

# **RECOVERY PLAN**

## ***Use of Waste for Construction (including amenity and engineering)***

### ***Land at Brent Hall, Russell Green***

*Prepared by*



**Integrated Skills**

*For*

**Land Logical**

**December 2023**

[J000857/REC-V2]

## DOCUMENT CONTROL SHEET

<b>Client</b>	Land at Russell Green, Boreham Road
<b>Project</b>	Land at Brent Hall, Russell Green
<b>Document Title</b>	Waste Recovery Plan
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## 1. INTRODUCTION AND BACKGROUND

- 1.1 This recovery plan has been prepared in conjunction with the Environment Agency Guidance.<sup>1</sup>
- 1.2 The activity will involve the importation and use of waste at the site.
- 1.3 It is proposed to import approximately 60,150m<sup>3</sup> of inert waste to stabilise the existing, unstable former quarry face along the south western boundary of the site to prevent further slippage and destabilise land that is in a different ownership. In achieving stabilisation, the proposed restoration will also provide ecological enhancement and landscape improvements.
- 1.4 The purpose of this plan is to seek approval of the WRP before an Environmental Permit application for recovery is submitted.
- 1.5 The WRP has been prepared on behalf of Aquila, the landowner, in conjunction with Land Logical, the proposed contractor.

### Background

- 1.6 The site was worked for sand and gravel during the 1980's. Following mineral extraction, a revised restoration scheme for amenity use was approved
- 1.7 In 2014, planning permission was granted by Essex County Council (ECC) to import 85,000 tonnes of inert waste material to stabilise former quarry face and satisfactorily restore former mineral site to landscaped grassland and ponds, and associated improvements to existing site access to facilitate delivery of waste material.
- 1.8 Condition 1 required the development to be started before the expiry of 5 years from the date of the permission. The works should have commenced by 29 January 2019.
- 1.9 The officer's report for determining this application noted that "*the site has previously been poorly restored leaving a steep bank which looks unnatural within the context of the surrounding landscape.*" The planning decision was issued on the basis that it sought to secure the long term stability and restoration of this site.
- 1.10 Unfortunately, the planning permission was not implemented.
- 1.11 Planning permission has now been granted by Essex County Council for the "*Importation of 85,000 tonnes of inert waste material to stabilise former quarry face and restore former mineral site to a landscaped habitat mosaic and pond with associated improvements to existing site access*". Ref ESS/81/23/CHL.
- 1.12 As part of the planning application, a Stability Risk Assessment and Restoration Design report was commissioned. This report was prepared by KEY Geo Solutions, an independent geotechnical consultancy. The design report provides the proposed landform which will deliver stability, biodiversity and landscape enhancements.
- 1.13 The restoration design includes a cut and fill exercises, to utilise as much on-site material as possible in the restoration, and thus minimise the amount of waste required for the project.

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<sup>1</sup> <https://www.gov.uk/government/publications/deposit-for-recovery-operators-environmental-permits/waste-recovery-plans-and-deposit-for-recovery-permits>



- 1.14 The project, once complete, will achieve significant improvement and environmental gains, with due consideration to the proposed Country Park and wider residential development.



## 2. THE SITE

- 2.1 The site is located on land at Brent Hall, Russell Green, Boreham, CM3 3BA, centred at NGR 574600 212600. It is approximately 1.6 miles north west of Chelmsford.
- 2.2 The site is accessed using a gated concrete surfaced entrance off Boreham Road, which has existing kerb radii and visibility splays.
- 2.3 The nearest residential properties are Russell Green Cottages, which are approximately 130m to the north of the site boundary.
- 2.4 The site is adjacent to the operational Bulls Lodge mineral extraction site. Part of Bulls Lodge quarry has been restored. The restored land abuts the Russell Green site boundary. The boundary line has been eroded over time and remains a key consideration to the proposed restoration works.
- 2.5 The Russell Green site at this boundary is a steep 10m high bank. At the base of the bank there is large pond, which appears subdivided into four smaller interconnecting water features.

### Geology

- 2.6 The underlying superficial deposits comprise the clay, silt, sand and gravel. These have been worked.
- 2.7 The bedrock geology is the London Clay Formation.
- 2.8 The southern slope is exposed and reveals 10m of sand and gravel with 1-2m overburden.

### Hydrogeology and Hydrology

- 2.9 The bedrock geology is unproductive. The superficial drift geology provides a secondary (undifferentiated) aquifer.
- 2.10 The site is not located in any Groundwater Source Protection Zone.
- 2.11 The site is not in an area at risk from flooding.

### Ecology

- 2.12 There are no European Sites (SPAs, Ramsar or SACs) or SSSIs within 2km of the site.

### Air Quality

- 2.13 The site is not in an Air Quality Management Area.

### Cultural Heritage

- 2.14 The Gin House and Brent Hall are both Grade II Listed Buildings. These are approximately 280m east of the site boundary.

### Future Development

- 2.15 The land to the immediate south of the site is designated in the district Local Plan as a new Country Park, with the surrounding land allocated to provide 3,000 new homes and 45,000sqm of new office/business park floor space. This seeks to provide new open space for public access and recreation.
- 2.16 This is indicated on Figure 1. The red line shows the position of the steep bank of the Russell Green Site.



Figure 1 – Proposed New Development (Red line shows boundary with Russell Green Site)





### 3. WASTE RECOVERY TEST

3.1 With reference to Environment Agency guidance<sup>2</sup>, “*depositing waste is a recovery activity if you can show that you could and would carry out the works using non-waste material.*” The supporting evidence can include:

- Financial benefit by using non-waste materials
- Funding to use non-waste materials
- Obligations to complete the scheme
  - Specific obligations
  - General obligations

3.2 Further evidence is also required to demonstrate:

- The waste is serving a useful purpose
- Planning permission
- Purpose of the Work
- Quantity of waste to be used
- Meeting quality standards

#### **Financial benefit by Using non-Waste Materials**

3.3 Evidence can be provided to show that if the works were carried out, there would be a benefit from a direct net financial gain or other worthwhile benefit.

3.4 In May 2022, Mr Colin Nottage, a Chartered Safety and Health Practitioner, visited the site and provided advice to Land Logical. At that time, it was reported too difficult to install safety fencing along the top of the quarry and there was already evidence of unauthorised pedestrian access into the quarry. A copy of the letter is provided in Appendix B.

3.5 In June 2022, Ascend Broking Group visited the site with a view of providing public liability cover for the site. The conclusion of their report confirmed that the site is uninsurable in its present condition. This letter is provided in Appendix C.

3.6 In June 2022, KEY GS prepared a Stability Risk Assessment and Restoration Design report. This concluded that “*the quarry faces within Russell Green Quarry are not stable if left unrestored and could potentially regress beyond the site boundary*”. A copy of this report is provided in Appendix D.

3.7 There is no direct easily measured financial gain to be achieved from the scheme. However, the work to stabilise bank will achieve a worthwhile benefit. As set out in the Stability Risk Assessment, in the absence of undertaking the work, the slope will continue to fail. The slope has continued to fail since 2013 and is now even closer to the boundary of the site. It is difficult to estimate the cost to the landlord for any claims made from the adjoining landowner, should the slope failures continue onto the adjoining land.

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<sup>2</sup> <https://www.gov.uk/government/publications/deposit-for-recovery-operators-environmental-permits/waste-recovery-plans-and-deposit-for-recovery-permits>





- 3.8 In October 2022, a Preliminary Ecological Assessment (PEA) was completed by Southern Ecological Solutions. This is provided in Appendix E.
- 3.9 The PEA concluded that the proposed restoration provides an opportunity to deliver landscape scale, biodiversity benefits that enhance habitats within and adjacent to the site and will strengthen ecological connectivity for priority habitats and protected and notable species.
- 3.10 The proposed restoration will also allow for biodiversity enhancement, to contribute towards meeting a biodiversity net gain, and provide a landscape that will support the adjoining country park status.
- 3.11 The proposed scheme will therefore deliver other worthwhile benefits.
- 3.12 The work will also deliver an indirect financial gain as it will avoid potential costs against the landowner for failing to stabilise the bank.

**Funding to Use Non Waste Materials**

- 3.13 As it is difficult to show the financial benefit associated with stabilising the banks, the landowner has assessed the cost for carrying out the work using non-waste materials.
- 3.14 The cost to carry out the work whether using waste or non-waste will have the same operational costs. The main difference will be the cost to purchase the non-waste. The proposed contractor, Land Logical Aggregates Limited, has provided the following costs to the landowner, see Table 1 (a quotation is provided in Appendix F).



**Table 1 – Estimated Costs Associated with the Development using Non-Waste**

<b>Item</b>	<b>Estimated Cost (£)</b>
<b>Planning Application</b>	68,000
<b>Set Up cost</b>	
Provision of Office and chemical toilet, storage	4,500
Utilities	5,000
Construct Haul Road (labour, plant and materials)	12,500
<b>Materials</b>	
85,000 tonnes of certified fill £4.75/tonne	403,750
23,270 tonnes of top soil £5.25/tonne	122,167.50
<b>Operational Costs</b>	
Project Manager/TCM	25,000
Office/Site Supervisor	25,000
Wheel Wash	10,000
Dozer and Operator (and any other plant)	55,000
Road Sweeper	10,000
Diesel	15,000
Unforeseen	10,000
<b>Post Operational Costs</b>	
Planting	8,000
Contingency	10,000
Removal of Haul Road	6,000
<b>TOTAL</b>	<b>£789,918</b>

3.15 The landowner has confirmed that funding is available to carry out this work, see Appendix G.



**Obligations to Complete the Scheme**

- 3.16 Planning permission has been granted by Essex County Council which confirms the importation of inert waste material to stabilise the former quarry face. A copy of the advice is provided in Appendix A.
- 3.17 The consent also requires the work to provide landscape habitat mosaic and pond.
- 3.18 The work must be carried out in accordance with the approved plans and conditions to ensure the site is properly restored.

**Evidence the Waste is Serving a Useful Purpose**

- 3.19 The Environment Agency has provided a list of wastes that are considered suitable for use in recovery schemes. The following wastes will be used in the project.

**Table 2 – Proposed Wastes**

<b>Waste Code</b>	<b>Waste Description</b>
01 04 09	Waste sand and clays
17 01 01	Concrete
17 01 02	Bricks
17 01 03	Tiles and ceramics
17 01 07	Mixtures of concrete, bricks, tiles and ceramics
17 05 04	Soils and stones
19 12 09	Minerals (for example sand, stones)
20 02 02	Soils and stones



#### 4. PURPOSE OF THE WORK

- 4.1 It is proposed to import inert material to restore the former quarry and stabilise the bank.
- 4.2 The stability of the bank has been assessed by third party geotechnical specialists. It is 12m high, with a steep gradient. The average slope angle is 1v:2h. The north eastern and eastern quarry faces benefitted from some restoration and achieve slope faces of 1v:4h, which is a more gentle gradient.
- 4.3 The Stability Risk Assessment confirms that the slope along the western quarry face will fail if not restored. Progressive failures have occurred at the unrestored western quarry faces since 2013.
- 4.4 Localized slope failures have already occurred, with the failures occurring close to the site boundary. Without intervention, there is a high risk that the failures will continue and encroach land in the control of a third party. This land is allocated as a Country Park the Local Plan. Any further slope failures could jeopardise the Country Park, which will be an amenity value to the local residents.
- 4.5 It is proposed to provide a 1v:4h slope along the western/southern boundary, to tie in sympathetically to the existing restored slopes. This will provide biodiversity enhancement through a managed wildflower meadow. The proposed slope gradient can be mown for routine annual management.
- 4.6 The pond will be retained and enhanced in the base of the restored profile. The Stability Risk Assessment has confirmed that the proposed restoration slopes will remain stable as the pond water level increases.

#### Quantity of Waste Used

- 4.7 The proposed landform requires 63,450m<sup>3</sup> of fill material. There is 3,300m<sup>3</sup> on site that can be regraded and incorporated into the scheme. There will be a need to import 60,150m<sup>3</sup> of inert waste to achieve the profile.
- 4.8 At a conversion rate of 1.8t/m<sup>3</sup>, 108,270 tonnes of material will be required to be imported. This will comprise of 85,000 tonnes of inert waste, predominantly a mixture of soils, concrete and bricks, with 23,270 tonnes of top soil.
- 4.9 The top soil will be delivered outside the scope of this WRP. This will be used to create the final surface layer required for planting and to create the biodiversity enhancement opportunities.
- 4.10 The design of the site seeks to use the minimum amount of waste required to achieve the benefit. A cut and fill exercise has been carried out to utilise soils already on site as part of the scheme. This reduces the amount of waste to be imported.
- 4.11 Cross sections of the proposed landform are provided with the Stability Risk Assessment.
- 4.12 As set out in the Stability Risk Assessment, the proposed landform has been designed to stabilise the steep slopes of the former mineral working site but has graded this into the existing gentler slopes provided. This will create a seamless transition from the proposed restoration area to the already restored profile.
- 4.13 During the previous planning application, alternative operations were considered. The proximity of the top of the quarry face to the property boundary means that there is no



practical means of reducing the steep slope, caused by previous excavation of the site, to a sustainable gradient, solely within the narrow strip along the western boundary.

- 4.14 The only potential means of resolving the problem involve building up the ground from the floor of the former quarry to create an engineered supporting wall, or to create a landscaped slope. Although the former would be possible, it would be incompatible with the rural setting and planning policy. It would be an unsustainable option in terms of the requirement for resource inputs and would not support the proposed amenity and biodiversity enhancement being promoted for the new scheme.
- 4.15 Removing soil from other parts of the site would create steep slopes elsewhere, not compatible with site restoration objectives, and would result in the loss of both wildlife habitat and trees planted in those areas.
- 4.16 Overall, the proposed scheme has been designed by Geotechnical engineers to provide a stable slope, that will tie into the existing profile creating a unified landform, with opportunities for biodiversity enhancement.

### **Meeting Quality Standards**

- 4.17 The proposed landform has been designed by KEY Geo Solutions. This is an independent geotechnical consultancy.
- 4.18 The design seeks to provide a uniformed profile, with slopes at an angle consistent with the rest of the site.
- 4.19 The site is within Flood Zone 1, which has the least probability of flooding.
- 4.20 The design retains a pond feature, which has been assessed to demonstrate that this will not affect stability of the restored slopes. The proposal will not increase the risk of flooding in the surrounding area. The final landform will essentially create a stabilised “bowl” feature, that will be approximately 10m below the top of the slopes.
- 4.21 Prior to works commencing, profile height markers will be installed by a surveyor to show the operator the final working levels. On completion of the work, a final topographical survey will be carried out.
- 4.22 As part of the Environmental Permit application, the supporting documents will include a risk assessment to assess the potential risk associated with the following:
- Dust
  - Mud on the road
  - Noise
- 4.23 The risk will be assessed to ensure that there will be no significant harm to local receptors which may include residents, ecology, surface water, groundwater, roads, footpaths and air.
- 4.24 An Accident Management Plan will also be prepared for the permit and will be valid for the duration of the work.
- 4.25 The planning consent requires the work to provide landscape habitat mosaic and pond.
- 4.26 The work must be carried out in accordance with the approved plans and conditions to ensure the site is properly restored. The operator has 12 months to complete the work once commenced, and restore the site to the approved plans.



## **5. CONCLUSION**

- 5.1 This Waste Recovery Plan has been prepared to seek agreement that the proposed works could proceed as a waste recovery operation.
- 5.2 Planning permission has been granted by Essex County Council.
- 5.3 This Waste Recovery Plan has been prepared now to help the landowner prepare in advance the necessary consents and permits required for the scheme to go ahead.
- 5.4 At this stage, there is a Stability Risk Assessment and Preliminary Ecological Assessment which both demonstrate that the restoration work will achieve a worthwhile benefit.
- 5.5 The Stability Risk Assessment has confirmed the need to stabilise, the existing slopes, which if left un-stabilised will continue to fail. Planning permission has been approved specifically to achieve this outcome.
- 5.6 The PEA concluded that the proposed restoration provides an opportunity to deliver landscape scale, biodiversity benefits that enhance habitats within and adjacent to the site and will strengthen ecological connectivity for priority habitats and protected and notable species.
- 5.7 The site is currently uninsurable which is a risk to the landowner. Alternative options to achieve stabilisation have been considered inappropriate. The technical advice received to date has confirmed the need for importation to achieve stabilisation. There is currently no means to secure the quarry from unauthorised access and evidence of pedestrian access has been recorded.
- 5.8 Using waste to restore this site is a sustainable use of resources and will serve a useful purpose.

## **Appendix A – Planning Permission**

**ESSEX COUNTY COUNCIL**

**Town and Country Planning Act 1990 (as amended)  
TOWN AND COUNTRY PLANNING (DEVELOPMENT MANAGEMENT PROCEDURE)  
ORDER 2015**

In pursuance of the powers exercised by it as County Planning Authority, Essex County Council has considered an application to carry out the following development:

**Importation of 85,000 tonnes of inert waste material to stabilise former quarry face and restore former mineral site to a landscaped habitat mosaic and pond with associated improvements to existing site access at:  
Land at Russell Green, Boreham Road, Chelmsford**

and in accordance with the said application and the plan(s) accompanying it, hereby gives notice of its decision to GRANT PERMISSION FOR the said development subject to compliance with the following conditions and reasons:

1. The development hereby permitted shall be begun before the expiry of 3 years from the date of this permission. Written notification of the date of commencement shall be sent to the Mineral Planning Authority within 7 days of such commencement.

Reason: To comply with section 91 of the Town and Country Planning Act 1990 [as amended].

2. The development hereby permitted shall be carried out in accordance with the details of the application dated 8 September 2023, together with:

- Drawing No. DHA/31169/01, titled 'Site Location Plan', dated September 2023;
- Drawing No. 8198-001-003, Rev. P01, titled 'Cross Sections', dated 14 October 2022;
- Drawing No. 8198-001-002, Rev. P01, titled 'Proposed Restoration Design', dated 14 October 2022;
- Drawing No. 8198-001-001, Rev. P01, titled 'Existing Site Conditions', dated 14 October 2022;
- Drawing No. 70071\_002\_001, Rev. B, titled 'Detail Planting Plan', dated 23 August 2023;
- Drawing No. H-01, Rev. P3, titled 'Proposed Access Arrangement' dated 16 November 2023;
- Drawing No. T-02, Rev. P1, titled 'Vehicle Swept Path Analysis Proposed Access Arrangement Articulated Lorry', dated 16 November 2023;
- Drawing No. T-01, Rev. P3, titled 'Vehicle Swept Path Analysis Proposed Access Arrangement', dated 16 November 2023.

and in accordance with any non-material amendment(s) as may be subsequently approved in writing by the Waste Planning Authority, except as varied by the following conditions:

Reason: For the avoidance of doubt as to the nature of the development hereby permitted, to ensure development is carried out in accordance with the approved



application details, to ensure that the development is carried out with the minimum harm to the local environment and in accordance with Essex and Southend-on-Sea Waste Local Plan (2017) Policies 1, 6, 9, 10, 11, 12 and 13 and Chelmsford Local Plan (2020) Policies S1, S3, S4, S11, DM10, DM13, DM16, DM17 and DM18.

3. The development hereby permitted shall be completed within 12 months from the notified date of commencement of the development, by which time tipping/operations shall have ceased and the site shall have been restored in accordance with the scheme approved under Condition 2.

Reason: To provide for the completion and progressive restoration of the site within the approved timescale, in the interest of local amenity and to comply with Essex and Southend-on-Sea Waste Local Plan (2017) Policies 10, 11, 12 and 13 and Chelmsford Local Plan (2020) Policies S1, S3, S4, S11, DM10, DM13, DM16 and DM17.

4. Any building, plant, machinery, foundation, hard standing, roadway, structure or erection in the nature of plant or machinery used in connection with the development hereby permitted shall be removed from the site when no longer required for the purpose for which built, erected or installed and in any case not later than 12 months from the date of commencement following which land shall be restored in accordance with the restoration scheme approved under condition 2 of this permission.

Reason: To enable the Waste Planning Authority to adequately control the development, to ensure that the land is restored to a condition capable of beneficial use and to comply with Essex and Southend-on-Sea Waste Local Plan (2017) Policies 10, 11, 12 and 13 and Chelmsford Local Plan (2020) Policies S1, S3, S4, S11, DM10, DM13, DM16 and DM17.

5. The development hereby permitted shall not be carried out unless during the following times:

0700 hours to 1700 hours Monday to Friday  
0700 hours to 1300 hours Saturdays

and at no other times, including on Sundays, Bank or Public Holidays.

Reason: In the interests of limiting the effects on local amenity, to control the impacts of the development and to comply with Essex and Southend-on-Sea Waste Local Plan (2017) Policy 10.

6. All vehicular access and egress to and from the site shall be from Boreham Road, as indicated on Drawing No. H-01, Rev. P3, titled 'Proposed Access Arrangement' dated 16 November 2023. No other access shall be used by vehicles entering or exiting the site.

Reason: In the interests of highway safety, safeguarding local amenity and to comply with Essex and Southend-on-Sea Waste Local Plan (2017) Policies 10 and 12.

7. Prior to commencement of the importation of operation at the site, the proposed haul road into the site shall be constructed as shown in principle in the Proposed Access Arrangement, Drawing No. H-01, Rev P3 and appropriately metalled for the proposed HGV use. It shall be provided with an appropriate vehicular crossing of the highway verge,

incorporating the junction radii to both sides of the vehicular access as shown in the drawing.

Reason: To ensure that vehicles can enter and leave the highway in a controlled manner and to ensure that opposing vehicles can pass clear of the limits of the highway, in the interests of highway safety and in accordance with Essex and Southend-on-Sea Waste Local Plan (2017) Policies 10 and 12.

8. The surfaced section of the access road from the junction with Boreham Road shall be kept free of potholes, mud, dust and detritus to ensure that such material is not carried onto the public highway.

Reason: In the interest of highway safety, to prevent material being taken onto the public highway and to comply with Essex and Southend-on-Sea Waste Local Plan (2017) Policies 10 and 12.

9. No commercial vehicle shall leave the site unless its wheels and underside chassis have been cleaned to prevent materials, including mud and debris, being deposited on the public highway.

Reason: In the interest of highway safety, to prevent material being taken onto the public highway and to comply with Essex and Southend-on-Sea Waste Local Plan (2017) Policies 10 and 12.

10. The total number of for HGV\* vehicle movements associated with the development hereby permitted shall not exceed the following limits:

120 movements (60 in and 60 out) per day (Monday to Friday)

60 movements (30 in and 30 out) per day (Saturdays)

No (vehicle/HGV) movements shall take place outside the hours of operation authorised in Condition 5 of this permission.

\*for the avoidance of doubt a heavy goods vehicle shall have a gross vehicle weight of 7.5 tonnes or more.

Reason: In the interests of highway safety, safeguarding local amenity and to comply with Essex and Southend-on-Sea Waste Local Plan (2017) Policies 10 and 12.

11. No unbound material shall be used in the surface finish of the site access road within 20 metres of its junction with the public highway.

Reason: In the interests of highway safety and to comply with Essex and Southend-on-Sea Waste Local Plan (2017) Policies 10 and 12.

12. No importation of waste shall take place until the first 20 metres of the access road has been surfaced in accordance with details which have been submitted to and approved in writing by the Waste Planning Authority. The access road surfacing shall be implemented in accordance with the approved details and retained for the duration of the development hereby permitted.

Reason: In the interests of highway safety and to comply with Essex and Southend-on-Sea Waste Local Plan (2017) Policies 10 and 12.

13. No development shall take place, including any ground works or demolition, until a Construction Traffic Management Plan has been submitted to, and approved in writing by, the Waste Planning Authority. The approved plan shall be adhered to throughout the entire development period. The Plan shall provide for:

- i. Shall limit the maximum length and type of vehicle identified in the Vehicle Swept Path Analysis, drawing no. T-01; 10.2 metre long rigid heavy goods vehicle (HGV) and Vehicle Swept Path Analysis, drawing no. T-02; 16.5 metre long articulated (HGV);
- ii. The use of a banksman for long rigid heavy goods vehicle greater than 10.2 metre long
- iii. The routing of HGV's including abnormal HGV loads shown, in the Transport Statement paragraph 3.3.1;
- iv. Timings for the delivery of abnormal loads to the site;
- v. The parking of vehicles of site operatives and visitors;
- vi. Loading and unloading of plant and materials;
- vii. Storage of plant and materials used in constructing the development;
- viii. Wheel and underbody washing facilities;

Reason: In the interests of highway safety and to comply with Essex and Southend-on-Sea Waste Local Plan (2017) Policies 10 and 12.

14. Prior to commencement of the importation of operation at the site, the vehicular access shown in the Proposed Access Arrangement, Drawing No. H-01, Rev P3 at its centre line shall be provided with a visibility splay with dimensions of not less than 2.4 metres by 116 metres to the west and 2.4 metres by 123 metres to the east, as measured from and along the nearside edge of the carriageway. Such vehicular visibility splays shall be provided before commencement and retained free of obstruction above 600mm at all times.

Reason: To provide adequate inter-visibility between vehicles using the vehicular access and those in the existing public highway in the interest of highway safety in accordance with Essex and Southend-on-Sea Waste Local Plan (2017) Policies 10 and 12.

15. Except for temporary operations, the free field Equivalent Continuous Noise Level (LAeq, 1 hr) at noise sensitive properties listed on page 19 of the Noise Assessment titled 'Russell Green Quarry. Proposed Restoration / Landscaping Works. Noise Assessment', ref: 5372, dated 24 July 2023 shall not exceed the following limits:

- Russell Green Cottages – 49 dB LAeq 1hr
- Coldstream Cottages – 49 dB LAeq 1hr
- Russell Green Bungalow – 49 dB LAeq 1hr
- Brent Hall / Cherry Tree Cottage – 52 dB LAeq 1hr

Measurements shall be made no closer than 3.5 metres from the façade of properties or other reflective surface and shall be corrected for extraneous noise. Noise monitoring may be required at noise sensitive properties. The results of the monitoring shall include LA90 and LAeq noise levels, the prevailing weather conditions, details and calibration of the

equipment used for measurement and comments on other sources of noise which affect the noise climate. The monitoring shall be carried out for at least 2 separate durations of 30 minutes separated by at least 1 hour during the working day and the results shall be submitted to the Waste Planning Authority within (1 month) of the monitoring being carried out.

Reason: In the interests of amenity and to comply with Essex and Southend-on-Sea Waste Local Plan (2017) Policy 10.

16. For temporary operations, the free field Equivalent Continuous Noise Level (LAeq, 1 hr) at noise sensitive properties at noise sensitive properties listed below and on page 19 of the Noise Assessment titled 'Russell Green Quarry. Proposed Restoration / Landscaping Works. Noise Assessment', ref: 5372, dated 24 July 2023 shall not exceed 70 dB LAeq 1hr:

- Russell Green Cottages
- Coldstream Cottages
- Russell Green Bungalow
- Brent Hall / Cherry Tree Cottage

Measurements shall be made no closer than 3.5 metres from the façade of properties or other reflective surface and shall be corrected for extraneous noise. Noise monitoring may be required at noise sensitive properties. The results of the monitoring shall include LA90 and LAeq noise levels, the prevailing weather conditions, details and calibration of the equipment used for measurement and comments on other sources of noise which affect the noise climate. The monitoring shall be carried out for at least 2 separate durations of 30 minutes separated by at least 1 hour during the working day and the results shall be submitted to the Waste Planning Authority within (1 month) of the monitoring being carried out.

Temporary operations shall not exceed a total of eight weeks in any continuous duration. Temporary operations shall include site preparation, bund formation and removal, site stripping and restoration and any other temporary activity that has been approved in writing by the Waste Planning Authority in advance of such a temporary activity taking place.

Reason: In the interests of amenity and to comply with Essex and Southend-on-Sea Waste Local Plan (2017) Policy 10.

17. No vehicle, plant, equipment and/or machinery shall be operated at the site unless it has been fitted with and uses an effective silencer. All vehicles, plant and/or machinery shall be maintained in accordance with the manufacturer's specification at all times.

Reason: In the interests of amenity and to comply with Essex and Southend-on-Sea Waste Local Plan (2017) Policy 10.

18. The development hereby permitted shall be carried out in accordance with the Environmental Design Measures listed in paragraph 5.1.2 of the Air Quality Assessment, project no. 402.064783.000001, dated 25 July 2023, and sections A.4, A.5, A.6 and A.7 of the Dust Management Plan (Appendix A of the Air Quality Assessment).

The development shall be implemented in accordance with the approved scheme, with the approved dust suppression measures being retained and maintained in a fully functional condition for the duration of the development hereby permitted.

Reason: To reduce the impacts of dust disturbance from the site on the local environment and to comply with Essex and Southend-on-Sea Waste Local Plan (2017) Policy 10.

19. The access/haul road used in connection with the development hereby permitted shall be sprayed with water during dry weather conditions.

Reason: To reduce the impacts of dust disturbance from the site on the local environment and to comply with Essex and Southend-on-Sea Waste Local Plan (2017) Policy 10.

20. All mitigation and enhancement measures and/or works shall be carried out in accordance with the details contained in the Invertebrate Survey (Green Shoots Ecology, August 2023), Confidential Badger Settle Survey (Green Shoots Ecology, September 2023), Reptile Survey (Green Shoots Ecology, September 2023), Breeding Bird Survey Report (Green Shoots Ecology, September 2023) and Preliminary Roost Assessment (Green Shoots Ecology, September 2023).

This shall include the appointment of an appropriately competent person e.g. an ecological clerk of works (ECoW) to provide on-site ecological expertise during construction. The appointed person shall undertake all activities, and works shall be carried out, in accordance with the approved details.

Reason: To conserve and enhance protected and Priority species and allow the Waste Planning Authority to discharge its duties under the Conservation of Habitats and Species Regulations 2017 (as amended), the Wildlife & Countryside Act 1981 as amended and s40 of the NERC Act 2006 (Priority habitats & species), and in accordance with Essex and Southend-on-Sea Waste Local Plan (2017) Policy 10 and Chelmsford Local Plan (2020) Policies DM16, DM17 and S4.

21. Any works which will impact the breeding / resting place of Great Crested Newts, shall not in any circumstances commence unless the Waste Planning Authority has been provided with either:

- a) A license issued by Natural England pursuant to Regulation 55 of The Conservation of Habitats and Species Regulations 2017 (as amended) authorizing the specified activity/development to go ahead; or
- b) A GCN District Level Licence issued by Natural England pursuant to Regulation 55 of The Conservation of Habitats and Species Regulations 2017 (as amended) authorizing the specified activity/development to go ahead; or
- c) A statement in writing from the Natural England to the effect that it does not consider that the specified activity/development will require a licence.

Reason: To conserve protected species and allow the Waste Planning Authority to discharge its duties under the Conservation of Habitats and Species Regulations 2017 (as amended), the Wildlife & Countryside Act 1981 (as amended) and s17 Crime & Disorder Act 1998, and in accordance with Essex and Southend-on-Sea Waste Local Plan (2017)

Policy 10 and Chelmsford Local Plan (2020) Policies DM16, DM17 and S4.

22. The badger sett closure identified in the document titled 'Badger Sett Survey carried out at Russell Green Quarry, Boreham, Essex', prepared by Green Shoots Ecology, dated September 2023, and as shown on the aerial plan on page 8 of the document, shall not in any circumstances commence unless the Waste Planning Authority has been provided with either:

- a) A license issued by Natural England pursuant Badger Protection Act 1992 authorizing the specified activity/development to go ahead; or
- b) A statement in writing from the Natural England to the effect that it does not consider that the specified activity/development will require a licence.

Reason: To conserve protected species and allow the LPA to discharge its duties under and Badger Protection Act 1992 and s17 Crime & Disorder Act 1998, and in accordance with Essex and Southend-on-Sea Waste Local Plan (2017) Policy 10 and Chelmsford Local Plan (2020) Policies DM16, DM17 and S4.

23. No development shall take place until a Landscape and Ecological Management Plan (LEMP) has been submitted to, and approved in writing by, the Waste Planning Authority. The content of the LEMP shall include the following:

- a) Description and evaluation of features to be managed including protected and priority species.
- b) Ecological trends and constraints on site that might influence management.
- c) Aims and objectives of management.
- d) Appropriate management options for achieving aims and objectives, in conjunction with the Biodiversity Net Gain Calculation (Green Shoots Ecology, September 2023).
- e) Prescriptions for management actions.
- f) Preparation of a work schedule (including an annual work plan capable of being rolled forward over a five-year period, covering a minimum of 30 years).
- g) Details of the body or organisation responsible for implementation of the plan.
- h) Ongoing monitoring and remedial measures.

The LEMP shall also include details of the long-term implementation of the plan and the management body(ies) responsible for its delivery. The plan shall also set out (where the results from monitoring show that conservation aims and objectives of the LEMP are not being met) how contingencies and/or remedial action will be identified, agreed and implemented so that the development still delivers the fully functioning biodiversity objectives of the originally approved scheme. The approved plan will be implemented in accordance with the approved details.

Reason: To allow the Waste Planning Authority to discharge its duties under the Conservation of Habitats and Species Regulations 2017 (as amended), the Wildlife & Countryside Act 1981 (as amended) and s40 of the NERC Act 2006 (Priority habitats & species), and in accordance with Essex and Southend-on-Sea Waste Local Plan (2017) Policy 10 and Chelmsford Local Plan (2020) Policies DM16, DM17 and S4.

24. Repair, maintenance and refuelling of plant, equipment and machinery shall only take place on an impervious surface drained to an interceptor.

Reason: To minimise the risk of pollution of watercourses and aquifers and to comply with Essex and Southend-on-Sea Waste Local Plan (2017) Policies 10 and 11 and Chelmsford Local Plan (2020) Policies S4, DM16 and DM18.

25. Final landform and surface restoration levels shall accord with the landform shown on Drawing No. 8198-001-003, Rev. P01, titled 'Cross Sections', dated 14 October 2022, and the final contour levels shown on Drawing No. 8198-001-002, Rev. P01, titled 'Proposed Restoration Design', dated 14 October 2022. The Mineral Planning Authority shall be notified of the completion of the importation of inert materials and a topographical survey shall be undertaken and submitted for approval by the Waste Planning Authority prior to the placement of topsoils.

Reason: To ensure the site is restored in accordance with the approved details and ensure the proper restoration of the site and compliance with Essex and Southend-on-Sea Waste Local Plan (2017) Policies 9, 10 and 13 and Chelmsford Local Plan (2020) Policies S1, S4 and DM10.

26. No waste other than those waste materials defined in the application details shall enter the site. These are defined as sand and clays, concrete, bricks, tiles and ceramics, soils and stones as listed in Table 2 on Page 8 of the Waste Recovery Plan, ref: J000857/REC-V1, dated 15 December 2022.

Reason: Waste material outside of the aforementioned would raise alternate, additional environmental concerns which would need to be considered afresh and to comply with Essex and Southend-on-Sea Waste Local Plan (2017) Policies 1, 9, 10 and 13 and Chelmsford Local Plan (2020) Policies S1, S4 and DM10.

27. No crushing and/or screening of stone, concrete, brick rubble or hardcore shall take place on the site.

Reason: To protect residential amenity from adverse impacts from such operations, to control waste processing operations and to comply with Essex and Southend-on-Sea Waste Local Plan (2017) Policy 10.

### **Informatives**

1. All work within or affecting the highway is to be laid out and constructed by prior arrangement with, and to the requirements and satisfaction of, the Highway Authority, details to be agreed before the commencement of works. The Highways Development Management Team can be contacted by email at: [development.management@essexhighways.org](mailto:development.management@essexhighways.org).

2. The applicant should contact the Highways Development Management Team to arrange details of a before-and-after condition survey to identify defects to the highway in the vicinity of the access to the site and, where necessary, ensure repairs are undertaken at the developer expense where caused by traffic associated with the development hereby permitted.

3. Prior to commencement of development contact should be made with the Environment

Agency to confirm whether an Environmental Permit is required.

### **Reason for Approval**

**Subject to the imposition of the attached conditions, the proposal is acceptable having been assessed in the light of all material considerations, including weighting against the following policies of the development plan:**

### **Development Plans**

#### ESSEX AND SOUTHEND WASTE LOCAL PLAN (WLP) 2017

- Policy 1 - Need for Waste Management Facilities
- Policy 6 - Open Waste Facilities
- Policy 9 - Waste Disposal Facilities
- Policy 10 - Development Management Criteria
- Policy 11 - Mitigating and Adapting to Climate Change
- Policy 12 - Transport and Access
- Policy 13 – Landraising

#### CHELMSFORD LOCAL PLAN (CLP) 2020

- Strategic Policy S1 – Spatial Principles
- Strategic Policy S3 – Conserving and Enhancing the Historic Environment
- Strategic Policy S4 – Conserving and Enhancing the Natural Environment
- Strategic Policy S11 – The Role of the Countryside
- Policy DM10 – Change of Use (Land and Buildings) and Engineering Operations
- Policy DM13 – Designated Heritage Assets
- Policy DM16 – Ecology and Biodiversity
- Policy DM17 – Trees, Woodland and Landscape Features
- Policy DM18 – Flooding/SuDS

### **Statement of Reasons**

This application seeks to import 85,000 tonnes of inert waste material to stabilise the former quarry face and restore the former mineral site to a landscaped habitat mosaic and pond with associated improvements to the existing site access.

The application has been appraised and it is considered that the proposal is acceptable in principle and that a need for the development has been demonstrated. It is considered that there would not be an unacceptable impact on the landscape, ecological or historic receptors or the highway network, particularly given the relatively short seven month proposed working period, whilst not increasing flood risk. It is also considered that mitigation could prevent unacceptable impact to nearby residential receptors.

Overall it is considered that the proposal complies with WLP Policies 1, 6, 9, 10, 11, 12 and 13 and CLP Policies S1, S3, S4, S11, DM10, DM13, DM16, DM17 and DM18.

