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**LYONS CMC
COAL MINING & GEOTECHNICAL
CONSULTANCY**

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Date: 6th January 2026
Your ref: (S72 8DP).
My Ref: CMRA 00443

FOR THE ATTENTION OF DAN WINTER

Dear Sir,

**COAL MINING RISK ASSESSMENT (CMRA)- FOR PROPOSED RESIDENTIAL
DEVELOPMENT AT BELL YARD, WELLS STREET, CUDWORTH, BARNSELY S72 8DP**

Introduction

Planning permission is being considered for new residential development (comprising of a pair of semi-detached dwellings and one detached dwelling; 5 dwellings in total) at the above named site, the location of which can be seen on the attached plan No. 00443/A in Appendix 1. The site is centred around national grid reference 438650E / 408663N. A Coal Mining Risk Assessment is required for the proposals in order to competently address the mining legacy for the site and determine what impact this may have had upon the land. The assessment is intended to be included as a supporting document to a future planning application to Barnsley MBC.

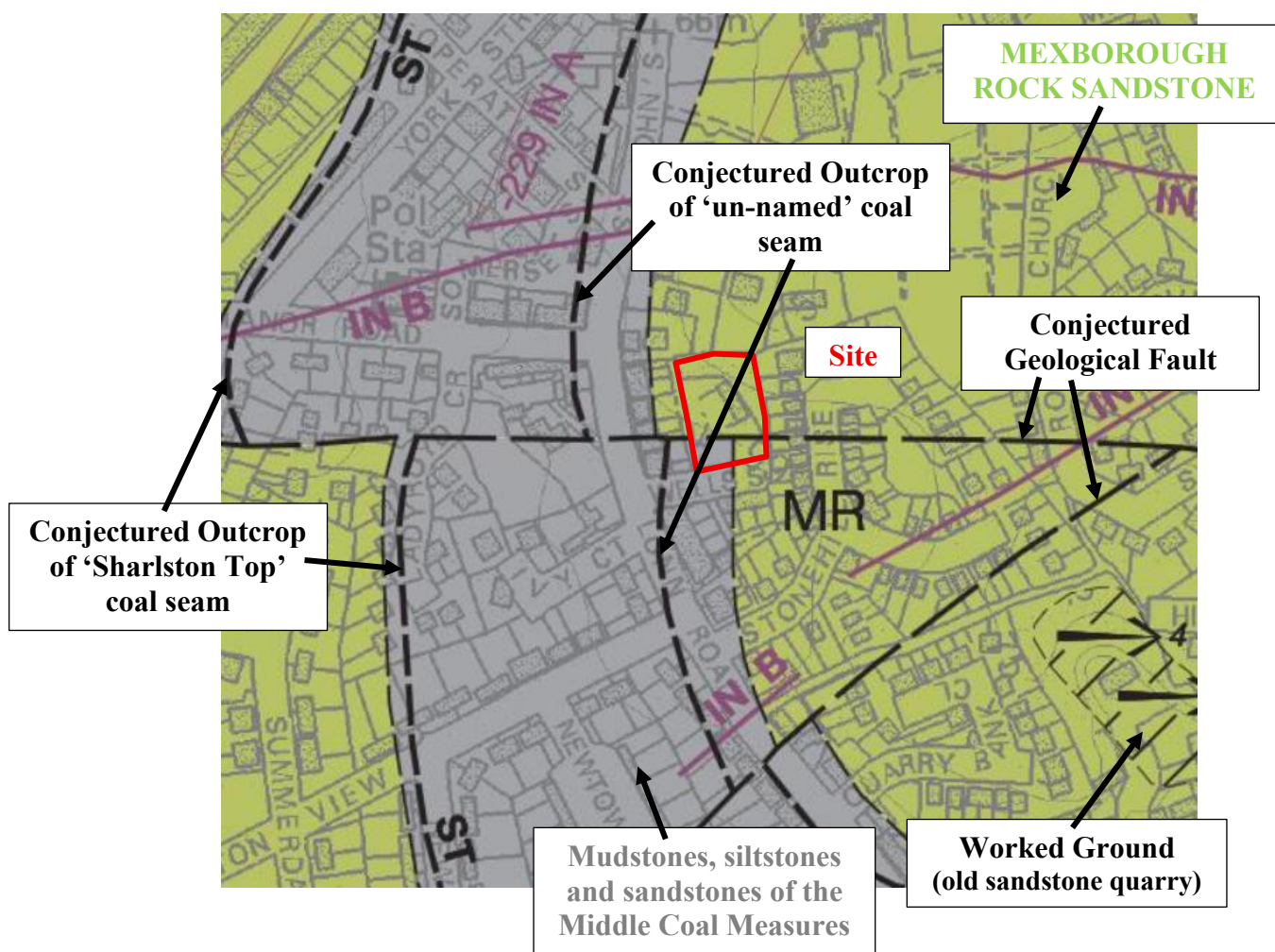
Scope of the Coal Mining Risk Assessment

