Arboricultural Implications Assessment and Method Statement

10th October 2019

Elton 2: Land North of Eaglethorpe

Creation of an extension area of the Mineral Processing facility at Elton Quarry for phased mineral extraction and restoration including an internal road and bailey bridge.

Client: Ingrebourne Valley Ltd
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1 INTRODUCTION

1.1 Instructions

1.1.1 This assessment was commissioned by the Client because trees are a material consideration and this report is required to support the Client’s planning application.

1.1.2 We were instructed to carry out an arboricultural assessment of trees potentially affected by mineral extraction activities at the site. This meant surveying trees within a 15m buffer zone around the edge of the site in line with the recommendations of BS5837: 2012 and to produce a plan showing the tree constraints overlaid to the buffer zone so that the implications could be assessed. This inspection took place on 9th October 2019.

1.1.3 Particular attention is to be paid to trees classified as Veterans and subsequent extensions to the acceptable limits of the buffer zone to 15 times larger than the diameter of the veteran tree or 5m from the edge of its canopy, if that is greater.

1.1.4 The second instruction was to carry out an assessment of the proposed development with regard to the protection of trees in or adjacent to the buffer zone, and to produce recommendations for work methodologies to arboricultural best practice in line with the recommendations of BS5837: 2012.

1.1.5 This document is accompanied by:

- Evidence of a tree survey conducted to BS5837:2012, including tree categorization (BS5837 section 4.4 and 4.5) (see Appendix C)

- An Arboricultural Implications and Protection Plan showing the trees and their RPAs overlaid to the proposed buffer zone, indicating trees for retention and removal. (BS5837 section 4.5 and 4.6) (Drawing ref: 3878.Elton2.Ingrebourne.AITP provided with this report, see also Appendix E)
1.2 Source documents

1.2.1 The drawings that have been used to inform this assessment are:

- Topographical survey: Elton Hall Phase 2 Topographic Survey 200415

1.2.2 Protective measures have been developed and specified in accordance with the recommendations of BS5837: 2012 ‘Trees in Relation to design, demolition and construction’, including relevant terms, definitions and Root Protection Area calculations.

1.2.3 Note: This assessment is specific to the drawings listed above and cannot be generalised.
2 THE SITE

2.1 Physical description

2.1.1 The site is located to the north of Eaglethorpe, near Peterborough and is bounded by the River Nene to the north and a river cut to the west and south that leads to Elton Mill.

2.1.2 The land to the east contains a plantation, which is to be removed as an earlier phase of works. These trees do not form part of this assessment.

2.1.3 The trees inspected are growing within the site and on adjoining neighbouring land.

2.1.4 The site is currently used for grazing.

2.1.5 The land is generally level but contains ponds and drains with varying water levels.

2.1.6 A public footpath crosses the site.

2.2 Soil and Geology

2.2.1 The British Geological Survey of England and Wales identifies the bedrock geology at this location as Grantham Formation - Sandstone, siltstone and mudstone with superficial deposits of Alluvium - Clay, silt, sand and gravel.

2.2.2 Sandy soils are much more resistant to damage through compaction but clay soils are easily damaged through compaction. This information can be used to inform an Arboricultural Method Statement.

2.3 Statutory protection

2.3.1 None of the trees surveyed are included in a Tree Preservation Order.

2.3.2 This site does not lie within a Conservation Area.

2.3.3 Under section 25 of the Land Drainage Act 1991, it is an offence to cause a blockage of any ordinary watercourse.

2.3.4 Appropriate advice regarding the protection of wildlife and other ecological matters must be sought before any tree work proceeds on site. Further information can be found in Appendix A.
3 SURVEY FINDINGS

3.1 Overview

3.1.1 The trees are visible within the landscape.

3.1.2 Two trees that can be identified as ‘veterans’ were identified. They both lie at the southern boundary of the site

3.2 Specific notes

3.2.1 The full table of survey data can be found in Appendix C.

3.2.2 Veteran Ash 5535 is infected with *Ganoderma australe* and is in poor condition with extensive basal decay (see fig 1 below). The infection will cause a slow predictable degrading of the wood that can lead to complete failure; however, in this setting the tree does not require any intervention.

![Fig 1. Picture showing the condition of the base of the main stem of Ash 5535](image_url)
3.2.3 Veteran White Willow 5538 is also infected with *Ganoderma australe* with a cavity in the main stem (see fig 2 below). A limb has been recently shed on the eastern side and there are signs that the tree has been historically pollarded at 10m. I recommend that the tree is re-pollarded at the old pruning points when resources allow.

