

Trees and Construction

BS5837:2012 Tree Survey, Arboricultural Implications Assessment & Method Statement

Site: Wisteria Court, Maesgwyn, Wrexham, LL11 2AJ

Ref: 220440.WC / A1_AIA

Client: Ellis Williams



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- May 2022 -

TABLE OF CONTENTS

Chapter	Title	Page
1	Introduction	3
2	Site & Application Information	4
3	Findings & Recommendations	5
4	Scheme / Impact Assessment	6
5	Method Statement (Application Stage)	7 - 9

Appendices

Caveat	I
Terms and Definitions	II
Tree data table, Tree Constraints Plan & Tree Protection Plan	III

Revision	Description	Date
/	/	/

1. INTRODUCTION

- 1.1 **Instruction:** This advice has been prepared for Ellis Williams (hereafter; client) and is in respect of the tree related planning considerations at Wisteria Court, Maesgwyn, Wrexham, LL11 2AJ (hereafter; site).

As the proposal relates to development works at site, the advice herein is produced in accordance with the British Standard 5837 : 2012 '*Trees in Relation to Design, Demolition and Construction - Recommendations*' (hereafter; BS5837).

- 1.2 **BS5837:** The scope of BS5837 is to provide guidance on how trees and other vegetation can be integrated into construction and development design schemes. The overall aim is to ensure the protection of amenity by trees which are appropriate for retention. This assessment is produced in accordance with BS5837.

- 1.3 **Scope of this advice:** The objective of this report is to assess the proposed scheme and provide recommendations regarding the potential impact on trees and vice versa with associated tree works, tree protection details and recommendations for the scheme in consideration for trees.

- 1.4 Following instruction the consultant surveyed the site on the 5th April 2022 where a site walkover and BS5837 tree survey were carried out; all trees on site and around the application boundary were surveyed from ground level and plotted as either an individual or a tree group.

- 1.5 This advice is subject to caveat at Appendix I, outlines relevant terms and definitions at Appendix II and constitutes the findings of the preliminary site assessment and associated arboricultural recommendations.

- 1.6 The survey data and site observations use the supplied topographical survey to illustrate the surveyed trees in plan format as a 'Tree Constraints Plan' (hereafter; TCP).

The TCP has an overlay of the proposed scheme to enable review. The TCP informs this assessment and is used as a base layer for the appended 'Tree Protection Plan' (hereafter; TPP); the TCP, tree survey data table and TPP are at Appendix III.

2. SITE INFORMATION & TREE ASSESSMENT

- 2.1 The site currently comprises a residential block with associated access, walkways, parking and amenity space..
- 2.2 **Proposal:** It is understood that a proposed scheme involves the refurbishment of the existing property including landscape alterations. This is confirmed in the form of the client's proposed site plan (see; TCP).
- 2.3 The site requires consideration from an arboricultural perspective due to the presence of trees on and around the site; these trees are deemed to be within impacting distance of the existing property and proposed construction area.
- 2.4 The trees -
- 2.4.1 The tree survey and assessment resulted in the BS5837 quality/retention categories of 'B - moderate' and 'C - low' being attributed to trees/tree groups.
- 2.4.2 The BS5837 tree survey is a means of objective assessment and reflects the trees' condition, quality contribution, remaining life expectancy and spatial considerations (stem, crown and roots). On this basis and in order to consider the trees' accurate constraints, the survey data is used to illustrate the trees as the TCP; this has the crown extents for north, east, south and west, the stem diameter measurement, and the calculated root protection areas (hereafter; RPAs). Hereafter, the trees are therefore reviewed and considered on their own merits and in line with the guidance of BS5837.

3. FINDINGS & RECOMMENDATIONS

3.1 The following information, as with the prior contents of this report, should be read with the appended tree data table and tree constraints plan (220440.WC/TCP/01).

NOTE: This information is included as a summary overview of the tree survey advice, it is then supplemented with a scheme review as an Arboricultural Impact Assessment (AIA; section 4) and Arboricultural Method Statement (AMS - Application Stage; section 5).

3.2 General Considerations for Tree Retention / Removal

3.2.1 T5 is a growing in close proximity to the building, has reduced vitality and defects which may limit its future potential, hence, it is categorised as 'C - low'.