The purpose of this Coal Mining Risk Assessment Report is to:

- Present a desk-based review of all available information on the coal mining issues which are relevant to the application site;
- Use that information to identify and assess the risks to the proposed development from coal mining legacy, including the cumulative impact of issues;
- Set out appropriate mitigation measures to address the coal mining legacy issues affecting the site, including any further works that may be necessary; and
- Demonstrate to the Local Planning Authority that the application site is, or can be made, safe and stable to meet the requirements of national planning policy with regard to development on unstable land.
- The report will not consider other geotechnical or geo-environmental issues.

Surface Geology (inc. any superficial deposits)

Records indicate the site to be located on mudstones, siltstones and predominantly the Mexborough Rock Sandstone of the Middle Coal Measure series from the Carboniferous formation. No superficial deposits are indicated in the vicinity of the site itself. The strata is shown to dip to the east at a rate of around 1 in 14 (4°) in this vicinity. A summary of the surface geology is illustrated on the image below which is an extract from the BGS Sheet SE30NE 2005 Edition:



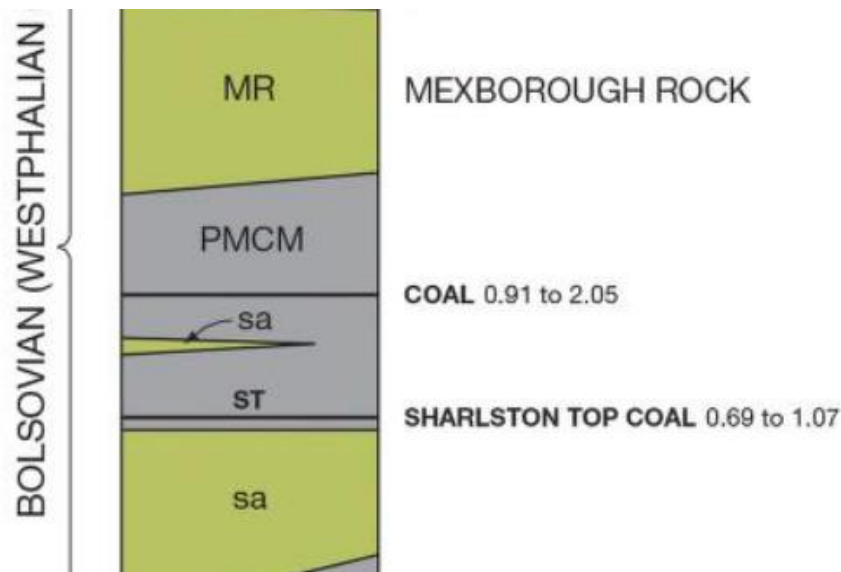
Fault Planes or Fissures

Geological faulting is conjectured to pass through the site from east to west as indicated above (*it should be noted that as this is based on 'conjecture' the actual position may differ, in some case quite significantly*). Although no fissuring of sandstone bedrock is known in this vicinity, there will be some potential for such natural features of which there are no records that may have been 'opened out' to some degree by the past deep coal mining in the area.