**There are no other policies or other material considerations which are overriding or**



warrant the withholding of permissions.

**THE CONSERVATION OF HABITATS AND SPECIES REGULATIONS 2017 (AS AMENDED)**

The proposed development would not be located adjacent to or within distance to a European site.

Therefore, it is considered that an Appropriate Assessment under Regulation 63 of The Conservation of Habitats and Species Regulations 2017 (as amended) is not required.

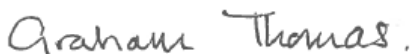
**STATEMENT OF HOW THE LOCAL AUTHORITY HAS WORKED WITH THE APPLICANT IN A POSITIVE AND PROACTIVE MANNER**

In determining this planning application, the Local Planning Authority has worked with the applicant in a positive and proactive manner based on seeking solutions to problems arising in relation to dealing with the planning application by liaising with consultees, respondents and the applicant/agent and discussing changes to the proposal where considered appropriate or necessary. This approach has been taken positively and proactively in accordance with the requirement in the NPPF, as set out in the Town and Country Planning (Development Management Procedure) (England) Order 2015.

**And there are no other policies or other material considerations which are overriding or warrant the withholding of permission.**

Dated: 14 December 2023  
COUNTY HALL  
CHELMSFORD

Signed



Graham Thomas - Head of Planning Service

**IMPORTANT - ATTENTION IS DRAWN TO THE NOTES ON THE NEXT PAGE**

## NOTES

### TOWN AND COUNTRY PLANNING ACT 1990

#### NOTIFICATION TO BE SENT TO AN APPLICANT WHEN A LOCAL PLANNING AUTHORITY REFUSE PLANNING PERMISSION OR GRANT IT SUBJECT TO CONDITIONS

##### Appeals to the Secretary of State

- If you are aggrieved by the decision of your local planning authority to refuse permission for the proposed development or to grant it subject to conditions, then you can appeal to the Secretary of State under section 78 of the Town and Country Planning Act 1990 (as amended).
- If you want to appeal against your local planning authority's decision then you must do so within 6 months of the date of this notice.
- If this is a decision that relates to the same or substantially the same land and development as is already the subject of an enforcement notice, if you want to appeal against your local planning authority's decision on your application, then you must do so within 28 days of the date of this notice.
- Alternatively, if an enforcement notice is served relating to the same or substantially the same land and development as in your application and if you want to appeal against your local planning authority's decision on your application, then you must do so within 28 days of the date of service of the enforcement notice, or within 6 months of the date of this notice, whichever period expires earlier.
- Appeals can be made online at: <https://www.gov.uk/appeal-planning-decision> .If you are unable to access the online appeal form, please contact the Planning Inspectorate to obtain a paper copy of the appeal form on tel: 0303 444 5000
- The Secretary of State can allow a longer period for giving notice of an appeal but will not normally be prepared to use this power unless there are special circumstances which excuse the delay in giving notice of appeal.
- The Secretary of State need not consider an appeal if it seems to the Secretary of State that the local planning authority could not have granted planning permission for the proposed development or could not have granted it without the conditions they imposed, having regard to the statutory requirements, to the provisions of any development order and to any directions given under a development order.
- If you intend to submit an appeal that you would like examined by inquiry then you must notify the Local Planning Authority and Planning Inspectorate (inquiryappeals@planninginspectorate.gov.uk) at least 10 days before submitting the appeal. Further details are on GOV.UK.

Appendix B H&S Letter



Working **together**  
to inspire business  
**improvement**

George Dilloway  
Director  
Land Logical  
C/O  
Stone Power Plant,  
Cotton Lane,  
Dartford,  
DA9 9BB

24<sup>th</sup> May 2022

Dear George,

**Report into the former quarry faces at Russel Green, Boreham Road, Chelmsford CM3 3BB**

My name is Colin Nottage and I am the health and safety competent person for Land Logical. I have worked in the quarrying industry for over 30 years and am a Fellow of the Institute of Quarrying. I have run numerous operational sites including sand and gravel deposits. I have a level 5 National Vocational Qualification in Safety Health and Environment in the Extractives Industry. I Geotechnical understanding and awareness forms a large part of the qualification however I am not a geotechnical specialist and I advise you formally review the geotechnical assessment prepared for the location. I suggest you discuss this with Brian Duthie at Key Geotechnical Solutions. Tel: 07748 638790.

This report is founded on my experience as a quarry manager and after a visit to the site on the 10<sup>th</sup> May 2022.

Executive Summary

The faces adjacent to the Hanson Aggregates site have been left excessively steep by previous quarry workings and they pose a risk of material movement that would undermine land outside of the current ownership.

The owner has a responsibility under Regulation 6 General duties of the operator

*(4) The operator shall ensure that in the event of the abandonment of or ceasing of operations at a quarry, the quarry is left, so far as is reasonably practicable, in a safe condition.*


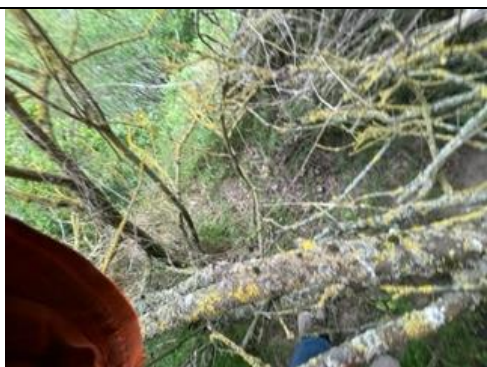

It has been indicated that a large housing estate is planned for the Hanson Aggregates site once their quarrying activities cease as such there will be significant risk of trespass and the need for a robust barrier. There are signs of current pedestrian use in the area. There is an insufficient

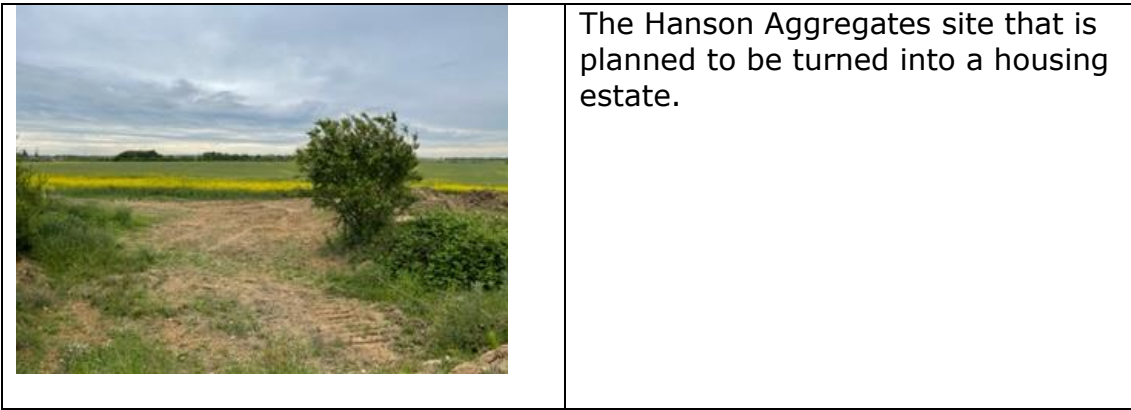
barrier around the old quarry workings as required by Regulation 16 of the Quarries Regulations 1999 (2013). It is not possible to safely install a barrier within the site boundary due to the old quarry workings being steep and quarried extremely close to the site boundary. The vegetation could cause instability in the old faces and trees could fall especially in high winds.

It is recommended that a design is produced for the infilling of the old quarry workings and this is completed. It is recommended that a robust barrier and signage is placed along the boundary between Hanson Aggregates site and the old quarry workings once the ground has been stabilised and this barrier is maintained.

**Detailed information**

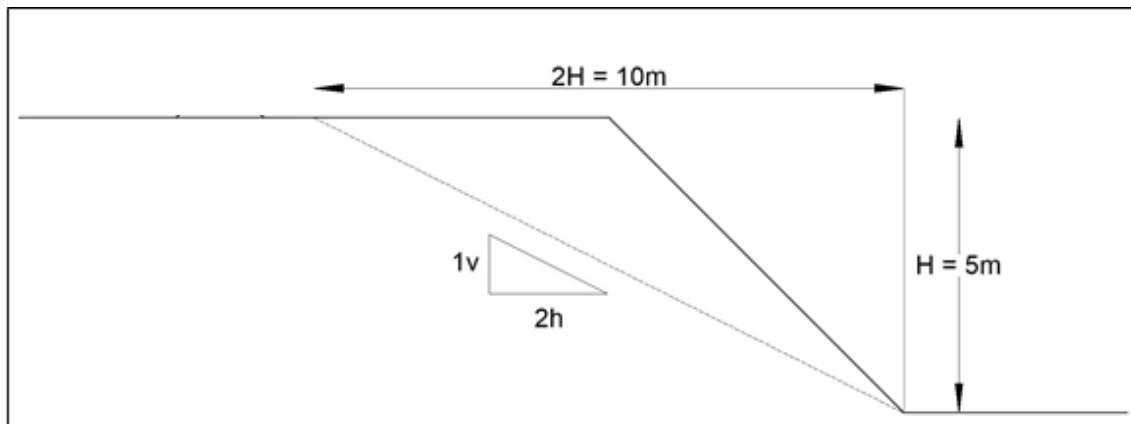
Image	Description
	<p>A general view of the old workings that have overgrown</p>
	<p>An excessively steep old quarry face with significant vegetation that has been quarried extremely close to the boundary</p>

	<p>Signs of instability from trees growing in the faces</p>
	<p>Further excessively steep faces that if moved would cause material movement outside of the ownership of the site.</p>
	<p>Evidence of people walking adjacent to the area that could slip. Insufficient room to place a barrier between the path and old workings</p>



### Issues with over steep faces

The image below shows the natural angle of repose of materials. The current old faces are, in places, almost at vertical. If materials slip a wedge of material would move out of the face and break back up to twice the face height. On this visit it was not possible to accurately measure the face height but is suggested to be between 8-10m in places. This needs further investigation.



### Conclusions and recommendations

The old quarry workings have been quarried extremely close the site boundary and have been left excessively steep. If they move they will cause a failure in land outside of the current ownership.

Recommendation No	Detail	Priority
1	Obtain advice from a geotechnical specialist and obtain a backfill design	High
2	Infill material to make the old workings safe	High
3	Install a suitable barrier and signage along the hazard area.	High
4	Monitor the ground conditions	Med

Please contact me if you wish to discuss any of the findings in the report.

Yours sincerely

Colin Nottage  
CMIOSH, FIQ  
Influential Management Group  
[www.influentialmg.com](http://www.influentialmg.com)







Appendix C Insurance Report



**Ascend Broking Group**  
Business Insurance Solutions

## Insurance Report Prepared for:

Land at Russel Green, Boreham Road,  
Chelmsford CM3 3BB

13/06/2022

Contact: Matthew Collins  
Telephone: 01245 449060  
Mobile: 07901551965  
E-mail: [matthew.collins@ascendbroking.co.uk](mailto:matthew.collins@ascendbroking.co.uk)



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Ascend Br  
this rep

[www.ascendbroking.co.uk](http://www.ascendbroking.co.uk)



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Your Business	7
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Appendix 1 – Quotation Summary	10



## Executive Summary

Thank you for providing us with the opportunity to provide our proposal for your forthcoming renewal.

Ascend Broking Group sited the site at Russel Green, Boreham Road, Chelmsford CM3 3BB with a view of providing public liability cover for the vacant land.

In undertaking this exercise, we reviewed:

- Access
- Security
- Site
- Site plans & additional information
- Dangerous quarry face

Having visited the site and discussed the public liability exposure with insurers, we have been unable to obtain cover in the sites present condition. Insurers would require corrective action in order to make the site safe and for consideration of cover to be granted.

Kind regards,

Matthew Collins  
Managing Director  
Ascend Broking Group Ltd



The following information is common to all your policies unless shown otherwise in our summary and your policy documents.

<b>Insured Title:</b>	Russell Green Site
-----------------------	--------------------

Key things that you need to let us know about include:

- ✓ **Missing subsidiaries or associated companies**
- ✓ **New ventures trading under different names**
- ✓ **Old businesses where liabilities through past activities may still exist**
- ✓ **Changes in company ownership or legal status**

<b>Business Description</b>	Land Owner
-----------------------------	------------

Please let us know immediately if the above description is incorrect or incomplete, or if there has been an acquisition or change in activity **during the period of insurance**. Your insurance **only** covers you for the above. If your business undertakes any other activities not currently listed, then your business may not be covered. It is therefore essential that you notify us immediately of any important changes. The following are examples of things that we should be informed of, which may need a change in business description:

- ✓ **Acquisitions and disposals**
- ✓ **The launch of new products or services**
- ✓ **Changes in your business activities noted above**

<b>Contacts</b>	Via Land Logical
-----------------	------------------

We are only able to take instructions from, and action cover alterations given by, the people noted above in your organisation:



# Business Disclosures

If you are unable to answer 'No' to the questions listed below, please notify us immediately, as failure to disclose the information could void your policy and prevent claims from being paid.

## CONVICTIONS, PROSECUTIONS, BANKRUPTCY

The business, its partners, directors, owners or anyone involved in the management of the business have never:

- ✓ **had a policy or proposal for insurance cancelled or refused**
- ✓ **had special terms or restrictions imposed on a policy**
- ✓ **been convicted or charged with a criminal offence other than a road traffic offence**
- ✓ **incurred a County Court Judgement against it**
- ✓ **been disqualified from being a company director**
- ✓ **been involved in a business which has gone into liquidation, receivership, ceased to trade or entered into an IVA with creditors**
- ✓ **been served a Prohibition Notice by the HSE or other government appointed body.**

## PREVIOUS INSURANCE

- ✓ **had an insurer decline to insure you**
- ✓ **had a policy cancelled or an insurer declined to renew any of your insurances**
- ✓ **had insurers imposed special terms (for example, but not limited to: deletion of coverage; exclusions imposed)**

You are reminded that you have a duty of care, not to make a misrepresentation to us, or your insurer, in respect of any aspects of the risks insured, including and most importantly circumstances that could increase the risk, such that in those circumstances your insurer would have wanted to increase premiums, applied additional terms, or indeed, decided not to provide cover at all.

If any of the facts or circumstances stated or any of the information provided to us is not correct, you should inform us as soon as possible. If and when we are notified of a change we will tell you if this affects your policy, following referral to your insurer. For example, your insurer may cancel your policy in accordance with the cancellation condition, amend the terms of your policy or require you to pay more for your insurance.

If you do not inform us about a change it may affect any claim you make or could result in your Insurance being invalid

XXXXX



# Statement of Demands and Needs

In assessing your demands and needs and making our recommendations, we have:

- ✓ Obtained information about your organisation's circumstances as might reasonably be expected to be relevant in enabling us to identify your requirements and have based our understanding of your needs on the information you have supplied to us.
- ✓ Taken into account any other information we already have about your organisation and its activities, including any other existing insurance contracts of which we have knowledge.
- ✓ Relied upon you disclosing all facts and circumstances material to the required insurance, having informed you of your duty to disclose all such facts and circumstances, and the consequences of a failure to disclose anything of which you are aware that may be relevant.

In making our recommendations, we have considered the relevance of any exclusions, excesses, limitations or conditions imposed by the insurer(s).

We provide a personal recommendation on the basis of a **fair and personal analysis**.

When a quotation is not on a 'fair market analysis' basis we will discuss this with you and explain why.





# Appendix 1

# Quotations Summary



# Executive Cover Summary

We are delighted to provide our report for the upcoming period of insurance.

We hope that you are happy with the results of the renewal exercise and look forward to receiving your instructions.

Policy Type	Commentary
Public Liability	No quotes available



# Appendix 2

# Premium Summary



# Property Owners

Current Insurer	Proposed Insurer
Not insured	None

Major Rating Factors	Limit	Excess	Presently Insured	Conditions
Public Liability Limit	£5,000,000	£10,000	No	-
No of Properties Russel Green, Boreham Road, Chelmsford CM3 3BB				

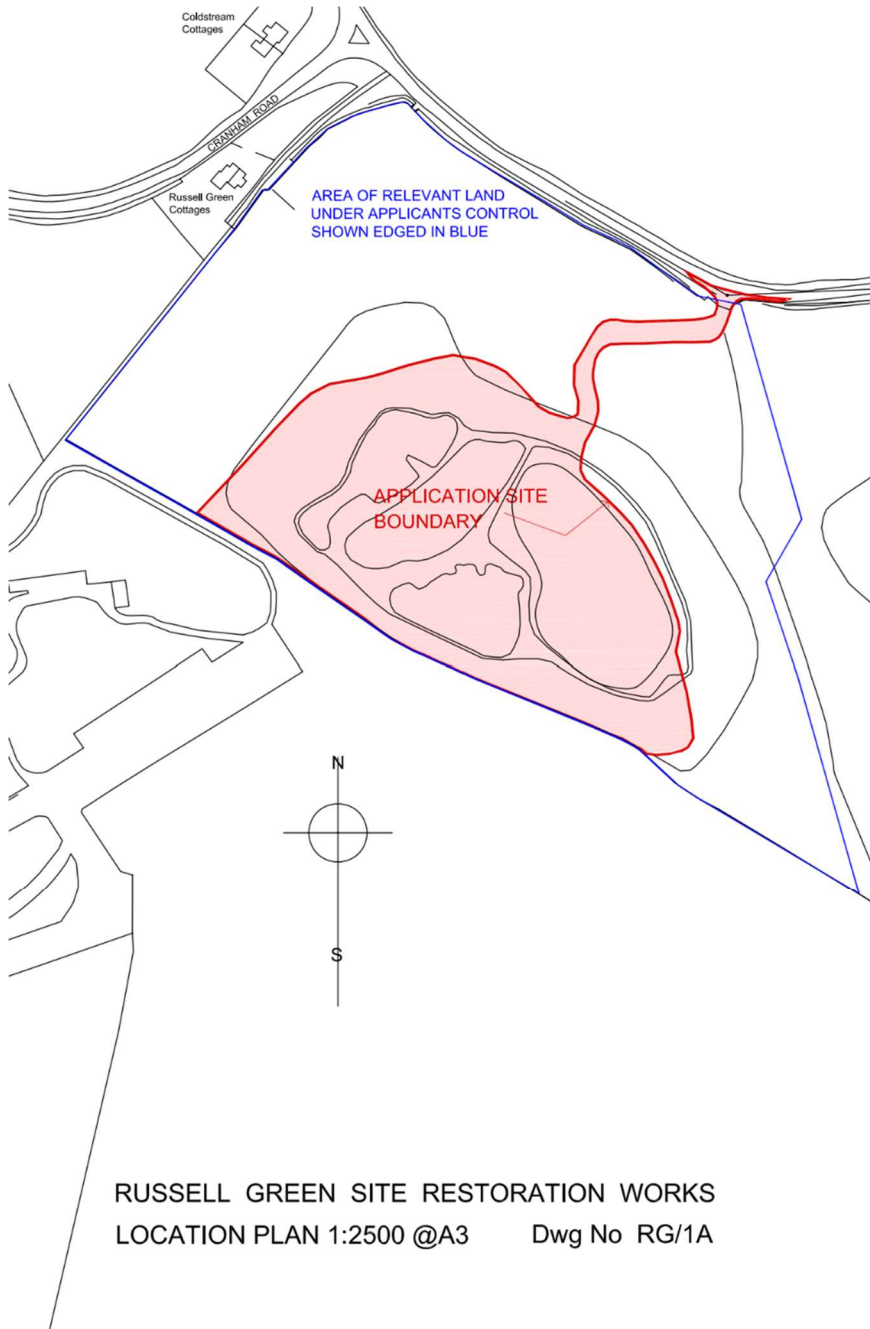
## Approach to market

Insurer	Security Rating	Cost	Claims Service	Policy/Service	Applicable Conditions
Aviva	A	No quote	★★★★★	★★★★☆	-
Allianz 360	A	No quote	★★★★☆	★★★★☆	-
Amlin	A	No quote	★★★★☆	★★★★☆	-
AXA	A	No quote	★★★★★	★★★★☆	-
QBE	A	No quote	-	-	-
Lloyd's of London	A	No quote	-	-	15 insurers



# Background







## Appendix D Stability Risk Assessment and Resotation Design





**Russell Green Quarry**  
**Stability Risk Assessment and Restoration Design**  
**(September 2022)**



**Prepared for: Land Logical Ltd**



**KEY | GS**

**Key GeoSolutions Ltd**  
Nova House  
Audley Avenue Enterprise Park  
Newport  
Shropshire  
TF10 7DW

Tel. 01952 822960  
Fax. 01952 822961  
email info@keygs.com  
web www.keygs.com

Job Number: 8198-001

Report Number: 8198-001-R-01

**Land Logical Limited**

**Russell Green Quarry**

**Stability Risk Assessment and Restoration Design**

**(September 2022)**

Prepared by:

Z Lu BEng PHD MIMMM

Approved by:

B Duthie BEng CGeol FGS FIQ

**Report Distribution List**

Name	Copies	Rev.	Date	Copies	Rev.	Date	Copies	Rev.	Date
Robin Jones	PDF	01	30/09/22						
Robin Jones	PDF	02	14/10/22						
Robin Jones	PDF	03	28/11/22						
Robin Jones	PDF	03	26/01/23						

*This report has been prepared by Key GeoSolutions Limited with all reasonable skill, care and diligence, within the terms of the Contract with the Client. The report is confidential to the Client and Key GeoSolutions Limited accept no responsibility of whatever nature to third parties to whom this report may be made known.*

*No part of this report may be reproduced without prior written approval of Key GeoSolutions Limited.*

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## **Appendices**

Appendix 1	Results of Slope Stability Analyses
Appendix 2	Photographs

## **Drawings**

8198-001-001	Existing Site Conditions
8198-001-002	Proposed Restoration Scheme
8198-001-003	Cross Sections

## 1.0 INTRODUCTION

Key GeoSolutions Ltd (KGS) have been commissioned by Land Logical Limited to undertake a stability assessment of the former sand and gravel quarry, Russell Green Quarry, which is understood to have been extracted and partially restored in the 1980's.

A site inspection was undertaken by KGS on 7<sup>th</sup> June 2022, the purpose of the inspection was to understand the ground conditions present and to assess the stability of the side slopes of the restoration.

The north-eastern and eastern quarry faces have been previously backfilled to form restoration slopes with a maximum inclination of 1v:4h. The existing former quarry faces to the west and southwest of the site are approximately 12m high and have an average slope angle of 1v:1.2h (40° from horizontal). Planning permission was granted in 2013 to allow the importation of inert waste to the site to be used to complete restoration works to the south-western side of the quarry. These proposed works were never undertaken, and the planning permission has now lapsed, however instability of the south-western excavation slopes has continued.

## 2.0 SITE DESCRIPTION

The quarry, National Grid Reference 574600mE N 212600mN, is located to the northeast of Chelmsford and approximately 1.6 miles northwest of Boreham village. The site is adjacent to Boreham Road with Grade II listed buildings Brent Hall and Ginn House located c. 320m to the east. The closest residential properties, Russell Green Cottages lie approximately 130m to the north of the site.

The boundary to the site includes agricultural land and Bulls Lodge Quarry to south-west. Access to the site is via a gated concrete-surfaced entrance off Boreham Road.

KGS have been informed of the following relevant planning history:

- CHL/1673/82 – Extraction of sand and gravel, with restoration to farmland and a small, landscaped lake. Approved 12 September 1983.
- CHL/1673/82/3 – Revised restoration scheme for amenity after use. Approved 16 January 1992.
- ESS/08/13/CHL – Importation of approximately 85,000 tonnes of inert waste material (excavation soils) to stabilise former quarry face and satisfactorily restore former mineral site to landscape grassland and ponds, and associated improvements to existing site access to facilitate delivery of waste material. Approved 29 January 2014.

Sand and gravel mineral extraction and restoration operations are understood to have taken place throughout the 1980's, being completed in the early 1990's. The originally permitted restoration scheme has not been completed following extraction of the sand and gravel and overly steep slopes have been left along the whole of the south-western margin of the site.

The planning permission (Ref. ESS/08/13/CHL) was granted in 2014 to allow the site to be restored with inert waste to landscaped grassland and ponds was never implemented and has now lapsed. The planning officer's report from the 2014 application has noted that the *'site has previously been poorly restored leaving a steep bank which looks unnatural within the context of the surrounding landscape'* and that *'the application seeks to create a comprehensive contoured topography that as well as stabilising the steep embankments found on the site, would also provide a more acceptable visual aesthetic across the former mineral working site'*.

### 3.0 GROUND CONDITIONS

The BGS Geindex Onshore and published geological map for the area (1: 50,000 Geological Survey of Scotland Sheet No. 241, Chelmsford) indicates that Russell Green Quarry extracted sand and gravel (alluvium and head deposits) of Holocene Epoch age. The sand gravel mineral is underlain by London Clay at the site.

On inspection of the site, in particular the south-western slopes where the natural ground is exposed, the general sequence was found to consist of 1-2m of overburden, which consists of a clay bound sand and gravel, this is underlain by c. 10m of sand and gravel.

Areas of previous sand and gravel extraction exist to the north-west and south-east of the site, these areas have predominantly been restored to lake features. The water levels in these lakes appear to be coincident with the water levels in the ponds in the site, i.e. approximately 38.5mAOD and it is considered that this level will be representative of the groundwater level.

The Photographs (Photos 3 and 4) taken in the last 10 years indicate that the water level in the ponds at the site has remained lower than the dividing bund between the ponds between 2012 and 2022, which is in the range of 38 to 40mAOD. No seepage was noticed at the quarry faces during the site visit undertaken in June 2022. The findings of the site visit and the Photographs of the ponds indicate that the groundwater level at the site is likely coincident with the pond water level between 38 and 40mAOD.

## **4.0 SLOPE STABILITY ASSESSMENT**

### **4.1 Findings and Recommendations of Inspection**

An inspection of the south-western slopes of the site was undertaken by Key GeoSolutions Ltd (KGS) on 7<sup>th</sup> June 2022. Localised progressive failures were observed during the inspection and near vertical quarry faces at the upper slope have been noted (Photo 1 and 2).

The progressive slope failures have taken the crest of the slope closer to the site boundary, these failures can be expected to continue to occur whilst the near vertical sections of slope exist, at least until a slope with natural angle of repose of c. 35° from horizontal is ultimately established over the full height of the slope. This process could ultimately take the crest of the slope beyond the site ownership boundary if left unchecked (see Drawings Nos. 8198-001-001 and 003).

It is therefore recommended that an appropriate restoration of the south-western slope should be undertaken in order to;

- Provide long-term stability, and
- Provide a more acceptable visual aesthetic across the site.

A possible restoration topography is presented on drawing number 8198-001-002 which is included at the back of this report. It is proposed to form a 1 vertical in 4 horizontal slopes along the south-western boundary, which will tie in sympathetically with the restored slopes around the rest of the perimeter of the site. The 1 in 4 slopes will provide better amenity than the 1 in 3 slopes proposed in the 2013 application and will offer better habitat options around the margins of the proposed water body and it will be possible to maintain it.

There are four ponds with a maximum pond water level of 38.5m at the site as showing in Drawing No. 8198-001-001. The proposed restoration design as shown in Drawing No. 8198-001-001 shows that most of the ponds will be backfilled to form a single restoration pond located to the east of the site.

### **4.2 Water Management During Restoration**

The Photographs of 2012 and 2022 of the existing ponds show that the pond water level is generally lower than the toe of the quarry faces and thus all the ponds likely have limited water depth.

It is recommended to commence the restoration in the summer when the pond water level is the least among the four seasons. The four ponds will be backfilled sequentially by temporarily pumping the water from the working area into the other ponds. It is recommended to start the restoration

from the southwestern faces by reducing the water level in the eastern pond down to the base level of the proposed restoration slope. Following the completion of the restoration of the area to the southwest of eastern pond, the restoration pond will be then formed at the location of eastern pond to store the water from the rest of the restoration area.

### **4.3 Stability Analysis**

Stability analyses have been undertaken on the existing south-western slope and the proposed restoration slope.

#### **4.2.1 Assumptions**

For the purposes of the stability assessment the following assumptions have been made:

Maximum slope height	13m
Angle of slopes	Range from 32° to 50°
Restoration slope angle	Maximum 1v:4h (14°)
Groundwater level	40 mAOD
Proposed pond water level	Between 36 and 44.0 mAOD

#### **4.2.2 Cross Section**

Stability analyses have been undertaken on a representative cross section that represents the typical ground conditions and maximum slope profiles of the existing quarry faces and the proposed restoration profile. The locations and profiles of the cross sections are presented on Drawing Nos. 8198-001-001 and 003.

The height of the quarry face and the slope profile have been determined from the topographical survey provided by Land Logical Ltd (see Drawing No. 8198-001-001).

#### **4.2.3 Parameters**

The ground profile that will form the overall slope in the stability analysis is as follows;

- Overburden, thickness 1.7m
- Sand gravel, thickness 10m
- London Clay, thickness >10m
- Restoration material, imported London Clay or material with similar characteristics



The parameters adopted for the slope stability assessment are listed in the table below, which are assumed based on the findings of the recent site inspection undertaken in June 2022, with reference to the published data for similar material.

Table 1 Geotechnical parameters used for Sensitivity Analyses

Materials	Bulk Density $\gamma$ (kN/m <sup>3</sup> )	Effective Cohesion $c'$ (kN/m <sup>2</sup> )	Effective Friction Angle $\phi'$ (degrees)
Overburden	18	0	28
London Clay	20	0	24
Sand Gravel	19	0	35
Restoration Material	18 (15 – 22*)	0 (20 – 40*)	22 (18 – 24*)

\* Sensitivity analysis of input parameters of imported restoration material

The BGS geology map of the area surrounding the site indicate the most available material to be used for the proposed restoration would be London Clay. A series of sensitivity analyses have been undertaken to assess the stability of the proposed restoration slope by considering the uncertainties involved in the selection of input parameters of imported restoration material. The range of values given in Table above adopted for restoration material (London Clay or material with similar characteristics) are determined with reference to the value ranges recommended in British Standard BS 8004:2015+A1:2020.

The parameters of the other materials have been chosen based on the findings of site visit and are considered to represent the long-term ground conditions and further sensitivity analysis has not been undertaken.

#### 4.2.4 Method of Analysis

The stability analysis has been undertaken using the commercially available SLIDE 2 (Rocscience Inc.) slope stability software, which uses the limiting equilibrium theory to assess the stability of a slope. The theory calculates the resisting forces and disturbing forces within the slope and determines the ratio of the resisting over the disturbing forces. This ratio is known as the Factor of Safety (FoS), with a ratio greater than 1.0 indicating the slopes are stable and less than 1.0 indicating that the slopes are or could become unstable.

The quarry faces could have been generally stable or marginally stable during the mineral extraction and probably have remained stable for a short period of time following the completion of mineral extraction. However, localised progressive failures have occurred at the unrestored western quarry faces since 2013. This will continue to deteriorate in the long term and further slope

failures would continue to occur until a slope profile with natural angle of repose will be ultimately formed from the failed material, by which point it will likely have breached the quarry boundary.

The current slope stability assessment has focused on the long-term stability condition of the quarry faces assuming the existing quarry faces would remain stable or marginally stable in the short term.

As part of the proposed restoration scheme, the current steeper quarry faces will be backfilled with inert waste material (primarily London Clay) to form shallower and stabler fill slope. Given the existing eastern restoration has a maximum slope angle of 1v:4h (14° from horizontal), it is proposed to backfill the quarry faces with inert waste to create a landscape being consistent with the rest of the site.

Slope stability analyses have been undertaken on the existing quarry faces and the proposed 1v:4h restoration slopes.

The groundwater level and pond level at the site have been in the range of 38 to 40mAOD in the past ten years in accordance with the findings of the recent site visit and historical photographs. The restoration pond water level will probably vary with the weathering conditions in the long term. A maximum pond water level of 44.0mAOD assuming a minimum freeboard of 1m has been considered in the analysis to represent the worst-case scenario in the long term.

Copies of the analyses are included as Appendix 1 of this report.

#### **4.2.5 Results of the Sensitivity Analysis**

All outputs of the sensitivity analyses are included in Appendix 1.

The results of the sensitivity analysis as shown in Figure 1 indicate that the bulk density of restoration material has limited impact on the long-term stability of the final restoration slope with a minimum Factor of Safety (FoS) between 1.37 and 1.50.

Further details of the sensitivity analysis of bulk density of fill material are shown in Plots 1 to 3 of Appendix 1.

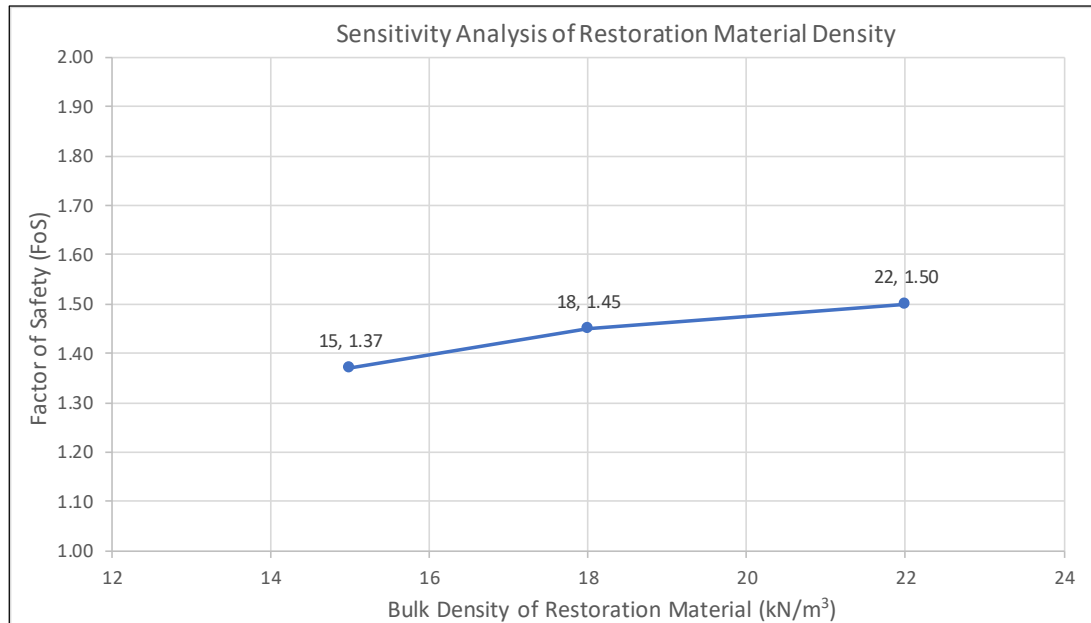


Figure 1 – Sensitivity analysis results of the bulk density of the restoration material

The newly placed restoration material is considered to be under undrained conditions and the sensitivity analyses with a range of undrained shear strength properties give an identical FoS value of 1.75 (Figure 2). The results (Plots 4 to 6) indicate that the restoration slope will be stable in the short term with an adequate FoS of 1.75 against any ground instability.

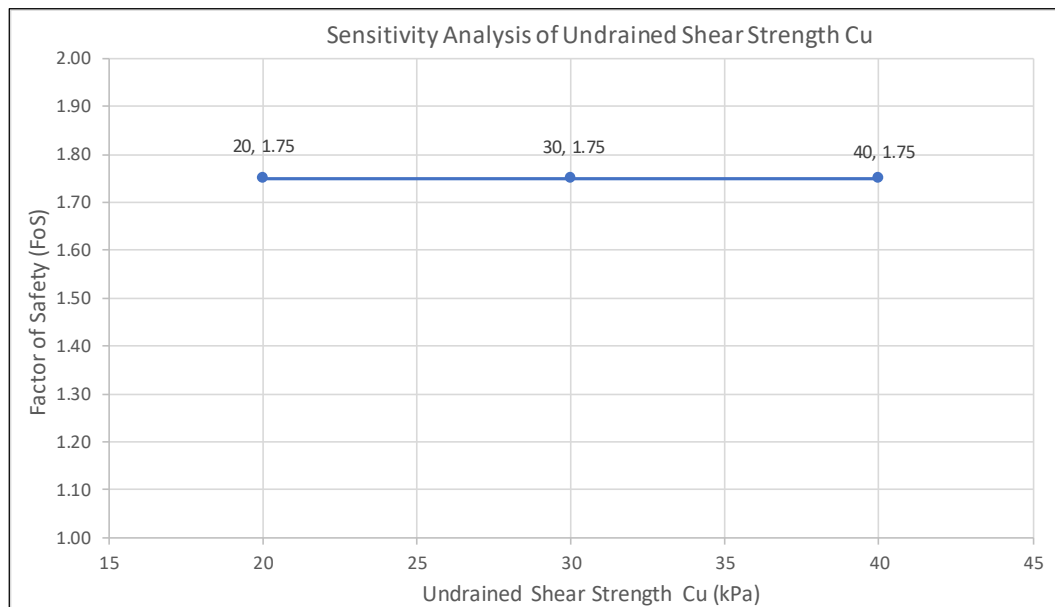


Figure 2 – Sensitivity analysis results of the undrained shear strength of the restoration material

Drained ground conditions will prevail in the long term and the results of the sensitivity analysis on a range of angles of shearing resistance are summarised in Figure 3. The Figure 3 shows that FoS

of the final restoration slope could be less than the required 1.3 if the angle of shearing resistance of the restoration material is less than 20 degrees. Further details of the analyses can be referred to Plots 7 to 10 included in Appendix 1.