This 'C' category trees should not constrain nor significantly guide a scheme. For any proposed tree removals, mitigation tree planting is recommended as part of a landscape scheme and can suitably replace and enhance the initial loss of canopy cover.

3.2.2 The moderate quality 'B' category trees are noted as such due to their future potential and current amenity contribution. These trees should be retained and protected as part of the site's development.

3.3 Further to the above information, the proposed scheme (see; TCP) is reviewed hereafter at s.4 as an Arboricultural Implications Assessment (hereafter; AIA).

4. SCHEME / IMPLICATIONS ASSESSMENT

- 4.1 For the purpose of this assessment, the proposed site plan is used as a basis for consideration. This takes account of anticipated tree removals, tree protection options and potential alterations to account for arboricultural features; as per s.1.6 and s.2.2 herein, the TCP shows the '*proposed site plan*' as an overlay for review.
- 4.2 To facilitate the proposed landscape alterations, the low quality 'C' category tree T5 will need to be removed. As per s.3.2.1, this tree should not constrain the proposed scheme and should be removed to facilitate the scheme; new tree planting is recommended as mitigation.
- NOTE: The proposed site plan shows indicative new tree planting, which would be suitable to mitigate the loss of T5.
- 4.3 The terrace and lightweight balcony are to be installed using a post and raised ground level beam. The terrace and balcony are clear of the crown of T3, however, the post installation will be within the RPA of T3 and will require sensitive installation methods to minimise the ground and RPA impact i.e. retain the existing soil level, investigate preferred post locations for tree roots, retain any large roots (>25mm dia.) and move post if large roots found.
- 4.4 Following the above considerations for trees and noted tree works, the trees are clear of the active construction area. However, the installation of temporary tree protection will be required to ensure no impact on trees from access, material storage etc.
- 4.5 Further to the above, the following tree works are required prior to site works.

TREE WORK SUMMARY

NUMBER	TREE REMOVALS / PRUNING WORKS	
T5	Remove	Remove in order to facilitate the scheme: - to be replaced with new tree planting as part of site landscaping and new tree planting proposals.
Retained trees		Protection by placement of fixed Heras panels (as per the TPP) to have no access during construction.

- 4.6 Further to the above review and in consideration for the tree removals and need to protect retained trees, the following section contains said details as an Arboricultural Method Statement (Application Stage).

5. METHOD STATEMENT (Application Stage)

5.1 Arboricultural Construction Restrictions

- 5.1.1 The following restrictions are considered relevant for tree protection purposes which are illustrated on the appended Tree Protection Plan:
- a) Tree works; are to be completed prior to any and all site works: additional tree works (or leaning against or attaching of objects to a tree) are not permitted unless agreed in writing by the council.
 - b) Tree Protection Measures; protective barrier fencing (hereafter; PBF) is to be installed around the retained trees immediately after the tree works (as per the TPP) prior to the site works commencing.
 - c) Construction Exclusion Zone (hereafter; CEZ); following the installation of PBF the fenced off section is to act as a CEZ and be supplemented with ground protection for RPA sections outside of fenced off areas as the CEZ.
 - d) Material Handling; no chemicals / materials are to be transported / stored / used / mixed within exposed grounds on site; all chemical / cement storage, transport or use will be pre-prepared with impermeable liner and detail within a Construction Management Plan.
 - e) Site Management; no fires are to be lit and no machinery, plant or vehicles are to be washed down within 10m of a tree's canopy, within a RPA / CEZ, and the RPA / CEZ may not be breached, i.e. no mechanical digging or scraping is permitted within a RPA / CEZ.
 - f) Sensitive Landscape; only following construction completion can the PBF be removed and any remaining soft landscape works be undertaken (ground levels to be retained within RPAs and works undertaken manually with non-mechanical hand tools).

5.2 Arboricultural Site Monitoring / Supervision

- 5.2.1 The site should be checked by a qualified arboriculturist throughout the construction processes to ensure the tree protection measures are adhered to, thus -
- (a) pre-commencement to confirm tree removals and PBF installation;
 - (b) during terrace post installations in RPAs; and
 - (c) prior to removal of tree protection after construction completion to sign off the site for correct tree protection and planting.