Coal Seam Outcrops

As outlined on the extract image above, the ‘Sharlston Top’ coal seam (also known as the ‘Cudworth’ or ‘Royston’ coal seam) is conjectured to outcrop some 130m away to the west of the site on the southern side of the geological fault (215m away to the west on the northern side), which will therefore dip beneath the site to the east. Should the conjectured detail be accurate (and considering the outcrop position being circa 7m lower in elevation than the site) the Sharlston Top seam would be anticipated at around 16m deep at its shallowest beneath the site on the western boundary, if on the southern side of the geological fault; or at around 25m deep if on the northern side of the fault (*it should be noted that as this is based on ‘conjecture’ the actual position may differ, in some case quite significantly*). Local mining information for the area suggests a likely seam thickness of the Sharlston Top coal as up to around 1.0m; which is also reflected in the BGS details.

As also indicated above, an ‘un-named’ coal seam is conjectured to outcrop just to the west on the southern side of the fault and some 50m away to the west on the northern side of the fault. As illustrated on the BGS extract image below, the BGS details the thickness of this coal as ranging between 0.91m to 2.05m in thickness. This coal seam could be encountered within 2m of the surface on the southern side of the fault; and is anticipated at around 5m deep, or more, on the northern side of the fault (*it should be noted that as this is based on ‘conjecture’ the actual position may differ, in some case quite significantly*).



Made Ground

BGS records show no made ground beneath the site.

Opencast Coal Workings.

No past opencast coal operations are known within 250m of the site.

Underground Coal Workings - Deep

Deep coal mining (over 30m deep) has taken place in various coal seams beneath this site, all settlement from which will be long complete. As no coalfields now exist, the site should remain stable from the deep coal mining perspective for the foreseeable future.

Underground Coal Workings - Shallow

In terms of the anticipated 'un-named' coal seam that is conjectured at shallow depth beneath the site, no associated workings of this specific seam are known in this or the wider area as a whole. The shaft section information of the former Grimethorpe Colliery does not indicate any significant coal seam above the 'Cudworth' (Sharlston Top) seam, although this is some 2km away to the east of the site. As such, the risks of historic unrecorded workings of this coal are considered very low, which is also reflected in the fact that the Mining Remediation Authority do not show this seam as an area of 'probable shallow coal workings' according to their interactive viewer information.

Although no recorded workings are known in the Sharlston Top coal seam in this specific area, given its nature/thickness there will be some potential for historic unrecorded, possibly illicit, workings being present; which is reflected in the MRA's interactive viewer information. **Note informative(s) nos. 1 & 2 in appendix 2.** Any historic coal workings would likely to have been via pillar and stall methods which follow the seam from its outcrop position via mine adits for example, or indeed any unrecorded mine shafts. Given the conjectured detail however, it is felt likely that this seam will lie too deep beneath the site to be of an effect from a stability aspect of the proposed development be the coal worked or otherwise. However, as this is based on conjectured there is potential for the coal seam to be considerably shallower or deeper than anticipated. No other workable coal seam will lie beneath the Sharlston Top coal seam from a shallow mining instability aspect.

Mine Entries

No known mine entries are indicated within 250m of the site. Given the likely presence of shallow workable coal, a slight risk will be present for discovering old mine entries of which there are no records. Grey circular areas of fill material within natural ground would be an indication of an old back filled mine shaft for example.

Fugitive Gases

As far as we are aware, no evidence of coal mining related fugitive gas emissions are known within 250m of the site. Given the information there will be some associated risks given the relatively shallow coal combined with porous sandstone deposits above, which may be faulted and/or fissured (which would create migratory pathways) *note informative no. 3 in appendix 2*. These risks will increase if old mining voids are proved and more so if any old mine entries are discovered.

Coal Mining Risk Assessment (based on the above).