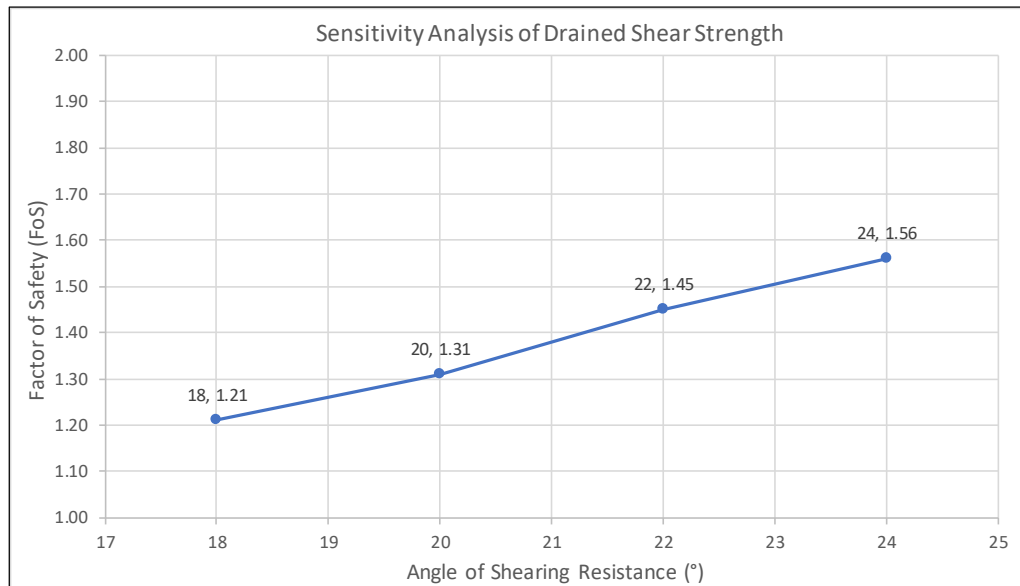


Figure 3 – Sensitivity analysis results of the angle of shearing resistance of the restoration material

Groundwater and pond water level at the site likely vary in the long term and a sensitivity analysis of various water levels has been undertaken and the results (Plots 11 to 15) are summarised in Figure 4. The results indicate that the least FoS is returned at an average groundwater level of 40mAOD. For the purpose of the stability analysis with reference to the historical pond levels at the site, a representative water level of 40mAOD has been used for the current stability analysis.

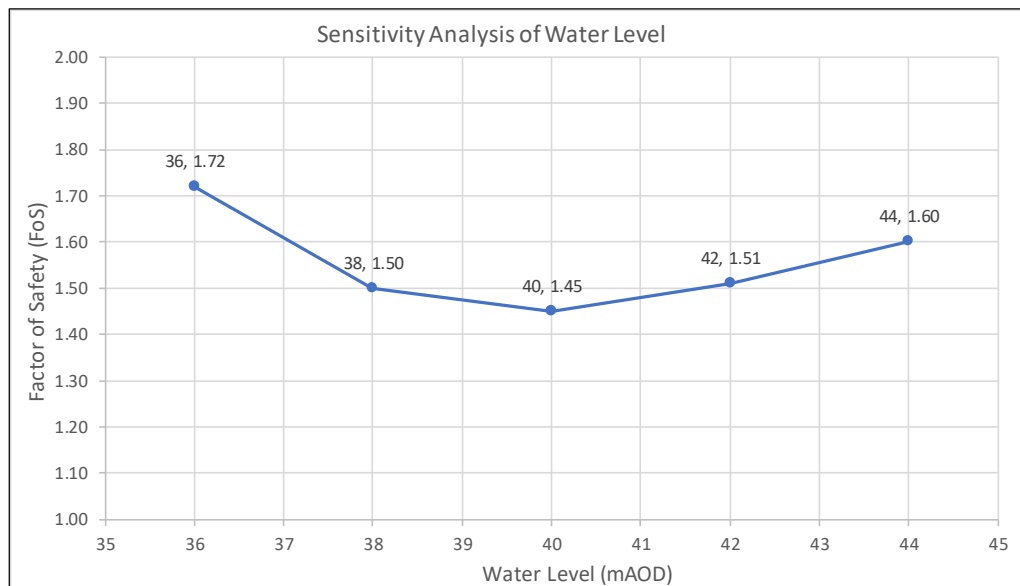


Figure 4 – Sensitivity analysis results of the groundwater level at the site

To determine an appropriate restoration slope profile with a target FoS value between 1.3 and 1.5, stability analyses have been undertaken on various slope angles between 11.3° (1v:5h) and 18.4° (1v:3h). The results (Plots 16 to 18) summarised in Figure 5 indicate that a 1v:4h restoration slope is the most appropriate slope profile with a FoS of 1.45 assuming an average angle of shearing resistance of 22° for restoration material.

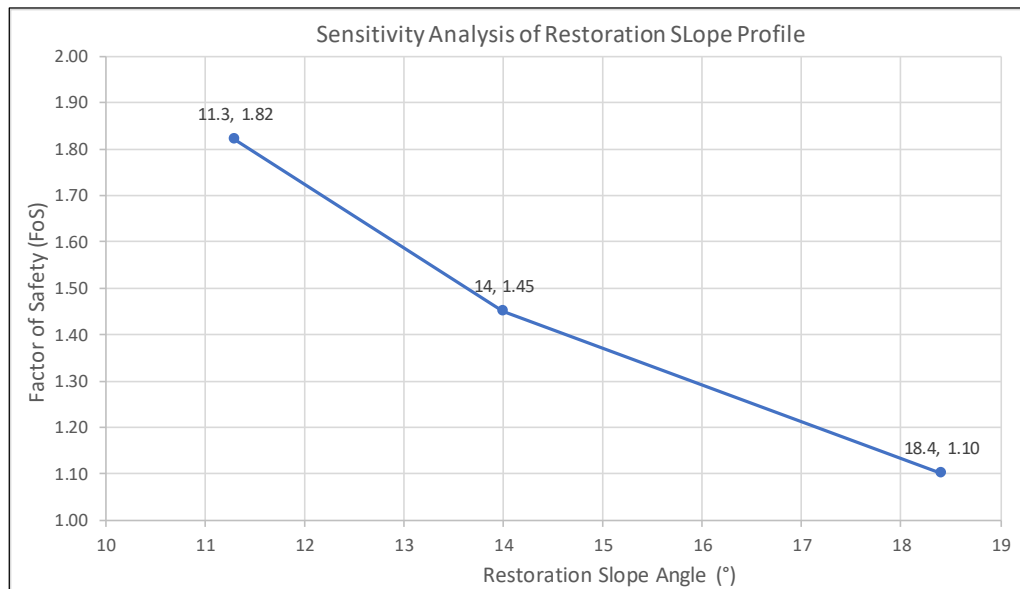


Figure 5 – Sensitivity analysis results of the proposed restoration slope profiles

#### 4.2.6 Conclusions of the Sensitivity Analysis

The results of the sensitivity analysis as shown in Figures 1 to 5 indicate that the most appropriate slope profile of the final restoration slope is 1v:4h. The slope profile of 1v:4h not only provides required factor of safety in the range of 1.3-1.5, but also creates a landscape that is consistent with the existing restoration and surrounding environment.

Given the potential variable shear strength properties of the imported fill material, Figures 3 and 5 indicate that the final restoration slope should be no steeper than 1v:4h and the fill material should be placed and compacted in layers of maximum 0.3m thick to ensure a minimum angle of shearing resistance of 20°.

Based on the results of the sensitivity analyses, the parameters listed in Table 2 are considered to represent the average ground conditions at the site and have been used for further and final stability assessment.

Table 2 Geotechnical parameters used for further stability assessment

Materials	Bulk Density $\gamma$ (kN/m <sup>3</sup> )	Effective Cohesion $c'$ (kN/m <sup>2</sup> )	Effective Friction Angle $\phi'$ (degrees)
Overburden	18	0	28
London Clay	20	0	24
Sand Gravel	19	0	35
Restoration Material	18	0	22

Figure 2 shows the restoration slope under undrained conditions will be adequately stable with a minimum FoS of 1.75 in the short term and further undrained analysis will not be considered.

#### 4.2.7 Further and Final Stability Analysis

Further analyses have been undertaken with input parameters given in Table 2 to assess the long-term stability of the existing slope if left unrestored and the stability of the final restoration slope assuming a critical groundwater level of 40mAOD.

The results of the slope stability analyses (Plots 19 and 20) indicate that slope failures will ultimately occur at the steeper western quarry faces in the long term if the quarry faces are left unrestored. Localised slope failures have already occurred along the western quarry faces and further slope failures would likely continue to occur due to the progressive deterioration of the ground conditions.

The analysis results indicate that the proposed restoration design will be stable with a minimum factor of safety over 1.45 against any slope failures.

## 5.0 RESTORATION DESIGN

The site inspection and the results of the slope stability analysis conclude that the quarry faces along the south-western boundary of Russell Green Quarry are not stable and the site should be restored to stabilise the steeper quarry faces and create a suitable landscape for the long-term benefit.

Given the quarry site has already been partially restored, the proposed restoration design aims to not only stabilise the quarry faces, but also create an overall landscape with minimal impact on or rather contribute to the existing restoration and surrounding landscape.

The proposed restoration design will create a landscape with a maximum slope gradient of 1v:4h and naturally merge more into the existing restoration scheme and surrounding landscape. The proposed restoration design is shown in Drawing No. 8198-001-002 and the existing site conditions

are shown on Drawing No. 8198-001-001. The cross sections showing the existing and proposed restoration profiles are shown in Drawing No. 8198-001-003.

The proposed restoration scheme as shown in Drawing No. 8198-001-002 requires approximately 63,450m<sup>3</sup> fill material (114,210 tonnes assuming an average density of 1.8t/m<sup>3</sup>), of which 5,940 tonnes (3,300m<sup>3</sup>) of soils can be sourced on site and the rest 108,270 tonnes (60,150m<sup>3</sup>) materials need to be imported. The restoration material can be any cohesive or granular inert waste material, which should be placed and compacted in a controlled manner.

The total required 108,270 tonnes imported material include 85,000 tonnes of inert waste to form the proposed restoration profile and 23,270 tonnes soils to provide a suitable growing medium for vegetation.

## 6.0 CONCLUSIONS

A site inspection and a slope stability assessment have been undertaken for the existing quarry faces and the proposed restoration design at Russell Green Quarry.

Slope failures have been observed during the recent inspection undertaken in June 2022. Localised near vertical slope sections have been formed from historical slope failures and these over-steepen slopes will ultimately collapse in the long term.

Slope stability analyses have been undertaken on the western quarry faces and the results of the analyses indicate that slope failures will occur at the western quarry faces in the long term. The potential slope failures will cause the land beyond the site boundary to collapse. Hence, the quarry faces must be stabilised or restored to prevent further slope failures.

Historical restoration has been partially undertaken to restore the eastern quarry faces to a landscape with a maximum slope angle of 1v:4h. The recent inspection indicates that the existing restoration area are overall stable.

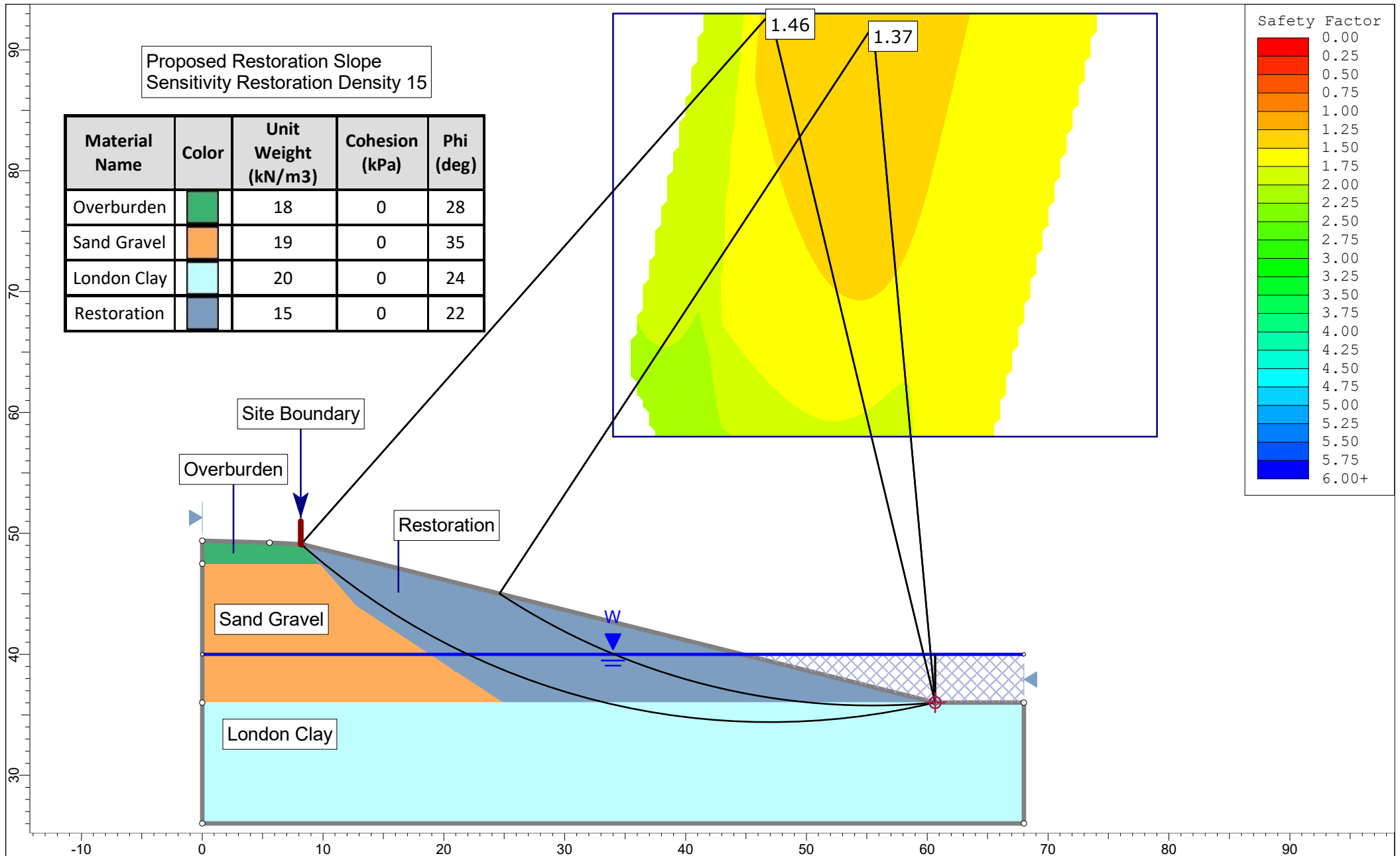
For the purpose of the slope stabilisation and creating a landscape that is consistent with the existing restoration and surrounding landscape, it is proposed to stabilise the quarry faces and restore the site with inert waste to form a landscape with a maximum slope angle of 1v:4h. The proposed restoration slope will ensure long-term stability.

In conclusion, the quarry faces within Russell Green Quarry are not stable if left unrestored and could potentially regress beyond the site boundary. The proposed restoration scheme will require to import approximately 85,000t inert waste material and 23,270t soils, which will create a suitable landscape that will stabilise the quarry faces and achieve long-term benefits.

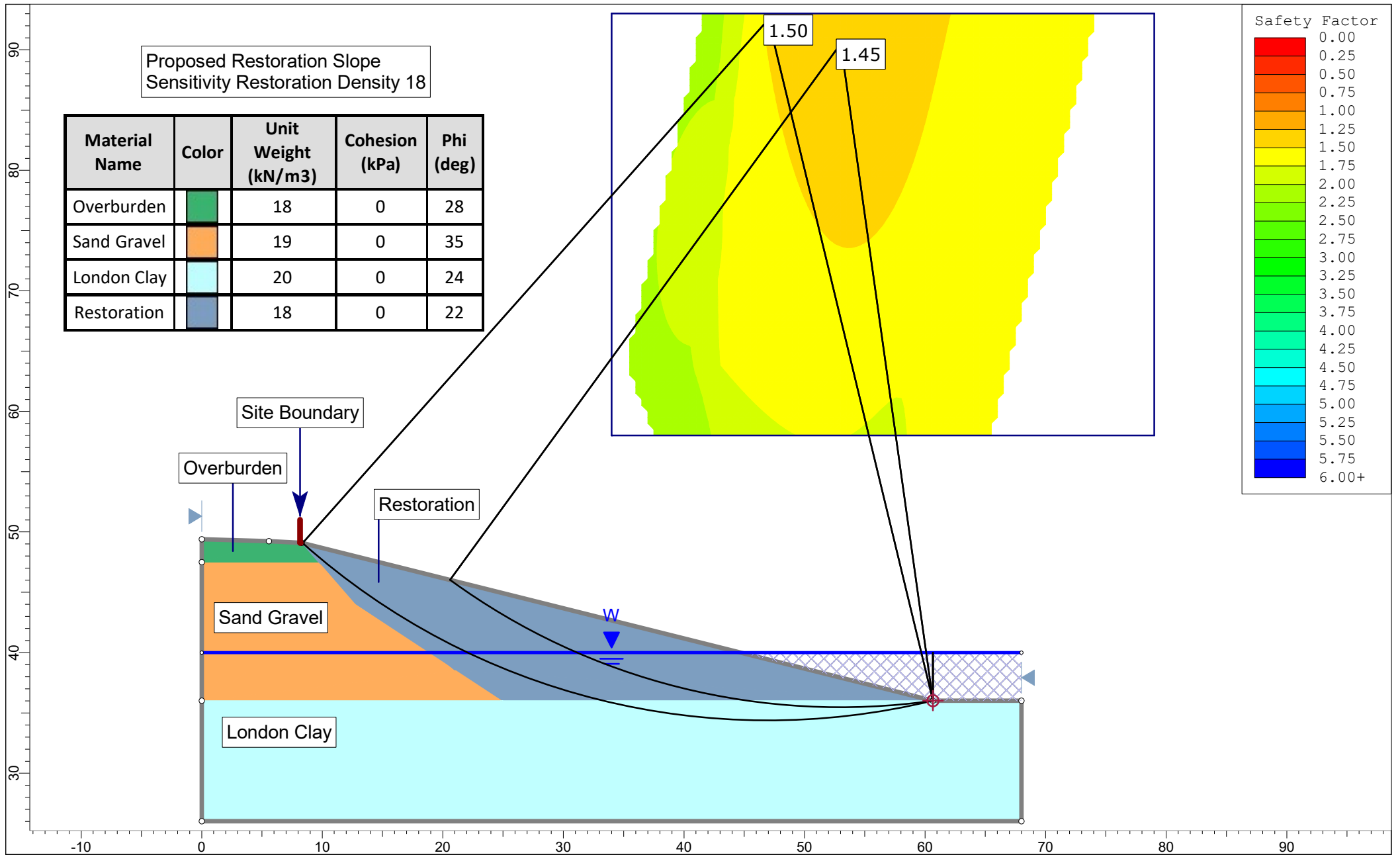


## **APPENDIX 1**

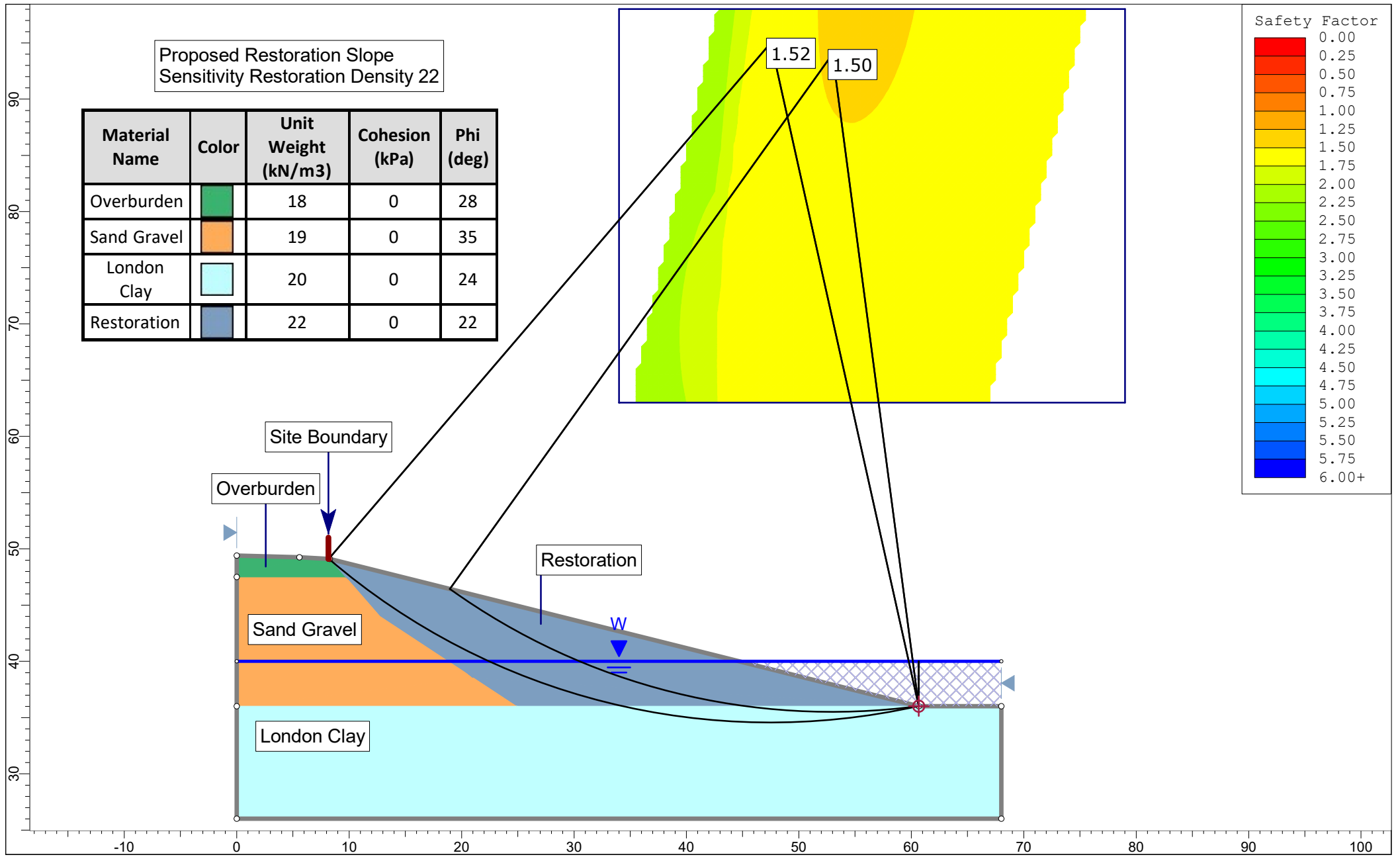
Results of Slope Stability Analyses



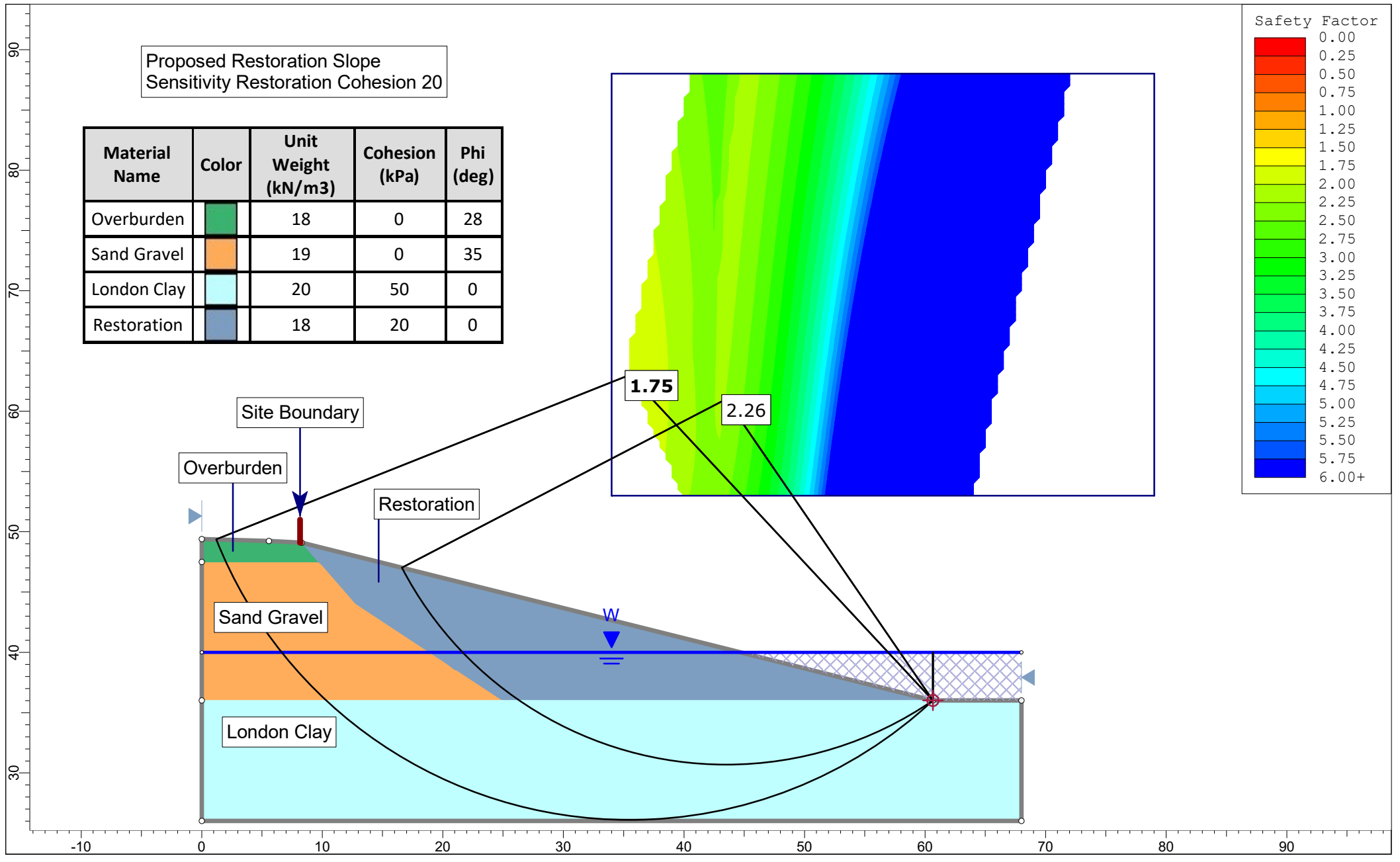
Plot 1 - Sensitivity analysis of restoration density (15kN/m<sup>3</sup>)



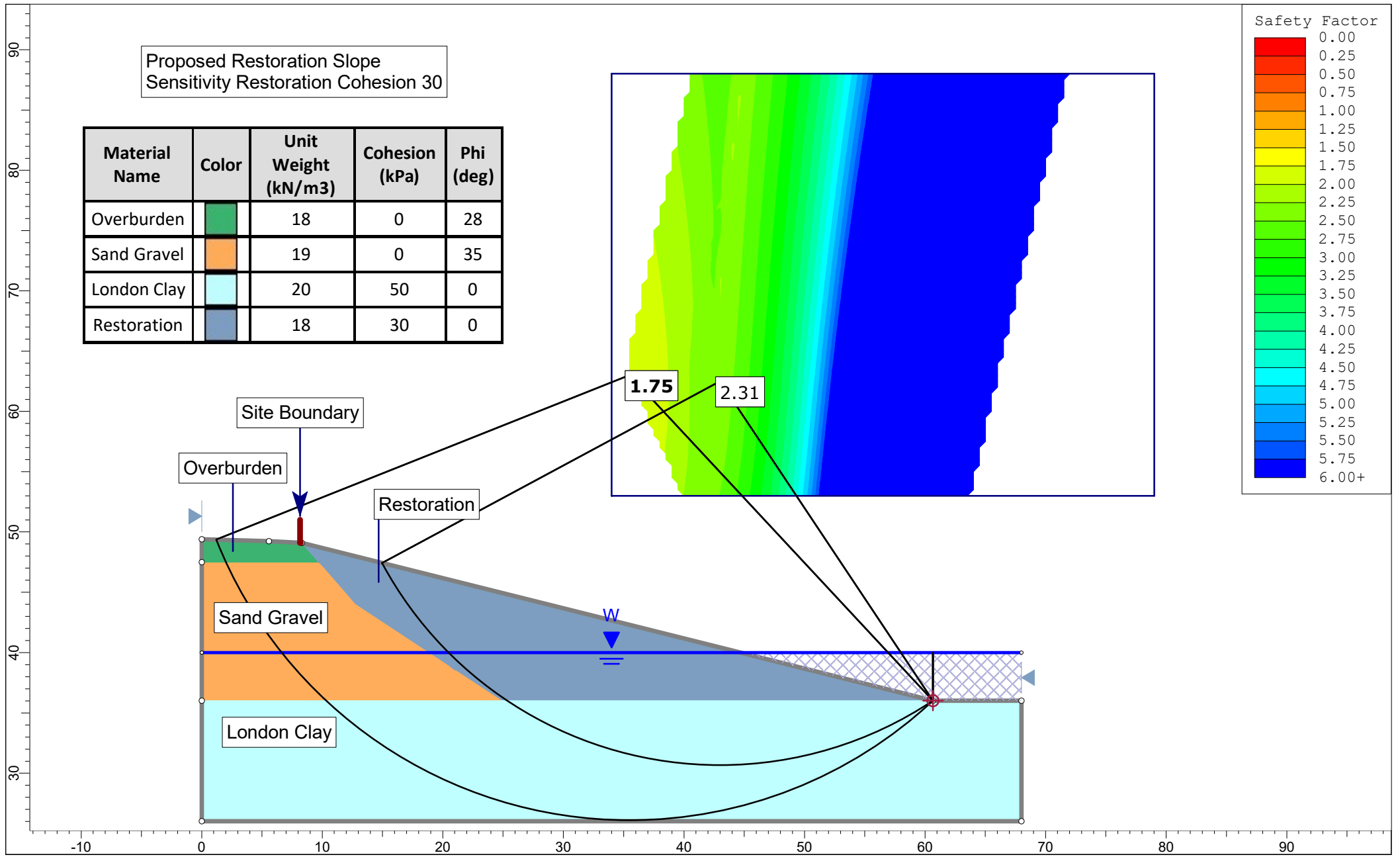
Plot 2 - Sensitivity analysis of restoration density (18kN/m<sup>3</sup>)



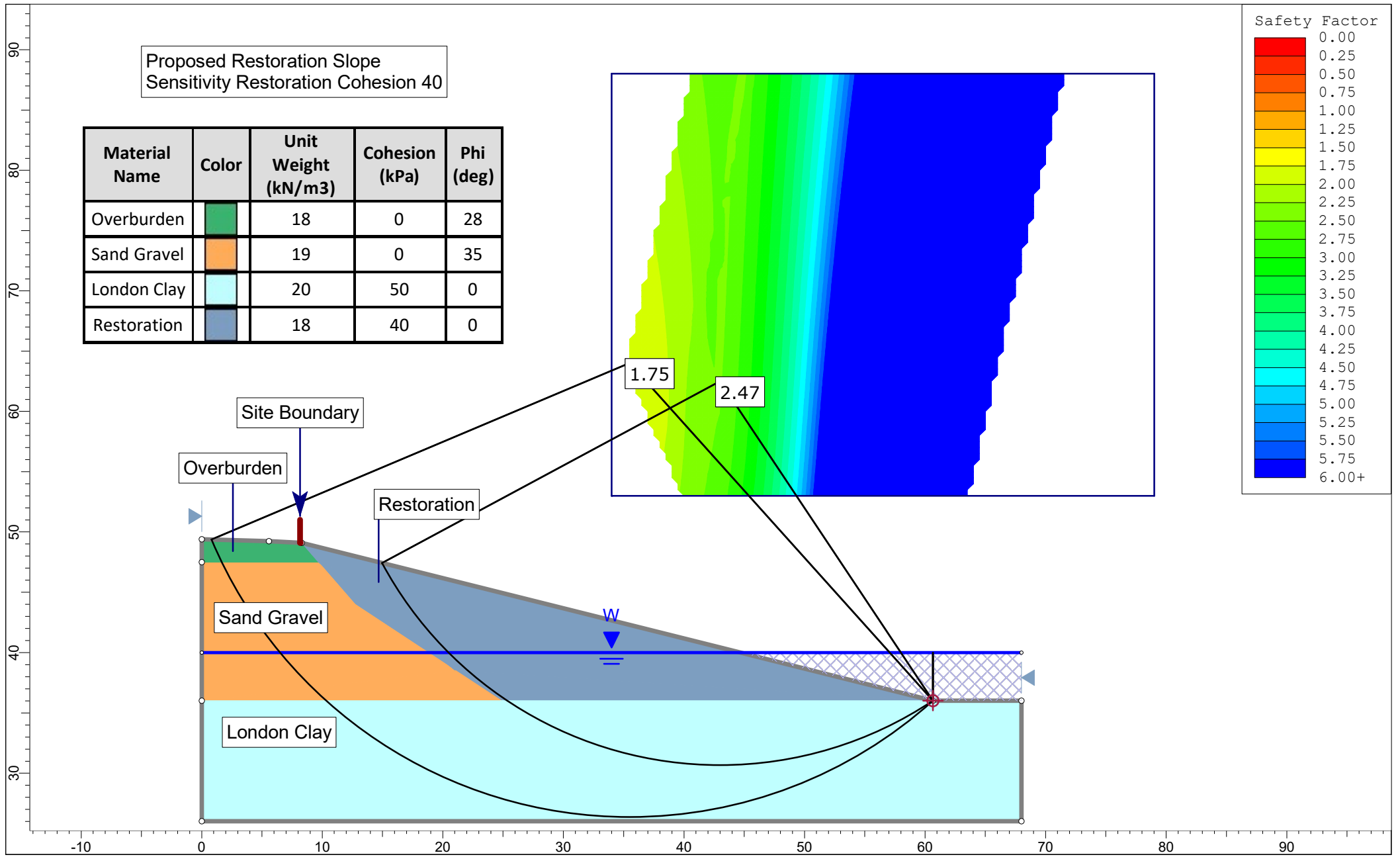
Plot 3 - Sensitivity analysis of restoration density (22kN/m<sup>3</sup>)



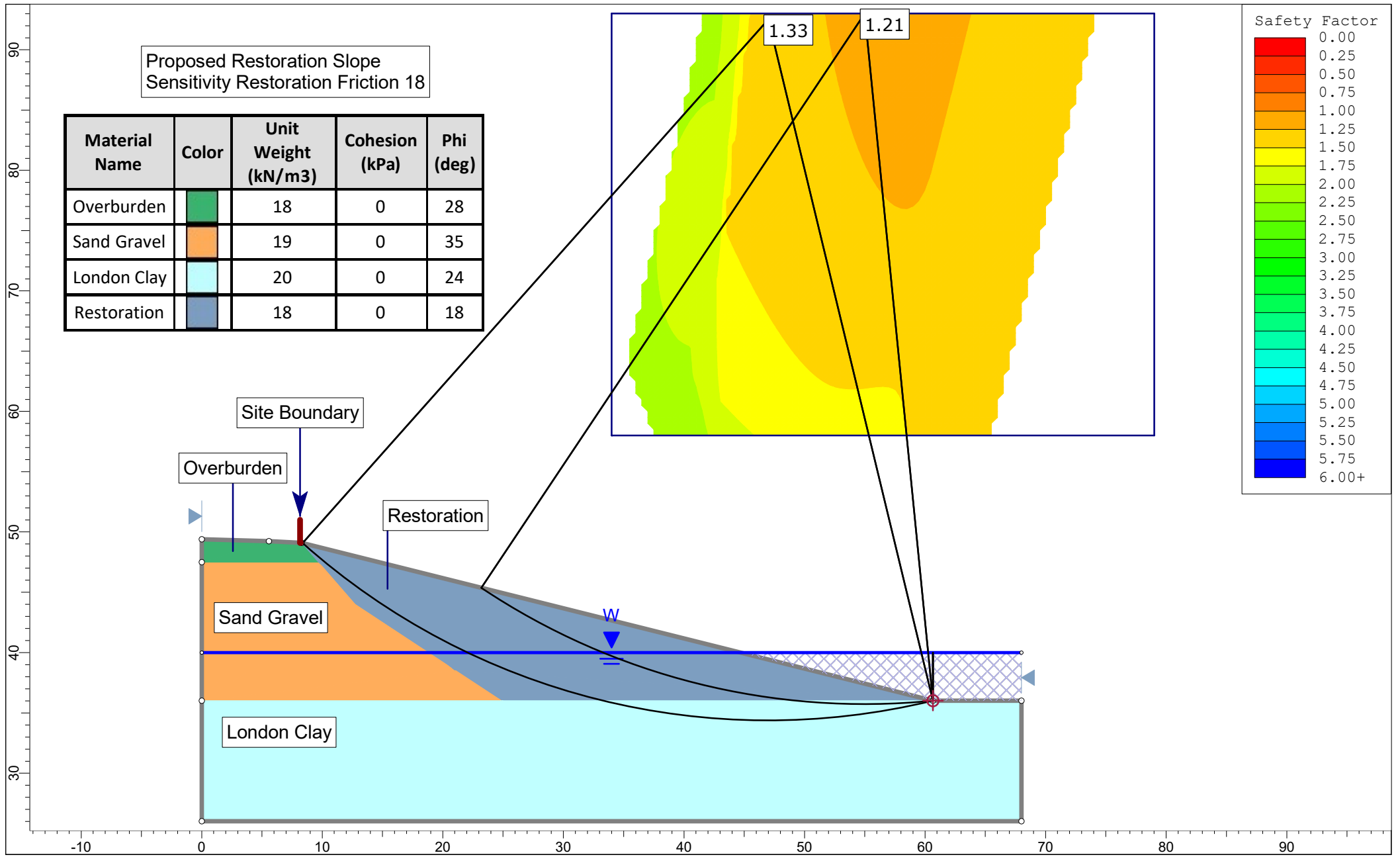
Plot 4 - Sensitivity analysis of undrained cohesion (20kPa)



Plot 5 - Sensitivity analysis of undrained cohesion (30kPa)

