

TOWN & COUNTRY PLANNING ACT 1990

SECTION 102(A) AND SCHEDULE 9

**TOWN AND COUNTRY PLANNING (ENVIRONMENTAL IMPACT)
(ENGLAND AND WALES) REGULATIONS 1998**

**PEAK DISTRICT NATIONAL PARK AUTHORITY
DEEP RAKE, HASSOP (LONGSTONE EDGE EAST)
PROHIBITION ORDER 2013**

PINS REFERENCE NPCU/PROH/M9496/73265

PROOF OF EVIDENCE

of

**DENNIS ANTHONY BERNARD HIGGINS
M.Sc., DIC, B.Sc. Hons, FGS, C.Geol, MIMMM, C.Eng**

1. INTRODUCTION

My name is Dennis Anthony Bernard Higgins M.Sc., DIC, B.Sc. Hons, FGS, C.Geol, MIMMM, C.Eng. I am the owner of James Associates and operate as a sole trader providing geological and geotechnical consultancy services to the mining and quarrying industries. I have been instructed by Bleaklow Industries Ltd (BIL) to advise on the restoration of the Backdale Quarry area.

2. EDUCATION

I graduated from Swansea University in 1977 with a 2:1 honours degree in Geology, following which I undertook a Masters Degree course at the Imperial College of Science and Technology (London) in Structural Geology and Rock Mechanics and graduated in 1978 with a MSc DIC.

3. MEMBERSHIPS AND PROFESSIONAL AFFILIATIONS

I am a Fellow of the Geological Society of London and a Chartered Geologist, in addition to which I am a Member of the Institute of Materials, Minerals and Mining with Chartered Engineer status.

4. CAREER HISTORY

- 4.1 Following graduation I was employed as a coal exploration geologist by British Coal Opencast Executive, initially in Fife, Scotland and then subsequently in North West Leicestershire.
- 4.2 Following three to four years with British Coal Opencast I transferred to British Coal Deep Mines and was based in the central west regional office and was Mines Geologist for two large underground coal mines. During my time with British Coal I gained experience in the Fife, North West Leicestershire, Lancashire, North Staffordshire, South Staffordshire and Derbyshire Coalfields.

- 4.3 Upon leaving British Coal I joined Shand Mining Ltd (a mining and civil engineering contractor located in Derbyshire) as the Group Geologist, and as head of the Geological Department, had responsibilities primarily for the opencast coal side of the business but also became involved in several overseas civil engineering projects.
- 4.4 Following two years with Shand Mining I joined Ibstock Brick Ltd as Group Geologist with whom I was employed for approximately three years. My role with Ibstock was to provide geological, ceramic and minerals planning related services throughout the group which involved development projects in Lancashire, Leicestershire, the West Midlands, Shropshire, Avon, Kent, West Sussex, Scotland and South Staffordshire.
- 4.5 In 1989 I left Ibstock Brick (with whom I continue to work with through to the present time) and established James Associates (JA).
- 4.6 The company (JA) comprises myself with the occasional assistance of sub-contractors when necessary.
- 4.7 Over the past 26 years of trading JA has established a large number of clients operating throughout the UK in a variety of sectors, including opencast and underground coal, dimensional stone, crushed stone, brickclays and other industrial minerals. A limited amount of overseas consultancy work has been undertaken in Borneo, Eire, South Vietnam, South Africa and Madagascar.
- 4.8 A significant proportion of the work I undertake relates to the geotechnical design of opencast coal and quarry operations, primarily involving the design of the excavated rock faces, tips, lagoons and the operational phasing.
- 4.9 Fifteen years ago I established Peak Surveying Services (PSS) which is a support company to JA, offering topographic quarry, land and buildings surveying, digital modelling and 3D real time virtual reality modelling services to a wide range of clients.