Coal Seam / Coal Mining Issue	Risk Assessment (VeryHigh/High/Moderate/Low/VeryLow)
Underground coal mining (at shallow depths)	Low
Mine entries (shafts and adits)	Low
Geological faulting	High
Geological fissures	Moderate
Fugitive gas emissions	Low to Moderate
Surface mining (opencast workings)	Low
Aggressive ground	High
Coal exposed / near foundation level	High

Defined Risk Assessment

(Where 'Underground Coal Mining' above = Very High to Moderate)

Extent of known underground mining in this/these shallow coal seam/s in the wider vicinity	(Extensive / Much / Occasional / None Known) Occasional (ST seam)
Intrusive Site Investigation of Coal Seam / Mines of Coal (given nature of proposals).	(Required / Recommended / Unnecessary)** Recommended
Advised critical depth beneath foundation/rock-head level to investigate considering geology and nature of the shallow coal/s*	15m

Key:

** The critical depth is calculated according to Ciria C758D guidance which details that for the land to be regarded as stable from any voided mineworkings, then a suitable section of competent rock cover above the workings should be proved that is equal or greater than ten times the 'in-tact' coal seam thickness. The advised critical depth to investigate to in this report takes into account the available geological information, any nearby mining records and may include a contingency for the seam to be of a slightly greater thickness than anticipated. Due care and diligence should be employed on-site to ensure that sound information is gathered of the in-tact seam thickness, particularly if concluding that old workings are outside the critical depth of affecting stability for the proposed development.*

*** Where :*

<i>Required</i>	<i>Intrusive Site Investigation required of the shallow coal/s and/or mine entries to determine any necessary stabilisation works for the given development.</i>
<i>Recommended</i>	<i>Intrusive Site investigation recommended – given a lower level of risk in relation to the nature of proposed development some proposals may reduce the risk to an acceptable level via suitable design considerations.</i>
<i>Unnecessary</i>	<i>Intrusive Site Investigation deemed unnecessary – given geological/mining information.</i>

Mining Remediation Authority

Prior written permission from The Mining Remediation Authority is required for intrusive activities which will disturb or enter any coal seams, coal mine workings or coal mine entries (shafts and adits). Further information on The Mining Remediation Authority's permissions process can be found at: www.coal.gov.uk/services/permissions/index.cfm

Information sources:

- *British Geological Survey Map Sheet SE30NE 2005 Edition*
- *British Geological Survey – Geology Of Britain Viewer*
- *Mining Remediation Authority Interactive Viewer and Mine Abandonment Plans*
- *Historical Mapping – old-maps.co.uk*

CONCLUSIONS

- 1) The site can be regarded as stable from the **Deep Coal Mining** perspective, and as no coal fields now remain this position should continue for the foreseeable future.
- 2) Given the **Shallow Mining** position combined with **geological** situation (conjectured geological fault through the site and coal seam possibly within 2m of the surface), it would be prudent that a limited intrusive site investigation is carried out to a) fully determine that the Sharlston Top coal seam is too deep to affect the proposals (*note informative(s) nos. 1 & 2 in appendix 2*); b) determine whether the geological fault does pass through the site; and c) determine the likely requirements in relation to shallow exposed coal (note conclusion no. 3 below). A series of three boreholes to 15m deep across the site from north to south would seem an appropriate approach in the outset; further holes may be deemed necessary depending on the findings at the time. A permit from the Mining Remediation Authority should be secured prior to such an investigation.

However, as the shallow mining risks are relatively low in this instance, it may be an acceptable approach, in the absence of any further intrusive investigation works, to adopt suitably designed foundation solution, such as thickened & strengthened strip or raft to span a 3m soft spot and cantilever 1.5m – to a structural engineers advice/design satisfaction. This could offer acceptable mitigation in relation to both the shallow mining and geological faulting risks. Any such proposals should seek the prior approval of both the local authority and Mining Remediation Authority.

- 3) Any exposed coal should be removed and blinded off using a suitable sulphur resistant grade concrete to mitigate from spontaneous combustion and chemical attack risks. Foundations should be sited on firm strata beneath any coal encountered.
- 4) A watching brief should be employed during future ground/foundation works for any signs of unrecorded mine entries. A site scrape to natural ground is the most effective procedure to check for such features, circular areas of grey fill within bedrock would be an indication. If suspected the Mining Remediation Authority (as owners) should be notified immediately for appropriate deliberations.
- 5) A watching brief should be employed during future ground/foundation works for any signs of any opened-out fissures within sandstone bedrock. If encountered then foundations may need to be strengthened/redesigned as necessary and prior ground remediation/treatment may be required in sever instances.