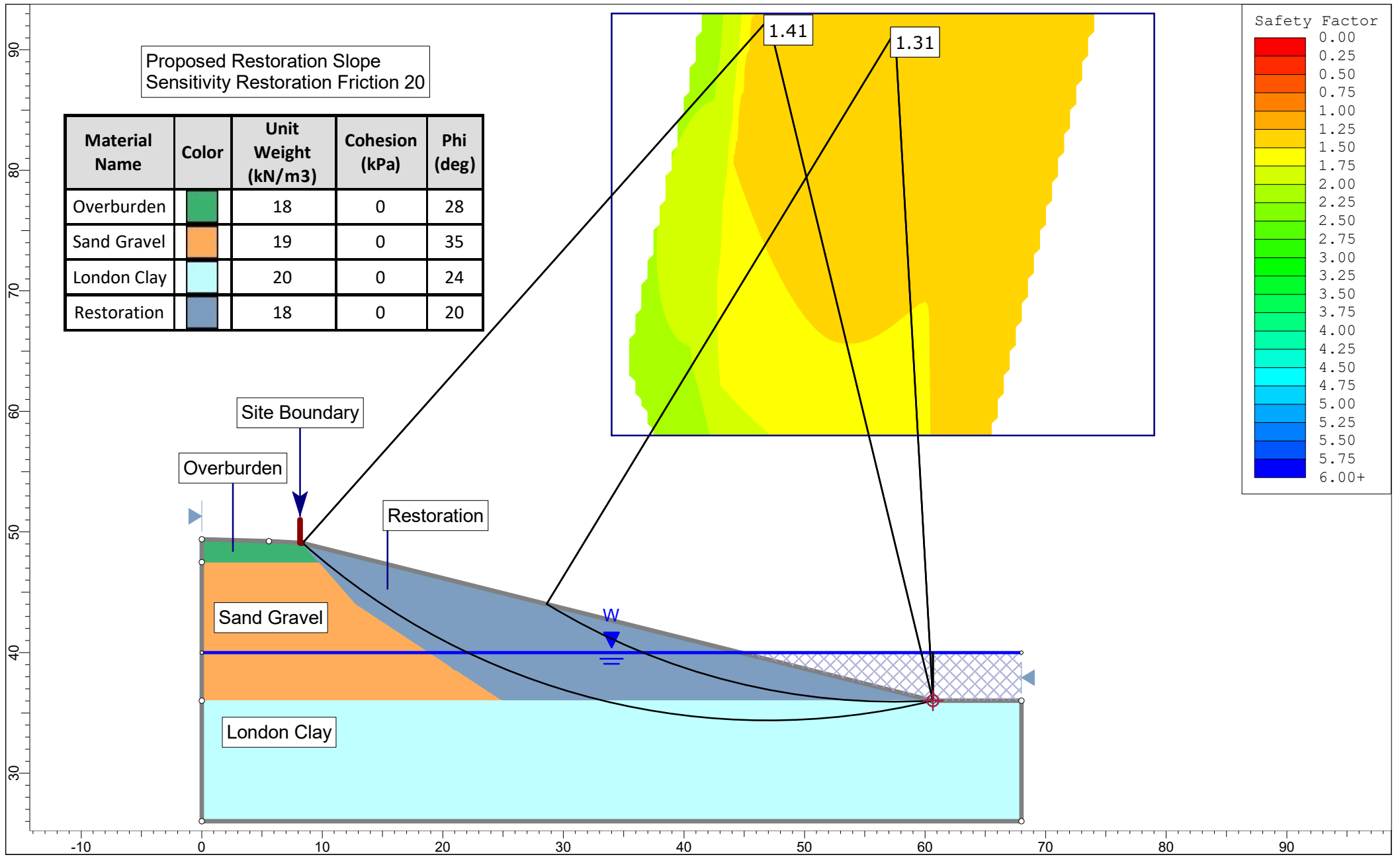


Plot 6 - Sensitivity analysis of undrained cohesion (40kPa)

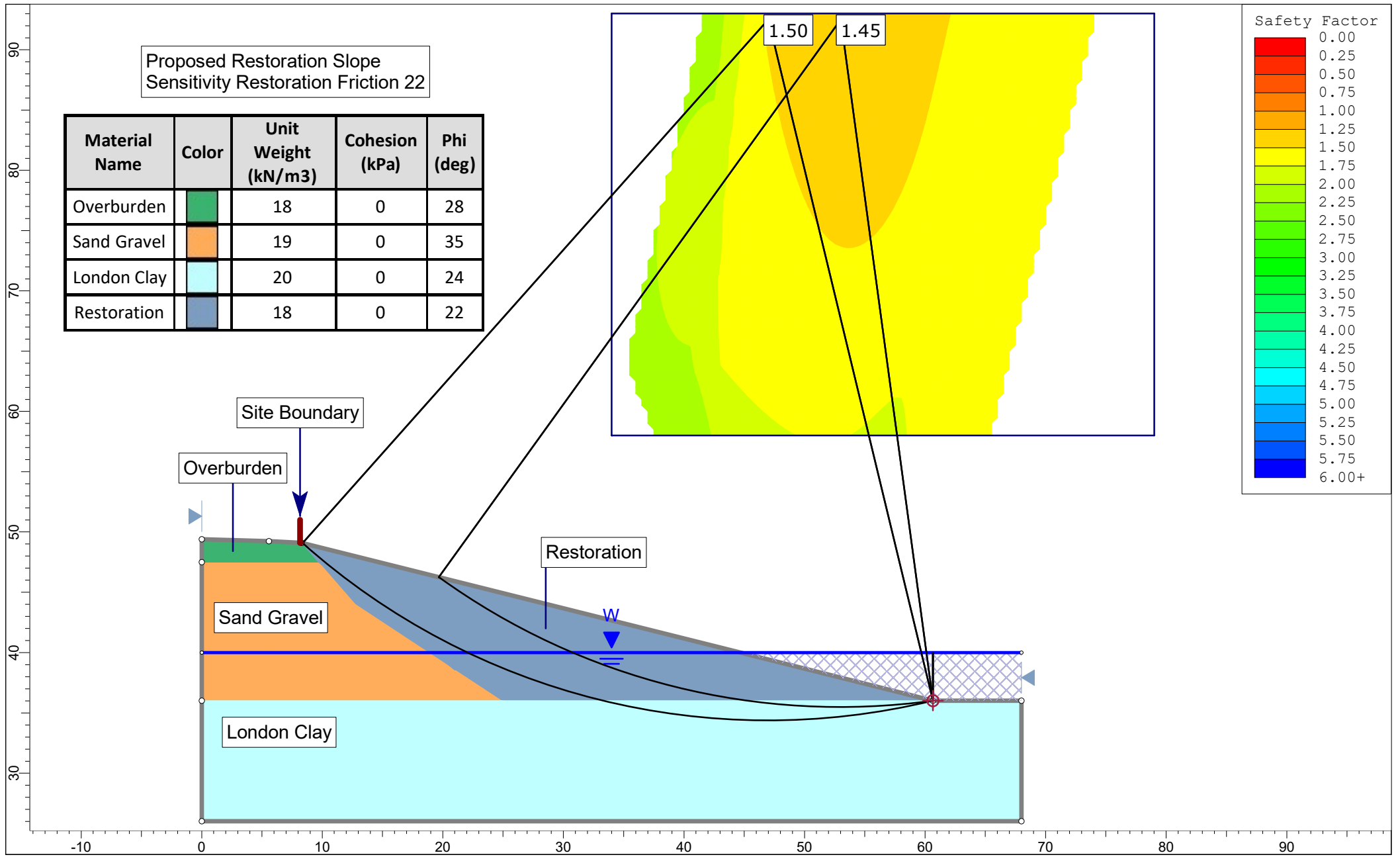


Plot 7 - Sensitivity analysis of friction angle (18 degrees)

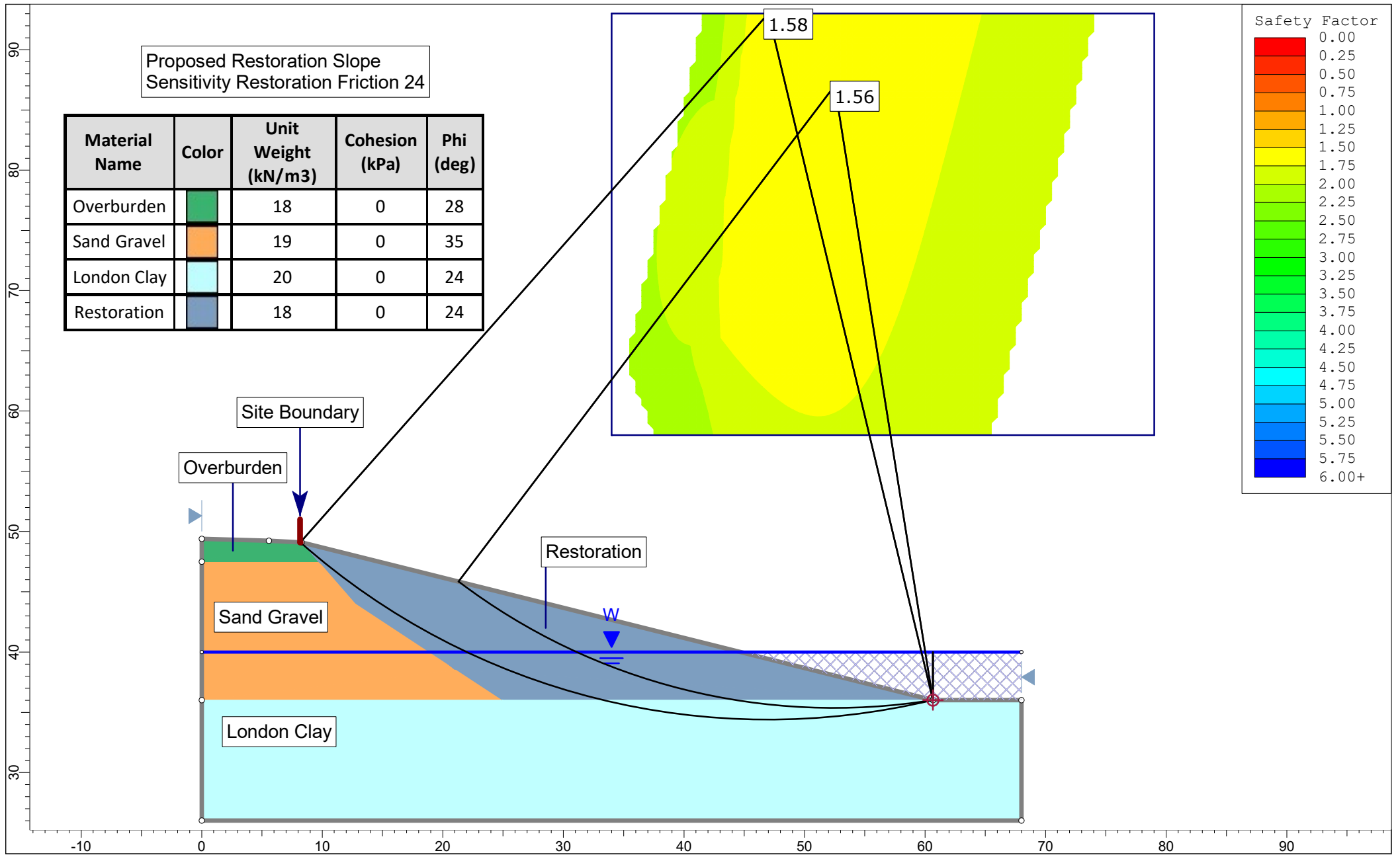




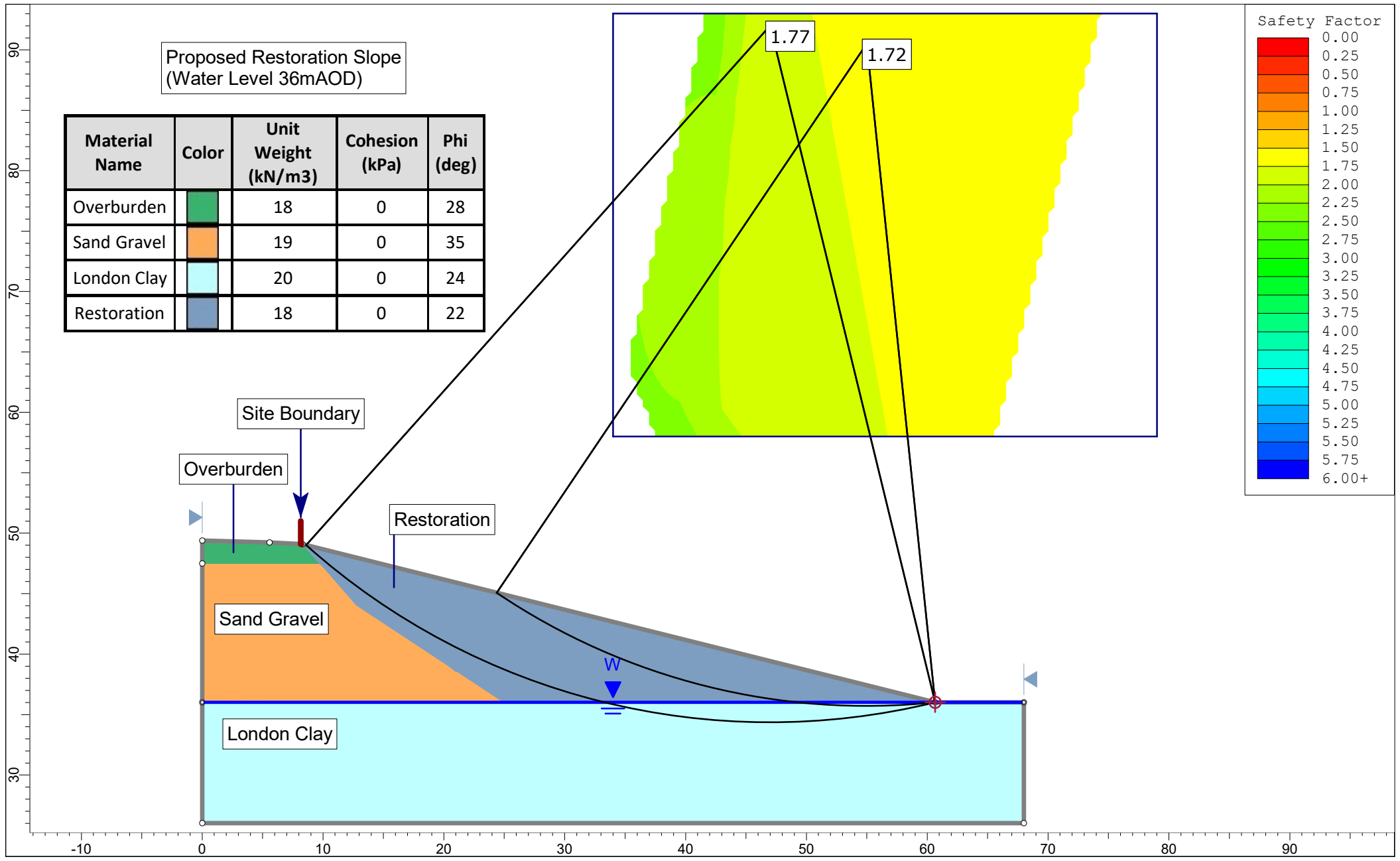
Plot 8 - Sensitivity analysis of friction angle (20 degrees)



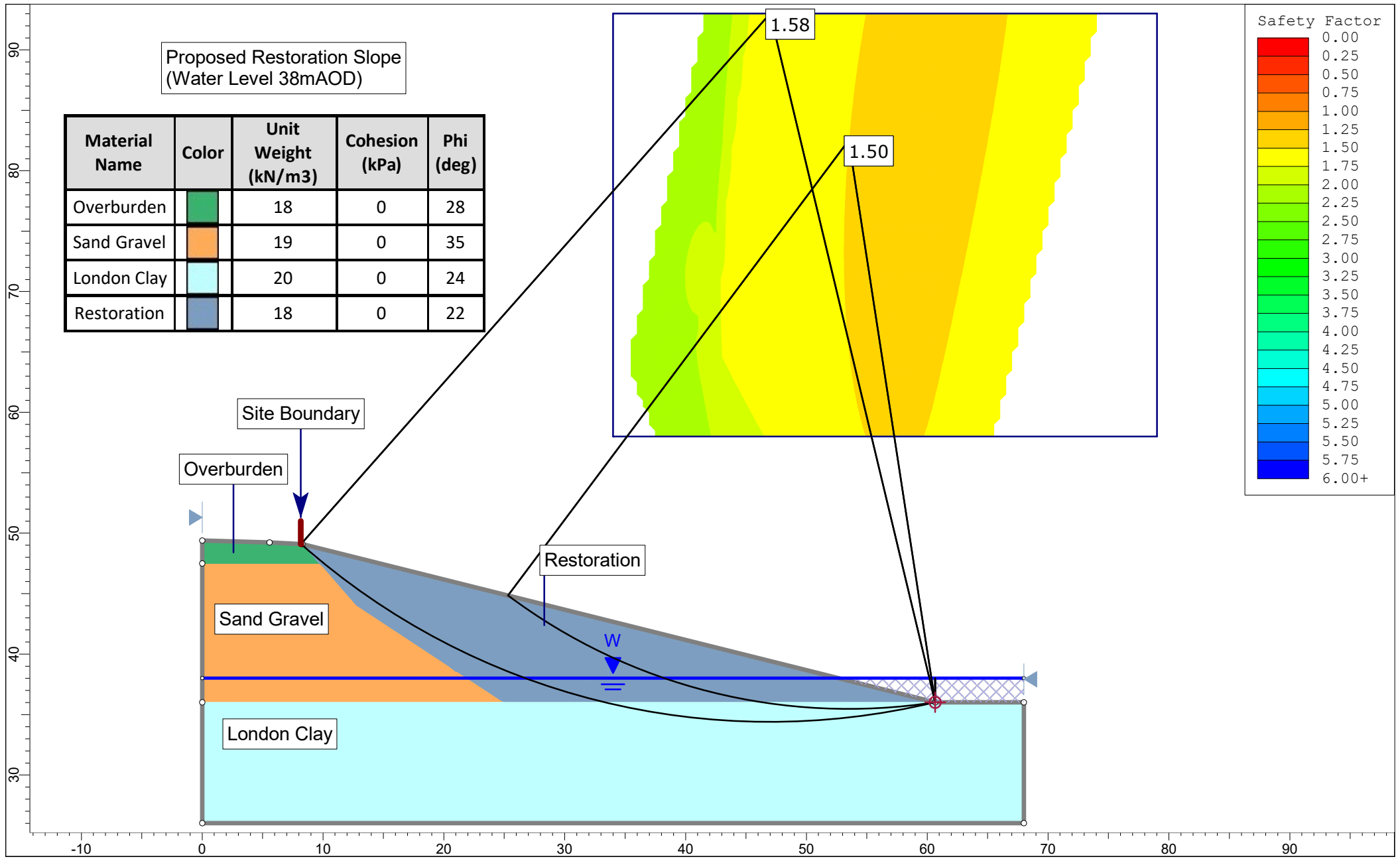
Plot 9 - Sensitivity analysis of friction angle (22 degrees)



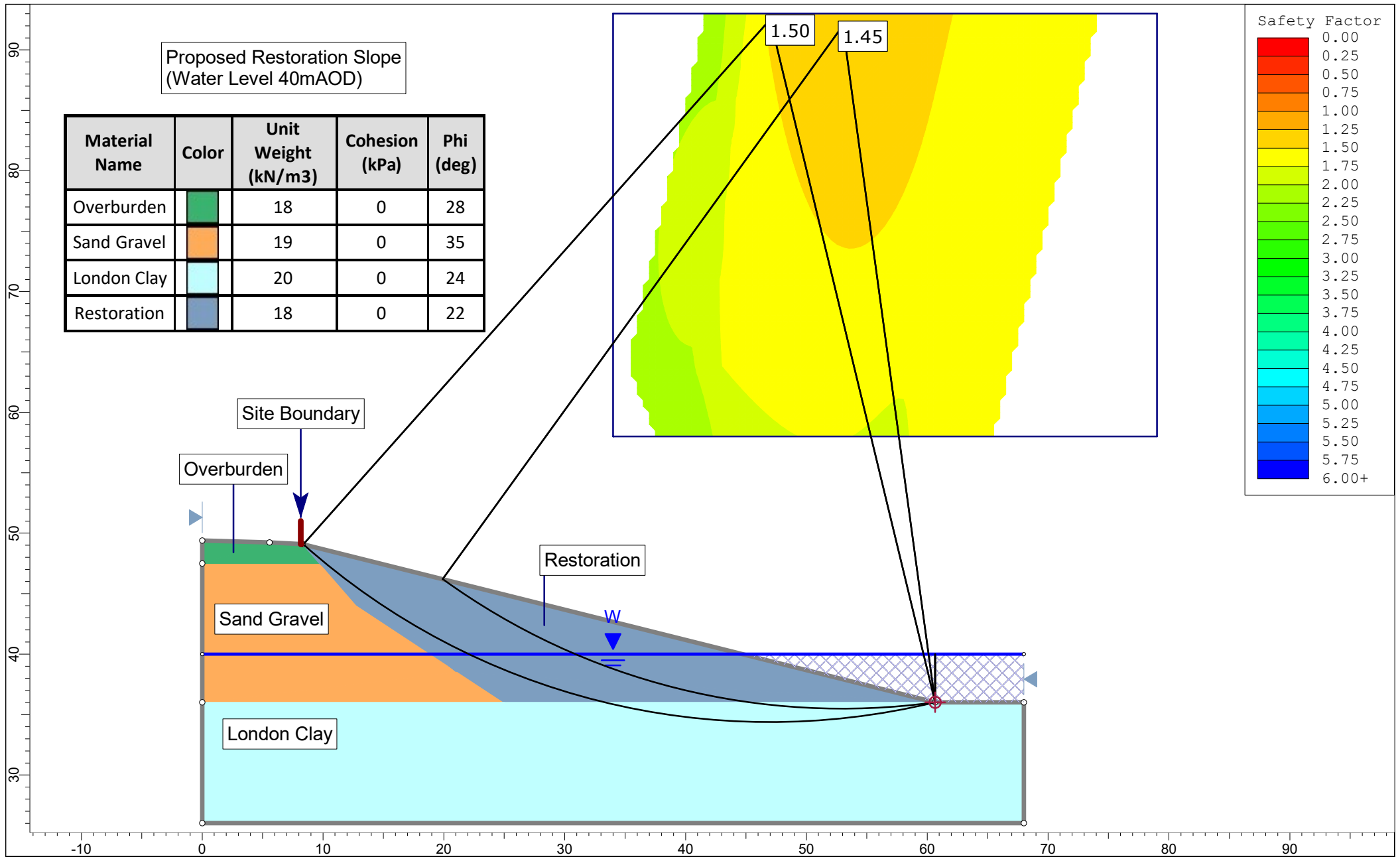
Plot 10 - Sensitivity analysis of friction angle (24 degrees)



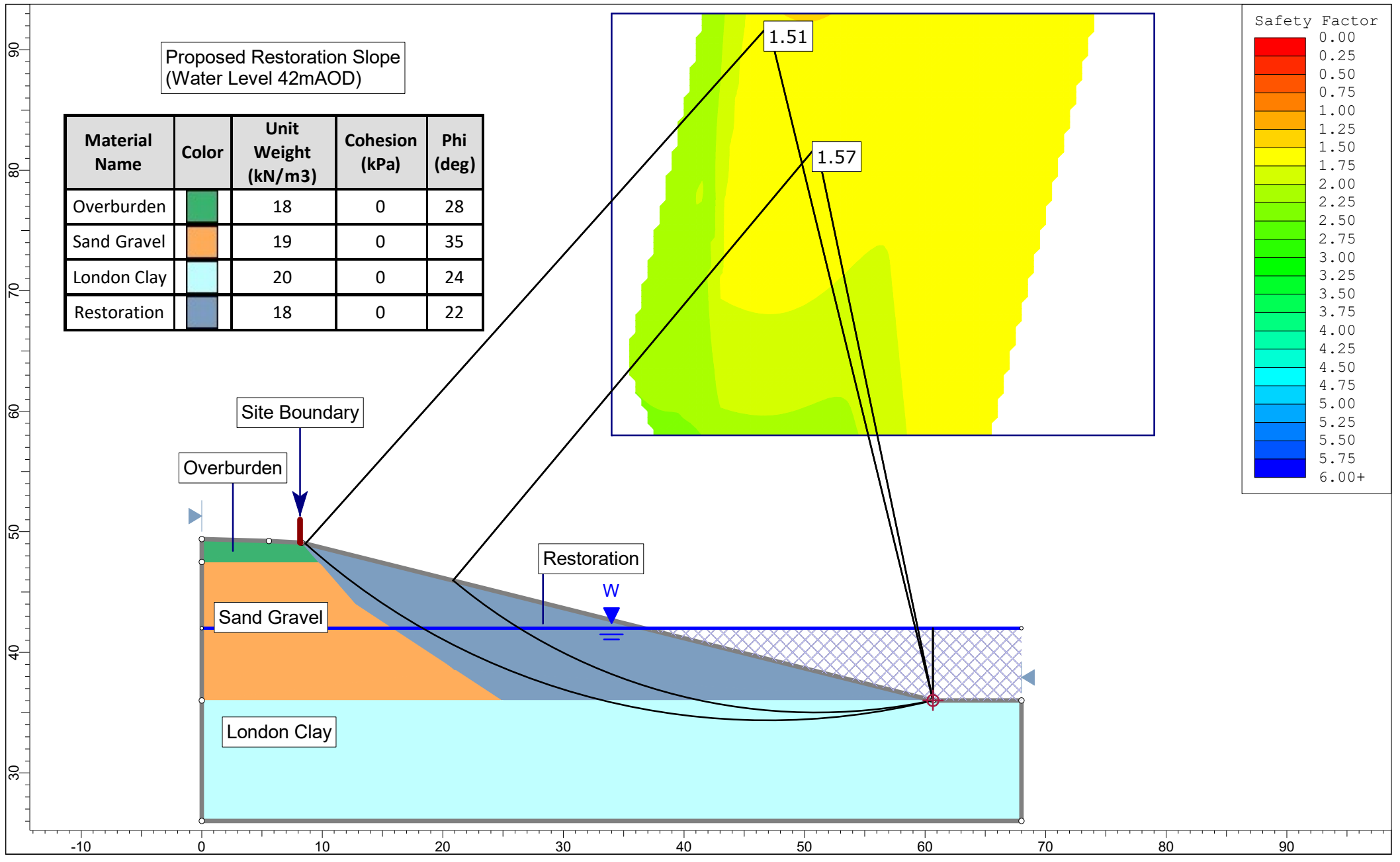
Plot 11 - Sensitivity analysis of water level (36 m AOD)



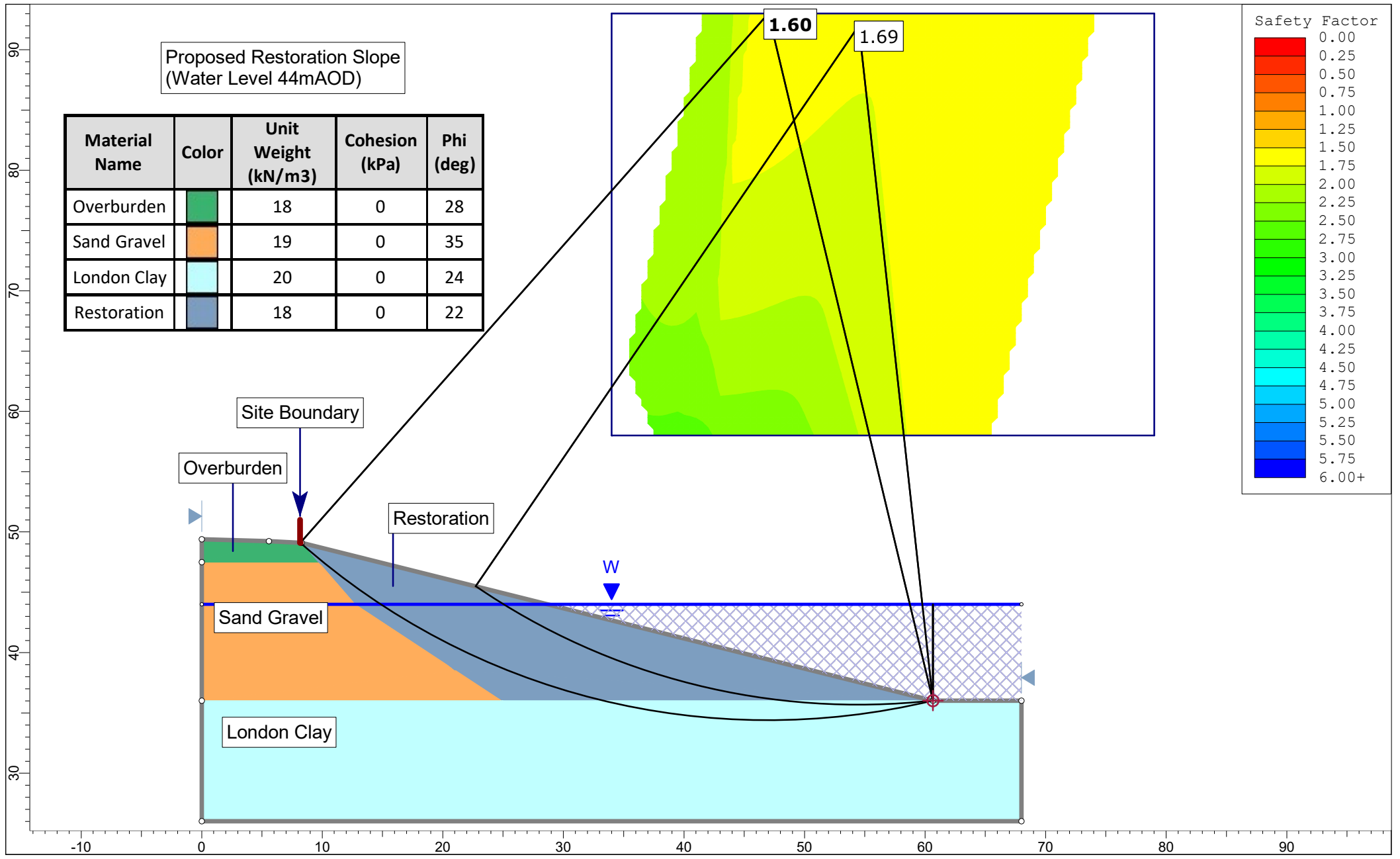
Plot 12 - Sensitivity analysis of water level (38 m AOD)



Plot 13 - Sensitivity analysis of water level (40 m AOD)

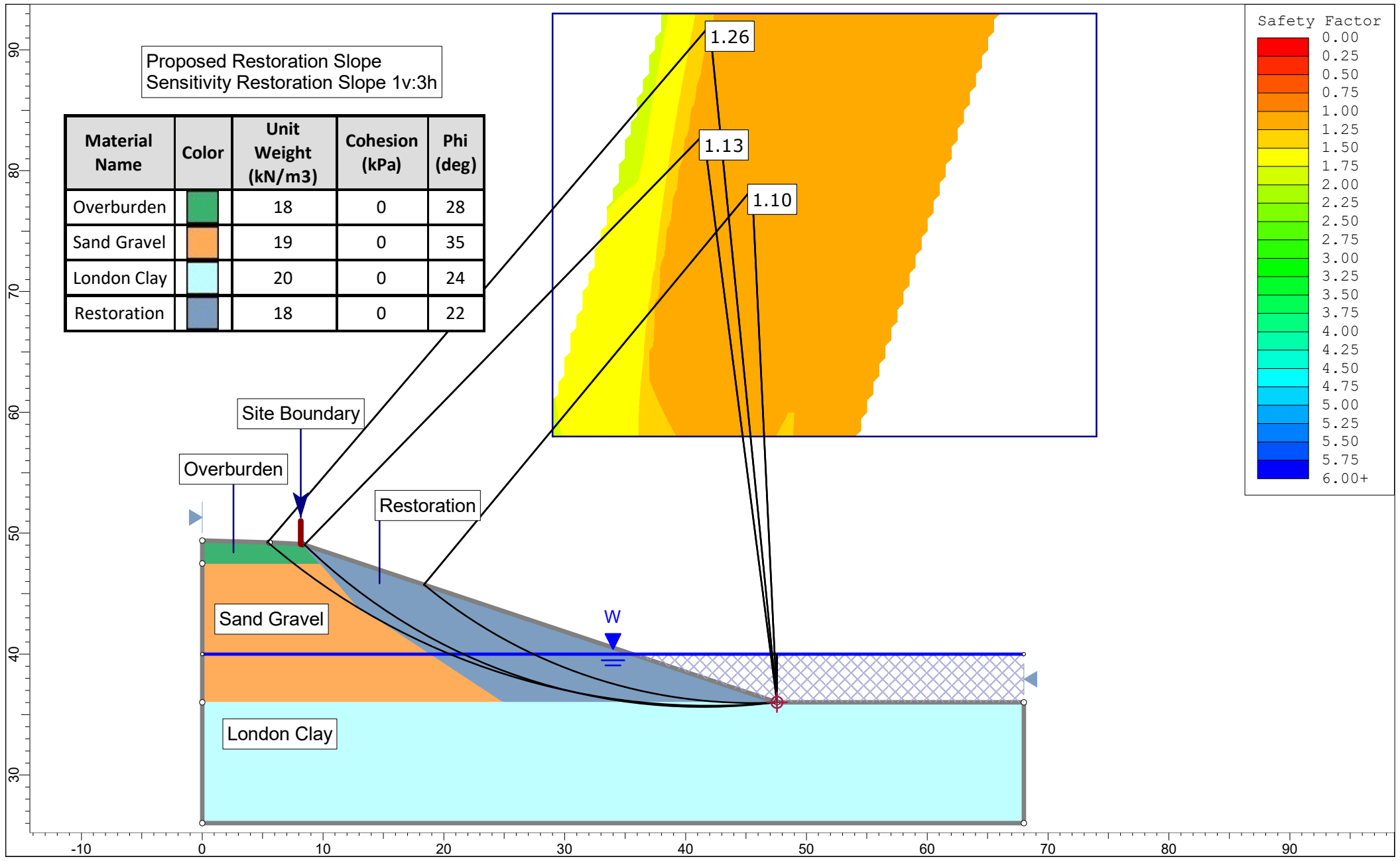


Plot 14 - Sensitivity analysis of water level (42 m AOD)

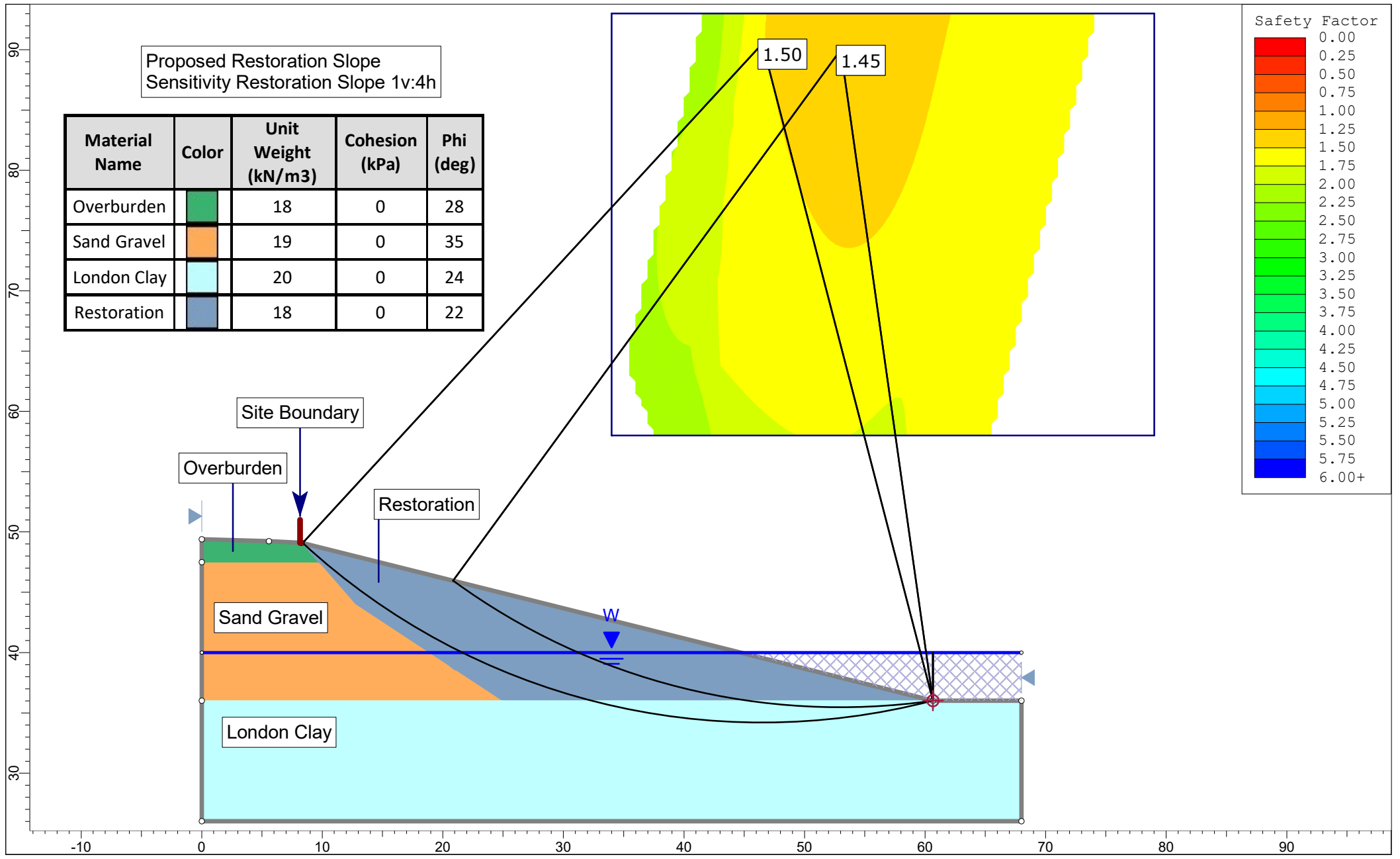


Plot 15 - Sensitivity analysis of water level (44 m AOD)