5.3 Protective Barrier Fencing (PBF) Specification

5.3.1 Barrier fencing is to be installed (and signed off by way of arboricultural supervision) following the completion of the tree works. It is illustrated on the Tree Protection Plan and is to remain in situ for the entire duration of preparation/construction processes unless otherwise agreed in writing by the council.

5.3.2 The barrier fencing is to consist of a series of Heras panels secured in place by driven scaffold posts or a scaffold frame to ensure that the fencing lines are well braced to resist impact, prevent access to the RPA/CEZ areas around the approved works.

5.4 Underground utilities

5.4.1 Underground utilities are to be installed as per a dedicated plan and be clear of RPA by design. Otherwise, and if RPAs cannot be avoided, the following restrictions are recommended for underground utilities within RPAs:

- Any necessary excavations to be undertaken sensitively using either a no-dig method (e.g. Air-Spade) and/or under arboricultural supervision;
- Any exposed roots shall be packed with a clean damp sand (not builders sand) and wrapped in hessian sacking to protect them;
- Small roots which are identified (those less than 25mm diameter) may be carefully pruned back with a clean sharp tree saw; and
- Larger roots which are identified (those greater than 25mm in diameter) are to be retained and protected as they may be necessary for a tree's health and stability.

5.5 Sensitive Ground Works within RPAs

5.5.1 The proposed terrace and balcony is within retained trees' RPAs, and will require sensitive installation methods to minimise ground and RPA impact.

5.5.2 Excavations within a RPA or designated CEZ (the area enclosed by PBF) must:

- Be undertaken only once construction is complete; and
- Use sensitive excavation techniques to protect the tree roots and their existing growing conditions i.e. prepare grounds manually stripping the existing soil surface/hard surface and turf only, retain soil levels, retain large roots (>25mm dia.) and investigate preferred post locations and move post if large roots are found, then polythene line footing to prevent soil contamination.

5.6 Landscape Detail

5.6.1 The finer details of the tree planting proposals are to be illustrated on a tree planting landscape plan. This is to include the exact proposals for hard and soft landscaping together with the details for tree planting locations, species and stock selection,

installation and maintenance; this is to be undertaken by the appointed landscape architect who will have the full support of the arboricultural consultant where required.

5.7 Report Handling

- 5.7.1 This report is released to the client and architect to be distributed at their discretion and the consultant is available for queries relating to this report and /or trees.
- 5.7.2 The proposed scheme is reviewed in respect of the arboricultural constraints and is considered to be achievable in line with the BS5837 guidance. The recommendations herein may be approved by the council as a means of authorised tree works and tree protection, for which the planning approval will be subject to a final and detailed Arboricultural Method Statement based on the approved information and other detail perhaps not available at the pre-planning approval stage, i.e. utility layout, final landscape plan, construction management plan (CMP) etc.
- 5.7.3 This AMS and the TPP may be approved by the council in support of the application, subject to a conditioned final AMS and TPP as a means of authorised tree protection measures; all site personnel will have access to a copy and the tree work and protection details are to be inspected as per s.5.2 for '*Arboricultural Monitoring / Supervision*'.

This concludes our advice.

Caveat

Any and all information supplied to Indigo Surveys Ltd by/on behalf of the client is assumed to be accurate unless otherwise informed. | This advice is limited to the observations made on the date of inspection as detailed herein and any deletion, editing or alteration will result in the advice being null and void in its entirety. | This advice in its entirety may be deemed null and void if remedial works are undertaken on any area of the site, on or after the date of the survey. | No liability is assumed by the author or by Indigo Surveys Ltd for any misuse, misinterpretation or misrepresentation of this advice. | This advice is not valid in adverse or unpredictable weather conditions or for any failure due to 'force majeure' or unpredictable events. | No responsibility is assumed either by the author of this advice or by Indigo Surveys Ltd for any legal matters that may arise as a consequence. | Neither the author nor Indigo Surveys Ltd will be required to attend court or give testimony as part of this agreement. | The responsibility for any works undertaken on the basis of the recommendations of this advice does not form part of this agreement.

Appendix II

Terms and Definitions

“Arboriculturist” - person who has, through relevant education, training and experience, gained expertise in the field of trees in relation to construction.