![Figure 2: Picture of the main stem of Willow 5538 with decaying cavity arrowed](image)

3.2.4 White Willow 5540 is in decline and in poor condition. Although it can be retained in the short term it will eventually need to be removed.
3.2.5 Several trees in Hawthorn Group C are also in poor condition with significant erosion around some root systems (see fig 3 below). This may eventually contribute to the collapse of the trees.

Fig 3. Picture of the base of one of the Hawthorns in Group C with root system exposed by erosion
4  ARBORICULTURAL IMPLICATIONS ASSESSMENT

4.1  Summary

4.1.1  The proposed scheme results in the loss of several low quality trees.

4.1.2  The proposed 15m offset from the red line site boundary is broadly adequate but extra allowance must be made near Willow 5538 due to its size and ‘Veteran’ status. (The other Veteran tree on this site, Ash 5535, has a much smaller ‘Protection Zone’ and is set back within the limit of the buffer zone; it does not require extra allowances to be made).

4.1.3  One tree is recommended for removal as a result of its health and condition.

4.1.4  The reclamation works include for the creation of a wet woodland. This will offer a net gain in biodiversity and a sustainable tree population.

4.1.5  There will be a positive overall benefit to the locality in terms of landscape quality and value as a result of the proposed restoration scheme (Ref: 95010/E2/R/1).
5 ARBORICULTURAL METHOD STATEMENT

5.1 General

5.1.1 This Method Statement provides recommendations for the protection of trees for the entire duration of the intended works.

5.2 Statutory implications

5.2.1 Trees and other vegetation can often provide nesting, roosting and feeding opportunities for protected species, including bats. Providing guidance on these issues is outside my expertise, so I recommend that appropriate advice is sought before any tree work proceeds on site.

5.2.2 Full Planning Consent overrides the need for a Tree Preservation Order works application or for the need to give Notice under the Conservation Area legislation.

5.2.3 The National Planning Policy Framework provides information and guidance on the issues raised by this legislation. See, for example:

http://planningguidance.communities.gov.uk/blog/guidance/tree-preservation-orders/

5.2.4 Under section 25 of the Land Drainage Act 1991, it is an offence to cause a blockage of any ordinary watercourse.

5.3 Supervision and Monitoring

5.3.1 It is important that the tree protection measures are understood and adopted at all levels from client to project manager and any sub-contractors in order that the measures can be successful.

5.3.2 A qualified Arboricultural Consultant should be retained during the period of construction to:

• Provide continuing advice for the client, landowner, site manager or contractors as matters may arise during the implementation of the works.

5.3.3 Communication between the Client, Main Contractor (and their sub-contractors), the Project Manager and the Arboriculturalist are of high importance.

5.3.4 The Site Manager will monitor the physical and managed protective tree measures continually.
ARBORICULTURAL WORKS

5.4 Standards

5.4.1 Tree work is skilled and potentially dangerous work, which must be carried out by trained and certificated staff working to BS3998: 2010 and working in accordance with the various Regulations within the Health and Safety at Work Act 1974

5.4.2 Contractors must have Public Liability Insurance (preferably £5 million) and Employer’s Liability Insurance (preferably £10 million)

5.4.3 Machinery and equipment must be maintained, inspected and operated in accordance with the various Regulations within the Health and Safety at Work Act 1974

5.5 Prior to works

5.5.1 Tree work must be carried out before any plant movement.

5.5.2 Before the commencement of any treeworks, the contractor will ensure that the proper checks for bats and nesting birds have been carried out by an appropriately-qualified inspector.

5.5.3 The Contractor will be responsible for producing their own Method Statement for the works that will include Risk Assessments, staff profiles and certification, machinery and equipment inspection records and certificates.

5.5.4 Disposal of timber, brash and other arising to be agreed with the Client.

5.6 Work required

5.6.1 Remove the following trees:

- Hawthorn NT1
- Hawthorn Group C
DEVELOPMENT PHASE

5.7 General notes

5.7.1 No fires will be lit on site where flames can reach within 5m of the crown of a tree taking the size of the fire, wind speed and direction into account.

5.7.2 No storage or discharge of materials within 15 metres of a tree bole.

5.7.3 No mixing of cement or dispensing of fuel or chemicals within 15 metres of a tree bole.

5.7.4 No stripping of topsoil, excavation or changing of levels to occur within the 15m buffer zone generally; or 24m of Veteran tree Willow 5538. (The other Veteran tree on this site, Ash 5535, is set back within the limit of the buffer zone and so is not implicated in this requirement).