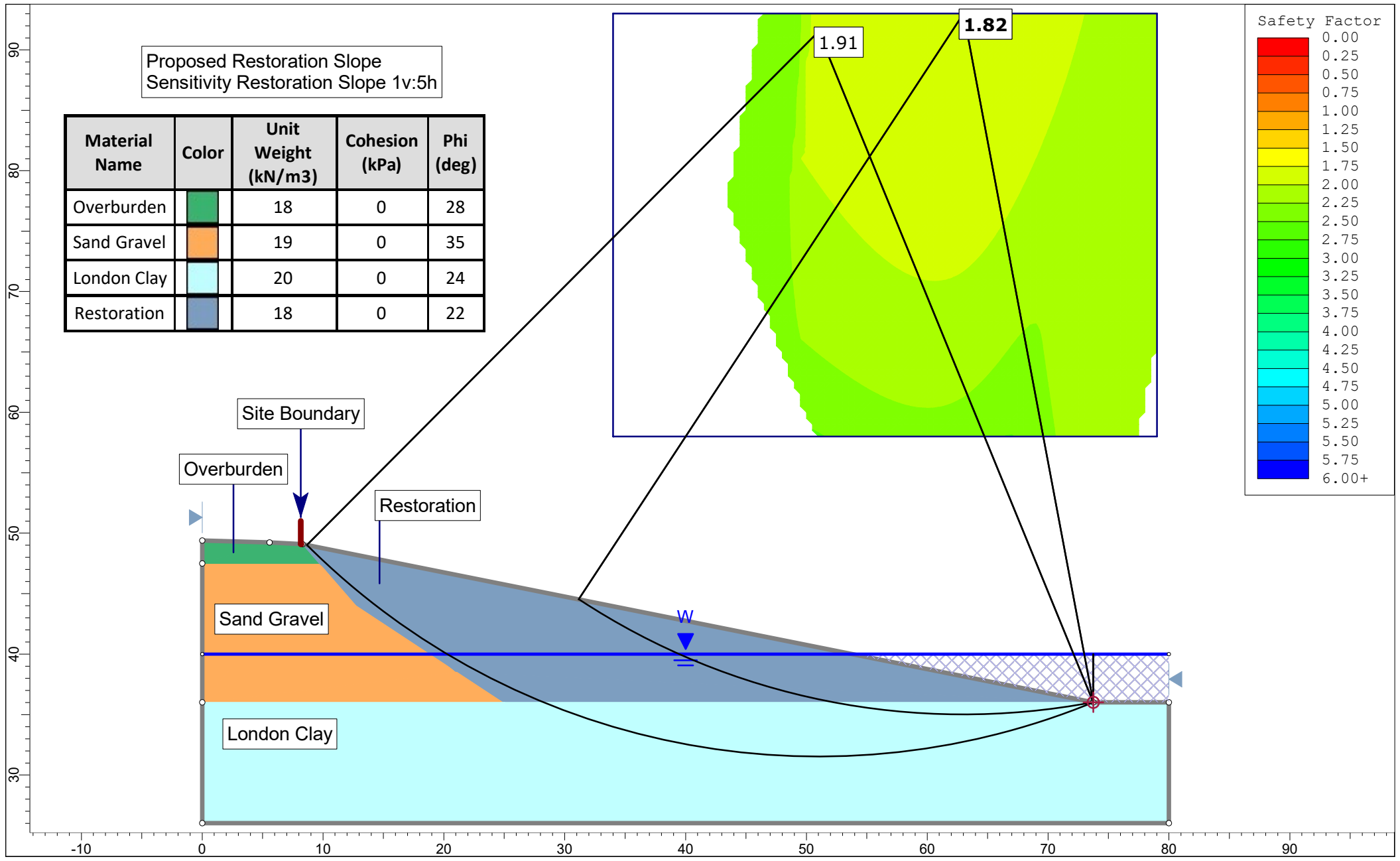




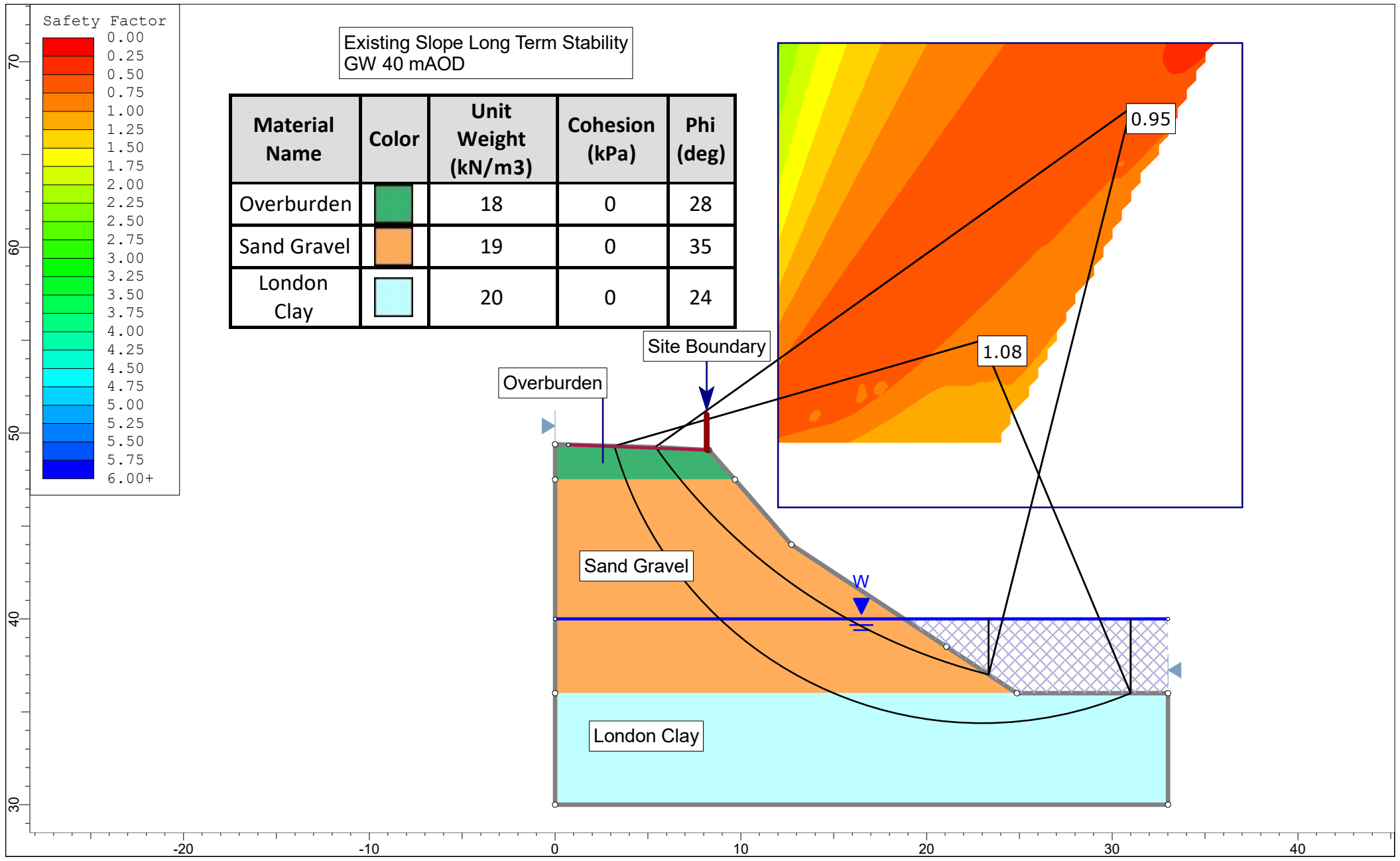
Plot 16 - Sensitivity analysis of slope angle (1v:3h)



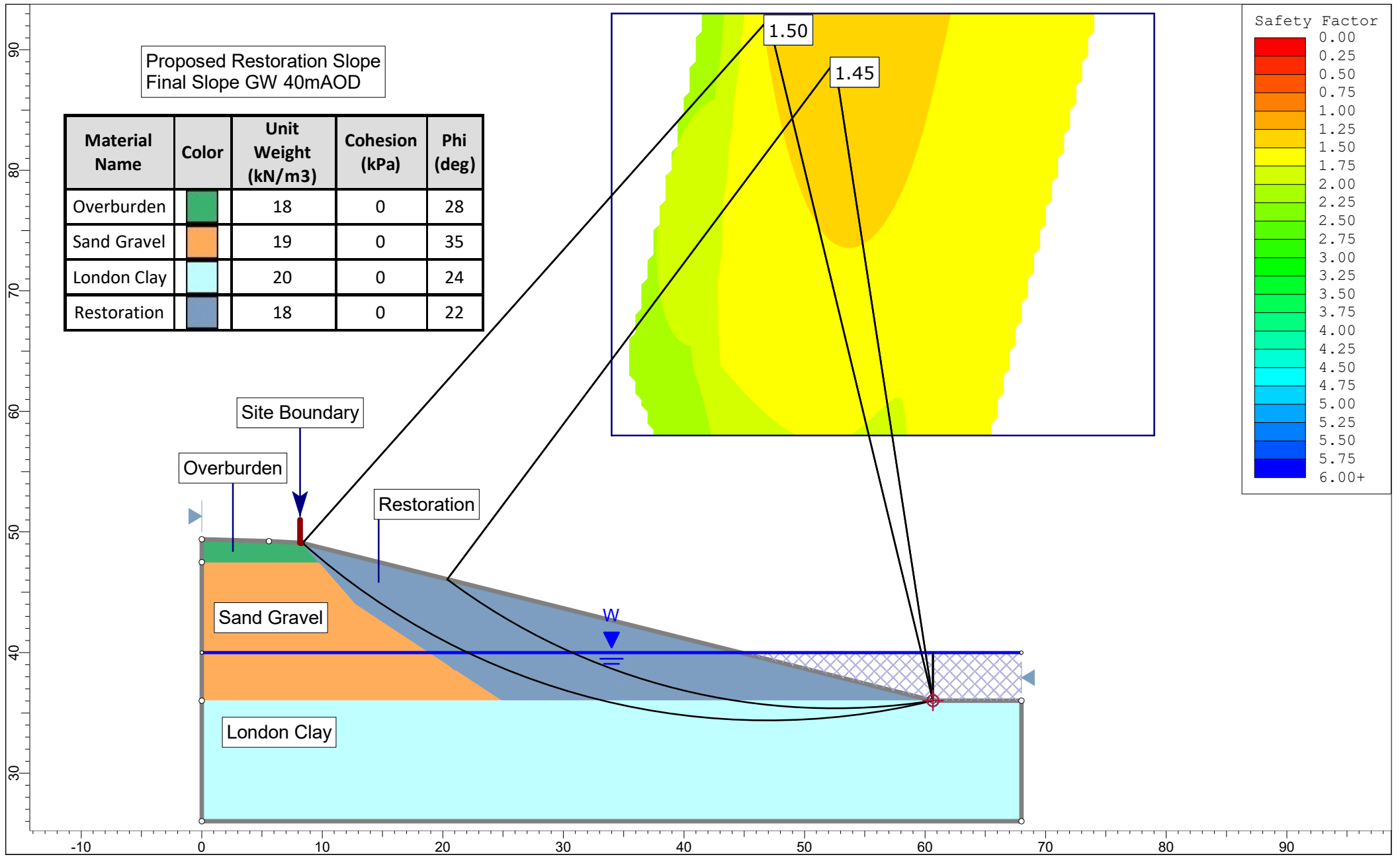
Plot 17 - Sensitivity analysis of slope angle (1v:4h)



Plot 18 - Sensitivity analysis of slope angle (1v:5h)



Plot 19 - Existing slope long term stability if unrestored



Plot 20 - Final restoration slope long term stability

## **APPENDIX 2**

### Photographs



Photo 1 – instable ground approximately 3m behind the crest of the western quarry face (potential slope failure in the long term)

Project:

Russell Green Quarry – Stability Risk Assessment and Restoration Design

By:

ZLu

Date:

Sep '22





Photo 2 near vertical quarry face/slope

Project:

Russell Green Quarry – Stability Risk Assessment and Restoration Design

By:

ZLu

Date:

Sep '22







Photo 3 the pond water level at the time of site visit undertaken on 7<sup>th</sup> June 2022

Project:

Russell Green Quarry – Stability Risk Assessment and Restoration Design

By:

ZLu

Date:

Sep '22





Photo 4 the historical pond water level in October 2012

Project:

Russell Green Quarry – Stability Risk Assessment and Restoration Design

By:

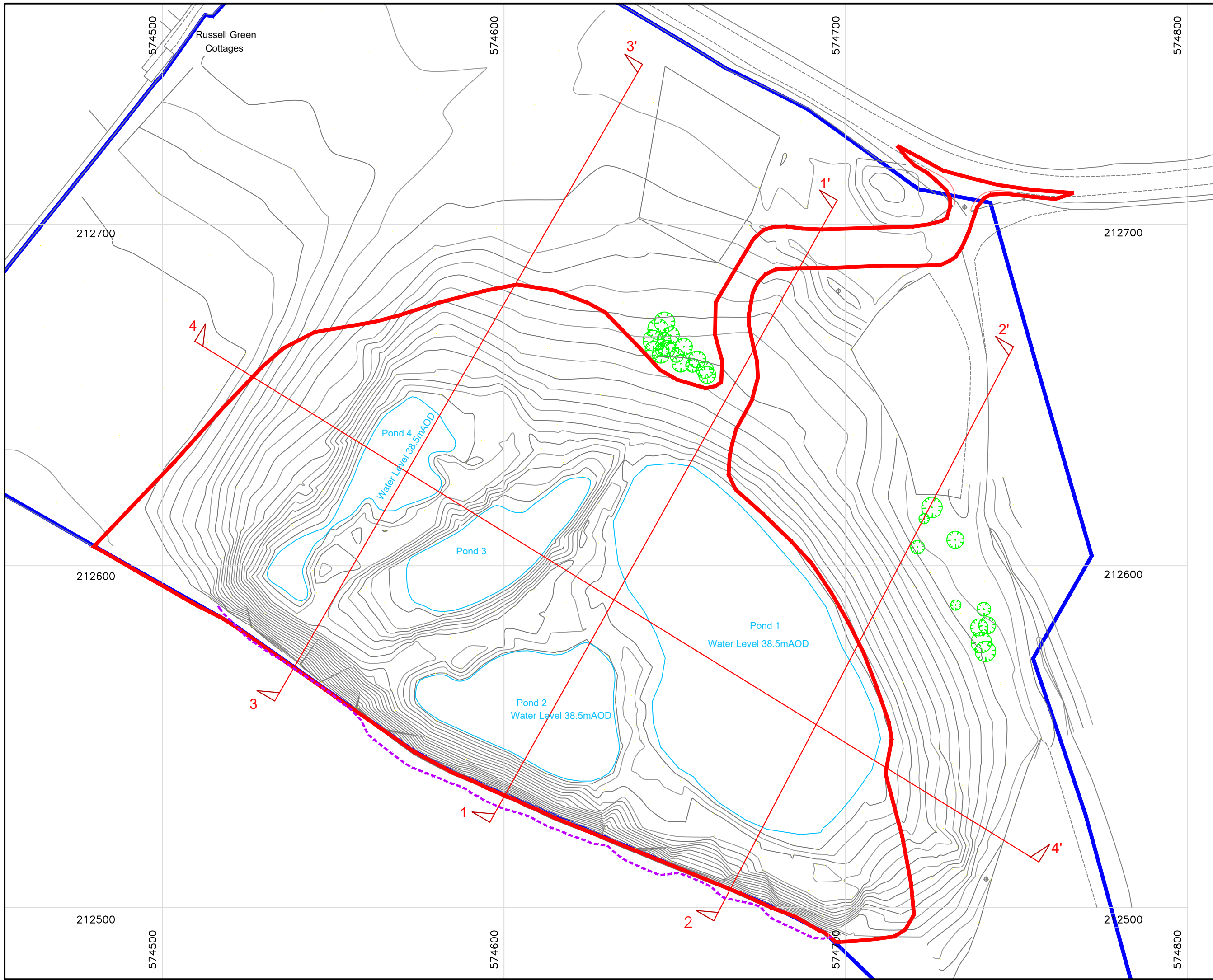
ZLu





Date:

Sep '22



## **DRAWINGS**



-  Cross Section Line
-  Application Site Boundary
-  Site Ownership Boundary
-  Slope Failure Extent if Left Unrestored

**NOTES**

1. Cross sections 1-1' to 4-4' are shown in Drawing No. 8198-001-003.

Rev.	Revision Detail	Drawn	Date
P02	Add Site Boundary	ZL	25/01/23
P01	First Issue	ZL	14/10/22

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CLIENT:



**Land Logical**

PROJECT:

**Russell Green Quarry**

TITLE:

**Existing Site Conditions**

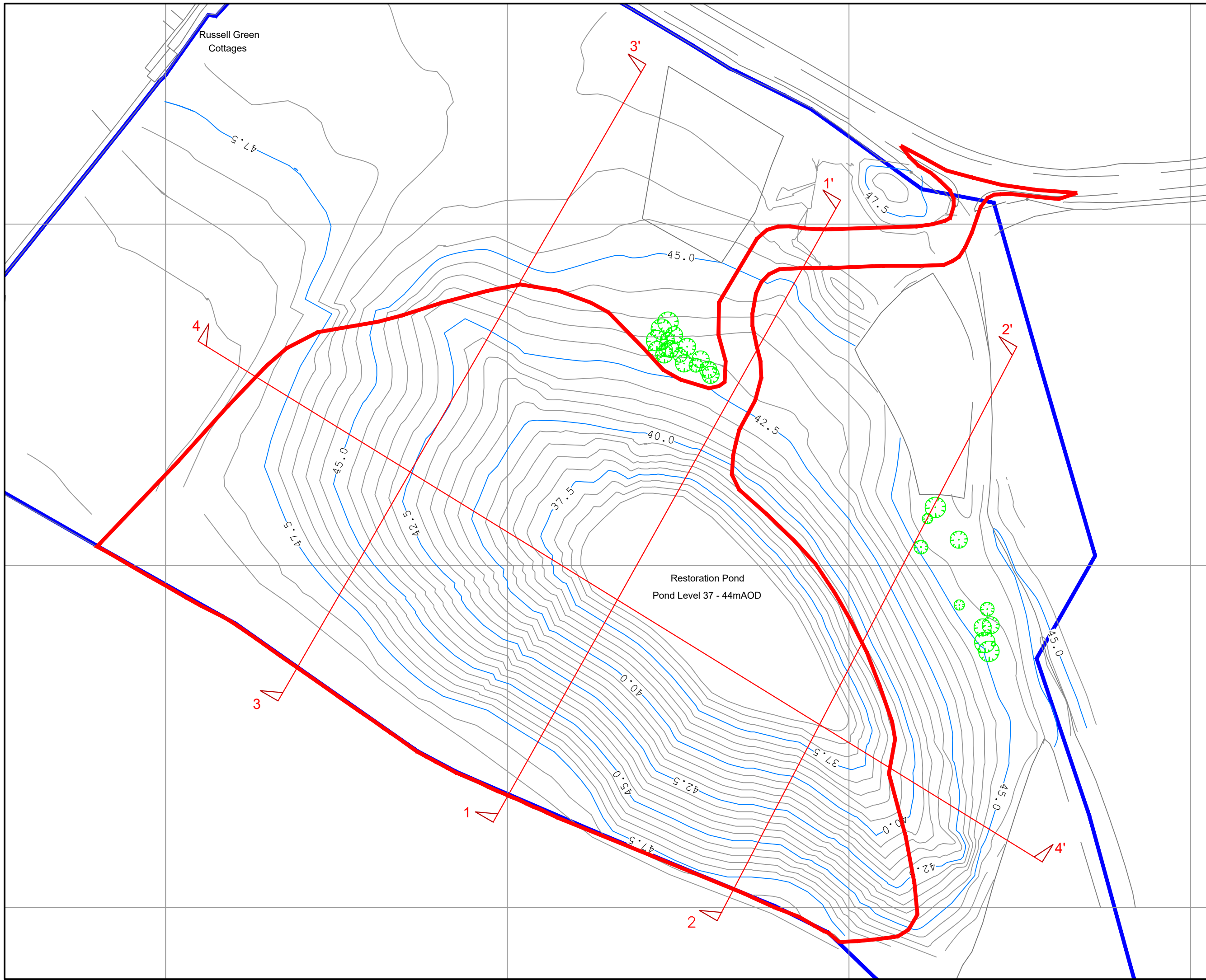
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ZL	BD	Oct '22
Scale:	Original Sheet Size:	Status:
1:1000	A3	V01
Drawing No.	Revision:	
<b>8198-001-001</b>	<b>P02</b>	






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-  Cross Section Line
-  Application Site Boundary
-  Site Ownership Boundary


**NOTES**

1. Cross sections 1-1' to 4-4' are shown in Drawing No. 8198-001-003.

Rev.	Revision Detail	Drawn	Date
P02	Add Site Boundary	ZL	25/01/23
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CLIENT:



**Land Logical**

PROJECT:

**Russell Green Quarry**

TITLE:

**Proposed Restoration Design**

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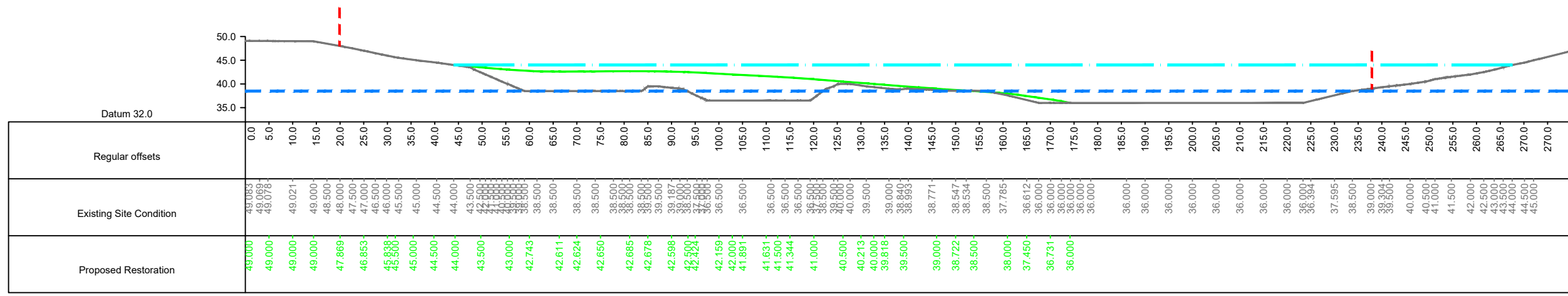
Drawing No.	<b>8198-001-002</b>	Revision:	<b>P01</b>
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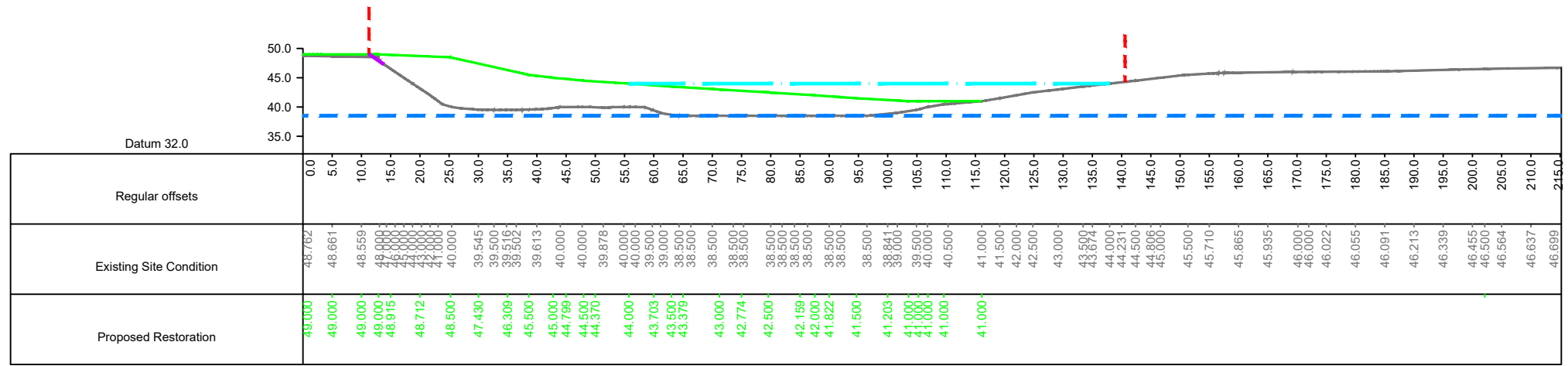
**KEY GS**

Key GeoSolutions Ltd

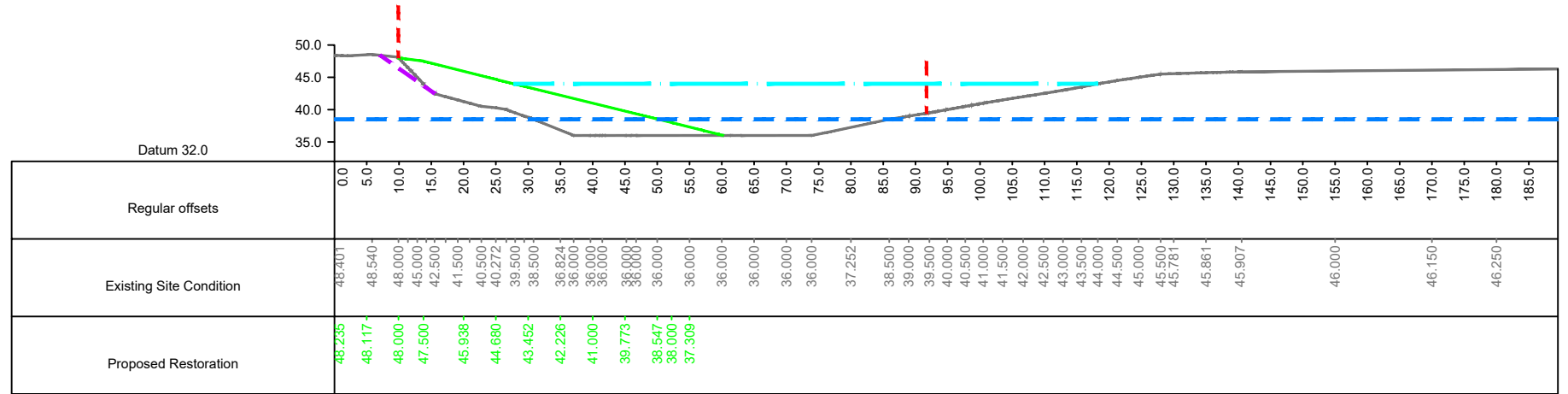
Nova House  
Audley Avenue  
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E-mail: info@keygs.com  
Web: www.keygs.com



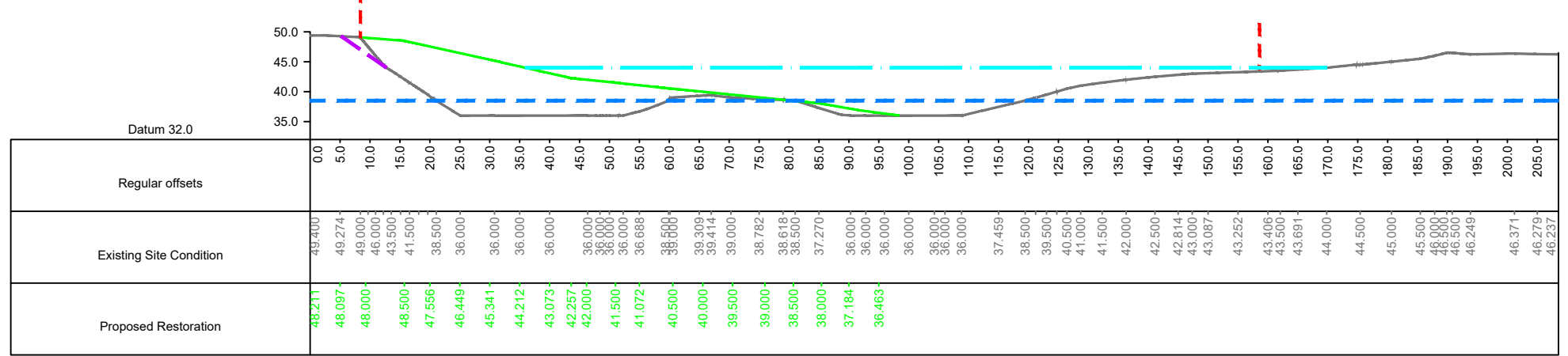
Section 4-4'



Section 3-3'



Section 2-2'



Section 1-1'

- Existing Site Condition
- Proposed Restoration
- Application Site Boundary
- Groundwater Table
- Maximum Restoration Pond Level
- Site Ownership Boundary
- Slope Failure Extent Without Restoration

NOTES  
 1. Section lines location is shown in Drawing No. 8198-001-001.

Rev.	Revision Detail	Drawn	Date
P02	Add Site Boundary	ZL	25/01/23
P01	First Issue	ZL	14/10/22



PROJECT:  
 Russell Green Quarry

TITLE:  
 Cross Sections

Drawn: ZL	Checked: BD	Date: Oct '22
Scale: 1:1000	Original Sheet Size: A3	Status: V01
Drawing No. 8198-001-003	Revision: P02	

Appendix E Preliminary Ecological Assessment



# Preliminary Ecological Assessment

Russell Green Quarry, Essex

On Behalf of:  
Land Logical Dartford Ltd

October 2022

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**Ecology, Countryside Management**  
Professional Service ● Pragmatic Solutions

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# **SES Quality Management**

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<b>Revision Number</b>	RevA

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Site assessments / surveys (where required) have been restricted to a level of detail required to achieve the stated objectives of the work.

Due to the temporal nature of ecology, the findings of this report should not be relied upon if a significant amount of time has passed, as defined by the Chartered Institute of Ecology and Environmental Management (CIEEM) guidelines.

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## Executive Summary

1. This report presents the results of a preliminary ecological appraisal (PEA) undertaken at Russell Green Quarry, Essex. The proposals comprise the stabilisation of the quarry slope by infilling with spoil and subsequent landscaping of the site.
2. The site (2.6ha) comprised four large waterbodies surrounded by trees, semi-improved grassland; scattered scrub, tall ruderal and semi-natural woodland. The site is bound to the northeast by Boreham Road and to the northwest by Cranham Road and Russell Green Cottages whilst the neighbouring property of Brent Hall lies to the southeast. To the southwest is restored land at the Bulls Lodge workings, now comprising rough grassland. In the wider area are a number of large waterbodies (from restored mineral extraction sites), arable land and an airfield.
3. The habitats within the site were predominantly four waterbodies, bound by trees, woodland and scrub, alongside semi-improved grassland and tall ruderal, both of which extend outside of the site boundary.
4. The surveyed area has the potential to support a number of protected and notable species including badgers, foraging and commuting bats, breeding and wintering birds, great crested newts, common reptiles, rare and notable invertebrates, hedgehog and brown hare.
5. Recommended further surveys and assessments, to be undertaken at the appropriate time in the planning process include:
  - Biodiversity Net Gain assessment and report;
  - Botanical survey;
  - Badger monitoring survey;
  - Bat activity and static surveys for a site of moderate value;
  - Bat ground level and/or aerial tree inspections and, if required, subsequent emergence surveys;
  - Breeding and wintering bird surveys;
  - Presence/absence or eDNA surveys for great crested newt with standing water;
  - Invertebrate surveys; and
  - Presence/absence survey for common reptiles

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## 1.0 Introduction

- 1.1 Southern Ecological Solutions Ltd. (SES) was commissioned to undertake a Preliminary Ecological Appraisal (PEA) of Russell Green Quarry, Essex (the site). The site is approximately 2.6ha in extent and located at Ordnance Survey Grid Reference TL 74653 12614. This report presents the findings and recommendations of preliminary ecological appraisal, including further surveys as recommended, to inform a planning application for the restoration of the site. An application for an identical restoration planning application was applied for on 19 March 2013 (reference: 13/00367/CM), with permission consented for on 29 January 2014.
- 1.2 Restoration would include the importation of approximately 85,000 tonnes of inert waste material (excavation soils) to stabilise former quarry face and satisfactorily restore former mineral site to landscaped grassland and ponds and associated improvements to existing site access to facilitate delivery of waste material.
- 1.3 The site comprised four large waterbodies surrounded by planted immature trees, scrub, semi-improved grassland and woodland. The site is bounded to the northeast by Boreham Road and to the northwest by Cranham Road and Russell Green Cottages whilst the neighbouring property of Brent Hall lies to the southeast. To the southwest is restored land at the Bulls Lodge workings, now comprising rough grassland. In the wider area are a number of large waterbodies (from restored mineral extraction sites), arable land and an airfield. The site location plan is provided in Appendix 1.
- 1.4 The site itself lies within a larger semi-improved grassland field also within the control of the applicant (see the blue ownership boundary within Appendix 1).
- 1.5 The site, and wider area, was previously subject to historic protected species surveys, with several badger *Meles meles* setts were confirmed to be present by (D F Clark Bionomique Ltd., 2013).
- 1.6 The objectives of this appraisal were to:
- Map the main ecological features within the surveyed area and compile a plant species list for each habitat type;
  - Make an initial assessment of the presence or likely absence of species of conservation concern;
  - Identify any legal and planning policy constraints relevant to nature conservation which may affect the development proposals;
  - Determine any potential further ecological issues;
  - Determine the possible need for further surveys and mitigation; and
  - Make recommendations for minimising impacts on biodiversity and providing net gains in biodiversity where possible in accordance with Chapter 15: *Conserving and Enhancing the Natural Environment*, of the National Planning Policy Framework (NPPF) (MHCLG, 2021), and relevant nature conservation policies within the adopted Chelmsford Borough Core Strategy (Chelmsford Borough Council, 2008) and new Chelmsford Draft Local Plan Pre-submission Document (Chelmsford Borough Council, 2018) including: policy NE1 and NE2.
- 1.7 Details of relevant wildlife legislation in addition to national and local planning policies related to nature conservation and biodiversity are provided in Appendix 2.

## 2.0 **Methods**

2.1 This report has been prepared with reference to British Standards Institution (BSI) BS 42020:2013 'Biodiversity – code of practice for planning and development' (BSI, 2013) and The Chartered Institute of Ecology and Environmental Management's (CIEEM) Technical Guidance Series 'Ecological Report Writing' (CIEEM, 2017a) and Code of Professional Conduct (CIEEM, 2019a).

2.2 The following PEA follows guidance and methods as prescribed by the CIEEM *Guidelines for Ecological Appraisal 2<sup>nd</sup> edition* (2017b) and the *Guidelines for Ecological Impact Assessment* (2019b). Following these methods, a baseline of rare and/or noted ecological receptors (species and habitats) was established and valued. Predicted significant impacts upon these receptors have been identified and constraints and opportunities identified. This step-wise assessment process has informed likely mitigation and enhancement measures. These surveys will fully inform the predicted impacts of the scheme in accordance with the NPPF (MHCLG, 2021), local planning policy and relevant wildlife legislation.

### **Desk Study**

2.3 SES commissioned a data search from the Essex Field Club (EFC) for records of protected and notable species and for data on non-statutory designated sites. The data search encompassed the study area, and up to 2km from the boundary. Data was received on 27 July 2022.

2.4 Hazel dormouse *Muscardinus avellanarius* records were reviewed on 12 June 2022 from the National Biodiversity Network (NBN) Atlas [www.nbnatlas.org](http://www.nbnatlas.org), which holds data from the People's Trust for Endangered Species (PTES). As hazel dormouse is particularly under-recorded, the data search for this species encompassed an area of up to 10km from the boundary.

2.5 A web-based search for statutory designated sites via the Multi Agency Geographic Information for the Countryside (MAGIC) spatial data resource [magic.defra.gov.uk](http://magic.defra.gov.uk) was undertaken on 19 June 2022 for the following statutory designated sites: European (up to 12km from the site boundary); and national (5km from the surveyed area boundary).

2.6 An online search was undertaken for waterbodies within 500m utilising MAGIC online spatial data resource (<https://magic.defra.gov.uk/>) on 17 June 2022.

### **Extended Phase 1 Habitat Survey**

2.7 An extended Phase 1 Habitat Survey was carried out on 24 June 2022 by Suitably Qualified Ecologist (SQE) Sarah Coulson BSc (Hons) during appropriate weather conditions.

2.8 This is a standard technique for obtaining baseline ecological information for areas of land, including proposed development sites. Phase 1 Habitat Survey methods are set out in the *Handbook for Phase 1 Habitat Survey* (JNCC, 2010). Habitat mapping was undertaken using the standard classification to indicate habitat types. Features of ecological interest and value were highlighted using target notes.

**2.9** The dominant and readily identifiable higher plant species identified in each of the various habitat parcels were recorded and their abundances assessed on the DAFOR scale:

- D - Dominant
- A - Abundant
- F - Frequent
- O - Occasional
- R - Rare

**2.10** These scores represent the abundance within the defined area only and do not reflect national or regional abundances. Plant species nomenclature follows Stace (2019).

**2.11** All impacts upon ecological features have been considered for the purposes of this survey following industry best practice guidance. Only relevant protected and notable species have been discussed within this report to keep its contents concise and relevant to the works being undertaken and for ease of application

### **Protected and Notable Species**

**2.12** The surveyed area was assessed during the extended Phase 1 Habitat survey for its suitability for protected and notable species that are likely to occur in the area. Considering the results of the desk study, the location and habitats in the surveyed area, an assessment was carried out for:

- Rare and notable flora;
- Invasive species
- Badger;
- Bats (foraging and commuting);
- Nesting and over-wintering birds;
- Great crested newt;
- Hazel dormouse;
- Rare or notable invertebrates;
- Reptiles; and
- Other notable species.