4.10 In summary, I have extensive experience gained throughout the UK principally in the assessment of surface mining / quarrying operations and am involved continually on a day-to-day basis providing advisory geotechnical design services relating to the construction of excavations and tips to a broad range of clients.

SITE RESTORATION

1. The Prohibition Order restoration proposals are shown in GWP Consultants' Drawing No. PPBKRES1308 (Version B) the principal elements of which are as follows:

- Removal of major areas of tipped deposits lying above the original topographic levels.
- Infilling of some 'hollows' within the topography.
- Construction of a major bund (B1) across the entrance point into the upper quarry area to facilitate the proposed diverted footpath FP10.
- Buttressing of a small quarry face (Bank B2) located along the north side of the proposed diverted footpath.
- Buttressing (Bank B3) of the north eastern and eastern quarry faces.

(Note: the cut : fill balance as shown in the above drawing is inaccurate, there is 2,300m³ excess cut.)

2. On the assumption that the proposed alternative diversion route for Footpath FP10 as presented BIL is adopted, elements of the design requirements as illustrated in the above GWP drawing become un-necessary.

3. The revised restoration designs are proposed by BIL are shown in James Associates (JA) Drawings No. JA-175-001-006.1 and JA-175-001-006.2 and accompanying explanatory text titled 'Backdale Restoration Earthworks' Ref: JA.BI.BQ.01.14 dated November 2015.

4. For simplicity the document addresses the areas of proposed 'Fill' and 'Excavation' by reference to western, central and eastern areas.
5. Assuming that the revised diverted route for Footpath FP10 is adopted then a requirement to provide a safe means of passage for pedestrians along the route shown on GWP's Drawing No. PPBKRES1308 (Ver. B) is removed.
6. The variations from the GWP plan are as shown in JA Drawing No. JA-175-001-006.1 and as follows:
 - 6.1 Bank B2 buttressing to the north side of the footpath is no longer shown. The north side is defined by a (largely) open quarry face with a minor earth fill mound along its crest (as there is also along the southern edge). The revised profile will entail no buttressing and the removal (flattening) of the earth fill bunds. The exposed rock face is only likely to be affected by minor localised block spalling with no great significance with respect to overall face stability.
 - 6.2 In the GWP scheme Bank B3 has been designed to provide buttressing for the northern and north eastern quarry faces. The proposed diverted route of the footpath (FP10) is such that the structural integrity of these residual quarry faces is no longer an issue. The faces, over time, may slowly degrade, the impacts of which are highly unlikely to be felt beyond the site boundary.
 - 6.3 In the GWP scheme an area to the north west of the existing industrial shed has been identified for the removal of 'small tips'. In the revised scheme the removal of material in this area will be more extensive and designed to provide the area required to accommodate the industrial unit which it is proposed to construct. Locating the proposed unit will require some rock excavation of the existing slope to be undertaken to achieve the desired position. The rock strata which will be excavated are inclined towards the south, likely to be heavily fractured and consequently likely will require

some stabilisation works to be undertaken. The nature of the works will only become apparent once the strata (which are currently concealed by a veneer of tipped materials) become exposed.

6.4 Bank B1 as shown in the GWP drawing comprises a large (fill) bank of materials along which the diverted Footpath FP10 is to be located. It is also identified as having blocking and rock trap functions (the latter not being considered to be of any great significance). The mound would serve the function of preventing easy access into the northern quarry void area. The revised proposal retains this bund albeit constructed to a lower elevation, i.e. approximately 205 metres AOD, as opposed to GWP's proposal of between 205m and 215m AOD. The structure still has the function of preventing easy access into the upper quarry area and will, with time, provide additional screening to the site.

6.5 The proposed restoration design as shown in Drawing No. JA-175-001-006.1 comprises elements of both 'cut' and 'fill', the magnitudes of which have been digitally quantified. There is an imbalance between the volume of materials in that the required fill exceeds the volume of cut material which is available by 3,713m³.