5.7.5 Any damage that occurs to the trees during works will be rectified to BS3998: 2010.

5.7.6 Trees will not be used as anchor points for winching or for supporting wires/cables.

5.8 Barriers

5.8.1 A 15m (or 24m near Willow 5538) construction exclusion zone will be marked by the standard strained wire fence on wooden stakes. A purple dot-dashed line on the Arboricultural Implication and Protection Plan (Drawing Ref: 3878.Elton2.Ingrebourne.AITP ) shows the outer limits of the exclusion zone.

5.8.2 Weather-proof notices stating: ‘PROTECTED AREA – DO NOT ENTER’ to be erected on the fencing (example in Appendix F) not less than 5m apart. These may require replacement from time to time depending on the duration of the extraction phase.

5.8.3 Temporary access to the protected area will be by permission of the LPA arboriculturalist.

5.8.4 The site manager will assess the integrity of the strained wire barrier continually. Any shortcomings will be rectified to the original specifications immediately. The fence will remain in place for the entire duration of the proposed works.

5.8.5 Before each logical stage of works commences, the stranded wire fence will be checked and brought back to specification as necessary.

5.8.6 The Site Manager will keep a copy of the Tree Protection Plan on site for reference during construction and for site induction where staff or contractors’ work may implicate working near trees so they understand the purpose of the measures.
RESTORATION PHASE

5.9 General notes

5.9.1 Before each logical stage of works commences, the stranded wire fence will be checked and brought back to specification as necessary.

5.9.2 Soil cultivation within the previously protected zones (i.e. within the Root Protection Areas) will be carried out by hand only. No machine cultivation will take place within these zones whatsoever.

5.9.3 Planting within Root Protection Areas will be carried out by hand using hand tools only.

5.9.4 Retained trees will be re-inspected by a qualified arboriculturalist prior to the start of any earthwork operations in the Western phase, and then again at completion of the Western phase. Post-restoration, they will fall under the remit of the 5 year after-care scheme. At each inspection, any works arising will be carried out within the time limits specified.

5.9.5 Once the site has been fully restored, the protective fencing will be removed.
Appendices
APPENDIX A – BRIEF NOTES ON STATUTORY PROTECTION

Trees and other vegetation can often provide nesting, roosting and feeding opportunities for protected species, including bats. The Wildlife and Countryside Act 1981 (as amended) makes disturbing a nesting bird or destroying its nest an offence. The maximum penalty that can be imposed for an offence under the Wildlife and Countryside Act - in respect of a single bird, nest or egg - is a fine of up to £5,000, and/or six months' imprisonment.

Bats are protected by The Wildlife and Countryside Act (1981) (as amended); the Countryside and Rights of Way Act, 2000; the Natural Environment and Rural Communities Act (NERC, 2006); and the Conservation of Habitats and Species Regulations (2010). People committing bat crimes can face six months imprisonment and/or unlimited fines. Additionally, any profits made as a consequence of not following lawful process can be confiscated and items used to commit the offences such as vehicles, plant or machinery can be forfeited. Visit: http://www.bats.org.uk/
Identification

All significant individual trees within the site were surveyed. Most of the significant individual trees within the site were tagged with numbered aluminium tags, attached to the tree with two nails at around head height. Inaccessible or neighbouring trees have been designated the prefix ‘NT’ (=‘No Tag’) and numbered. Three Groups of trees were identified and designated a letter. Reference to the trees’ locations can be made using the plans appended to this report.

Limitations

The tree survey was carried out for the purpose of informing the planning process. Relevant structural defects and aspects of tree condition are noted in the tree survey table in Appendix C; however, a full hazard assessment has not been carried out. As trees and shrubs are living organisms whose health and condition can change rapidly, conclusions and recommendations are only valid for one year. The health, condition and safety of trees should be checked regularly, preferably annually.

It may have been necessary to estimate some measurements when assessing trees on neighbouring land. This will not generally affect the conclusions of this report.

No invasive investigations were carried out to assess the internal condition of the trees. The soil was not examined and no soil samples were taken. Should soil analysis or further investigations be indicated, this will be recommended in the report.

