

## Raising standards to protect homeowners

# NHBC Requirements for Soil Capping Systems

Matthew Lennard  
Senior Environmental Engineer

NHBC – British Sugar Topsoil Seminar January 2019

# Contents

- Who is NHBC?
- NHBC Conditions
- Purpose of cover systems
- NHBC requirements
- Further information



# Who is NHBC?

- Leading Warranty and Building Control provider
- Raising standards in the new house building industry
- Provide consumer protection for new homebuyers



# Who is NHBC? Buildmark Warranty

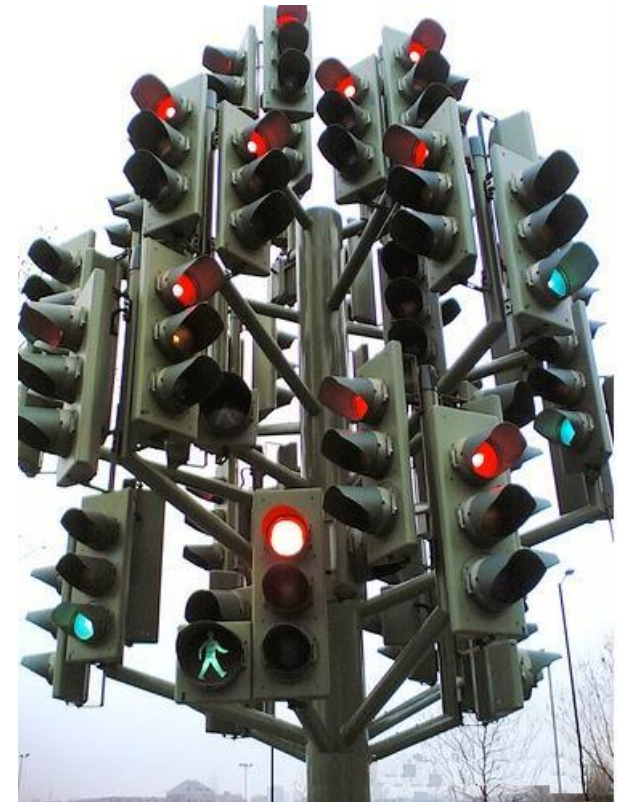
Contaminated Land Cover included under section 5 of warranty

- **Valid Claims** - *If substance/s within the site curtilage result, or could reasonably be expected to result in a Statutory Notice being served.*
- **Financial limits** - *The maximum claim relating to a Home under Section 5 is the Original **Purchase Price**, up to a maximum of:*
  - ***£1 million** for a newly built Home; or*
  - ***£500,000** for a converted Home*



# NHBC Conditions

- The CML initiative (“Revised Finalling Procedures”)
- Mandatory Conditions = no warranty = no mortgage = no sale
- Mandatory = Verification Reports
- NHBC Standards Chapters 4.1 and 10.2 (Formerly 9.2)