6.6 Additional fill materials will be available from the following sources:

- Approximately 4,000 to 5,000m³ of tipped quarry waste on the floor in the northern quarry void (as identified in Drawing No. JA-175-001-006.1).
- Additional material arising from the 'cut and fill' undertaken in the western area where topographic gradients will present operational problems for the transportation of materials in an up-hill direction.

6.7 The proposed restoration designs as shown in plan Drawings No. JA-175-001-006.1 and cross sections Drawing No. JA-175-001-006.2 are considered to be appropriate for the proposed end-use of the site. The rock faces within the quarry can be safely left to naturalise, a process which will undoubtedly involve a certain degree of slope

degradation. Slopes will be sufficiently isolated such that any degradation will not compromise the safety of personnel utilising other areas of the site. The proposed revised diversion route for Footpath FP10 will effectively remove public access from the quarry face areas and therefore any rock movements within the quarry will not compromise the safety of the general public. The likelihood of large scale slope instability affecting areas outside of the site boundary in the area of Bank B3 (after GWP) is considered to be remote and therefore the GWP proposed buttressing works are considered to be unnecessary.



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7 December 2015

Attached:

Backdale Restoration Earthworks, November 2015 ref: JA.BI.BQ.14

Drawing No. JA-175-001-006.1 – Restoration Design - Phase 2

Drawing No. JA-175-001-006.2 – Restoration Design Cross Sections



BLEAKLOW INDUSTRIES
BACKDALE QUARRY

BACKDALE RESTORATION
EARTHWORKS

November 2015

The proposed restoration earthworks are shown in Drawings No. JA-175-001-005.1 and 005.2 and comprise a number of areas of excavation and infill, details of which are as follows.

ELEMENTS OF EARTHWORKS

Excavation

The current topography comprises a number of areas of original ground which have been surcharged by historic tipping operations associated with previous quarrying activity on the site.

Drawing No. JA-175-001-005.1 shows three areas of cut which are described as follows:

Western Area

Comprises both excavation and fill.

The excavation will involve the removal of a large area of tip in the lower slope area.

Fill will probably involve dozer work due to the steep gradients limiting the use of dumptrucks.

It is likely that some of the excavated material will be used to form the bund which will be constructed to the east. The balance of excavation to infilling is approximately 7,086m³ excavation : 7,602m³.

Central Area - Behind Proposed Industrial Unit

Due to the location of the proposed unit it will be necessary to excavate into the rising ground to the north west. Historical photographic evidence suggests that the ground will be original in-situ bedrock.

It is proposed to excavate leaving a 5 metres corridor at formation level behind the proposed unit.

Field observations made of ground located to the west would indicate that the strata are moderately steeply inclined towards the south east, consequently there will be a requirement to undertake face stabilisation works which are likely to include rock bolting and meshing.

Excavated material will be used to construct the proposed screening bund which is located to the west.

Eastern Area

Re-grading works will involve the removal of the extensive areas of surcharging by quarry waste materials and infilling of benches and ramps to create a graded slope with an overall gradient which is sympathetic with the original topography.

The balance of excavation to infilling is approximately 16,795m³ excavation : 15,022m³.

Fill

Within the eastern and western areas there will be areas of infilling designed to remove irregularities in the topography and generate a landform which approaches that of the original and surrounding hillside.

A major area of infilling will be in the central western part of the site where an earth bund / screen will be constructed which will have the effect of isolating the lower quarry area from the upper.

The quantity of fill required to construct this bund will be approximately 15,089m³.

Summary of Excavation and Infilling

Area	Excavation Volume m ³	Fill Volume m ³
West Area	7,086	7,602
East Area	16,795	15,022
Central Area	8,621	15,089

Balancing

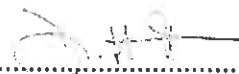
Excess Materials

Any excess materials can be readily deposited in the northern quarry void and graded against the southern sidewalls.

