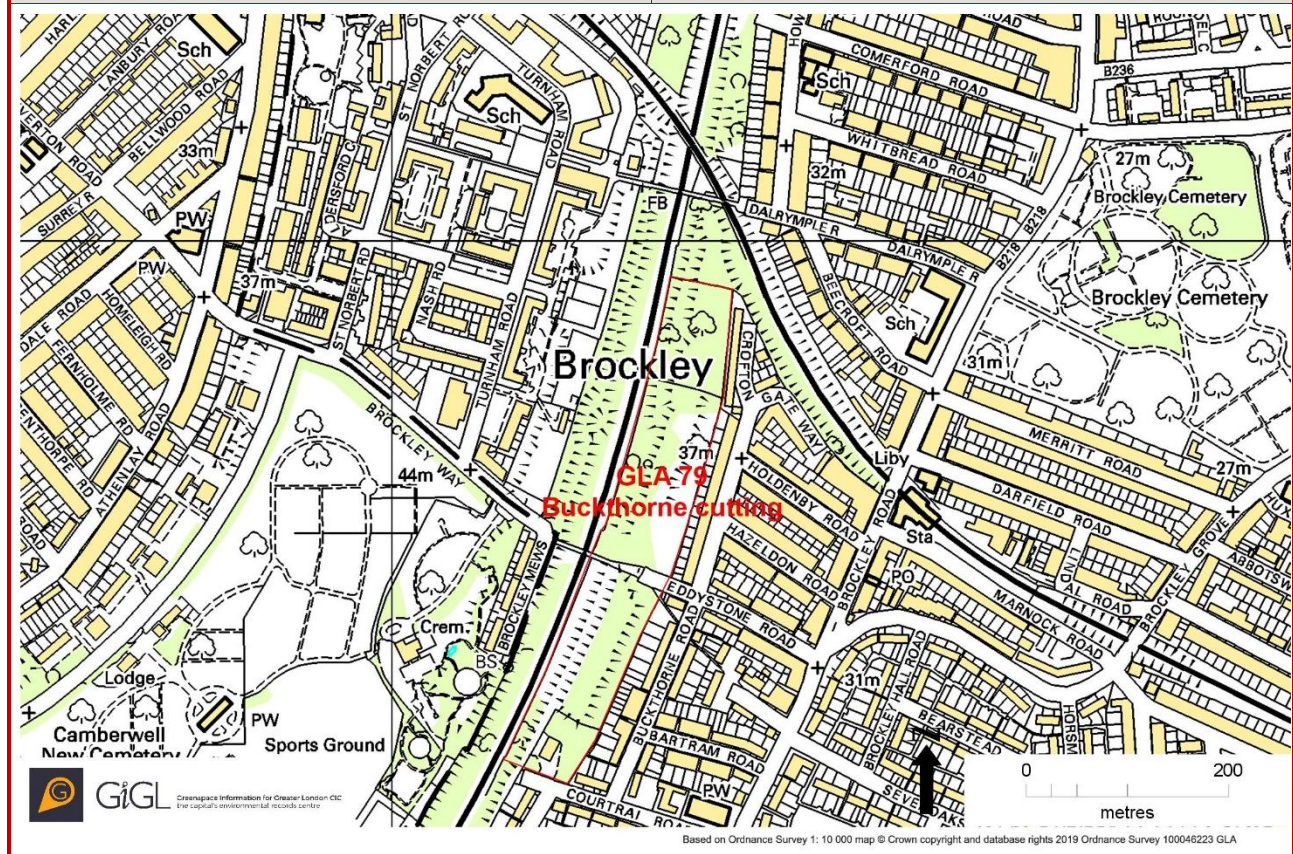


GLA 79 Buckthorne Cutting

Grid Reference: TQ 362 746 (site access)	Site Type: Visible <i>in situ</i> septarian nodules in London Clay revealed whilst conserving
Site Area (hectares): 3.8	Current use: railway cutting; north section is an LNR
Site ownership: Network Rail (north half), property developer AA Homes and Housing (south half). Managed by Buckthorne Cutting Nature Reserve.	Borough: London Borough of Lewisham
Field surveyors: Diana Clements, Laurie Baker	Date: December 2020
Current geological designation: Recommended by Partnership as a LIGS	Other designation: LNR; Metropolitan SINC (Forest Hill to New Cross Cutting)
Site Map	OS Topography © Crown Copyright



Stratigraphy and Rock Types

Time Unit: Eocene	Rock Unit: London Clay Formation, Thames Group
Rock Type: Clay, silt, sand	Details: Fine, silty clay/ clayey silt, clay with occasional horizons of 'clay balls' known as septarian nodules or calcareous concretions.