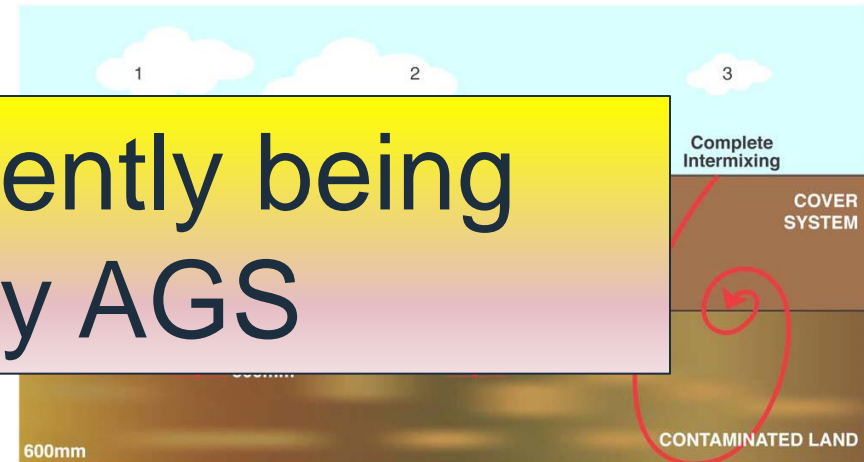
# NHBC requirements – Cover systems

- Check that capping is appropriate
- Design it
- Install it
- Verify it



# Cover systems -Is it appropriate?

- BRE 465 Cover systems for land regeneration
- Mitigate marginal conditions
- No
- Wid
- Not suitable everywhere (shallow water table)
- Needs design and verification



**BRE 465 - Currently being reviewed by AGS**



# Cover systems - Design it

- Think about final site levels – is there space for capping?
- BRE 465 design chart / spreadsheet
- It's not just 600mm
- Pick sensible “contamination of cover” values (are they achievable?)
- The shaded zone...

# Cover systems -Install it

- The easy bit (?)
- Do what you said you'd do (or, what was agreed)
- But if plans change, let us (and LA) know, in advance.
- Look out for unsuitable materials, odours, colours etc...  
would you want it in your garden?
- Remember, we'll be asking questions if we're not happy – make sure those doing the work do it right

# Cover systems - Verify it

1. Soil quality (topsoil and subsoil)
2. Soil thickness
3. Chain of custody
4. Reporting



# Verify it – 1. Soil quality testing requirements

- Need to ensure materials are suitable for use
- Chemical testing requirements depends on the source of the capping materials
  - Greenfield, agricultural land or forestry land
  - Other development sites
  - Commercial providers including manufactured soils
  - Unknown?

# Verify it – 1. Soil quality testing requirements

- If sourced from a site or sites where no sources of contamination has been identified:
  - in desk study/walkover
  - site investigation
  - and appropriate documentation is available

Then NHBC would not normally require any additional testing above BS:3882:2015.



# Verify it – 1. Soil quality testing requirements

- Examples of source sites where additional chemical testing may not be required include:
  - Agricultural land
  - forestry land
  - or manufactured soils from green wastes where good quality controls are in place.



# Verify it – 1. Soil quality testing requirements

## Agricultural, Greenfield or Forestry

- A minimum of a desk study and a site walkover is required to confirm that no historical or visible evidence of contamination.
- If no potential source of contamination is identified then no additional testing above BS:3882:2015 is required.
- Where a potential source of contamination is identified then chemical testing required.

# Verify it – 1. Soil quality testing requirements

## Commercial Providers (inc manufactured soils)

- Copy of suppliers chemical test certificate required.
- Certificate should be current and representative of the material actually being used on site.
- The frequency of testing should be linked to the former use of the source site/ potential for contamination
- Where good controls are in place then additional testing may not be required.

# Verify it – 1. Soil quality

## Unknown source or contamination suspected

- If the source is unknown or from a site where contamination is suspected then sufficient testing required to confirm suitable for use.
- The sampling frequency will depend on a number of factors including the number of plots being constructed and the source of the capping materials

# Verify it – 1. Soil quality

- NHBC consider good practice would be for the following suggested sampling frequency of each material:

No of Plots	Nominal sampling frequency	Suggested min No of tests per site of each capping material
1-5	1 test per plot	3
5-10	1 test per 2 plots	5
10-20	1 test per 2 plots	5
20-30	1 test per 3 plots	7
30-40	1 test per 4 plots	10
Over 40 plots	1 test per 4 plots	10



# Verify it – 1. Soil quality testing requirements

- Not just BS3882:2015 plant nutrients, human health contaminants should be considered depending on source.
- Chemical testing requirements should be discussed with a suitably qualified person and agreed with NHBC (and regulators)
- No simple answer – it depends on the source and the available documentation.