Deficit

Any deficit of materials can be made up using materials which are currently available on the quarry floor.

The small ramp area shown in Drawing No. JA-175-001-005.1 contains approximately 4,000-5,000m³ of tipped waste.



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November 2015

Attached:

Drawing No. JA-175-001-005.1 – Proposed restoration Design

Drawing No. JA-175-001-005.2 – Proposed Restoration Cross Sections

LEGEND

- Cross Section Location
- Topographic Contour (1m interval)
- Topographic Contour (5m interval)
- Building
- Retained Vegetation
- Area of Cut
- Area of Fill

NOTES:

Bas... on site survey supplied by Cassis Studio dated May 2012.
Please refer to Plan Ref. JA-175-001-005.2 for cross sections.

DRAWN	RB	CHECKED	DH
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SITE
BACKDALE
QUARRY

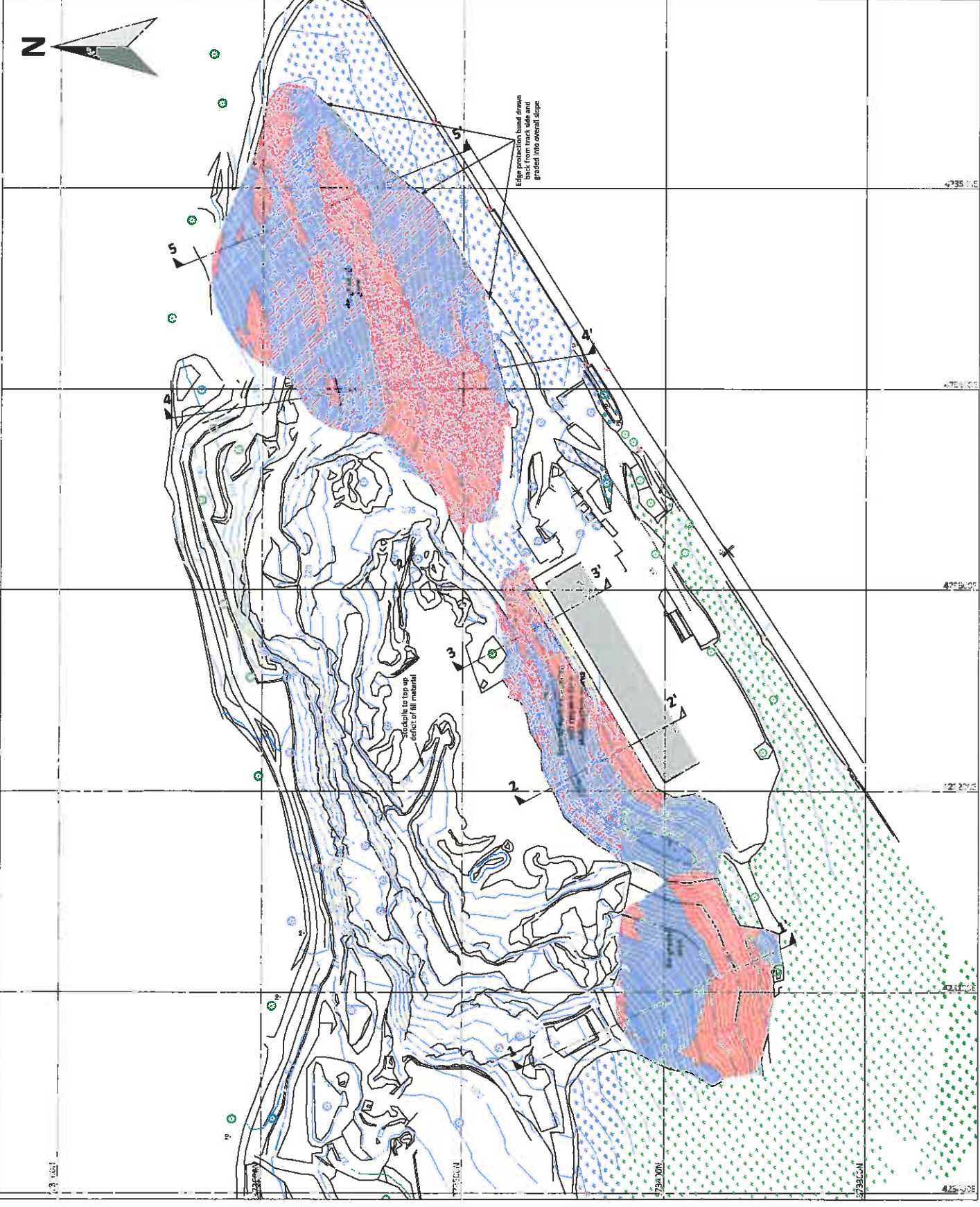
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PROPOSED RESTORATION
DESIGN