#### Badger

**2.13** An initial assessment was made to record badger setts across the surveyed area using standard guidelines for classifying badger setts (Harris *et al.*, 1989) and categorising entrance holes (Natural England, 2009). Together with records of signs including paths, hairs, latrines and setts. This assessment also sought to identify areas with the potential to be utilised by badgers for foraging, commuting and sett creation, such as earth banks, woodland, hedgerows and rough grassland. A detailed description of the survey methods relating to this species is provided in Appendix 3.

#### Bats

**2.14** The surveyed area was assessed for its suitability to support foraging and commuting bats.

**2.15** Good bat foraging habitat generally includes sheltered areas and habitats with good numbers of insects, such as woodland, scrub, ponds lakes and species-rich or rough grassland. Good commuting habitat generally comprises linear features such as well-connected hedgerows, woodland edge, watercourses. The site was assigned a level of suitability according to the classification provided by Collins (2016), outlined in Table 1.

**Table 1: Assessment of the potential suitability of a proposed development site for roosting, foraging and commuting bats (Collins, 2016)**

Suitability	Roosting habitats	Commuting and foraging habitats
Negligible	Negligible habitat features on site likely to be used by roosting bats.	Negligible habitat features on site likely to be used by commuting and foraging bats.
Low	<p>A structure with one or more potential roost sites that could be used by individual bats opportunistically but not enough space, shelter, protection and appropriate conditions to be used on a regular basis or by larger numbers of bats.</p> <p>A tree of sufficient size and age to contain potential roosting features but with none seen from the ground or features seen with only very limited roosting potential.</p>	<p>Habitat that could be used by small numbers of commuting bats such as a gappy hedgerow or unvegetated stream, but isolated, i.e. not very well connected to the surrounding landscape by another habitat.</p> <p>Suitable, but isolated habitat that could be used by small numbers of foraging bats such as a lone tree (not in a parkland situation) or patch of scrub.</p>
Moderate	A structure or tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status.	<p>Continuous habitat connected to the wider landscape that could be used by bats for commuting such as lines of trees and scrub or linked back gardens.</p> <p>Habitat that is connected to the wider landscape that could be used by bats for foraging such as trees, scrub, grassland or water.</p>
High	A structure or tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat.	<p>Continuous, high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by commuting bats such as river valleys, streams, hedgerows, lines of trees and woodland edge.</p> <p>High-quality habitat that is well-connected to the wider landscape that is likely used regularly by foraging bats such as broad-leaved woodland, tree-lined watercourses and grazed parkland</p> <p>Site is close to and connected to known roosts.</p>

Birds

**2.16** The surveyed area was assessed for its potential to support breeding birds and significant wintering and/or migratory bird populations. Suitable habitat generally includes scrub, trees and can also include buildings, open grassland and piles of debris.

Great Crested Newt

**2.17** Aquatic and terrestrial habitats were assessed for its suitability for great crested newt. Suitable terrestrial habitat generally includes rough grassland and woodland where they can forage and hibernate, with good links to ponds where they breed.

**2.18** All accessible waterbodies within 500m of the surveyed area were assessed for their suitability to support great crested newt, in accordance with best practice guidelines (Oldham *et al.*, 2000).

#### Hazel Dormouse

**2.19** Habitats were assessed for their general suitability for hazel dormouse. This species generally uses areas of dense woody vegetation and are more likely to be found where there is a wide diversity of woody species contributing to a three-dimensional habitat structure, a number of food sources, plants suitable for nest-building materials and good habitat connectivity.

#### Invertebrates

**2.20** The surveyed area was assessed for its potential to support rare or notable invertebrate species; this assessment was made on the basis of the range of the habitats present.

#### Reptiles

**2.21** The surveyed area was assessed for its suitability for the four common reptile species; common lizard *Zootoca vivipara*, slow-worm *Anguis fragilis*, grass snake *Natrix helvetica* and adder *Vipera berus*. Specific habitat requirements vary between species. Common lizard and slow worm prefer rough grassland although they can be found in a variety of habitats ranging from woodland glades to walls and pastures. Grass snake has similar habitat requirements but have a greater reliance on ponds and wetlands. Adder is more associated with dry grasslands, heathland and woodland edge habitats.

#### Notable Mammals

**2.22** The surveyed area was assessed for its potential to support Natural Environment and Rural Communities (NERC) Act 2006 mammals of principal importance which are likely to occur in the local area especially European hedgehog and brown hare.

### **Assessment of Nature Conservation Value**

**2.23** CIEEM guidelines for Ecological Impact Assessment in the United Kingdom (2018) have been utilised to assess the impacts upon habitats within the Zone of Influence of the site. CIEEM suggests that it is best to use the geographical scale (i.e. international, national, regional etc.) at which a feature (i.e. a habitat, species or other ecological resource) may or may not be important as the appropriate measure of value. As such, data from the data search and Extended Phase 1 Habitat survey have been reviewed and the likely occurrence of protected and notable species/species groups assessed. This has allowed predictions of impacts to be made along with recommendations for mitigation, compensation and enhancement. Further targeted survey will refine the evaluation and associated recommendations.

**2.24** The following geographical scale categories are considered appropriate:

- International;
- National (England);
- Regional (South-east);
- County (Essex);



- District (City of Chelmsford);
- Local (northeast Chelmsford); and
- Site.

### **Constraints**

- 2.25** Desktop data searches are a valuable tool in evaluating a site's potential to hold rare and protected species, it is not however an absolute in confirming presence or absence of notable species due to the nature of how the records are collected.
- 2.26** Where any data supplied by the client, or any other sources have been used, it has been assumed that the information is correct. No responsibility can be accepted by SES for inaccuracies in the data supplied by any other party. The conclusions and recommendations in this report are based on the assumption that all relevant information has been supplied by those bodies from whom it was requested.
- 2.27** All the species that occur in each habitat would not necessarily be detectable during survey work carried out at any given time of the year, since different species are apparent at different seasons. However, given the nature of the habitats present within the site, an accurate characterization of the habitats was made, and the timing of the initial survey is not considered a significant limitation.
- 2.28** During the site walkover, it was not possible to fully inspect the trees for suitable features for roosting bats, due to their position and gradient of the slope they were positioned upon. In addition, a complete badger survey of the site could not be undertaken, due to quarry face slippage and the steepness of the slopes upon which the previously observed badger setts were recorded.
- 2.29** Nine waterbodies within 500m of the site could not be accessed for their potential to support great crested newt.

### 3.0 **Baseline Ecological Conditions**

#### **Site Description**

- 3.1 The site comprised predominantly of four large waterbodies, semi-improved grassland, scattered scrub, scattered trees, semi-natural woodland, tall ruderal and hedgerow. The site was bordered a number of large waterbodies (from restored mineral extraction sites), arable land and an airfield.

#### **Statutory Designated Sites**

##### *International Designated Sites*

- 3.2 There are two sites designated under the Conservation of Habitats and Species Regulations (Habitats Regulations, 2019) considered to be of **international** importance within 12km of the site boundary. These sites are predominantly designated for their wintering bird assemblage, and are summarised in Table 2. Of these, Blackwater, Crouch, Roach and Colne Estuaries Marine Conservation Zone (MCZ) lies the closest, at 10.1km southeast of the site boundary. This site overlaps with Blackwater Estuary Special Protection Area (SPA), Essex Estuaries Special Area of Conservation (SAC), Blackwater Estuary Ramsar and Blackwater Estuary Site of Special Scientific Interest (SSSI), which at its closest point lies 11.6km of the site boundary.

- 3.3 The Blackwater Estuary supports internationally and nationally important numbers of waterfowl which overwinter in the UK. Essex Estuaries comprises annex 1 habitats including estuaries and mudflats, and annex 2 habitats including sandbanks which are slightly covered by sea water all the time. The surrounding terrestrial habitats - the sea wall, ancient grazing marsh and its associated fleet and ditch systems, plus semi-improved grassland - are also of high conservation interest. This rich mosaic of habitats supports an outstanding assemblage of nationally scarce plants and a nationally important assemblage of rare invertebrates, with 16 Red Data Book species and 94 notable and local species.

##### *Nationally Designated Sites*

- 3.4 River Ter SSSI, located approximately 2.8km north of the site and considered to be of national importance, is the sole SSSI within 5km of the site boundary (Table 2). The site is designated for its lowland stream habitat with distinctive floor regime, including pool-riffle sequences, bank erosion, bedload transport and dimensional adjustments to flooding frequency. The site also falls within Natural England SSSI Impact Risk Zone related to River Ter SSSI, however the risks do not relate to this planning application, which will restore a mineral extraction site, not create one.

- 3.5 All nationally designated sites are considered to be of value at the **national** level.

**Table 2: Statutory designated sites within the vicinity of the site**

Site name	Distance & direction	Size (ha)	Reason for designation
<b>International designated sites within 15km</b>			
Blackwater, Crouch, Roach and Colne Estuaries MCZ	10.1km southeast	28447.8	The largest inshore MCZ in England, the site protects one of the largest estuaries in the East of England and the largest tidal river in Essex. The site has been designated for four specific features: Native oysters <i>Ostrea edulis</i> ; Native oyster beds; Intertidal mixed sediments; and Clacton Cliffs and Foreshore.
Blackwater Estuary SPA, Ramsar & SSSI / Essex Estuaries SAC / Blackwater Estuary NNR	11.6km southeast	4403.4	The Blackwater Estuary is the largest estuary in Essex north of the Thames and, indeed, is one of the largest estuarine complexes in East Anglia. Its mud flats, fringed by saltmarsh on the upper shores, support internationally and nationally important numbers of waterfowl which overwinter here. Shingle and shell banks and offshore islands are also a feature of the tidal flats. The surrounding terrestrial habitats - the sea wall, ancient grazing marsh and its associated fleet and ditch systems, plus semi-improved grassland - are also of high conservation interest. This rich mosaic of habitats supports an outstanding assemblage of nationally scarce plants and a nationally important assemblage of rare invertebrates, with 16 Red Data Book species and 94 notable and local species. Essex Estuaries comprises annex 1 habitats including estuaries and mudflats, and annex 2 habitats including sandbanks which are slightly covered by sea water all the time.
<b>Nationally designated sites within 5km</b>			
River Ter SSSI	2.8km north	6.41	This reach of the River Ter is representative of a lowland stream with a distinctive floor regime. It is flashy, draining a low-lying catchment on glacial till, and has a very low base flow discharge but high flood peaks; daily, monthly and annual flow variability are also high. In addition the site demonstrates characteristic features of a lowland stream including pool-riffle sequences, bank erosion, bedload transport and dimensional adjustments to flooding frequency.

**Key:** MCZ = Marine Conservation Zone; SPA = Special Protection Area; SAC = Special Area of Conservation; SSSI = Site of Special Scientific Interest; NNR = National Nature Reserve

### Non-statutory Designated Sites

**3.6** There were nine non-statutory designated sites within 2km of the site (Table 3). Boreham Road Gravel Pits Local Wildlife Site (LoWS) was the closest to the site boundary, located approximately 0.5km to the southeast, and included areas of ancient woodland, in addition to several lakes, wet woodland and dense scrub.

**3.7** The LoWSs are considered important at a **county** level.

**Table 3: Non-statutory designated sites within 2km of the site**

Site Name	Distance & Direction	Reasons for Designation
Ch113 Boreham Road Gravel Pits LoWS	0.5km southeast	Series of lakes surrounded by wet woodland and dense scrub. Ancient woodland can be found on the site boundary to the south.
Bra70 Ringer's Wood LoWS	1.1km northeast	Neglected hornbeam <i>Carpinus betulus</i> and small-leaved lime <i>Tilia cordata</i> coppice, pedunculate oak <i>Quercus robur</i> and ash <i>Fraxinus excelsior</i> standards are the main canopy components of Ringer's Wood.
Bra87 Toppinghoehall Wood LoWS	1.2km east	Areas of ancient woodland habitat supporting Schedule 8 bluebell.
Ch116 Porter's Wood LoWS	1.2km east	Designated for ancient woodland habitat.
Ch96 Chopping's Wood LoWS	1.3km northwest	An ancient wood containing a mix of broadleaved species.

Site Name	Distance & Direction	Reasons for Designation
Ch102 Scarlett's Wood LoWS	1.6km north	An area of woodland.
Ch176 Bulls Lodge Lagoons LoWS	1.6km south	A series of water management lagoons associated with the adjacent mineral workings epitomises the ecological value of brownfield land, with an intricate mosaic of habitats. Areas of flower-rich, albeit weedy, rough grassland provide good foraging habitat for a wide range of invertebrates and areas of bare ground, including some steep, sandy banks, provides nesting habitat and hunting areas also for invertebrates. Areas of reedbed and scrub are also present.
Ch107 The Grove LoWS	1.6km south	A streamside woodland with some substantial earthwork features within its borders.
Bra94 Lost Wood LoWS	1.9km east	An area of ancient woodland being commercially exploited for timber production, with extensive plantations of Beech <i>Fagus sylvatica</i> , Scots Pine <i>Pinus sylvestris</i> , Larch <i>Larix</i> sp. and Spruce <i>Picea</i> sp..

**Key:** LoWS = Local Wildlife Site

## Habitats

**3.8** A Phase 1 Habitat map of the site is provided within Appendix 4, whilst plant species recorded per habitat type are tabled in Appendix 5. The Phase 1 Habitat types (JNCC, 2010) within the site are listed below followed, by a description of each habitat type:

- Standing water;
- Semi-improved grassland;
- Tall ruderal;
- Scattered scrub;
- Bare ground;
- Species-poor hedgerow with trees;
- Scattered trees; and
- Semi-natural mixed woodland.

### Standing water

**3.9** Standing water is the dominant habitat within the site, comprising four large waterbodies; descriptions are recorded below and a location plan provided in Appendix 6. The four waterbodies are clustered together and are the result of previous mineral extraction works in the 1980's within the site and the resultant partial restoration for 'amenity use'. All four ponds were accessible for survey, however New Zealand pigmyweed *Crassula helmsii*, an invasive Schedule 9 species, was observed on all banks. Vegetation within the waterbodies was otherwise limited, with no other aquatic or emergent vegetation identified within.

**3.10** The four ponds within the surveyed area:

- **Pond P1:** This was a large waterbody (c. 1,830m<sup>2</sup>) in the northwest of the site and adjacent to Pond P2
- **Pond P2:** This waterbody (c. 2,550m<sup>2</sup>) lies between Ponds P1, P3 and P4.
- **Pond P3:** This waterbody lies in the south of the site adjacent to Ponds P2 and P4 (c. 1,900m<sup>2</sup>).
- **Pond P4:** The largest of the four waterbodies (c. 7,110m<sup>2</sup>) located in the east of the site, adjacent to Pond P3 and the northern part of Pond P2.

### Semi-improved grassland

- 3.11** Semi-improved grassland surrounds the bodies of standing water, and dominates the land within the ownership boundary. The sward was long (up to 120cm in places) at the time of the survey in June 2022 and is managed annually with a cut at the end of summer. Species within the semi-improved grassland were predominantly grass, predominantly cock's-foot *Dactylis glomerata*, false oat-grass *Arrhenatherum elatius*, annual meadow grass *Poa annua* and some perennial ryegrass *Lolium perenne* and Yorkshire fog *Holcus lanatus*, although several wildflowers and other forbs are present within as well, including ribwort plantain *Plantago lanceolata*, lesser stitchwort *Stellaria graminea* and common mallow *Malva sylvestris*. A single pyramid orchid *Anacamptis pyramidalis* was observed within the grassland, although this was outside of the site boundary, but within the ownership boundary.

### Tall ruderal

- 3.12** Small areas of tall ruderal vegetation are present within the semi-improved grassland, in particular adjacent to the site entrance. Species include goat's-rue *Galega officinalis*, sheep's sorrel *Rumex acetosella*, spear thistle *Cirsium vulgare*, black medick *Medicago lupulina*, bristly oxtongue *Helminthotheca echioides*, scentless mayweed *Tripleurospermum inodorum*, hogweed *Heracleum mantegazzianum*, field bindweed *Convolvulus arvensis*, sowthistle *Sonchus oleraceus*, common nettle *Urtica dioica*, bramble *Rubus fruticosus*, creeping cinquefoil *Potentilla reptans*, Imperforate St. John's-wort *Hypericum maculatum*, chickweed *Stellaria media*, wild mignonette *Reseda lutea* and mullein *Verbascum thapsus*.

### Scattered scrub

- 3.13** Small areas of scattered scrub were noted within the site. Scattered rose *Rosa* sp., bramble, willow *Salix* sp. and blackthorn *Prunus spinosa* scrub is present along the eastern part of the site upon the steep verges where the grassland merges with the treeline.

### Bare ground

- 3.14** A small area of bare ground is present at the entrance to the site, off Cranham Road. This habitat is present at the entrance to the site and is of is present at the entrance to the site.

### Species-poor hedgerow with trees

- 3.15** An unmanaged species-poor hedgerow with trees lies along the southwestern boundary of the site, separating the steep banks of the former quarry and standing water within the site from the adjacent arable field and development.
- 3.16** The hedgerow was dominated by hawthorn *Crataegus monogyna*, field maple *Acer campestre* and blackthorn. Other species included ash *Fraxinus excelsior*, elder *Sambucus nigra*, apple *Malus* sp. and elm *Ulmus* sp.. A detailed hedgerow survey conforming to The Hedgerow Regulations 1997 was not undertaken. Ivy *Hedera helix*, red dead-nettle *Lamium purpureum* and Hedge mustard *Sisymbrium officinale* were also observed.

### Scattered Trees

- 3.17** Several willow trees, predominantly goat willow *Salix caprea* (although white willow *Salix alba* was also recorded) were present surrounding the standing water within the site. Planted as part of the partial restoration for ‘amenity use’ undertaken post mineral extraction in the 1980s at the site. No ground flora was observed beneath the trees.

### Semi-natural mixed woodland

- 3.18** Along the southern boundary of the site, where the banks were steepest, a small area of unmanaged semi-natural woodland has developed. The trees are young, and is dominated by willow, however other species include oak *Quercus robur*, hawthorn, ash, blackthorn, and elder.

### Summary

- 3.19** The majority of the habitats within the site were considered to be of moderate to high ecological value with the potential to support protected species, including those of conservation concern such as great crested newts. While the majority of the habitats within the site, i.e. the semi-improved grassland, are of **site** value, the standing water and is considered to hold value at the **Local** level. Confidence in this assessment is **moderate**.

### **Protected Habitats**

#### Hedgerow

- 3.20** The species-poor hedgerow with trees along the southwestern boundary of the site alongside the bodies of water were considered to be the habitats of most ecological value within the site. The hedgerow fulfils the definition for classification as a Habitat of Principal Importance (HoPI) under Section 41 of the (NERC) Act 2006 (i.e. composition of 80% UK native woody species or more) (JNCC, 2008). However, the hedgerow is not considered likely to meet the criteria for an ‘important hedgerow’ under the Hedgerow Regulations 1997 (HMSO, 1997) due to a lack of species diversity and limited associated features. These habitats are therefore considered to be of value at up to the **site** level, confidence in this assessment is **moderate**. Other habitats on site were common within the wider landscape and of limited biodiversity value lacking species diversity.

### **Protected and Notable Species**

- 3.21** Protected and notable species are animals and plants protected under the Conservation of Habitats and Species Regulations (2019), as amended, The Wildlife and Countryside Act (WCA) (1981), as amended, The Protection of Badgers Act (1992), or listed in Section 40 or 41 of the NERC Act (2006). Protected and notable species with existing records within 2km of the site are detailed below.

#### Rare and Notable Flora

- 3.22** Two Schedule 8-protected plants were returned within 2km of the surveyed area. A single record of Jersey Cudweed *Gnaphalium luteoalbum* was observed in 2019 within a 1km grid square which includes the site itself, alongside a single Bluebell *Hyacinthoides non-scripta* record observed

approximately 2km southeast of the site boundary, and both of which date from 2015. A focused botanical survey is advised in order to appropriately assess the site; three visits between are recommended (to include a minimum of one visit in June).

- 3.23** No rare or protected species were recorded within the site. The standing water, semi-improved grassland, semi-natural woodland, trees and scattered scrub within the site are considered to be of **site** importance for rare and notable plants; confidence in this assessment is **moderate**.

#### Invasive Species

- 3.24** Records of two species listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) were returned within the vicinity of the site by the data search. New Zealand pigmyweed was recorded within a 1km grid square less than 0.7km from the site boundary (and thus includes the site within its range) in 2015, whilst a Giant Hogweed *Heracleum mantegazzianum* record was returned for a location approximately 2km west of the site boundary in 2018.

- 3.25** New Zealand pigmyweed was observed upon the banks of all three ponds within the site during the Phase 1 Habitat Survey in June 2022. Confidence in this assessment is therefore **high**.

#### Badger

- 3.26** There were five badger records returned by the data search within 2km from the surveyed area. The closest, and most recent, record was observed at a location approximately 0.4km east of the site boundary in 2015.

- 3.27** Previous surveys undertaken (D F Clark Bionomique Ltd., 2013) identified seven badger setts within the site, in addition to one disused / collapsed badger sett approximately 100m west of the site. In total, ten potential entrances were identified in the quarry slope, with spoil piles, bedding and hairs confirming recent badger activity in the majority of the potential entrances.

- 3.28** A badger survey was undertaken on 24 June 2022 as part of the preliminary ecological appraisal, however the survey was incomplete and did not encompass the entire site due to the steepness of the banks. Potential sett entrances were observed in the southeast of the site, however those further along the quarry face could not be investigated. Of the previously active badger setts, Sett S1 (a single entrance outlier sett on the eastern bank of Pond P4) could not be found. Two partially-blocked sett entrances were observed in the southeast of the site (south of P3 and P4). The remaining previously recorded setts could not be observed at the time of the survey, due to quarry face slippage and the steepness of the slope.

- 3.29** The surveyed area supported a number of setts. The surveyed area is therefore currently considered of **Local** importance for badger; confidence in this assessment is **moderate**.

#### Bats

- 3.30** The data search returned a single record of a grounded soprano pipistrelle *Pipistrellus pygmaeus* at a location approximately 2.6km southeast of the site boundary, separated by open countryside. A

further three records pertaining to brown long-eared bat *Plecotus auritus* were also returned by the data search; the closest, and most recent, of these records dated from 2016 at a location approximately 2.1km northwest of the site boundary.

#### *Bats – Roosting*

- 3.31** The majority of the trees within the site, in particular those surrounding the standing water, were willow *Salix* sp., with negligible potential for roosting bats. However, the check within the woodland in the south of the site was not exhaustive, and if trees are to be impacted upon by the proposed restoration of the site, then further Ground Level Tree Assessments (GLTAs), including the use of binoculars and endoscopes, and Aerial Tree Inspections (ATIs) may be required to fully assign a level of suitability for roosting bats in accordance with Collins (2016). The site is therefore currently considered of **Local** importance for roosting bats and confidence in this assessment is **moderate**.

#### *Bat - Foraging*

- 3.32** The standing water which comprise the majority of the site, in addition to the trees which surround them and the semi-improved grassland provide a range of moderate to high value foraging habitats for bats, combined with the adjacent hedgerows which serve as commuting links to the suitable habitats outside of the site boundary, including the nearby waterbodies to the east and he northwest of the surveyed area. The surveyed area is therefore currently considered overall of **high** importance for foraging/commuting bats and confidence in this assessment is **moderate**.

#### *Birds*

- 3.33** A total of 905 records of thirty-three species listed under Schedule 1 of the WCA 1981 (as amended) were returned by the data search within 2km, as summarised in Table 4, including barn owl *Tyto alba* and kingfisher *Alcedo atthis* alongside various raptor species. 6,608 records were also obtained for eighty-two red-listed birds of Conservation Concern (BoCC) (Eaton *et al.*, 2015), including house sparrow *Passer domesticus*, starling *Sturnus vulgaris*, and song thrush *Turdus philomelos*.

**Table 4: Schedule 1 bird species recorded within the vicinity of the surveyed area**

Taxa	Records	Date of most recent record	Distance to closest record (km)
Barn Owl <i>Tyto alba</i>	21	2020	1
Bewick's Swan <i>Cygnus columbianus</i>	1	2014	0.7
Black Redstart <i>Phoenicurus ochruros</i>	1	2015	2.2
Black Tern <i>Chlidonias niger</i>	17	2017	0
Black-tailed Godwit <i>Limosa limosa</i>	10	2020	0
Brambling <i>Fringilla montifringilla</i>	3	2015	2.2
Common Scoter <i>Melanitta nigra</i>	3	2014	0.7
Fieldfare <i>Turdus pilaris</i>	146	2020	0
Goldeneye <i>Bucephala clangula</i>	1	2015	2.2
Goshawk <i>Accipiter gentilis</i>	2	2015	2.8
Green Sandpiper <i>Tringa ochropus</i>	69	2020	0
Greenshank <i>Tringa nebularia</i>	13	2020	0
Greylag Goose <i>Anser anser</i>	251	2020	0



Taxa	Records	Date of most recent record	Distance to closest record (km)
Hen Harrier <i>Circus cyaneus</i>	1	2015	2.2
Hobby <i>Falco Subbuteo</i>	37	2020	0
Honey-buzzard <i>Pernis apivorus</i>	2	2017	2.2
Kingfisher <i>Alcedo atthis</i>	45	2020	0
Little Gull <i>Hydrocoloeus minutus</i>	12	2018	0
Little Ringed Plover <i>Charadrius dubius</i>	42	2020	0.7
Marsh Harrier <i>Circus aeruginosus</i>	5	2020	0
Mediterranean Gull <i>Larus melanocephalus</i>	6	2017	0
Merlin <i>Falco columbarius</i>	3	2019	2.2
Osprey <i>Pandion haliaetus</i>	2	2015	2.5
Peregrine <i>Falco peregrinus</i>	21	2020	0
Pintail <i>Anas acuta</i>	6	2020	0.7
Red Kite <i>Milvus milvus</i>	42	2020	0
Red-throated Diver <i>Gavia stellata</i>	4	2020	1
Redwing <i>Turdus iliacus</i>	132	2020	0
Spoonbill <i>Platalea leucorodia</i>	1	2019	1
Stone-curlew <i>Burhinus oediconemus</i>	1	2013	2.9
Whimbrel <i>Numenius phaeopus</i>	3	2017	2.2
Whooper Swan <i>Cygnus cygnus</i>	1	2015	0
Wood Sandpiper <i>Tringa glareola</i>	1	2015	2.2

**3.34** Three breeding bird surveys were previously undertaken at the site (D F Clark Bionomique Ltd., 2013); forty-two species were recorded, of which thirty-seven species were recorded using the site to breed or forage. Of these thirty-seven species, four were 'confirmed breeders,' thirteen were 'probable breeders' and nine were 'possible breeders'. Five species recorded were Red status and fourteen were Amber status, with seven of the species recorded on the site listed as 'Species of Principle Importance'.

**3.35** During the site walkover magpie *Pika pika*, black-headed gull *Chroicocephalus ridibundus*, greenfinch *Chloris chloris*, robin *Erithacus rubecula*, blackbird *Turdus merula* and carrion crow *Corvus corone* were all recorded within the site.

**3.36** The surveyed area is likely to support a wide range of widespread breeding and wintering species associated with the standing water, trees and open semi-improved grassland and is therefore considered of **District** importance for breeding birds; confidence in this assessment is **high**.

#### Great Crested Newt

**3.37** A total of seventy-four great crested newt records from the last 10 years within 2km of the surveyed area were returned by the data search. The most recent of these records date from 2021 and were recorded at a location approximately 2.7km southwest of the site boundary.

**3.38** Ten great crested newt mitigation licence returns were recorded within 5km of the site. Of these, the closest licence to the site began in 2017 and is located approximately 0.6km west of the site boundary, at OS grid reference: TL3881260), whilst the most recent license was granted in 2018 at a location approximately 2.8km southwest of the site boundary.

- 3.39** Examination of Natural England’s Essex Great Crested Newt Risk Zones Map shows the site to be located within a ‘Amber Risk Zone’. Amber Zones are areas containing main population centres for great crested newt and comprise important connecting habitat that aids natural dispersal.
- 3.40** Surveys were previously undertaken as part of this planning application included surveys for great crested newts (D F Clark Bionomique Ltd., 2013). The results a *medium* population of great crested newt within the site (however, the standing water was previously grouped as a single pond for the survey); a second population of great crested newt were also recorded within an offsite large waterbody approximately 350m east of the site. A peak count of twenty-three great crested newts were recorded within the waterbodies within the site, whilst a peak count of twenty-eight great crested newt was recorded in the nearby waterbody.
- 3.41** A Habitat Suitability Index (HSI) was calculated, and the data are presented in Table 5, below. Further detail on the HSI method is provided in Appendix 3. All of the ponds were assessed as being of “Average” suitability for great crested newt.

**Table 5: Summary HSI assessment for waterbodies within the surveyed area**

Pond Reference	Central OS Grid Reference	HSI Score	HSI Suitability
P1	TL7456712632	0.661	<b>Average</b>
P2	TL7459712605	0.658	<b>Average</b>
P3	TL7461412562	0.659	<b>Average</b>
P4	TL7467012575	0.658	<b>Average</b>

- 3.42** Despite the assessment as the ponds being of ‘Average’ suitability, the previous records of great crested newts within the waterbodies suggests that there is a high likelihood that great crested newts still being present within the waterbodies (The surveyed area is considered of **Local** importance for great crested newt and confidence in this assessment is **high**).

Hazel Dormouse

- 3.43** No Hazel Dormouse records were received within 2km of the site by EFC. There are also no European Protected Species (EPS) mitigation licences for hazel dormouse within 10km of the site. However, the data from the NBN gateway returned 18 records within 10km of the site in the last decade; the records relate to two 1km grid squares, the closer of the two is located at a location approximately 9.1km south of the site boundary, south of the village of Danbury, and were observed as recently as 2019. The locations of these records are ecologically isolated from the site. Preferred habitats for the species include woodland with developed understory and species-rich complex-structured hedgerow.
- 3.44** The trees, woodland and hedgerow within the surveyed area had a bare understory at the time of the survey and were considered sub-optimal. The site was considered to provide very limited opportunities for dormice along the boundaries in the form of tree lines. Preferred core habitats for this species (broadleaved woodland with developed understory and species-rich complex-structured hedgerows) were not present. The value of the tree lines was also limited by their species-poor nature and limited understory. These factors were considered to severely limit the amount of suitable nesting habitat and the availability of a variety of food sources, necessary to sustain dormice throughout the year

- 3.45 Given the lack of records and suitable habitat within the site, it is considered highly unlikely that dormouse are present on site, and further surveys are not required. The site is considered to be of **negligible** value for hazel dormouse; confidence in this assessment is **high** and this species is not considered further in the assessment

#### Invertebrates

- 3.46 Two records of White-letter Hairstreak *Satyrium w-album*, a Schedule 5 protected species, were returned by the data search. Both records date from 2018 and were located within a 1km grid square approximately 2.1km northwest of the site boundary.
- 3.47 A further 817 records of 43 species of principal importance under the NERC Act were also returned by the data search. The closest of these were attributed to small heath *Coenonympha pamphilus*, which were recorded in 2020 within a 1km grid square which includes the site itself.
- 3.48 Several invertebrate species were observed within the site during the walkover in June 2022. Species recorded include cinnabar moth *Tyria jacobaeae*, small tortoiseshell *Aglais urticae*, meadow brown *Maniola jurtina*, marbled white *Melanargia galathea*, small copper *Lycaena phlaeas*, soldier beetle *Rhagonycha fulva*, common blue damselfly *Enallagma cyathigerum* and four-spotted chaser *Libellula quadrimaculata*.
- 3.49 The semi-improved grassland and large bodies of standing water may support other notable species, as might the trees and scrub. The vertical sand cliff at the top of the quarry slope is also considered to offer good habitat for invertebrate species. The site is therefore considered to be of **Site** or **Local** importance; confidence in this assessment is **moderate**.

#### Reptiles

- 3.50 Two records of common lizard were observed in 2014 at a location approximately 1.4km southeast of the site boundary.
- 3.51 Surveys previously undertaken within the site in 2013 (D F Clark Bionomique Ltd., 2013) identified a low population of grass snake within the site; a sub-adult grass snake was discovered on three occasions in June 2013. No other reptile species were found during surveys.
- 3.52 The semi-improved grassland habitats adjacent to standing water were considered highly suitable for common reptile species. The surveyed area is considered to be of at least **Local** importance for reptiles; confidence in this assessment is **moderate**, given the previously recorded grass snakes.

#### Other Notable Species

- 3.53 A single European hedgehog record was returned by EFC within 2km of the surveyed area; the hedgehog was observed in 2015 at a location approximately 2.6km southeast of the site boundary. The small areas scrub and woodland habitats alongside the open semi-improved grassland were considered suitable foraging habitats alongside suitable hibernating and breeding sites. The surveyed area is considered to have **Local** importance for hedgehog; confidence in this assessment is **moderate**.

**3.54** The open, semi-improved grassland habitats close to arable fields were considered suitable for brown hare. Four records were returned by the data search, with the closest records observed in 2015 approximately 1.5km southeast of the site boundary, whilst the most recent observations date from 2021 at a location approximately 1.9km northeast of the site boundary. The surveyed area is considered to have **Local** importance for brown hare; confidence in this assessment is **moderate**.

Summary

**3.55** An evaluation of the surveyed area in relation to ecology features is provided in Table 6.

**Table 6: Evaluation of existing ecological features**

Feature	Summary Description	Importance	Confidence
Statutory Designated Sites	Blackwater, Crouch, Roach and Colne Estuaries MCZ / Blackwater Estuary SPA, Ramsar & SSSI / Essex Estuaries SAC / Blackwater Estuary NNR lies approximately 10.1/11.6km southeast of the site.	International	High
	River Ter SSSI lies approximately 2.8km north of the site.	National	High
Non-statutory Designated Sites	Boreham Road Gravel Pits LoWS located approximately 0.5km from the site	Site - Local	Moderate
Habitats	Majority of site made up of standing water surrounded by trees, alongside small areas of scrub and some semi-improved grassland and semi-natural woodland.	District - Local	High
Invasive species	New Zealand pigmyweed observed upon the banks of the waterbodies.	Local	High
Badger	Previously recorded badger setts.	Local	Moderate
Bats	Two species recorded within 2km. Habitats offer good suitability for foraging at the waterbodies and commuting along the southwestern boundary.	Local	Moderate
Birds	Likely to support a large breeding assemblage of common and widespread species including those associated with waterbodies and grassland.	District	High
Great Crested Newt	Medium population of great crested newts previously recorded within the site	Local	High
Invertebrates	May support a notable assemblage associated within grasslands and aquatic / adjacent habitats.	Site/Local	Moderate
Reptiles	Small population of grass snake previously recorded within the site.	Local	Moderate
Notable Mammals	Tussocky grassland and scrub may provide foraging habitat for European hedgehog and brown hare	Local	Moderate

#### **4.0 Preliminary Prediction of Impacts, Mitigation and Enhancement Measures and Residual Effects**

##### **Description of Proposals**

- 4.1** Proposals for the site comprise the stabilisation of the quarry slope by infilling with spoil (approximately 80,000 to 85,000 tonnes of inert waste) to stabilise the current potentially unstable face of the former gravel quarry and subsequent landscaping of the site to landscaped grassland and pond, alongside associated improvements to the existing site access.
- 4.2** The boundary habitats will be retained whilst three of the four standing bodies of water will be lost to facilitate works, alongside the adjacent trees, small areas of scrub and semi-improved grassland.

##### **International and National Statutory Designated Sites**

- 4.3** Due to the scale and nature of proposals, combined with the distances of the designated sites; direct and indirect impacts are not considered likely to occur to any statutory designated sites.
- 4.4** It is predicted that in the absence of mitigation, the development will have a **negligible** impact on statutory designated sites.
- 4.5** The Essex Coast Recreational disturbance Avoidance and Mitigation Strategy (the “Essex Coast RAMS”) aims to deliver the mitigation necessary to avoid significant adverse effects from ‘in-combination’ impacts of residential development that is anticipated across Essex. As the proposed works are non-residential, there is no further assessment in regard to the Essex Coast RAMs.

##### **Non-statutory Designated Sites**

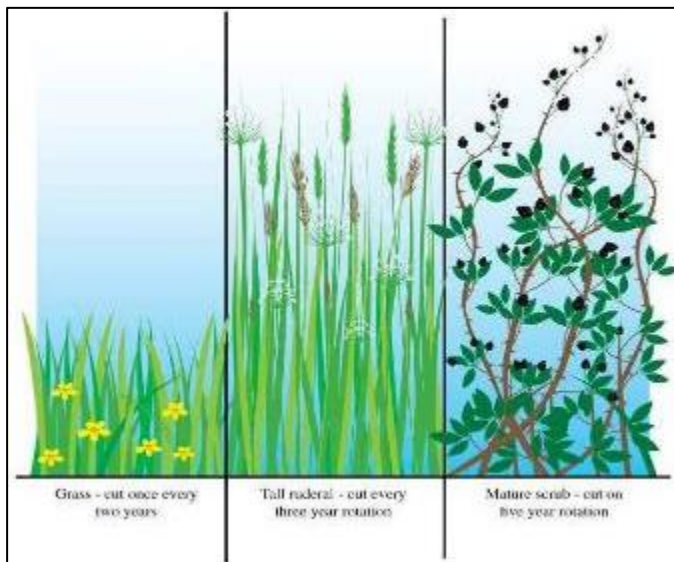
- 4.6** Nine non-statutory designated sites are located within 2km of the surveyed area (Table 3). Boreham Road Gravel Pits LoWS was the closest to the site, located approximately 0.5km to the southeast of the site boundary. As a precaution, pollution prevention measures should be adhered to (following PPG6 Pollution Prevention Guidelines). Therefore, indirect effects are considered to be **negligible**.