Site Description

This section of the New Cross to Brighton line was opened in 1839 as the London and Croydon Railway. At Eddystone Road the railway is in a deep cutting into the London Clay. Further north at the New Cross Gate (Brockley) Nature Reserve there was a famous landslide in 1841, two years after the railway opened (SGI 17). At this point the railway follows the same route as the earlier Croydon Canal of which there is an 1805 description of a line of septarian nodules. These were rediscovered whilst cutting a path through the recently-designated Buckthorne Cutting Nature Reserve, and also observed in the cutting on the south side of Eddystone Road. Permanently exposed septaria in London are rare and the site provides opportunities for research and education both of the septaria and the London Clay itself.

The ground elevation at the top of the cutting is c.40 m OD and was cut exactly beneath the old canal cutting for which we have a description. The canal cutting itself was 20 feet (6 m) below the top. The railway was dug down a further 50 feet (c.15 m) so that the cutting is 70 feet (c.21 m) at this point. We hope that more septaria can be exposed along at least one horizontal line. On the south side of the bridge fragments of septaria are evident along the horizontal path and were marked by white poles when visited. The *in situ*

septaria must be just above the path at those locations and excavation for them will be carried out. Reeds at the top of the embankment are rather enigmatic and do not seem to relate to a spring line, although small gullies in the hillside may prove to come from a line of septaria (see location map of septaria below).

Assessment of Site Value

Geodiversity topic: lithostratigraphy, mineralogy

Access and Safety

Aspect	Description
Safety of access	The locked gate to the Nature Reserve is situated off Eddystone Road footbridge, Eddystone Road, Brockley, London SE4 2DB
Safety of exposure	Slippage along a steep railway embankment; potential development on south half of the cutting; exposures become overgrown
Permission to visit	Contact the Buckthorne Cutting Nature Reserve, www.fourthreserve.org.uk for access. Open days are held periodically.
Current condition	Most occurrences are not <i>in situ</i> but some are and further excavation in their proximity will increase exposure, particularly adjacent to the path on the south side of the cutting.
Current conflicting activities	Potential development on the south side
Restricting conditions	Vegetation, slope stability, particularly if a section of London Clay was to be cut.
Nature of exposure	Mostly uncovered fragments while creating a path and platform through the north half of the cutting; fallen fragments along the older path on the south side.

Culture, Heritage & Economic

Aspect	Description	Rating
Historic, archaeological & literary associations	Former site of Croydon Canal: description of the septaria in 1805 by David Hughson who wrote of the soil along the canal route, describing shells and clay nodules along the Buckthorne Cutting in Brockley Green (see text copied below)	9
Aesthetic landscape	Good view of frequent trains passing on the railway below. Apart from the noise of the trains, a quiet haven in an urban environment, well maintained.	5
History of Earth Sciences	Geological descriptions of the floor of the cutting closer to New Cross and of the former Croydon Canal cutting (see above)	9
Economic geology	Bricks were made locally from the London Clay dug from the cutting. There are descriptions and maps showing sites and over-burnt bricks are included in local garden walls	6

GeoScientific Merit

Geomorphology		
Sedimentology	Septarian nodules within London Clay – a rare permanent exposure in London	3-4
Palaeontology	None found so far	0
Igneous/mineral/ Metamorphic Geology	NA	
Structural Geology		
Lithostratigraphy	Old descriptions along the canal/railway cutting	3-4
Potential use	Geological interest within existing Nature Reserve	
Fragility	Slippage along a steep railway embankment; potential development on south half of the cutting; exposures become overgrown	