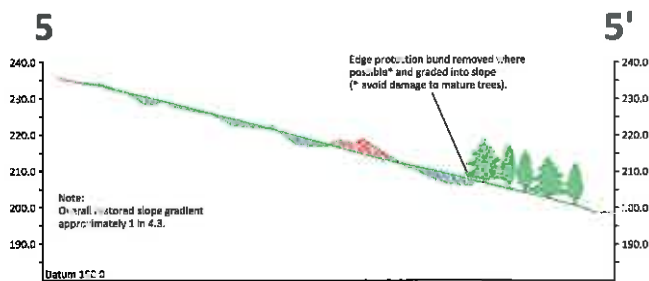
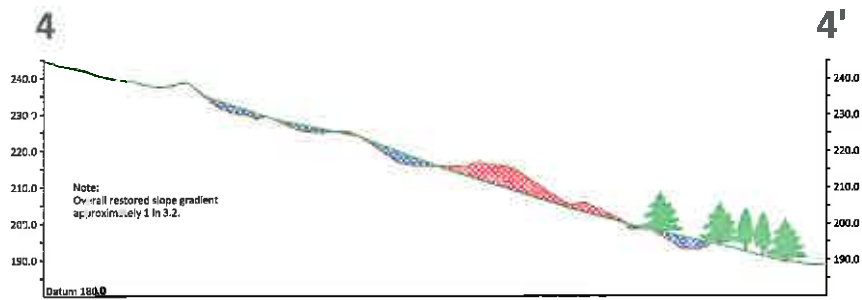
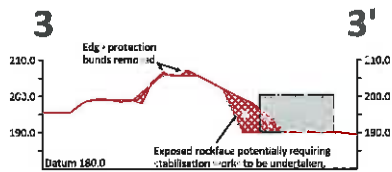
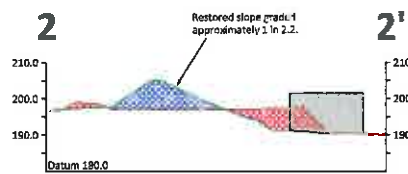
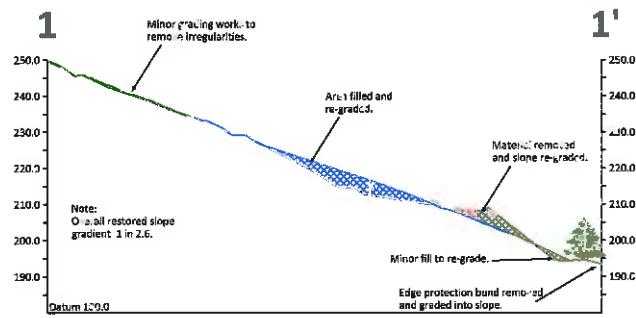
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LEGEND

- Existing Site Profile
- Proposed Restoration Design
- Building
- Area Of Cut
- Area Of Fill

Please refer to Plan Ref. JA-175-001-005.1 for cross section locations.

