) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.</i></b></p>	<p>Wetlands or watercourses are not located within the application area, or within 50 metres of the application area (Attachment E and F). The coastal heath vegetation within the application area is therefore not growing in association with a wetland or watercourse.</p> <p>As no surface water is present within the proposed clearing area, the proposed clearing is not likely to cause deterioration in surface water quality through sedimentation or eutrophication.</p> <p>The proposed clearing area is not within a Public Drinking Water Source Area, however it is within the Perth Groundwater Area RIWI Act area. Given the availability of adjacent remnant vegetation throughout Bush Forever Site 322, and the proposed</p>

	<p>small clearing area, it is not considered the proposed clearing will increase groundwater salinity.</p> <p>The proposed clearing is therefore not likely to be at variance to clearing principle (i).</p>
<b><i>Principle (j) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause or exacerbate the incidence or intensity of flooding.</i></b>	<p>The proposed clearing of 0.401 hectares of Good (remnant vegetation and weed species) vegetation is not likely to cause, or exacerbate the incidence, or intensity of flooding.</p> <p>The proposed clearing is not likely to be at variance to clearing principle (j).</p>

**Red** – Likely to be at variance, **Orange** – May be at variance, **Green** – Not likely to be or not at variance

## 8. Conclusion

The City has assessed the proposed clearing against the 10 clearing principle and has found that the clearing of 0.401 hectares within the Mindarie Breakwater, Clayton's Beach carpark and along Alexandria View, may be at variance to principle (a) due to the clearing occurring within both an ESA and Bush Forever Site 322, however, it is not likely to be at variance to the remaining clearing principles.

## 9. References

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