Assessment

The trees were assessed on these criteria, which relate directly to BS5837: 2012:

- **Species** – gives information on expected growth, habit, life expectancy and suitability for situation.
- **Age Class** – Indicates the tree’s stage of growth in a normal life span.
- **Remaining contribution (in years)** – used to assess the retention category of the tree and potential future growth.
- **Diameter of main stem or stems at 1.5 metres above ground** – information to use in calculating the Root Protection Area (RPA). Where a tree is multi-stemmed, its RPA is calculated in accordance with BS5837: 2012 Annex C and D.
- **Physiological and structural condition.**
- **Category grading in accordance with Table 1 BS5837: 2012, reflecting the tree’s or group’s landscape function and condition (see below)**
- **The suitability of the trees in the context of future development was also considered, including their safe useful life expectancy and sustainability.**
APPENDIX C – TREE SURVEY DATA

<table>
<thead>
<tr>
<th>Key to Survey</th>
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<tbody>
<tr>
<td>Height</td>
</tr>
<tr>
<td>Crown spread</td>
</tr>
<tr>
<td>Remaining Contribution</td>
</tr>
<tr>
<td>Main Stem Diameter</td>
</tr>
<tr>
<td>Condition</td>
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<tr>
<td></td>
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<tr>
<td>Age Class</td>
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<td></td>
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<tr>
<td>RPA (Radius)</td>
</tr>
<tr>
<td>RPA (Area)</td>
</tr>
<tr>
<td>Recommendation</td>
</tr>
</tbody>
</table>

UTrees in poor condition; value lost within 10 years; serious defects, dead, in irreversible decline, infected with pathogens significant to health of other trees nearby
A1 Trees of high quality and value; offering at least 40 years’ contribution; particularly good example of species
A2 Trees of high quality and value; offering at least 40 years’ contribution; screening or softening effect
A3 Trees of high quality and value; offering at least 40 years’ contribution; conservation, historical or other value
B1 Trees of moderate value; offering at least 20 years’ contribution; slightly impaired condition but remediable
B2 Trees of moderate value; offering at least 20 years’ contribution; distinct landscape feature as a group or woodland.
B3 Trees of moderate value; offering at least 20 years’ contribution; trees with clearly identifiable conservation or other cultural benefits.
C1 Trees of low quality and value; at least 10 years’ contribution; trees not qualifying in higher categories
C2 Trees of low quality and value; at least 10 years’ contribution; groups or woodlands without significant landscape value, trees of low or temporary landscape value
C3 Trees of low quality and value; at least 10 years’ contribution; trees with limited conservation or other value
<table>
<thead>
<tr>
<th>ref.</th>
<th>Species</th>
<th>Age Class</th>
<th>Ø m/s</th>
<th>Height</th>
<th>Lower crown height</th>
<th>Ultimate height</th>
<th>Grade</th>
<th>Crown Spread N</th>
<th>Crown Spread S</th>
<th>Crown Spread E</th>
<th>Crown Spread W</th>
<th>RPA radius</th>
<th>RPA (m²)</th>
<th>Remaining Contribution</th>
<th>Condition</th>
<th>Comments</th>
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<tr>
<td>Group A</td>
<td>Hybrid Black Poplar</td>
<td>M</td>
<td>850</td>
<td>26</td>
<td>1.5</td>
<td>26</td>
<td>B2</td>
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<td>12</td>
<td>12</td>
<td>12</td>
<td>10.2</td>
<td>326.89</td>
<td>20+</td>
<td>Good</td>
<td>No visible defects seen. Now in last third of safe useful life expectancy. Scattered minor dead wood throughout crown. No work required</td>
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<tr>
<td>Group B</td>
<td>Hawthorn</td>
<td>M</td>
<td>350</td>
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<td>0.5</td>
<td>5</td>
<td>B2</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>4.2</td>
<td>55.42</td>
<td>40+</td>
<td>Fair</td>
<td>No visible defects seen. Ditch-side fragmented group. No work required.</td>
</tr>
<tr>
<td></td>
<td>Ash</td>
<td>V</td>
<td>600</td>
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<td>1.5</td>
<td>13</td>
<td>B3</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>7.2</td>
<td>162.88</td>
<td>&lt;10</td>
<td>Poor</td>
<td>Infected with Ganoderma australe. Extensive basal decay. Lateral root system exposed through grazing damage and erosion No work required</td>
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<tr>
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<td>Crack Willow</td>
<td>SM</td>
<td>600</td>
<td>15</td>
<td>1.5</td>
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<td>B1/B2</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>7.2</td>
<td>162.88</td>
<td>40+</td>
<td>Good</td>
<td>No visible defects seen. No work required.</td>
</tr>
<tr>
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<td>SM</td>
<td>750</td>
<td>15</td>
<td>1.5</td>
<td>18</td>
<td>B1/B2</td>
<td>9</td>
<td>9</td>
<td>9</td>
<td>9</td>
<td>9</td>
<td>254.5</td>
<td>40+</td>
<td>Fair</td>
<td>No visible defects seen. Minor Ivy on main stem and scaffolds. No work required</td>
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<td>ref.</td>
<td>Species</td>
<td>Age Class</td>
<td>Ø m/s</td>
<td>Height</td>
<td>Lower crown height</td>
<td>Ultimate height</td>
<td>Grade</td>
<td>Crown Spread N</td>
<td>Crown Spread S</td>
<td>Crown Spread E</td>
<td>Crown Spread W</td>
<td>RPA radius</td>
<td>RPA (m²)</td>
<td>Remaining Contribution</td>
<td>Condition</td>
<td>Comments</td>
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<tr>
<td>5539</td>
<td>White Willow</td>
<td>SM</td>
<td>700</td>
<td>15</td>
<td>1.5</td>
<td>18</td>
<td>B1/B2</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>8.4</td>
<td>221.7</td>
<td>40+</td>
<td>Good</td>
<td>No visible defects seen.</td>
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<td>5540</td>
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<td>1.5</td>
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<td>U</td>
<td>6</td>
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<td>6.5</td>
<td>5</td>
<td>6.6</td>
<td>136.87</td>
<td>&lt;10</td>
<td>Poor</td>
<td>Low vigour. In decline. Dieback in crown.</td>
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<tr>
<td></td>
<td>Hawthorn</td>
<td>OM</td>
<td>350</td>
<td>4</td>
<td>0.5</td>
<td>4</td>
<td>C2</td>
<td>2.5</td>
<td>2.5</td>
<td>2.5</td>
<td>2.5</td>
<td>4.2</td>
<td>55.42</td>
<td>10+</td>
<td>Poor</td>
<td>Low vigour. Ditch-side fragmented linear group. Some significant erosion around root systems.</td>
</tr>
<tr>
<td></td>
<td>Hawthorn</td>
<td>OM</td>
<td>300</td>
<td>3.5</td>
<td>1</td>
<td>3.5</td>
<td>C1</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3.6</td>
<td>40.72</td>
<td>10+</td>
<td>Fair</td>
<td>Low vigour. Extensive Bramble growth in crown</td>
</tr>
</tbody>
</table>
APPENDIX D – ASSESSING CONSTRAINTS