DRAWN	RB	CHECKED	DH
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SITE

**BACKDALE
QUARRY**



PLAN







**PROPOSED RESTORATION
CROSS SECTIONS**



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Scale: 1:1250 @ A2 25 October 2015
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LEGEND

-  Cross-section Location
-  Topographic Contour (5m Interval)
-  Proposed Building
-  Retained Area
-  Area of Cut
-  Area of Fill

NOTES:
 Based on the survey supplied by Cassis Studio dated May 2012
 Please refer to Plan Ref. JA-175-001-006.2 for cross sections.

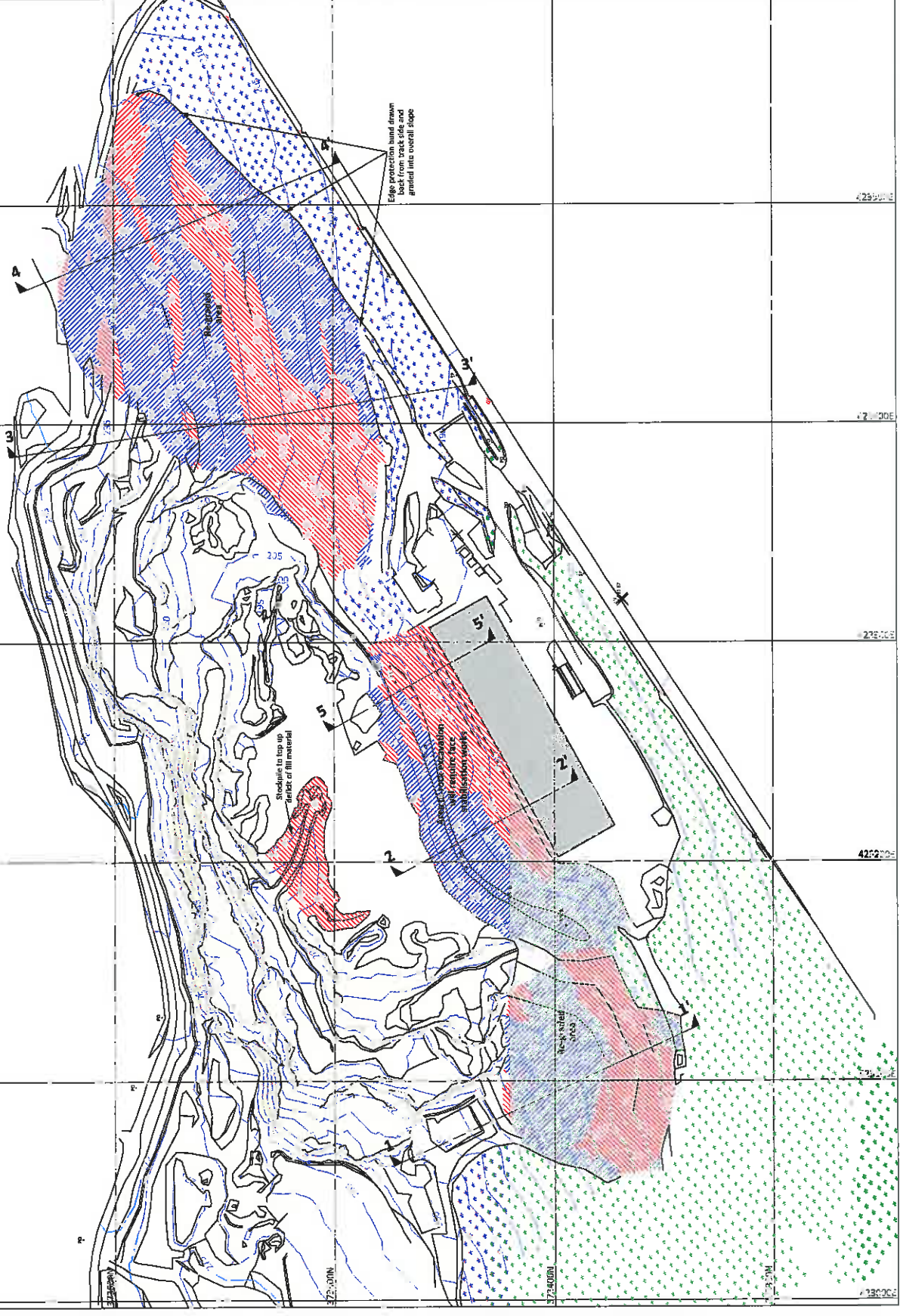
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 SITE
BACKDALE QUARRY