“Competent Person” - person who has training and experience relevant to the matter being addressed and an understanding of the requirements of the particular task being approached.

“Topographical survey” - an accurately measured land survey undertaken to show all relevant existing site features. *A method of carrying out topographical surveys is given in RICS specification Surveys of land buildings and utility services at scales of 1:500 and larger.*

“BS5837 Tree survey” - should be undertaken by an arboriculturist to record information about the trees on or adjacent to a site. The results of the tree survey, including material constraints arising from existing trees that merit retention, should be used (along with any other relevant baseline data) to inform feasibility studies and design options. For this reason, the tree survey should be completed and made available to designers prior to and/or independently of any specific proposals for development.

“Tree categorisation method” - trees should be categorised in accordance with the BS5837 cascade chart by an arboriculturist. This is to identify the quality and value (in a non-fiscal sense) of the existing tree stock, allowing informed decisions to be made concerning which trees should be removed or retained in the event of development occurring.

“Root protection area (RPA)” - layout design tool indicating the minimum area around a tree deemed to contain sufficient roots and rooting volume to maintain the tree’s viability, and where the protection of the roots and soil structure is treated as a priority, shown as an arboricultural constraint in m². The radius is calculated using the BS5837 calculation method. An arboriculturist may change the shape of an RPA but not reduce its area.

“Arboricultural implications assessment” - a study, undertaken by an arboriculturist, to identify, evaluate and possibly mitigate the extent of direct and indirect impacts on existing trees that may arise as a result of the implementation of any site layout proposal.

“Arboricultural method statement” - methodology for the implementation of any aspect of development that is within the root protection area, or has the potential to result in loss of or damage to a tree to be retained.

“Tree protection plan” - a scale drawing, informed by descriptive text where necessary, based upon the finalised proposals, showing trees for retention and illustrating the tree and landscape protection measures.

Appendix III

Data Table:	As appended (BS5837 Tree Survey Key & Table)
Tree Constraints Plan:	As appended (220440.WC/TCP/01)
Tree Protection Plan:	As appended (220440.WC/TPP/01)

TREE SURVEY IN ACCORDANCE WITH BRITISH STANDARD 5837:2012 'TREES IN RELATION TO DESIGN, DEMOLITION & CONSTRUCTION - RECOMMENDATIONS'																	
CLIENT: Ellis Williams				PROJECT REF: 220440				SITE: Wisteria Court, Maesgwyn, Wrexham, LL11 2AJ									
CONTACT: /				SURVEY DATE: 5th April 2022				ARB CONSULTANT: Tony Banner TechCert (ArborA) TechArborA									
TREE REF. #	SPECIES	AGE	HEIGHT (in m)	CANOPY (in m) N - S - E - W				STEM (in mm)	RPA (in m)	CLEARANCE (in m)	1st BRANCH (in m)	VITALITY	LIFE EXPEC.	NOTES		BS CAT.	MANAGEMENT
T1	Jacquemontii Birch; Betula, Betulaceae	M	10	5	4.5	5	5	270	3.2	2	2.5	Normal	20 - 40	Situated toward the site boundary co-dominant below 2m.		B 1	
T2	Cherry; Prunus, Rosaceae	M	10	4	6.5	6	6	530	6.4	2.5	2.5	Normal	20 - 40	Situated toward the site boundary co-dominant below 2m, impact damage to exposed roots, large old pruning wounds in crown, decay on one lower lateral.		B 1	
T3	Cherry; Prunus, Rosaceae	M	10	4	2.5	7.5	5	370	4.4	3.5	2.5	Normal	20 - 40	Situated toward the site boundary collective canopy with T4, hard surfaces and underground utilities close to base, old pruning wounds in crown.		B 2	
T4	Norway Maple; Acer, Aceraceae	M	14	3.5	6.5	6	5.5	390	4.7	4	3	Normal	20 - 40	Situated toward the site boundary collective canopy with T3, co-dominant at 3m.		B 2	
T5	Norway Maple; Acer, Aceraceae	M	10	4	3.5	3.5	3.5	240	2.9	2.5	3	Fair	10 - 20	Situated toward the site boundary, close to the building with growth influenced by the building and pruned to clear in parts, partially included wound over 50% of lower stem.		C 1	Monitor tree's condition and stem condition.