General

It is desirable to retain trees.

In general, Grade ‘A’ and ‘B’ trees should be retained, especially if they offer a visual amenity to the wider community. It may be desirable to retain Grade ‘C’ trees where they can continue to offer a presence until they are replaced but they should not generally prevent an otherwise satisfactory layout from being achieved.

Root system

Construction can impose enormous strain on trees through damage to, or loss of root mass. The root system is the part of the tree most susceptible to damage during construction. Any retained trees could be at risk of root damage through:

- Site clearance
- Excavation causing root severance
- Access for plant and vehicles which may cause compaction of the root zone leading to root death through asphyxiation
- Storage of materials or spillage of damaging substances such as fuel oil, petrol or lime, which can kill roots.
- The raising of soil levels which can kill roots through asphyxiation
- The lowering of soil levels which removes root mass, including many of the fine water collecting roots and beneficial humus layer

The symptoms that can arise from root damage as identified above can take several years to become evident.

The Arboricultural Implications Plan (see Appendix E) shows the constraint of the Root Protection Area (RPA) as a magenta circle or polygon around each tree or group of trees. This is the area where if the trees are retained, ideally no excavation should take place; the soil level should not be raised or lowered; no materials should be stacked; there must be no contamination and no services should be routed.

The Root Protection Area (RPA) required for each tree may affect where the mineral extraction area can be extended to.
Above Ground

Construction can threaten the aerial parts of the tree through physical damage by contact from various plant vehicles; and through the lighting of fires.

The height of the lower crown above ground is shown in the Tree Survey Table (Appendix C). Lifting (or raising) the crown to a set height above ground in order to allow access for plant and machinery would be an acceptable arboricultural practice. Crown spread may in itself be a constraint where it is greater than the RPA radius.

Future growth

Whilst trees may be small at the time of survey, future growth may be considerable, both in height and radial crown spread.
APPENDIX E – ARBORICULTURAL IMPLICATIONS AND PROTECTION PLAN

The Arboricultural Implications Plan is pictured below. A full-sized version of the plan (Filename: 3878.Elton2.Ingrebourne.AITP) has been provided with this file. It is recommended that the full-size version be used for detailed review, as the resolution of the plan will be much higher than that below.
PROTECTED AREA

DO NOT ENTER

(WITHOUT PERMISSION)

This barrier is designed to protect these trees.

PLEASE REPORT ANY BREACH IN THE BARRIER TO THE SITE MANAGER
APPENDIX G – REFERENCE MATERIAL

- Arboricultural Advisory and Information Service ‘Tree Root Systems’ 1995
- BS5837 ‘Trees in Relation to design, demolition and construction’ 2012
- Diagnosis of Ill Health in Trees (Strouts and Winter) 1994
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