- 6) In terms of the fugitive mine gas risks from the potential shallow coal, and considering the overlying sandstone deposits (which may be faulted/fissured) it would be prudent, in the absence of any further gas monitoring (*note informative no. 3 in appendix 2*), to include gas protection measures (such as a methane membrane for example) within future foundation designs; which could also protect from radon issues if required. All usual safety precautions should be employed regarding possible fugitive gases in any deep excavation work taking place.
- 7) If no evidence of any shallow mining or geological faulting/fissuring are determined to be of effect for the development then usual foundation solutions can be considered in line with the appointed Building Control departments advice/requirements.

Note: should there be any uncertainty of actual conditions during future ground works Lyons CMC or indeed the Mining Remediation Authority themselves can be further consulted for on site assessment if necessary.

A suitably qualified and competent professional should be employed to use this report to determine the conditions on site, and ultimately advise on what action, if any, is necessary to safeguard the development. It should be noted that any future works to investigate any coal seam, mines of coal or associated mine entries will need the prior consent of the Mining Remediation Authority via their permitting procedure.

I trust that this satisfies your requirements, however please do not hesitate to contact myself at any time for further clarification or advice.

Yours Sincerely,

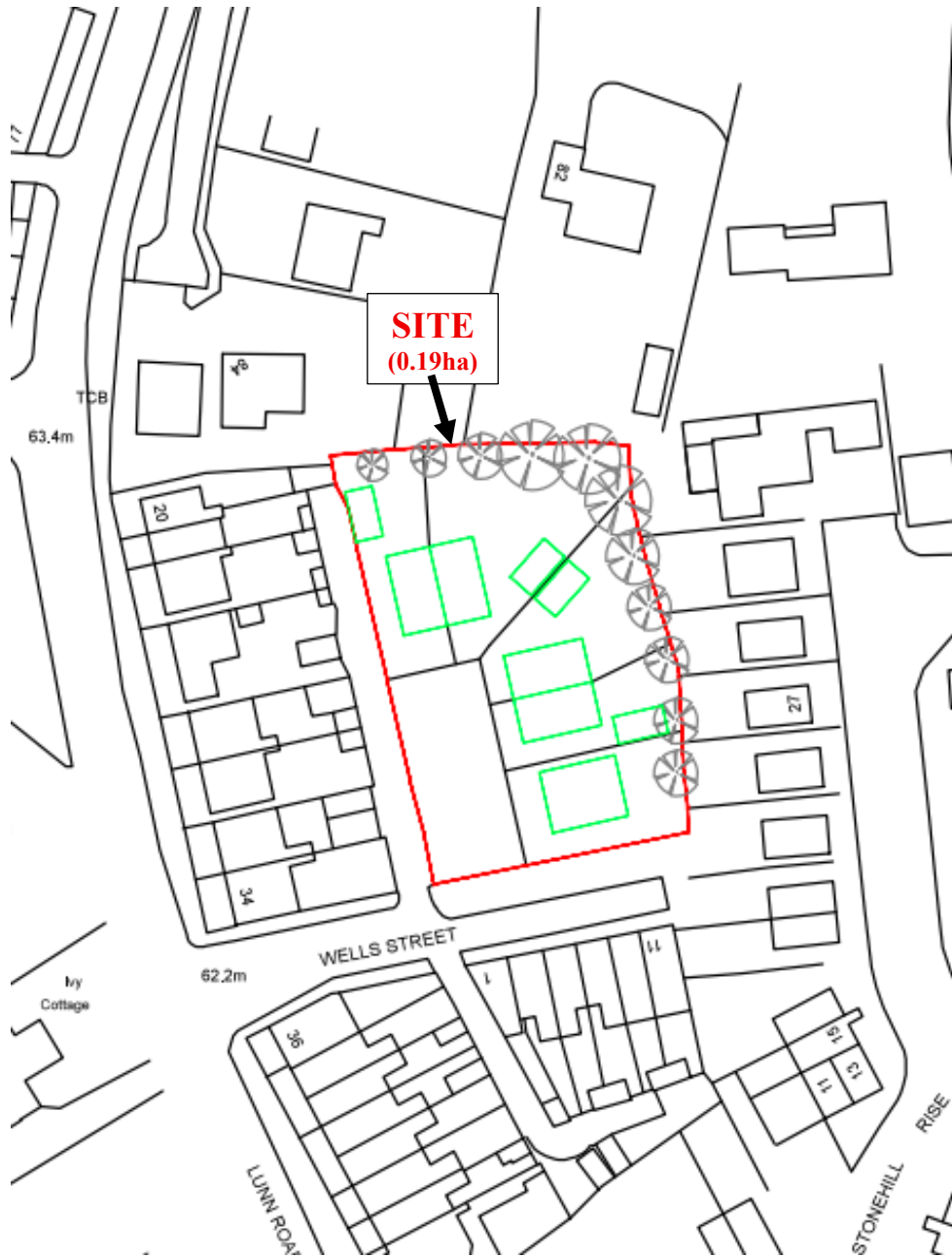
M Lyons

M. Lyons
Consultant Mining Engineer
BSc CSci MIMMM

Enc.

THIS COAL MINING RISK ASSESSMENT IS BASED ON AND LIMITED TO THE INFORMATION IN MY RECORD AT THE TIME THE ENQUIRY IS ANSWERED. It is based on my professional opinion in line with the guidelines set out in CIRIA C758D "Abandoned mine workings manual." The opinion may be overruled by Government Authorities decisions based on other information not in my record. If a site investigation is recommended then this risk assessment will be superseded by the factual findings of that investigation. All site investigation work should be carried out by a competent professional from which independent conclusions and recommendations for safe development should be provided. It should be noted that: no operation should be undertaken that intersects, disturbs or interferes with any coal or mines of coal without the permission of the Coal Authority. The investigation of coal seams/former mines of coal may have the potential to generate and/or displace underground gases; these risks both under and adjacent the site should be fully considered in any proposals both for personnel and public safety. Copyright in this CMRA belongs to M.A.Lyons. All rights are reserved and unauthorised use is prohibited. Copyright is not transferred to external parties by possession of this report, however, those for whom the report is compiled have the right to use it. If any unauthorised third party comes into possession of this report, they rely upon it entirely at their own risk and the author does not owe them any Duty of Care or Skill.