TREE SURVEY 'KEY' - BRITISH STANDARD 5837:2012 'TREES IN RELATION TO DESIGN, DEMOLITION & CONSTRUCTION - RECOMMENDATIONS'

FIELD KEY:

TPO/CA	-	On client request: presence of Tree Preservation Orders (TPO) / site location within a Conservation Area (CA) & date checked;
TREE REF. #	-	Tree reference number: tag or plan number (T - individual tree, G - group of trees/shrubs, H - hedge);
SPECIES	-	Genus, species and/or common name;
AGE	-	Age classification (NP - new planting, Y - young, SM - semi mature, EM - Early-Mature, M - mature, LM - late mature, OM - over mature);
HEIGHT (in m)	-	Approximate height of tree in metres;
CANOPY (in m) N - S - E - W	-	Approximate branch spread in metres of the four principal compass points;
STEM (in mm)	-	Stem diameter in millimetres: measured in accordance with s.4.6 of BS5837;
RPA (in m)	-	Circle radius of the Root Protection Area: calculated using the stem diameter (single/multiple stem variant, as outlined within BS5837);
CLEARANCE (in m)	-	Crown clearance in metres above the adjacent ground level;
IST BRANCH (in m)	-	Clearance in metres to first significant branch and direction of growth (where relevant);
VITALITY	-	Physiological condition typically gauged from canopy cover and annual extension growth (good, fair, poor, dead);
ESTIMATED REMAINING CONTRIBUTION	-	Approximate number of years the tree will continue to make a contribution without the need for oppressive arboricultural intervention, categorised in years as <10, 10-20, 20-40 and >40;
NOTES	-	Structural and physiological condition observations;
BS CAT.	-	BS5837 tree quality assessment category: resulting from structural/physiological condition and remaining contribution (approximate Standard retention category U : in such a condition that any existing value would be lost within 10 years;
	-	Standard retention category A : high quality and value, in such a condition as to be able to make substantial contribution of 40+ years;
	-	Standard retention category B : moderate quality and value, in such a condition as to make a significant contribution of 20+ years;
	-	Standard retention category C : low quality and value, currently in adequate condition to remain until new planting could be established
	-	Standard retention sub-category, mainly due to: 1 - Arboricultural values, 2 - Landscape values, 3 - Cultural values, including conservation;
MANAGEMENT	-	Preliminary management recommendations (as appropriate);
' * '	-	Within the survey schedule denotes an estimate



KEY

- Tree Crown Spread
- Root Protection Area (RPA)
- Tree Stem
- T1 Tree No.

Tree Condition Category

- A
- B
- C
- U

The surveyed trees are illustrated on this Constraints Plan which is prepared in accordance with British Standard BS5837: 2012 'Trees in Relation to Design, Demolition and Construction - Recommendations'

REV.	DESCRIPTION	DWN	CHK'D	DATE		
CLIENT						
Ellis Williams						
PROJECT						
220440 Wisteria Court, Maesgwyn, Wrexham, LL11 2AJ						
TITLE						
Tree Constraints Plan						
DWN	DATE	CHK'D	DATE	APP'D	DATE	SCALE
RCK	8/4/2022	TB	12/4/2022			1:250


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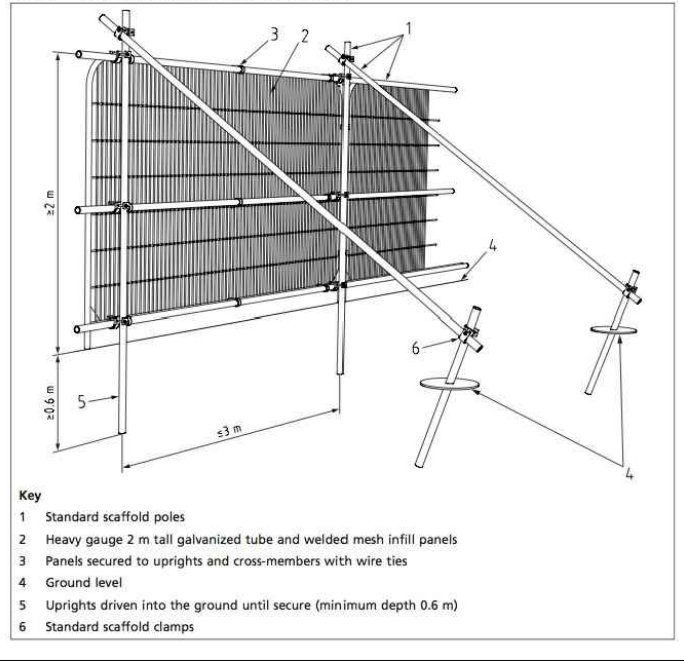
Drawing Number
220440/TCP/01

A2
REV.