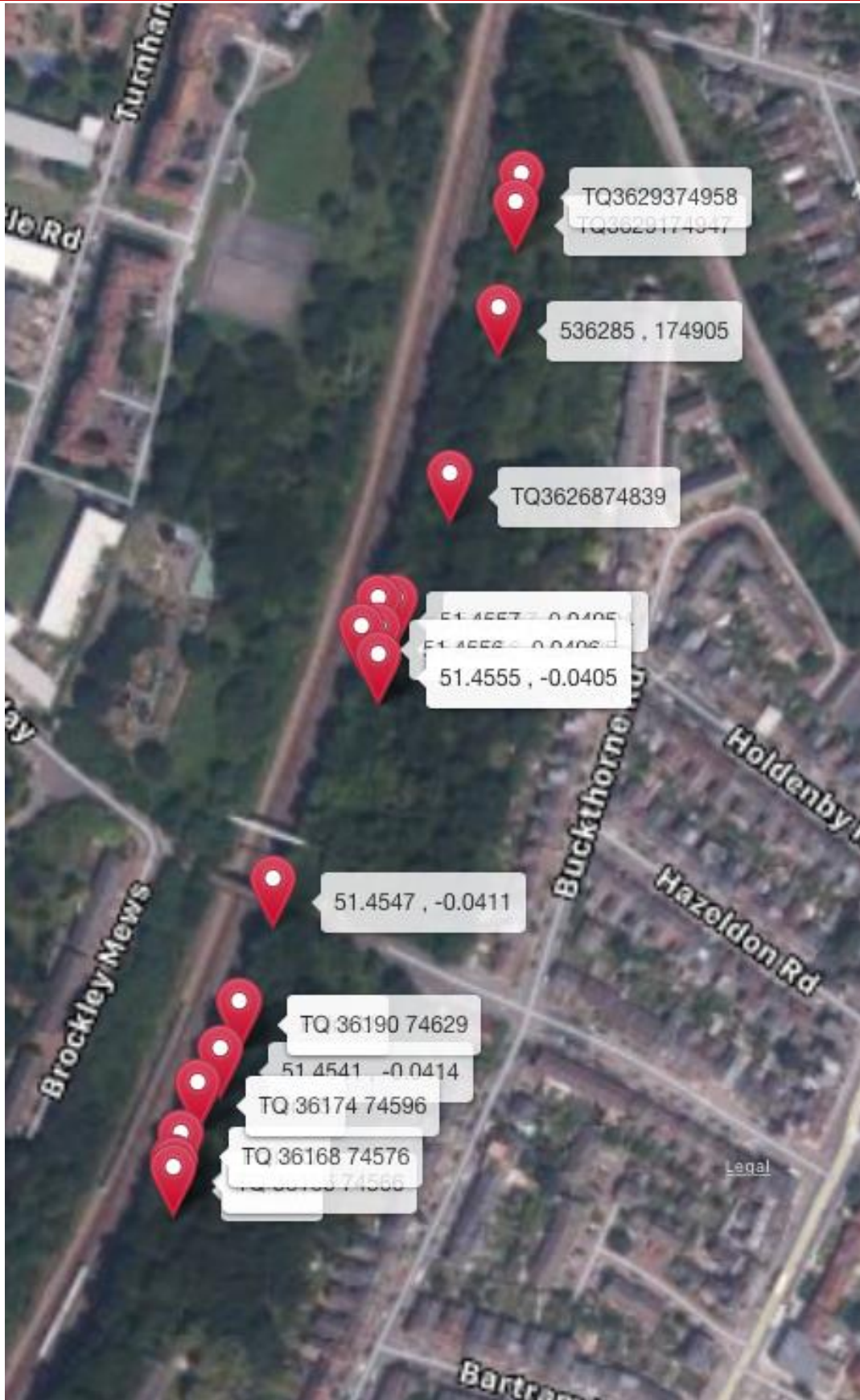
Current Site Value

Community	Nature reserve in urban environment	6
Education	Potential for leaflet explaining the geology and extending to north/south along the railway exposing older lithology	6

Geodiversity value		
Recommended by Partnership as a LIGS for the Septarian nodules (more excavation is required with photographs).		3-4
GLA 79 Buckthorne Cutting		
		
People are standing at the entrance gate in Eddystone Road	The white poles mark the row of septaria fragments on the south side of the cutting	
		
Exposure of <i>in situ</i> septaria beside the path	A loose septarian nodule	London Clay exposure: 'blue' (deep), beside pale (surface weathered)
<p>1805 quotation re-septaria from “<i>London; being an accurate history and description of the British Metropolis and its Neighbourhood, to Thirty Miles Extent, from an actual perambulation</i>”, David Hughson (pen name of Edward Pugh), LL.D. Vol 2 1805. Link to whole book: https://tinyurl.com/c4wb7mt8</p> <p>On page 81-82: <i>The ground begins to rise up towards Brockley Green, and the first thing observable is the newly cut banks, is a very curious stratum, of a yard thick, or more, consisting entirely of small bivalve shells, and long slender screw shells:...In ascending the hill, it appears that a stratum of reddish coarse sand, of several feet thick, crops out above these shells; then a clay of considerable thickness is seen and then a slight spring of mineral water, very highly charged with iron, as appears by its ochre deposit; this was apprehended to proceed from a layer of ludus helmantii;...there is a thick stratum of yellow loamy clay, or brick earth. This thick stratum of yellow clay is succeeded by two layers, one about a yard above the other, of large and curious ludus helmantii, or clay ball, very compact, containing but few septana, and those mostly close filled with wax-coloured spar; but, on the sides of some of these sparry joints, but partly filled, pointed and small crystals were so thickly and uniformly set all over the surface, as to give the appearance of a rich piece of velvet.</i></p> <p>This 1805 description is along the old Croydon Canal cutting that pre-dated the railway cutting, which utilised the same cutting at this point, although at a higher level.</p> <p>The description relates to Brockley Green, which would have been right here on Buckthorne Road SE4 2DG - grid reference TQ 36366 74424. A little further north, the Lambeth Group is shown on the BGS map at the base of the cutting and in the quote above, the Woolwich Shell bed (top Lambeth Group in this area) is described by its contained shells. Above that the 'stratum of reddish coarse sand' probably relates to the basal Thames Group, Harwich Formation, beneath the London Clay. 'Reddish coarse sand' is not typical of</p>		

the Blackheath beds but that does not rule it out.

We now call the 'ludus helmantii' septarian nodules and this is the main focus for this site.



Location map of finds either side of Eddystone Road.
Note that the Buckthorne Cutting Nature Reserve is restricted to the north side of Eddystone Road.