Appendix 1 – Location Plan No. 00443/A
(Not To Scale)
Site centred at NGR: 438650E / 408663N



Appendix 2 – Informative(s)

- 1) The relatively recently revised CIRIA document titled ‘Abandoned Mine Workings Manual’, which replaced Special Publication 32 (1984), indicates that the use of empirical or ‘rule of thumb’ guides, as the design basis for treatment depth, has been successfully observed for many years for a wide range of abandoned mine workings and overlying rock/soil strata scenarios. As such, the guidance indicates that further design/ground stabilisation considerations will be required if there is less than 10 times the aggregate measured height of mine workings as competent rock cover above the workings.
- 2) For information, should the grouting of any mine workings be required, a 10:1 PFA/cement mix or similar would need to be injected into the workings and any other disturbed strata above it under pressure on an OS coordinated treatment grid approved by the Coal Authority (and Building Control/third-party Warranty provider as required). Specific proposals to treat any mine workings would need to be submitted in the form of a standalone ‘Specification’, with a separate permit to treat being obtained from the Coal Authority. The method of consolidation is dependent on the nature of the bedrock strata and the underground mining conditions encountered, although fissile strata, such as shales and mudstone deposits, do permit mining voids to migrate upwards to quite high levels. All grouting works would need to be supervised by a competent engineer, with a final validation report being produced to confirm what works were undertaken and whether they were successful or not.
- 3) Ground gas monitoring can be undertaken to confirm or discount the presence of an elevated gassing regime within the underlying soils. Elevated concentrations of mine gases (e.g. CO₂, CH₄) may be present within the coal seams, voids in or above any shallow mine workings, areas of made ground/opencast backfill, and in any permeable bedrock strata (and any organic rich surficial soils). Mine entries and/or geological fault lines/fissured bedrock will also provide pathways for gas to migrate. The period of monitoring to be undertaken should be broadly completed in accordance with current guidance [BS8485]. Piezometers would need to be installed (during drilling works for example) to facilitate this.