##### **Habitats**

- 4.7** The development will result in the permanent loss of three bodies of standing water, in addition to scattered trees and woodland, small areas of scrub and tall ruderal alongside semi-improved grassland. Boundary features, including hedgerow will be retained post-restoration.
- 4.8** It is recommended that all retained habitats are protected during construction works through the provision of suitable fencing such as Heras fencing. Heras fencing should follow BS standard BS 5837: 2012 Trees in relation to design, demolition and construction. A 5m unlit ecological buffer is recommended along all boundary habitats.
- 4.9** A Biodiversity Net Gain (BNG) calculation should be carried out using the Defra Metric (3.1) using the baseline habitats mapped in the Phase 1 plan in relation to the proposed landscape layout in order to calculate the potential for the delivering of net gains for biodiversity within the site. If an onsite gain cannot be achieved, an off-site solution may need to be explored.

**4.10** If boundary habitats are to be removed in part/full, in order to mitigate habitat losses, it is recommended that compensatory planting is undertaken and retained boundary habitats are enhanced with a native, species-rich mixes using species of local abundance through gap filling. An appropriate management plan is recommended in order to restore boundary hedgerows as a protected habitat and as a wildlife corridor by creating a transitional habitat (Figure 1) including a 1.5m buffer of grassland to tall ruderal to scrub. A rotation where no more than half of the hedgerows on site are trimmed in any one year is considered appropriate, with longer rotations of up to three-yearly cuts providing even greater wildlife value (Bright *et al.*, 2006). The value of the hedgerows could be further enhanced by allowing some trees to grow above the height of the surrounding hedge. In addition, portions of the hedgerows could be managed to prevent ‘woody legs’ to develop, whilst allowing the hedgerow to widen and develop a graduation into tall ruderal and long grass habitat. All planting should comprise of native species; a suitable and appropriate species planting list is provided in Appendix 7.

**Figure 1: Edge Habitat Sketch**



**4.11** The inclusion of native planting within the development plan, together with retaining and enhancing boundary habitats where possible, buffering works from retained habitats and managing the retained hedgerows on site through rotational cutting could result in a residual **positive** impact on habitats at a **site** level.

### **Protected and Notable Species**

#### *Badger*

**4.12** Badgers are legally protected under the Protection of Badgers Act (1992).

**4.13** Seven badger sets were previously identified during the walkover survey (Appendix 8). Further recommended surveys include a full badger scoping survey to identify all setts accompanied by sett monitoring surveys to confirm sett status within surveyed area.

**4.14** The results of these surveys will determine any suitable and appropriate mitigation required. Any active badger setts impacted by the development may require full or partial closure to enable work, with works restricted within 20m of any retained, active setts. Closure of active setts will require a licence from Natural England. Badger sett closures can only be undertaken between 1st July – 30th November, with licenses generally granted upon the receipt of full planning permission. If a main sett is found within the surveyed area boundary, and due to be impacted by proposals, a replacement main sett would be required to be provided within the existing clan territory.

**4.15** In general, the following precautionary construction techniques which are applicable to most construction sites and are sympathetic to badgers are recommended:

- Covering trenches at night or leaving a plank of wood leant against the side to ensure badgers can escape if they were to accidentally fall in;
- Covering open pipework with a diameter of greater than 120mm at the end of the workday to prevent animals from entering and becoming trapped;
- Covering chemicals and storing them appropriately overnight; and
- Regular removal of litter; and
- Low speed limits ( $\leq 20$ mph).

**4.16** The loss of foraging or sett building habitat is likely to require a level of mitigation in the form of maintaining areas of grassland, scrub and boundary habitats and within low light corridor during the construction stages. There is considerable opportunity to enhance the habitats within the site for foraging badgers, through appropriate hedgerow and woodland enhancement. Planting using a range of native species within the landscape scheme is advised and a list of potential species is provided in Appendix 9. It is considered that mitigation is fully achievable within the surveyed area with regards to Badgers.

**4.17** The above mitigation and enhancement measures are considered to result in a **negligible** residual effect at site level for badgers.

#### Bats - Foraging

**4.18** All bat species are legally protected under the WCA (1981, as amended) and Conservation of Habitats and Species Regulations (2019, as amended). Taken together, it is an offence to destroy/damage or obstruct access to a bat roost, to kill/injure or disturb individual bats, or to deliberately disturb bats in such a way to be likely to significantly affect their ability to survive, breed, rear or nurture their young or their local distribution.

**4.19** It is recommended that wherever possible, any trees with bat roost potential are retained.

**4.20** The standing water, scattered scrub, semi-improved grassland and scattered trees and woodland within the site are assessed of high value for foraging and commuting bats and with records within 2km of the surveyed area. Other habitats within the east of the surveyed area are assessed as being of moderate value.

**4.21** Activity and remote surveys are required to confirm the status of foraging and commuting bats within the surveyed area through a series of activity and static surveys. The surveyed area is assessed as

supporting habitats of high and moderate value for foraging bats and survey given the presence of hedgerows, woodland and stream habitats within the surveyed area. Detailed survey effort dependent on habitat suitability is outlined in Table 7 below.

**Table 7: Recommended survey effort for suitable bat commuting and foraging habitats**

Suitability	Number of Surveys	Seasonal Timings
Low	One survey visit per season in appropriate weather conditions for bats. One automated static location per transect across 5 consecutive nights in suitable weather, per season.	Spring - April/May Summer - June/July/August Autumn - September/October
Moderate	One survey visit per month in appropriate weather conditions for bats. Two automated static locations per transect across 5 consecutive nights in suitable weather, per month.	April - October. At least one of the surveys should comprise dusk and pre-dawn (or dusk to dawn) within one 24-hour period.
High	Up to two surveys visit per month in appropriate weather conditions for bats. Three automated static locations per transect across 5 consecutive nights in suitable weather, per month.	April - October. At least one of the surveys should comprise dusk and pre-dawn (or dusk to dawn) within one 24-hour period.

- 4.22** The survey effort for areas of high value will include two transects and automated surveys each month including a dusk to dawn survey (visits April to October) which will adhere to current guidance (Collins 2016). The survey effort for the eastern section of the surveyed area will be single monthly transects and automated detector surveys each month (April to October).
- 4.23** The loss of foraging habitat is likely to require a level of mitigation in the form of maintaining some areas of planted immature trees alongside boundary habitats and within low light corridor during the construction stage.
- 4.24** Planting using a range of nectar-rich and native species within the landscape scheme is advised and a list of potential species is provided in Appendix 7. It is considered that mitigation is fully achievable within the surveyed area with regards to foraging bats.

*Bats - Roosting*

- 4.25** An assessment of roosting potential of the trees is required of any trees which will be impacted by the restoration (if required), through an inspection of features by a licensed bat ecologist. A ground level tree assessment may be combined with a climbing survey where this is feasible. This will determine the need for follow-up emergence and/or re-entry surveys.
- 4.26** The proposed restoration provides the opportunity to enhance the surveyed area for bats through the provision of additional roosting features upon trees.
- 4.27** If any new external lighting is necessary, this should avoid directly lighting retained and newly planted trees. A sensitive lighting strategy should be employed to reduce indirect impacts on local bat populations. The following mitigation strategies have been taken from the Institution of Lighting Professionals and BCT Guidance Note 08/18 Bats and artificial lighting in the UK (2018):



- In general, light sources will not emit ultra-violet light to avoid attracting insects and thus potentially reducing numbers in adjacent areas, which bats may use for foraging. Metal halide and fluorescent sources will not be used.
- LED luminaires will be used where possible. A warm white spectrum (ideally <2700Kelvin) will be adopted to reduce blue light component. Luminaires will feature peak wavelengths higher than 550nm to avoid the component of light most disturbing to bats (Stone, 2012).
- The height of lighting columns will be limited to 8m and the spacing of lighting columns will be increased to reduce spill of light into unwanted areas such as hedgerows and trees (Fure, 2006). Only luminaires with an upward light ratio of 0% and with good optical control will be used. Luminaires will always be mounted on the horizontal, i.e. no upward tilt.
- Other ways to reduce light spill include the use of directional luminaires, shields, baffles and/or louvres. Flat, cut-off lanterns are best. Additionally, lights will be located away from reflective surfaces where the reflection of light will spill onto potential foraging/commuting corridors. Internal luminaires can be recessed where installed in proximity to windows to reduce glare and light spill. Where windows and glass facades etc. cannot be avoided, low transmission glazing treatments may be a suitable option in achieving reduced illuminance targets.
- Lighting that is required for security or access will use a lamp of no greater than 2000 lumens (150 Watts) and be PIR sensor activated on a short timer (1 minute), to ensure that the lights are only on when required and turned off when not in use (Jones, 2000; Hundt, 2012). A control management system can be used to dim (typically to 25% or less) or turn off groups of lights when not in use.

**4.28** It is considered that mitigation is fully achievable within the surveyed area with regards to roosting bats through a sensitive design at masterplan stage incorporating use of bat roosting features throughout the site.

#### Birds

**4.29** All breeding birds are protected from deliberate destruction under the WCA 1981 (as amended). Under this legislation all birds, their nests and eggs are protected by law, and it is an offence, with certain exceptions, to intentionally kill, injure, or take any wild bird or their eggs or nests. In addition, a select group of species are further listed under Schedule 1 of the Act and these have additional protection that makes it an offence to disturb these birds at the nest, or to disturb their dependent young. In addition to this statutory protection British birds are also classified according to their conservation status, including their position on the Red and Amber lists of Birds of Conservation Concern (BoCC, 2021) and whether they have been identified as Priority Species.

**4.30** The hedgerow and planted immature trees within the site are considered to contain the potential for nesting birds, whilst foraging opportunities are present within the standing water and semi-improved grassland areas.

**4.31** Due to the presence of suitable habitat, breeding and wintering bird surveys are recommended to specifically focus on this species and to confirm the value of the breeding and non-breeding assemblages. All nesting birds are protected under the WCA 1981. Therefore, if any nesting bird habitat is to be lost (i.e. woodland, trees, scattered scrub hedgerow and/or semi-improved grassland), these

areas should be cleared outside of the nesting bird season (March to August inclusive) where possible. If works on these habitats are required during the nesting bird season, then a nesting bird check / habitat inspection is required to ensure that there is no nest disturbance within the site by a SQE within 24 hours prior to clearance to confirm the absence of active nests. Any active nests located during inspections will be protected with a suitable buffer of retained vegetation around the nest (of appropriate size to the species) and monitored until the nest is no longer active/all chicks have fledged, when the ecologist will provide sign off for clearance to be undertaken

- 4.32** To enhance the site for nesting birds, artificial nesting opportunities are recommended to be installed on retained trees to attract species known to occur locally, see Figure 2. This design was selected as it requires little to no maintenance after installation and can be installed at any point in the year. Nest boxes should be installed with a northerly orientation to create a cool nesting environment and minimise the risk of chicks overheating. The locations of boxes should be grouped within the scheme due to the colonial nesting nature of these species, to facilitate likelihood of uptake.

**Figure 2: Schwegler 1B bird box for erection on trees.**



- 4.33** It is considered that mitigation is fully achievable within the surveyed area with regards to nesting birds. As such, it is predicted that the above mitigation and enhancements would result in a **neutral to positive** residual effect for birds

#### Great Crested Newt

- 4.34** Great crested newts are legally protected under the WCA (1981, as amended) and Conservation of Habitats and Species Regulations (2019, as amended). Taken together, it is an offence to destroy/damage a great crested newt resting place, to kill/injure individual animals, to disturb them within their resting places, or to impact them in such a way to be likely to significantly affect their ability to survive, breed, rear or nurture their young or their local distribution.
- 4.35** There are four bodies of standing water within the surveyed area, all of which were assessed to have 'Average' suitability. Further surveys are required and should include a minimum of four presence/likely absence surveys from March to June with at least two surveys between mid-April to mid-May following published guidance (English Nature, 2004). If great crested newt is present, an additional two surveys should be carried out to categorise the population class size, hence totaling six surveys with at least three surveys carried out between mid-April to mid-May.

- 4.36** If great crested newts are found to reside within the standing water within the site a Natural England (NE) European Protected Species (EPS) Licence will be required to restore the site. Mitigation via the traditional licensing approach would likely include the need for the installation of exclusion fencing to impede great crested newts from entering/exiting the site, trapping and translocation to an on-site receptor area, and removal of suitable habitat under the supervision of an ecologist. The license will also stipulate a level of mitigation in the form of replacement ponds and/or habitat. Alternatively, the District licensing approach can still be used.
- 4.37** The proposals may also enhance the surveyed area for great crested newt through standing water and terrestrial habitat creation as well as enhancing ecological connectivity between standing water within the site. The creation of log piles, which provide alternative sheltering habitats for great crested newt.
- 4.38** Given the characteristics of the site, mitigation is considered to be fully achievable. Through the retention of existing boundary habitats and appropriate mitigation and enhancement as detailed above, any residual effects on great crested newts would likely be **positive**.

#### Invertebrates

- 4.39** Habitats within the site are considered to provide opportunities for invertebrates, including assemblages of potentially rare or notable species, in particular within and adjacent to the standing water, semi-improved grassland, small areas of scrub and trees. These areas will be retained by the restoration scheme where feasible.
- 4.40** The loss of semi-natural habitats and lighting disturbance of retained habitats during the construction phase could result in killing and/or injury of invertebrates, including potentially notable species. The scale of impacts would likely be low (site or local level), given the common habitats supported, their scale and existing quality.
- 4.41** Given the habitats present, it is recommended that a suite of invertebrate surveys be conducted; this will establish the likelihood of any assemblages of important/protected species utilising the site, and which habitats are of most value to them. Four visits between April and July (inclusive) are recommended (scope maybe refined following initial visit). This will in determine the potential impacts the development of the site have on the local invertebrate population and guide detailed mitigation recommendations.
- 4.42** The implementation of a sensitive lighting scheme which avoids light-spill into retained and created semi-natural habitats would also mitigate potential light disturbance impacts on invertebrates on and adjacent site; see recommendations for bats, paragraph 4.27.
- 4.43** Recommended enhancements for invertebrates post-development could incorporate planting a range of native, nectar-rich species, as proposed for bats and other wildlife, as well as areas of wildflower grassland. Inclusion of night-scented lower planting such as honeysuckle *Lonicera periclymenum* and jasmine *Jasminium officinale* would also attract moths in the evening, which would in turn attract foraging bats. A list of appropriate plants is provided in Appendix 7.

4.44 These measures could result in a **positive** residual effect at site level for invertebrates.

### Reptiles

4.45 The four common species of UK reptiles, slow-worm, common lizard, grass snake and adder are legally protected from killing/injury in the UK under the WCA 1981 (as amended). Potential impacts on slow-worm, common lizard and grass snake, which have all previously been recorded adjacent to the site in low numbers, include death/injury during construction/site clearance and loss of habitat.

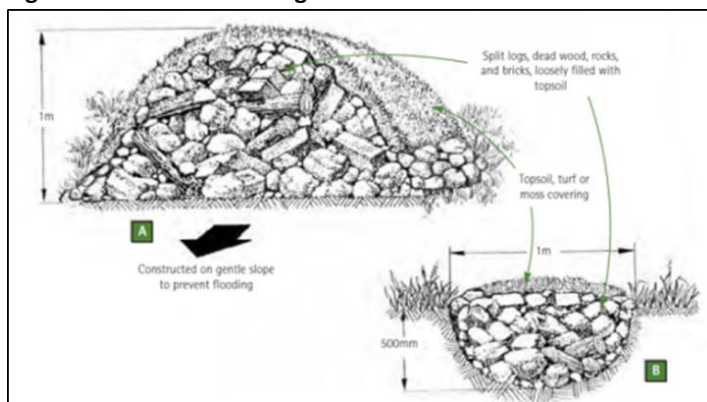
4.46 Low numbers of grass snake were previously recorded within the site in 2013. As a significant period of time has passed, the presence of reptiles may not be discounted, especially within the semi-improved grassland and scrub edges. As such, it is recommended that seven-visit presence/likely absence surveys are undertaken across all suitable habitats and conforming to standard survey methods is considered to be required to determine if reptiles currently use the site. This should be undertaken during the active reptile season from March – September and during appropriate weather conditions, with temperature being the pre-eminent factor, by following current best practice guidelines (Froglife, 1999). The results of the surveys will determine if mitigation is required.

4.47 If reptile presence is confirmed on site, a review of habitat loss will determine likely mitigation required. If suitable sheltering habitat is to be lost, mitigation will likely require removal of these habitats under the supervision of an ECoW, with any reptiles found moved to suitable retained habitats outside of the works area. If proposals change to require the removal of large amounts of suitable reptile habitat, mitigation may require the installation of exclusion fencing along site boundaries, followed by trapping and translocation of reptiles to a suitable onsite receptor site with log piles/hibernacula, followed by a destructive search supervised by an EcoW.

4.48 Exclusion fencing for great crested newts (if required) would also function as mitigation for reptiles by prohibiting access onto the construction area. Furthermore, a Toolbox Talk would be carried out to site workers and reptile identification information will be displayed.

4.49 The site could be enhanced for reptiles through the creation of log piles and hibernacula (Figure 3).

**Figure 3: Hibernacula Design**



4.50 Given the characteristics of the site, mitigation is considered to be fully achievable through the proposed layout. The above mitigation and enhancement recommendations would likely result in a **positive** residual effect at site level.

Other Notable Species

- 4.51** The presence of hedgehog cannot be discounted. No specific mitigation above that provided for reptiles is required, with mitigation considered fully achievable within the surveyed area. Boundary hedgerows should be retained wherever possible, however if clearance is required, it is recommended this is undertaken outside the hibernation season (November to February inclusive) when Hedgehogs are most vulnerable. If this is not possible, it is recommended that clearance and ground works are undertaken under a method statement which details precautionary measures supervised by an SQE.
- 4.52** A **negligible** residual effect for hedgehog would be expected to be achieved through these measures.
- 4.53** Brown hare may be present within the surveyed area but there are large areas of suitable habitat in the surrounding area, and impacts are likely to be negligible on the local population. A **neutral** residual effect for Brown Hare would be expected to be achieved.

## 5.0 Conclusions

- 5.1** The site supports a range of protected and priority habitats, predominantly the standing water in the centre of the site, in addition to areas of lower value habitats, including semi-improved grassland, scrub, woodland and scattered trees. The site provides suitable habitat for a number of protected and/or notable species. A summary of features, likely impacts and outline mitigation and enhancement measures is provided in Table 8.
- 5.2** Through incorporation of relevant surveys, mitigation and precautionary methods, it is considered that the surveyed area could deliver a Biodiversity Net Gain in terms of measures to support high value habitats and protected species and to carry this out in line with current wildlife legislation, *chapter 15 of the NPPF* (MHCLG, 2021); and local planning policies relevant to nature conservation.
- 5.3** The proposed restoration therefore provides an important opportunity to deliver landscape scale, biodiversity benefits that enhance habitats within and adjacent to the site and strengthen ecological connectivity for priority habitats and protected and notable species.

**Table 8: Summary of likely impacts, mitigation and enhancement measures and residual effects**

Feature	Likely Impacts	Further Surveys and Consultation	Likely Mitigation and Enhancement Measures	Residual Effect
International and National Statutory Designated Sites	None predicted	None required	<ul style="list-style-type: none"> <li>None more than standard measures are likely</li> </ul>	Negligible
Non-statutory Designated Sites	None predicted	None required	<ul style="list-style-type: none"> <li>None required</li> </ul>	Negligible
Habitats	Loss of habitats of up to County value	Biodiversity Net Gain Assessment  Botanical survey	<ul style="list-style-type: none"> <li>Layout should avoid higher value habitats where possible, such as woodland.</li> <li>Safeguarding of retained habitats.</li> <li>Biodiversity Net Gain assessment.</li> <li>New native species planting.</li> <li>Creation of HOPI water bodies.</li> </ul>	Positive
Badger	Potential disturbance, damage and destruction of badger setts within surveyed area.  Loss of foraging and sett building habitat.	Updated badger survey.	<ul style="list-style-type: none"> <li>If impacts to active setts then licensed closure (part or full) and potential artificial sett creation.</li> </ul>	Negligible

Feature	Likely Impacts	Further Surveys and Consultation	Likely Mitigation and Enhancement Measures	Residual Effect
Bats - Activity	Disturbance effects due to lighting	Bat activity surveys for a site of high-moderate value	<ul style="list-style-type: none"> <li>Retention of priority habitats.</li> <li>Sensitive lighting within the development.</li> <li>Nectar-rich planting scheme.</li> </ul>	Positive
Bats - Roosts	Disturbance and potential loss of bat roosts in trees	GLTA tree surveys. Emergence surveys of trees with >moderate bat roost potential	<ul style="list-style-type: none"> <li>Retention of mature trees where possible.</li> <li>Provision of bat boxes.</li> </ul>	Neutral
Birds	Destruction/damage of nests	Breeding and wintering bird surveys (minimum three per season)	<ul style="list-style-type: none"> <li>Retention of priority habitats.</li> <li>Works undertaken outside of breeding bird season or after nest search and adhering to method statement.</li> <li>Provision of bird boxes.</li> </ul>	Neutral - Positive
Great Crested Newt	Death/injury of adult great crested newt and loss of terrestrial habitats	Population assessment surveys in 2023	<ul style="list-style-type: none"> <li>District licensing or licensed programme of clearance of animals from construction zones with habitat mitigation where required.</li> </ul>	Neutral
Invertebrates	Potential for a wide range of notable species	Invertebrate survey by specialist including all priority habitats	<ul style="list-style-type: none"> <li>Retention of priority habitats</li> <li>Wildlife friendly planting scheme.</li> </ul>	Positive
Reptiles	Death/injury of common reptile species	Sampling to confirm presence/absence survey in suitable habitats	<ul style="list-style-type: none"> <li>Sensitive clearance of habitats adhering to method statement.</li> <li>Translocation of reptiles to receptor site from donor habitats.</li> <li>Provision of rough grassland habitats and log piles/hibernacula.</li> </ul>	Positive
Notable Mammals	Death/injury	N/A	<ul style="list-style-type: none"> <li>Sensitive clearance of habitats.</li> <li>Provision of hedgehog homes/hibernacula.</li> </ul>	Neutral

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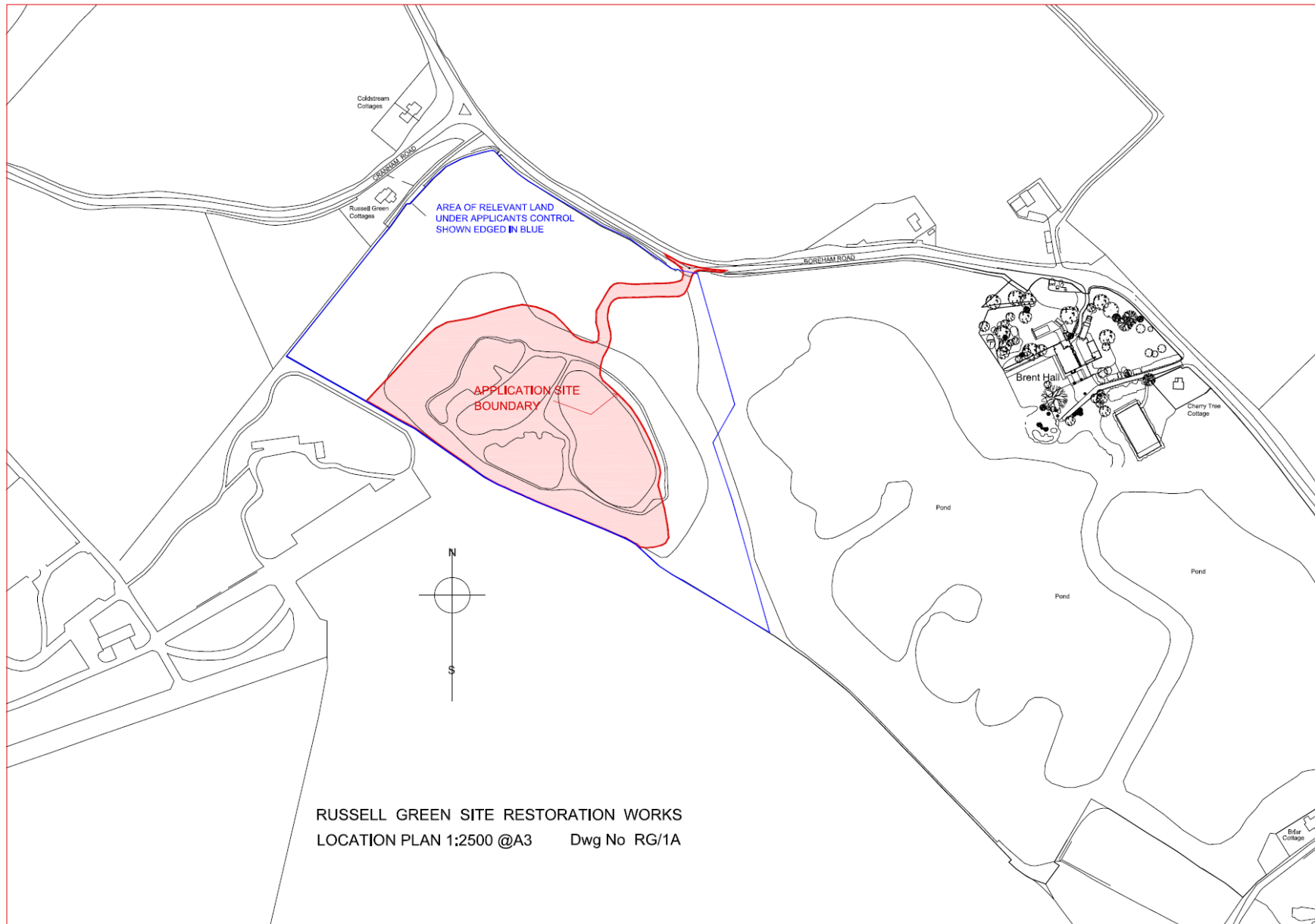
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**Appendix 1: Site Location Plan**



## **Appendix 2: Legislative and Policy Framework**

### **National Planning Policy Framework (NPPF)**

The *NPPF* (MHCLG, 2021) outlines what the planning system should do to contribute to and enhance the natural and local environment through the following policy statements:

#### **Paragraph 8**

Achieving sustainable development means that the planning system has three overarching objectives, which are interdependent and need to be pursued in mutually supportive ways (so that opportunities can be taken to secure net gains across each of the different objectives):

- c) an environmental objective – to contribute to protecting and enhancing our natural, built and historic environment; including making effective use of land, helping to improve biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy.

#### **Paragraph 20**

Strategic policies should set out an overall strategy for the pattern, scale and quality of development, and make sufficient provision for:

- d) conservation and enhancement of the natural, built and historic environment, including landscapes and green infrastructure, and planning measures to address climate change mitigation and adaptation.

#### **Paragraph 28**

Non-strategic policies should be used by local planning authorities and communities to set out more detailed policies for specific areas, neighbourhoods or types of development. This can include allocating sites, the provision of infrastructure and community facilities at a local level, establishing design principles, conserving and enhancing the natural and historic environment and setting out other development management policies.

#### **Paragraph 73:**

*The supply of large numbers of new homes can often be best achieved through planning for larger scale development, such as new settlements or significant extensions to existing villages and towns, provided they are well located and designed, and supported by the necessary infrastructure and facilities (including a genuine choice of transport modes). Working with the support of their communities, and with other authorities if appropriate, strategic policy-making authorities should identify suitable locations for such development where this can help to meet identified needs in a sustainable way. In doing so, they should:*

- a) *consider the opportunities presented by existing or planned investment in infrastructure, the area's economic potential and the scope for net environmental gains;*

#### **Paragraph 102**

Transport issues should be considered from the earliest stages of plan-making and development proposals, so that:

- d) the environmental impacts of traffic and transport infrastructure can be identified, assessed and taken into account – including appropriate opportunities for avoiding and mitigating any adverse effects, and for net environmental gains; and

#### Paragraph 119

*Planning policies and decisions should promote an effective use of land in meeting the need for homes and other uses, while safeguarding and improving the environment and ensuring safe and healthy living conditions. Strategic policies should set out a clear strategy for accommodating objectively assessed needs, in a way that makes as much use as possible of previously-developed or 'brownfield' land.*

#### Paragraph 120

Planning policies and decisions should:

- a) encourage multiple benefits from both urban and rural land, including through mixed use schemes and taking opportunities to achieve net environmental gains – such as developments that would enable new habitat creation or improve public access to the countryside;
- b) recognise that some undeveloped land can perform many functions, such as for wildlife, recreation, flood risk mitigation, cooling/shading, carbon storage or food production;

#### Paragraph 140

Once Green Belts have been defined, local planning authorities should plan positively to enhance their beneficial use, such as looking for opportunities to provide access; to provide opportunities for outdoor sport and recreation; to retain and enhance landscapes, visual amenity and biodiversity; or to improve damaged and derelict land.

#### Paragraph 174

Planning policies and decisions should contribute to and enhance the natural and local environment by:

- a) protecting and enhancing valued landscapes, sites of biodiversity or geological value and soils (in a manner commensurate with their statutory status or identified quality in the development plan);
- b) recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services – including the economic and other benefits of the best and most versatile agricultural land, and of trees and woodland;
- c) maintaining the character of the undeveloped coast, while improving public access to it where appropriate;
- d) minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures;

#### Paragraph 175

*Plans should: distinguish between the hierarchy of international, national and locally designated sites; allocate land with the least environmental or amenity value, where consistent with other policies in this Framework<sup>58</sup>; take a strategic approach to maintaining and enhancing networks of habitats and green infrastructure; and plan for the enhancement of natural capital at a catchment or landscape scale across local authority boundaries.*

#### Paragraph 179

To protect and enhance biodiversity and geodiversity, plans should:

- a) Identify, map and safeguard components of local wildlife-rich habitats and wider ecological networks, including the hierarchy of international, national and locally designated sites of importance for biodiversity<sup>56</sup>; wildlife corridors and stepping stones that connect them; and areas identified by national and local partnerships for habitat management, enhancement, restoration or creation; and
- b) promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity.

Paragraph 180

When determining planning applications, local planning authorities should apply the following principles:

- a) if significant harm to biodiversity resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;
- b) development on land within or outside a Site of Special Scientific Interest, and which is likely to have an adverse effect on it (either individually or in combination with other developments), should not normally be permitted. The only exception is where the benefits of the development in the location proposed clearly outweigh both its likely impact on the features of the site that make it of special scientific interest, and any broader impacts on the national network of Sites of Special Scientific Interest;
- c) development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons and a suitable compensation strategy exists; and
- d) development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to incorporate biodiversity improvements in and around developments should be encouraged, especially where this can secure measurable net gains for biodiversity.

**Chelmsford Draft Local Plan. Pre-Submission Document – Chelmsford City Council 2018**

The Secretary of State Approved the Maldon District Local Development Plan on 21st July 2017. Policies relevant to ecology and biodiversity include:

Policy N1: Green Infrastructure Network

A strategic multi-functional network of green infrastructure will be identified, managed and where possible, enhanced. Open spaces and areas of significant biodiversity or historic interest will be protected. Development which results in the creation, restoration, enhancement, expansion and interconnection of these sites will be encouraged. There will be a presumption against any development which may lead to the loss, degradation, fragmentation and / or isolation of existing or proposed green infrastructure.

Where there is no adverse impact or the adverse impact can be mitigated without loss in value, development proposals which promote the use and enjoyment of the natural environment will be encouraged. To preserve and enhance a multi-functional green infrastructure network, all development must:

1. Maximise opportunities for the restoration, enhancement and connection of the District's green infrastructure network throughout the lifetime of the development, both on-site and for the wider community;
2. Maximise opportunities to integrate green infrastructure with other types of land uses and/or design measures to maximise the collective social, economic and environmental benefits;
3. Seek to meet local standards and address any deficiencies as identified in the Maldon District Green Infrastructure Study and future strategies adopted by the Council; and
4. Where appropriate, be accompanied by a viable, long term management plan to the Council's satisfaction.

### Policy N2: Natural Environment, Geodiversity and Biodiversity

Development proposals which help to improve the condition of existing international, national or local designations will be encouraged.

All development should seek to deliver net biodiversity and geodiversity gain where possible. Any development which could have an adverse effect on sites with designated features and / or protected species, either individually or cumulatively, will require an assessment as required by the relevant legislation or national planning guidance.

Where any potential adverse effects to the conservation value or biodiversity value of designated sites are identified, the proposal will not normally be permitted.

#### *Mitigation Measures*

In exceptional circumstances where the loss of designated sites is demonstrated to be unavoidable, developers will be required to provide 'like for like' replacement, relocation and / or compensation towards the loss of habitats and be able to demonstrate that such measures are at least of an equal value to the loss on a site by site basis. Any compensatory habitat created should be ecologically functional in advance of the loss.

If any protected species and / or significant local wildlife are found on site, or their habitat may be affected by the proposed development, the proposal must make provision to mitigate any negative biodiversity impacts it may create.

Where the creation or relocation of habitat is required as part of the mitigation measures, the Council will have to be satisfied that:

1. There is no net loss of habitats in terms of quantity, quality and connectivity; and
2. Any new or replacement habitat is delivered as close as possible to the development site in order to maintain a viable population locally and to avoid incremental and accumulative impact on local ecology.

#### *Biodiversity by design*

In exceptional circumstances where the loss of designated sites is demonstrated to be unavoidable, developers will be required to provide 'like for like' replacement, relocation and / or compensation towards the loss of habitats and be able to demonstrate that such measures are at least of an equal value to the loss on a site by site basis. Any compensatory habitat created should be ecologically functional in advance of the loss.

### Policy N3: Open Space, Sport and Leisure

In principle, all development must contribute towards improving the provision, quality and / or accessibility of local and strategic open space, sports, community and leisure facilities. Appropriate contribution or direct provision should be provided at the most suitable and accessible locations, taking into account the Council's Green Infrastructure Study (or any successor document), Sports and Physical Activity Plan or other relevant strategies adopted by the Council.

As a minimum, development should not increase existing deficiencies of open space, sports and leisure facilities in the locality. Proposals which will result in the loss of, or negative impact upon designated

or proposed open space including district parks, local parks, children's play areas, sports grounds, sports facilities, cycleways, footpaths and allotments will only be considered where:

1. Alternative and improved provision can be created in the most appropriate and accessible location in the locality for existing and future users; and,
2. There is an identified significant excess of provision within the catchment of the space / facility, and the development can address other types of open space, sports or leisure deficiency in the locality.

Development that would result in the loss of, or negatively impact upon, any public rights of way or any space / facility contributing towards the integrity of the green infrastructure network, will not normally be supported.

## Wildlife Legislation

The two principal wildlife statutes are the Conservation of Habitats and Species Regulations (The Habitats Regulations 2019), which deals with internationally important sites and species, and the Wildlife and Countryside Act (WCA) 1981, which deals with nationally important sites and species.

Certain habitats and species within discrete sites are protected as SSSI under the WCA 1981. A proportion of these are more strictly protected as proposed or designated SPA, SAC and Ramsar sites under the Conservation of Habitats and Species Regulations (2019). These designations protect features and resources listed as being of international importance from both direct and indirect effects arising from a range of issues including proposed development. In addition, non-statutory designated sites (e.g. Local Wildlife Sites) are protected under the National Parks and Access to the Countryside Act, (1949) Section 21.

Certain species listed on Schedule 5 of the WCA 1981, including all bat species, great crested newt *Triturus cristatus*, hazel dormouse *Muscardinus avellanarius* and otter *Lutra lutra* are also protected under Schedule 2 of the Habitats Regulations 2010 making them European Protected Species (EPS). Taken together it is illegal to:

- Deliberately kill, injure or capture any wild animal of EPS;
- Deliberately disturb wild animals of any EPS in such a way to be likely to significantly affect:
  - The ability of that species to survive, breed, rear or nurture their young; or
  - The local distribution of that species.
- Recklessly disturb an EPS or obstruct access to their place of rest;
- Damage or destroy breeding sites or resting places of such animals;
- Deliberately take or destroy the eggs of such an animal;
- Possess or transport any part of an EPS, unless acquired legally; and/or
- Sell, barter or exchange any part of an EPS.

A range of species other than birds, including water vole *Arvicola amphibius*, is protected from disturbance and destruction under the WCA 1981 through inclusion on Schedule 5.

All breeding birds are protected from deliberate destruction under the WCA 1981. Certain species are further protected from disturbance at their nest sites being listed on Schedule 1 of the WCA 1981.

Common reptiles including common lizard *Zootoca vivipara*, slow-worm *Anguis fragilis*, grass snake *Natrix helvetica* and adder *Vipera berus* are protected under the WCA 1981, they are listed as schedule 5 species, therefore part of Section 9(1) and section 9(5) apply; the Countryside and Rights of Way Act 2000 (CRoW) also strengthens their protection.

Badger *Meles meles* is protected from sett disturbance and destruction under the Protection of Badgers Act 1992.

Section 40 of The Natural Environment and Rural Communities Act (NERC) 2006 places a legal duty on Local Authorities to conserve biodiversity. Section 41 (S41) sets out a list of 943 species and habitats of principal importance. These species are known as England Biodiversity Priority (EBP) species and are those identified as requiring action under the former UK Biodiversity Action Plan (BAP) and which continue to be regarded as conservation priorities under the UK Post-2010 Biodiversity Framework.

Native, species-rich hedgerows that fit certain criteria are protected as being 'important' under the Hedgerow Regulations (1997).



Japanese Knotweed *Fallopia japonica*, along with other introduced and invasive species are listed under Schedule 9 of the WCA 1981. Japanese knotweed is highly invasive, and its rhizomes cause damage to buildings and other infrastructure. Hence it is also classed as controlled waste under the Environment Protection Act 1990 and has therefore either to be removed or disposed of in a licensed landfill or the rhizomes buried to a depth of at least 5m.