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Protective Barrier Fencing – Example Design

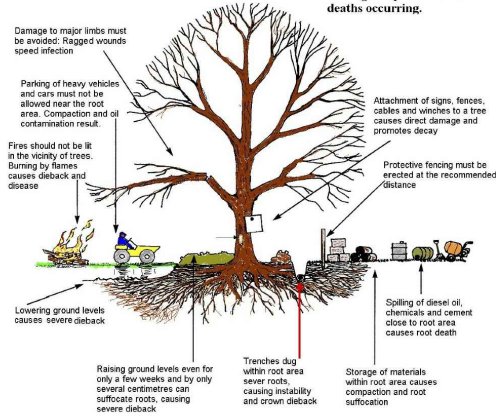
Figure 2 Default specification for protective barrier



Common causes of Tree Death

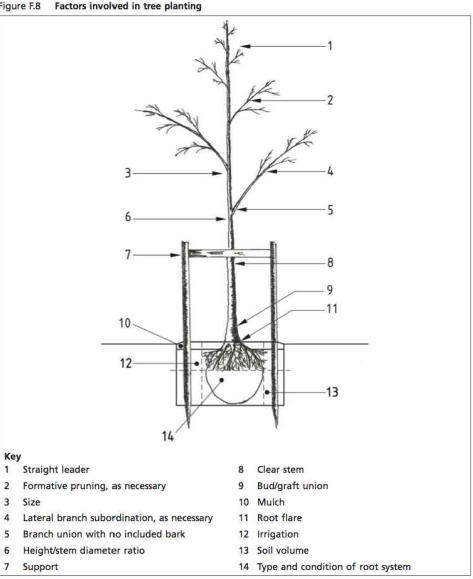
(Source: Arboricultural Information Exchange website, 2005)

The use of properly positioned protective fencing can prevent tree deaths occurring.



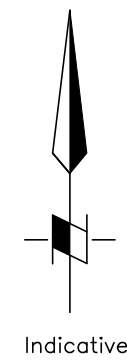
Tree Planting – Example Design

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KEY

- Tree Crown Spread
- Root Protection Area (RPA)
- Tree Stem
- T1 Tree No.
- Tree Condition Category
 - A
 - B
 - C
 - U

The surveyed trees are illustrated on this Constraints Plan which is prepared in accordance with British Standard BS5837: 2012 'Trees in Relation to Design, Demolition and Construction – Recommendations'

Tree Removals – T5 and shrub border to be removed to facilitate the scheme; replacement tree detail to be included within the landscape scheme.

Ground Protection:
The existing hard surfaces are to be retained during the demolition and construction stage, only to be removed during hard landscape works (manually, with hand held tools and to retain the existing soil level).

Protective Barrier Fencing (PBF):
Heras panels to be installed (as per the illustration on this plan) aligned along the existing driveway edge with tree protection signs, to be fixed in place for the duration of site works for tree protection and to remain until demolition and construction completion, then to be realigned for hard landscape.

Sensitive Ground Works – raised level terrace to be installed using a post and raised ground level beam – works only to be undertaken once construction is complete, then prepare grounds manually stripping the existing soil surface and turf only, retain soil levels, the investigation preferred post location to confirm no large roots (>25mm dia) and polythene line post footings to prevent soil contamination.

REV.	DESCRIPTION	DWN	CHK'D	DATE		
CLIENT						
Ellis Williams						
PROJECT						
220440 Wisteria Court, Maesgwyn, Wrexham, LL11 2AJ						
TITLE						
Tree Protection Plan						
DWN	DATE	CHK'D	DATE	APP'D	DATE	SCALE
RCK	8/4/2022	TB	12/4/2022			1:250


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