PLAN
PROPOSED RESTORATION DESIGN - PHASE 2

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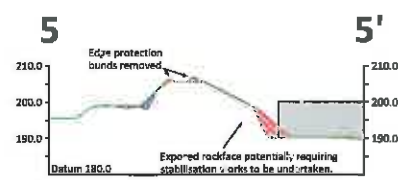
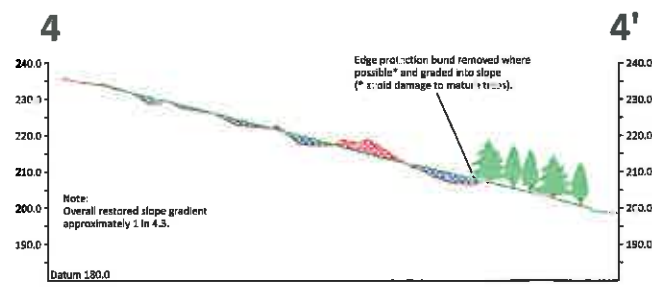
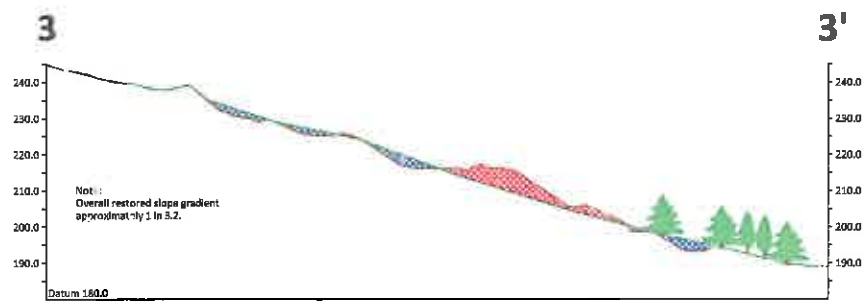
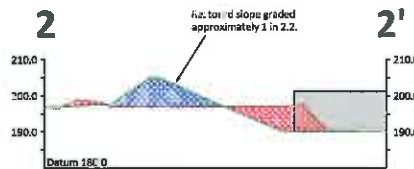
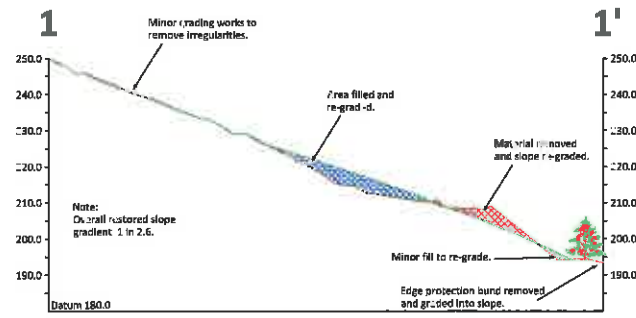
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LEGEND

- Existing Site Profile
- Proposed Restoration Design
- Proposed Building
- Area Of Cut
- Area Of Fill

Please refer to Plan Ref. JA-175-001-006.1 for cross section locations.

DRAWN	RB	CHECKED	DH
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SITE
BACKDALE QUARRY

PLAN
PROPOSED RESTORATION CROSS SECTIONS

Scale: 1:1250 @ A2 20 November 2015
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