## **Appendix 3: Detailed Methods**

### **Extended Phase 1 Habitat Survey**

Phase 1 Habitat Survey is a standard technique for obtaining baseline ecological information for areas of land, including proposed development sites. Phase 1 Habitat Survey methods are set out in the Handbook for Phase 1 Habitat Survey (Joint Nature Conservation Committee, 2010). Habitat mapping was undertaken using the standard classification to indicate habitat types. Features of ecological interest and value were highlighted using target notes.

### **Detailed Botanical Survey**

As the Phase 1 Habitat Survey was conducted during sub-optimal timings for botanical survey, a further site visit was undertaken in June 2022 to assess the floristic value of the site and compile a peak-season detailed botanical species list.

Plant species identified in each of the various habitat parcels were recorded and their abundances assessed on the DAFOR scale:

- D - Dominant
- A - Abundant
- F - Frequent
- O - Occasional
- R - Rare

These scores represent the abundance within the defined area only and do not reflect national or regional abundances. Plant species nomenclature follows Stace (2010).

### **Bats**

#### **Preliminary Bat Roost Assessment**

Habitats on and adjacent site were assessed for their suitability to support roosting, foraging and commuting bats using guidelines issued by the Bat Conservation Trust (Collins, 2016). All potential roosting habitats (existing trees) were assigned a level of suitability according to the descriptions outlined in Table 9. Trees were initially assessed from ground level, using binoculars where necessary to identify potential roost features, bat access points and evidence of bat occupation such as droppings, urine staining and mammalian fur oil staining.

The site was also assigned a level of suitability for foraging and commuting bats according to the descriptions outlined in Table 9.

**Table 9: Assessment of the potential suitability of a proposed development site for roosting, foraging and commuting bats (Collins, 2016)**

Suitability	Roosting habitats	Commuting and foraging habitats
Negligible	Negligible habitat features on site likely to be used by roosting bats	Negligible habitat features on site likely to be used by commuting and foraging bats
Low	<p>A structure with one or more potential roost sites that could be used by individual bats opportunistically but not enough space, shelter, protection and appropriate conditions to be used on a regular basis or by larger numbers of bats</p> <p>A tree of sufficient size and age to contain potential roosting features but with none seen from the ground or features seen with only very limited roosting potential</p>	<p>Habitat that could be used by small numbers of commuting bats such as a gappy hedgerow or unvegetated stream, but isolated, i.e. not very well connected to the surrounding landscape by another habitat</p> <p>Suitable, but isolated habitat that could be used by small numbers of foraging bats such as a lone tree (not in a parkland situation) or patch of scrub</p>
Moderate	A structure or tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status	<p>Continuous habitat connected to the wider landscape that could be used by bats for commuting such as lines of trees and scrub or linked back gardens</p> <p>Habitat that is connected to the wider landscape that could be used by bats for foraging such as trees, scrub, grassland or water</p>
High	A structure or tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat	<p>Continuous, high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by commuting bats such as river valleys, streams, hedgerows, lines of trees and woodland edge</p> <p>High-quality habitat that is well-connected to the wider landscape that is likely used regularly by foraging bats such as broad-leaved woodland, tree-lined watercourses and grazed parkland</p> <p>Site is close to and connected to known roosts</p>

### Great Crested Newt Habitat Suitability Index (HSI)

The HSI for the great crested newt was developed by Oldham *et al.* (2000). An HSI is a numerical index, between 0 and 1. 0 indicates unsuitable habitat, 1 represents optimal habitat. The HSI for the great crested newt incorporates 10 suitability indices, all of which are factors thought to influence the likelihood of great crested newt presence (*e.g.* surrounding habitat, geographical location, shading, presence of waterfowl and fish).

The HSI is calculated as a geometric mean of the 10 suitability indices (SI) as indicated below:

- Geographic locality
- Pond area
- Permanence
- Water quality
- Shade
- Waterfowl presence
- Fish presence
- Pond count within 1km<sup>2</sup> of survey pond
- Terrestrial habitat quality
- Macrophyte cover

$$\text{HSI} = (\text{SI1} \times \text{SI2} \times \text{SI3} \times \text{SI4} \times \text{SI5} \times \text{SI6} \times \text{SI7} \times \text{SI8} \times \text{SI9} \times \text{SI10})^{1/10}$$

The data regarding each factor is collected in the field at each pond, and also by using maps, this is then converted into SI scores on a scale of 0.1 - 1.0. The results can then be used to calculate the HSI. In general ponds with high HSI scores are more likely to support great crested newts than those with low scores (Table 10).

**Table 10: HSI score categories (Oldham *et al.*, 2000)**

HSI score	Pond suitability
< 0.5	Poor
0.5 – 0.59	Below average
0.6 – 0.69	Average
0.7 – 0.79	Good
> 0.8	Excellent

The HSI for great crested newt is a measure of habitat suitability. It is not a substitute for newt surveys. In general, ponds with high HSI scores are more likely to support great crested newt than those with low scores. However, the system is not sufficiently precise to allow the conclusion that any particular pond with a high score will support newts, or that any pond with a low score will not do so. There is also a positive correlation between HSI scores and the numbers of great crested newt observed in ponds. So, in general, high HSI scores are likely to be associated with greater numbers of great crested newt. The relationship however is not sufficiently strong to allow predictions to be made about the numbers of newts in any particular pond. HSI scoring of ponds can be useful when:

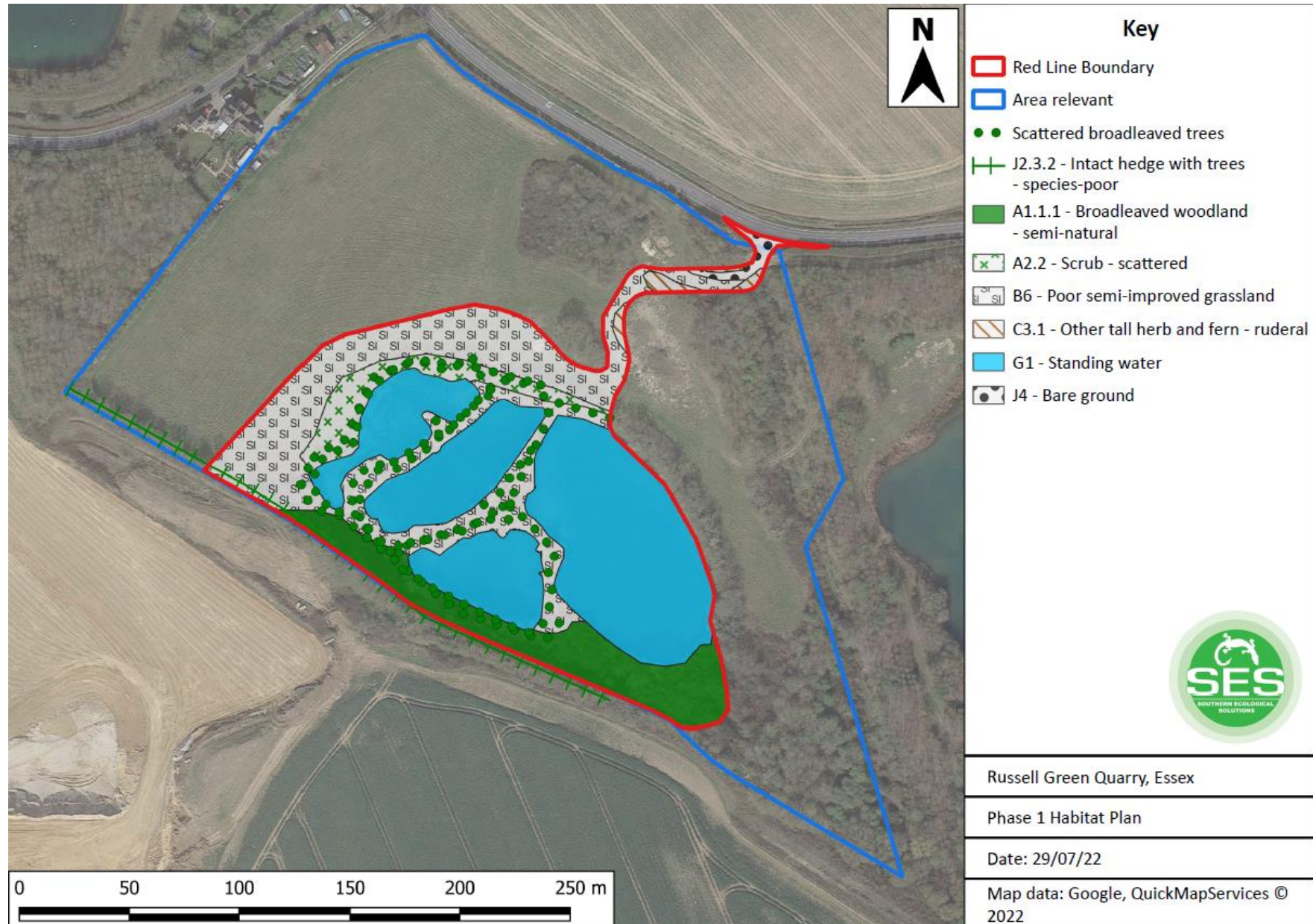
- Evaluating the general suitability of a pond or group of ponds to support great crested newt;
- Comparing ponds across different areas of a site or within the landscape;
- Evaluating the suitability of ponds to be used as receptor sites for great crested newt; and
- Planning restorative or enhancement works to ponds.

Lee Brady developed a system of using HSI scores to define ponds suitability for great crested newts on a categorical scale during a study undertaken in south-east England in which 248 ponds were surveyed for great crested newt using standard methods and also subjected to an HSI. The results of this study show that as the HSI score increases, the proportion of ponds occupied also increases, as summarised below:

**Table 11: HSI range, associated suitability and predicted probability of presence**

HSI Range	Pond Suitability	Predicted presence of Great Crested Newt (% of ponds occupied n=248)
<0.5	Poor	0.03
0.5 - 0.59	Below average	0.2
0.6-0.69	Average	0.55
0.7-0.79	Good	0.79

**Appendix 4: Phase 1 Habitat Survey Plan**



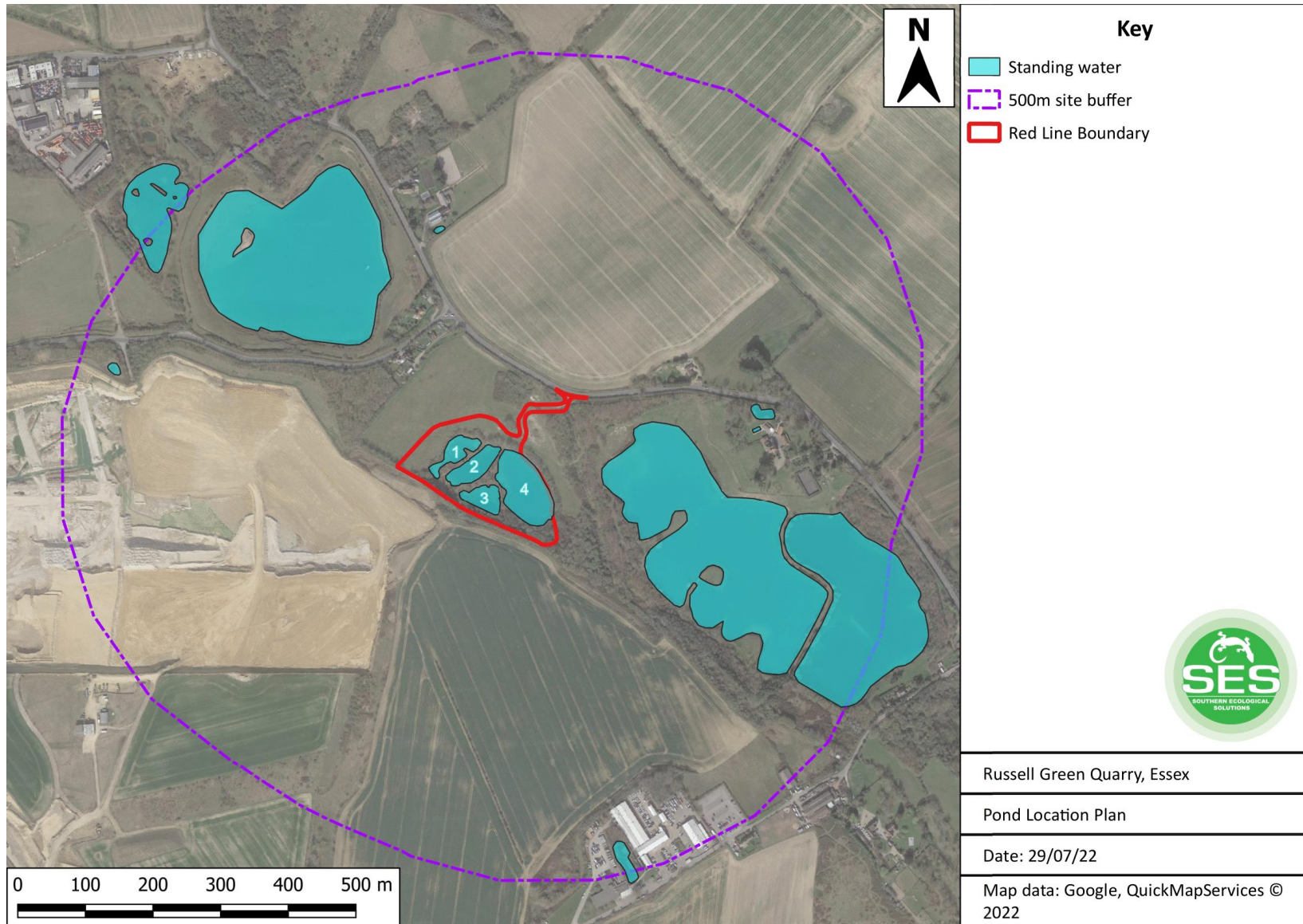
**Appendix 5: Plant Species recorded during Phase 1 Habitat Survey**

Common name	Latin name	Semi-improved grassland	Recolonising Ground	Scrub	Trees	Hedgerow	Banks of the standing water
Agrimony	<i>Agrimonia eupatoria</i>	R					
Annual meadow grass	<i>Poa annua</i>	D					
Apple	<i>Malus sp.</i>					*	
Ash	<i>Fraxinus excelsior</i>				*	*	
Bird's-foot trefoil	<i>Lotus corniculatus</i>	R					
Black medick	<i>Medicago lupulina</i>		F				R
Blackthorn	<i>Prunus spinosa</i>				*	*	
Bramble	<i>Rubus fruticosus</i>	R	F	A			
Bristly oxtongue	<i>Helminthotheca echioides</i>	R	O				
Chickweed	<i>Stellaria media</i>		F				
Cleavers	<i>Galium aparine</i>	R	O	F			
Cock's-foot	<i>Dactylis glomerata</i>	D					
Common bent	<i>Agrostis capillaris</i>	A					
Common centaury	<i>Centaurium erythraea</i>	O					
Common gypsyweed	<i>Veronica officinalis</i>						O
Common mallow	<i>Malva sylvestris</i>	R	O				
Common mouse-ear	<i>Cerastium fontanum</i>		R				
Common mullein	<i>Verbascum thapsus</i>		R				
Common nettle	<i>Urtica dioica</i>	R	O	A			
Common poppy	<i>Papaver rhoeas</i>	R					
Common rush	<i>Juncus effusus</i>						R
Cow parsley	<i>Anthriscus sylvestris</i>	R					
Creeping buttercup	<i>Ranunculus repens</i>	R					
Creeping cinquefoil	<i>Potentilla reptans</i>		F				
Creeping Thistle	<i>Cirsium arvense</i>	R					
Dog rose	<i>Rosa canina</i>	R		O			
Dove's-foot Crane's-bill	<i>Geranium molle</i>	R					
Elder	<i>Sambucus nigra</i>					*	
Elm	<i>Ulmus sp.</i>					*	
False fox sedge	<i>Carex otrubae</i>						R
False oat-grass	<i>Arrhenatherum elatius</i>	D					
Field bindweed	<i>Convolvulus arvensis</i>		F				
Field brome	<i>Bromus arvensis</i>		F				
Field maple	<i>Acer campestre</i>					*	
Forget-me-not	<i>Myosotis sp.</i>	R					
Goat willow	<i>Salix caprea</i>			*			
Goat's-rue	<i>Galega officinalis</i>		A				
Hard rush	<i>Juncus inflexus</i>						R
Hawthorn	<i>Crataegus monogyna</i>				*	*	
Hedge mustard	<i>Sisymbrium officinale</i>					*	

Common name	Latin name	Semi-improved grassland	Recolonising Ground	Scrub	Trees	Hedgerow	Banks of the standing water
Hogweed	<i>Heracleum mantegazzianum</i>		O				
Imperforate St John's-wort	<i>Hypericum maculatum</i>	R	R				
Ivy	<i>Hera helix</i>					*	
Lesser stitchwort	<i>Stellaria graminea</i>	O					
Melilot	<i>Melilotus sp.</i>		F				
New Zealand pigmyweed	<i>Crassula helmsii</i>						D
Pedunculate oak	<i>Quercus robur</i>				*		
Perennial ryegrass	<i>Lolium perenne</i>	A					
Pyramidal orchid	<i>Anacamptis pyramidalis</i>	R					
Ragwort	<i>Jacobaea vulgaris</i>	R					
Red dead-nettle	<i>Lamium purpureum</i>	R	R				
Ribwort plantain	<i>Plantago lanceolata</i>	O					
Rose	<i>Rosa sp.</i>	R					
Rough hawkbit	<i>Leontodon hispidus</i>	R					
Scentless mayweed	<i>Tripleurospermum inodorum</i>	R	O				
Self-heal	<i>Prunella vulgaris</i>	R					
Sheep's sorrel	<i>Rumex acetosella</i>						
Slender meadow foxtail	<i>Alopecurus myosuroides</i>	F					
Smooth vetch	<i>Vicia tetrasperma</i>						R
Soft brome	<i>Bromus hordeaceus</i>	F					
Sowthistle	<i>Sonchus oleraceus</i>		O				
Spear Thistle	<i>Cirsium vulgare</i>	R	R				
Timothy	<i>Phleum pratense</i>	F					
Water mint	<i>Mentha aquatica</i>						O
White clover	<i>Trifolium repens</i>	O					
White willow	<i>Salix alba</i>			*			
Wild mignonette	<i>Reseda lutea</i>		R				
Yarrow	<i>Achillea millefolium</i>	R					
Yorkshire fog	<i>Holcus lanatus</i>	A					R

## Appendix 6: Great Crested Newt Assessment Results

### Pond Location Plan





HSI Results

**Table 12: HSI values for standing water within the surveyed area**

Index		P1	Calculation	P2	Calculation	P3	Calculation	P4	Calculation
SI <sub>1</sub>	Location	Zone A	1	Zone A	1	Zone A	1	Zone A	1
SI <sub>2</sub>	Pond Area	1,830 m <sup>2</sup>	0.835	2,550 m <sup>2</sup>	0.8	1,900 m <sup>2</sup>	0.81	7,110 m <sup>2</sup>	0.8
SI <sub>3</sub>	Pond Drying	Never Dries	0.9	Never Dries	0.9	Never Dries	0.9	Never Dries	0.9
SI <sub>4</sub>	Water Quality	Moderate	0.67	Moderate	0.67	Moderate	0.67	Moderate	0.67
SI <sub>5</sub>	Shade	100%	0.2	100%	0.2	100%	0.2	100%	0.2
SI <sub>6</sub>	Fowl	Minor	0.67	Minor	0.67	Minor	0.67	Minor	0.67
SI <sub>7</sub>	Fish	Possible	0.67	Possible	0.67	Possible	0.67	Possible	0.67
SI <sub>8</sub>	Ponds	12+	1	12+	1	12+	1	12+	1
SI <sub>9</sub>	Terrestrial Habitat	Good	1	Good	1	Good	1	Good	1
SI <sub>10</sub>	Macrophytes	1-5%	0.35	1-5%	0.35	1-5%	0.35	1-5%	0.35
<b>HSI</b>		<b>0.66</b>		<b>0.66</b>		<b>0.66</b>		<b>0.66</b>	
<b>Suitability</b>		<b>Average</b>		<b>Average</b>		<b>Average</b>		<b>Average</b>	

## Appendix 7: Species of Known Benefit to Wildlife especially Bats and Invertebrates

The following table is reproduced from Gunnell, K., Grant, G. and Williams, C. (2012). Landscape and Urban Design for Bats and Biodiversity, Bat Conservation Trust. This table contains a suggested species list of plants that can provide benefit for bats either by providing a food source for insects and/ or roost potential. The plants listed are predominately native to Britain. The small group of non-native plants included for their documented value for wildlife. The list has been checked by the author against Natural England's list of invasive non-native plants.

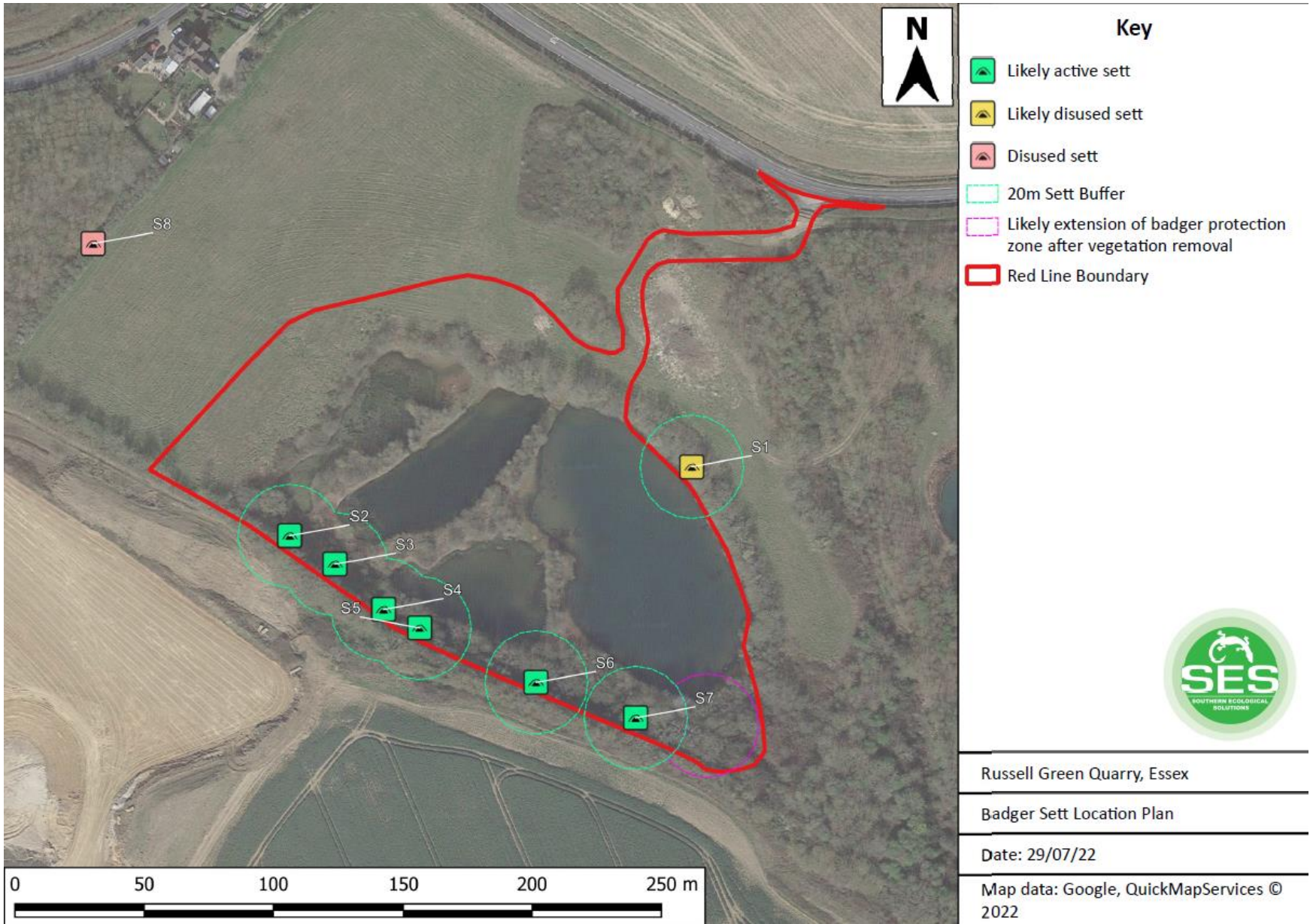
Plant species	Common name	Native (N)	Type	Benefit	Soil	Light	Extensive green roofs	Living walls	Rain gardens	Hedge/trees	Beds/borders
<i>Acer campestre</i>	Field maple	N	T/S	C	Any	Sun/ shade				Y	
<i>Acer platanoides</i>	Norway maple		T	S	Well drained/ alkaline	Sun/ shade				Y	
<i>Acer saooaharum</i>	Sugar maple		T	S	Any	Sun/ shade				Y	
<i>Achillea millefolium</i>	Yarrow	N	HP	C,F	Well drained	Sun				Y	
<i>Ajuga reptans</i>	Bugle	N	HP	C,F	Any	Sun/ shade	Y		Y		
<i>Anthyllis vulneraria</i>	Kidney vetch	N	HP	F	Well drained	Sun	Y				
<i>Aubrieta deltoidea</i>	Aubrieta		H	F	Well drained	Sun/shade		Y			
<i>Betula pendula</i>	Sliver birch	N	T	C	Sandy/ acid	Sun				Y	
<i>Cardamine pratensis</i>	Cuckoo- flower	N	HP	F	Moist	Sun/ shade			Y		Y
<i>Carpinus betulus</i>	Hornbeam	N	T	C	Clay	Sun				Y	
<i>Centaurea nigra</i>	Common knapweed	N	HP	C,F	Dry, not acid	Sun	Y				Y
<i>Centranthus ruber</i>	Red valerian		HP	F	Well drained	Sun	Y				Y
<i>Clematis vitalba</i>	Old man's Beard	N	C	F	well drained/ alkaline	Sun				Y	
<i>Corylus avellana</i>	Hazel	N	S	C	Any dry	Sun/ shade		Y		Y	
<i>Crataegus monogyna</i>	Hawthorn	N	S	S,C	Any	Sun/shade				Y	
<i>Daucus carota</i>	Wild carrot	N	Bi	S,C,F	Any	Sun	Y				Y
<i>Dianthus spp.</i>	Pinks	N	A-Bi	F	Well drained	Sun	Y	Y			Y
<i>Digitalis purpurea</i>	Foxglove	N	Bi	C	Well drained	Shade/ partial shade				Y	Y
<i>Erica cinera</i>	Bell heather	N	S	F	Sandy	Full sun					Y
<i>Ersimum cherira</i>	Wallflower		Bi-P	F	Well drained	Sun		Y			Y
<i>Eupatorium</i>	Hemp agrimony	N	H	F	Moist	Sun/ shade			Y		Y
<i>Fagus sylvatica</i>	Beech	N	T	C, R	Well drained alkaline	Sun/ shade				Y	
<i>Foeniculum vulgare</i>	Fennel		H	F	Well drained	Sun					Y
<i>Fraxinus excelsior</i>	Common Ash	N	T	C, R	Any	Sun/ shade				Y	
<i>Hebe spp.</i>	Hebe species		S	F	Well drained	Sun/ shade				Y	Y
<i>Hedera Helix</i>	Ivy	N	C	F,C	Any	Sun/ shade		Y	Y	Y	Y
<i>Hesperis matronalis</i>	Sweet Rocket		H	F	Well drained/ dry	Sun/ shade					Y
<i>Hyacinthoides non-scripta</i>	Bluebell	N	B	F	Loam	Shade/ partial shade		Y		Y	Y
<i>Ilex aquilifolium</i>	Holly	N	T	C	Any	Sun/ shade				Y	
<i>Jasmine officinale</i>	Common jasmine		C	F	Well drained	Sun		Y			Y
<i>Lavandula spp.</i>	Lavender species		S	F	Well drained / sandy	Sun		Y			Y
<i>Linaria vulgaris</i>	Toadflax	N	HP	C	Well drained/ alkaline	Sun	Y				Y
<i>Lonicera periclymenum</i>	Honeysuckle	N	C	F	Well drained	Sun		Y		Y	
<i>Lotus corniculatus</i>	Bird's foot trefoil	N	HP	F	Well drained/ dry	Sun	Y				Y
<i>Lunaria annua</i>	Honesty		Bi	F	Any	Sun/ partial shade	Y				Y
<i>Malus spp.</i>	Apple		T	C	Any	Sun				Y	Y
<i>Matthiola longipetala</i>	Night - scented stock		A	F	Well drained/ moist				Y		Y
<i>Myosotis spp.</i>	Forget me not sp.	N	A	F	Any	Sun	Y	Y			Y
<i>Nicotiana glauca</i>	Ornamental tobacco		A	F	Well drained moist	Sun / partial shade			Y		Y
<i>Oneothena spp.</i>	Evening primrose		Bi	F	Well drained	Sun	Y				Y
<i>Origanum vulgare</i>	Marjoram	N	HP	F	Well drained / dry	Sun				Y	
<i>Populus alba</i>	White poplar	N	T	C	Clay loam	Sun				Y	
<i>Primula veris</i>	Cowslip	N	HP	F	Well drained/ moist	Sun/ partial shade	Y				Y

Plant species	Common name	Native (N)	Type	Benefit	Soil	Light	Extensive green roofs	Living walls	Rain gardens	Hedge/trees	Beds/borders
<i>Primula vulgaris</i>	Primrose	N	HP	F	Moist	Partial shade	Y	Y		Y	Y
<i>Prunus avium</i>	Wild cherry	N	T	C	Any	Sun				Y	Y
<i>Prunus domestica</i>	Plum		T	C	Well drained/moist	Sun				Y	Y
<i>Prunus spinosa</i>	Blackthorn	N	S	C	Any	Sun/ partial shade				Y	
<i>Quercus petraea</i>	Sessile oak	N	T	C,R	Sandy loam	Sun/ shade				Y	
<i>Quercus robur</i>	Common oak	N	T	R	Clay Loam	Sun/ shade				Y	
<i>Rosa canina</i>	Dog rose	N	S	C	Any	Sun			Y	Y	Y
<i>Salix spp.</i>	Willow species	N	S	S,C	Moist	Sun/ shade			Y	Y	
<i>Sambucus nigra</i>	Elder	N	T	C	Clay loam	Sun				Y	
<i>Saponaria officinalis</i>	Soapwort	N	HP	F	Any	Sun					Y
<i>Saxifraga oppositifolia</i>	Saxifrage	N	HP	C	Well drained	Sun	Y	Y			Y
<i>Scabiosa columbaria</i>	small scabious	N	HP	F	Well drained/alkaline	Sun	Y				Y
<i>Sedum spectabile</i>	Ice plant		HP	F	Well drained/dry	Sun	Y				Y
<i>Silene dioecia</i>	Red campion	N	HP	F	Any	Shade/ partial shade		Y	Y	Y	Y
<i>Sorbus aucuparia</i>	Rowan	N	T	C	Well drained	Sun				Y	
<i>Stachys lanata</i>	Lamb's ear		HP	F	Well drained/dry	Sun					Y
<i>Symphotrichum spp.</i>	Michaelmas daisies		HP	F	Any	Sun					Y
<i>Tages patula</i>	French marigold		A	F	Well drained	Sun					Y
<i>Thymus serpyllum</i>	Creeping thyme	N	HP/S	F	Well drained/dry	Sun	Y	Y			Y
<i>Tilia x europaea</i>	Common lime		T	C	Any	Sun/ shade				Y	
<i>Trifolium spp.</i>	Clover species	N	H	F	Any	Sun	Y				Y
<i>Valerina spp.</i>	Valerian species	N	HP	F	Moist	Sun/ partial shade			Y		Y
<i>Verbascum spp.</i>	Mulleins	N	Bi, HP	C	Well drained	Sun					Y
<i>Verbena bonariensis</i>	Verbena		HP	F	Well drained/moist	Sun					Y
<i>Viburnum lantana</i>	Wayfaring tree	N	S	C	Any	Sun/ shade				Y	Y
<i>Viburnum opulus</i>	Guelder rose	N	S	C	Moist	Sun/ shade			Y	Y	
<i>Viola tricolor</i>	Pansy	N	A	F	Well drained/moist	Sun/ partial shade	Y	Y			Y

## Legend

Type		Benefit	
HP	Herbaceous perennial	C	Moth caterpillar food plant
Bi	Biennial	S	Sap sucking insects (e.g., whiteflies)
BiP	Biennial perennial	F	Flowers attract adult moths
T	Tree	E	Good roost potential
S	Shrub		
H	Herb		
A	Annual		
B	Bulb		
C	Creeper/ climber		

**Appendix 8: Preliminary Badger Set Location Plan**



## Appendix 9: Plant Species of Known Benefit to Wildlife

Common Name	Scientific Name	Benefits
<b>Shrubs</b>		
Barberry *	<i>Berberis spp.</i>	Nectar, fruit, nesting cover
Blackthorn	<i>Prunus spinosa</i>	Nectar, fruit, larval foodplant, nesting cover
Broom	<i>Cystisus scoparius</i>	Nectar, larval foodplant
Buckthorn #	<i>Rhamnus cathartica</i>	Nectar, berries, larval foodplant, nesting cover
Butterfly bush*	<i>Buddleja davidii</i>	Nectar, nesting cover
Butterfly bush*	<i>Buddleja globosa</i>	Nectar
Californian lilac*	<i>Ceanothus spp.</i>	Nectar, nesting cover
Cherry laurel*#	<i>Prunus laurocerasus</i>	Nectar (including extra-floral nectaries)
Dog Rose	<i>Rosa canina agg.</i>	Nectar, fruit, larval foodplant, nesting cover
Dogwood	<i>Cornus sanguinea</i>	Nectar, fruit, larval foodplant
Elder	<i>Sambucus nigra</i>	Nectar, fruit, larval foodplant, nesting cover
Field rose	<i>Rosa arvensis</i>	Nectar, larval foodplant, fruit
Firethorn*	<i>Pyracantha spp.</i>	Nectar, fruit, nesting cover
Flowering currant *	<i>Ribes sanguineum</i>	Nectar, larval foodplant
Garden lavender*	<i>Lavandula x intermedia</i>	Nectar
Gorse	<i>Ulex europaeus</i>	Nectar, larval foodplant, nesting cover
Guelder rose	<i>Viburnum opulus</i>	Nectar, fruit, larval foodplant
Hawthorn	<i>Crataegus monogyna</i>	Nectar, fruit, larval foodplant, nesting cover
Hazel	<i>Corylus avellana</i>	Nuts, larval foodplant
Hebe *	<i>Hebe spp.</i>	Nectar
Holly	<i>Ilex aquifolium</i>	Nectar, fruit, larval foodplant, nesting cover
Laurustinus*	<i>Viburnum tinus</i>	Nectar, nesting cover
Mexican orange *	<i>Choisya ternata</i>	Nectar
Portuguese laurel *	<i>Prunus lusitanica</i>	Nectar, fruit, nesting cover
Rosemary *	<i>Rosmarinus officinalis</i>	Nectar
Spindle #	<i>Euonymous europaeus</i>	Nectar, fruits
Tutsan	<i>Hypericum androsaemum</i>	Nectar, fruit, larval foodplant
Wayfaring tree	<i>Viburnum lantana</i>	Nectar, fruit, larval foodplant
Yew#	<i>Taxus baccata</i>	Berries, nesting cover
<b>Climbers</b>		
Clematis*	<i>Clematis tangutica</i>	Nectar, seeds
Honeysuckle	<i>Lonicera periclymenum</i>	Nectar, fruit, larval foodplant, nesting cover
Ivy	<i>Herdera helix</i>	Nectar, fruit, larval foodplant, nesting cover
Traveller's joy	<i>Clematis vitalba</i>	Nectar, seeds, larval foodplant
Note: * Non-native species # Poisonous ** Native Woody species		

Appendix F Letter from Land Logical Aggregates



LANDLOGICAL

## LAND LOGICAL AGGREGATES LIMITED

PASTURE HOUSE FARM  
THE CAUSEWAY  
PETERBOROUGH  
PE6 0QL  
Tel: 03304 600900  
[aggregates@landlogical.com](mailto:aggregates@landlogical.com)

### QUOTATION

Tony Chambers

**Date** 18-Nov-2022  
**Quote No** 000677  
**Account**  
**For the attention of** Tony Chambers

#### Customer Site

Russell Green Boreham Road Chelmsford Essex CM3 3BB

Dear Sir/Madam

Thank you for your enquiry. We have pleasure in tendering for the supply of the products/services in 20 tonne loads to the terms set out below, subject to TERMS & CONDITIONS which are available on request.

Unit	Description	Price per unit £
85,000 tonnes	Clay 2B Engineering Fill	4.75
23,270 tonnes	Topsoil	5.25

The prices quoted are based on minimum loads of 20 tonnes.

Aggregate Tax is included where applicable.

Landfill Tax for contaminated and active waste will be charged at the current rate, unless exempt.

IBAA should be used in accordance with the code of practice, which is available on request.

All materials quoted are subject to availability.

The prices quoted are exclusive of VAT. All applicable VAT will be included on final invoice.

Appendix G Letter from Landowner



Alison Crooks  
Integrated Skills Ltd  
Suite 3A, Chapel Allerton House  
114 Harrogate Road  
Leeds  
LS7 4NY

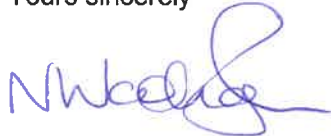
19 December 2022

Dear Alison

We understand that you are working on behalf of Anthony Chambers in relation to their site at Russell Green, Boreham Road.

We have seen the quotation for carrying out the work to stabilise the banks at the site. We can confirm that Mr Chambers has the funds available to carry out this work.

Yours sincerely



Natalie Woolnough  
Financial Administrator