## Verify it – 2. Soil thickness

- The Inspection regime for capping thickness will depend on the number of plots being built

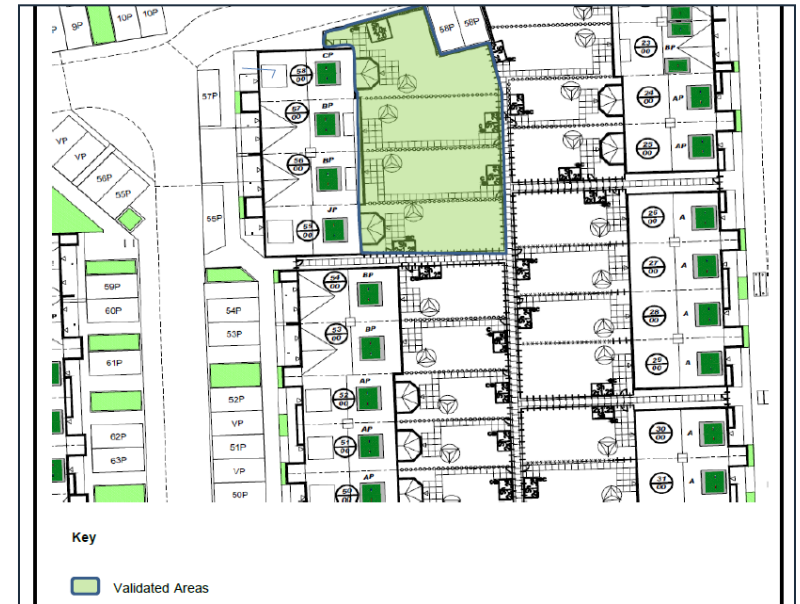
No of Plots	Depth Inspection
< 5	Each plot
5 to 20	1 in 2
20-30	1 in 3
>30	1 in 4

## Verify it – 3. Chain of custody

- Important if materials verified off-site in advance
- Haulage delivery notes may be acceptable, but the more info the better (A selection would be acceptable)
- Can you confirm the certificate relates to the material imported to site?
- A visual inspection of soil on delivery essential (does soil visually compare with that described on suppliers test report?)

# Verify it – 4. Reporting

- To include:
  - Plot numbers
  - Confirmation of depth
  - Details of plots actually proven
  - Photos of depth check holes
  - Chemical test data
  - Chain of custody
  - Site plan showing sample and depth check locations
  - Report





# Verify it – 4. Reporting

- What causes problems
  - Sampling ratio
  - Wrong analysis
  - Testing out of date??
  - Poor photos
  - Exceeding agreed concentration
  - Wrong depths, missing members
  - Getting info to us late in the day

BS3682:2007

**Chemtest**  
The right chemistry to deliver results

Depot Road  
Newmarket  
Suffolk  
CB8 9AL  
Tel: 01638 606070

Compiled From: Test Report  
Sample Source: [Redacted]  
Client: [Redacted]

Parameter	Units	Multipurpose Range		Result	Compliant with Multipurpose Range? (Y/N)	Compliant with Specific Purpose Range? (Y/N)		
		Acid	Low F			Calc		
Texture								
Clay Content	%	5-35		12	Yes			
Silt Content	%	0-65		24	Yes			
Sand Content	%	30-65		64	Yes			
Soil Texture Class				Sandy Loam				
Soil Organic Matter Content	Clay %	5-20%	20-35%					
Organic matter to BS1377	%	3.0-20	5.0-20	3.4	Yes			
Stone Content								
> 2mm	%	0-30		29	Yes			
> 20mm	%	0-10		0	Yes			
> 50mm	%	0		0	Yes			
Soil pH value		5.5-8.5		7.6	Yes	No	Yes	Yes
Carbonate	%			<0.1	N/A	N/A	N/A	No
Electrical Conductivity	$\mu\text{S cm}^{-1}$	If >2800 do ESP		2200	Yes			
Available Nutrient Content								
Nitrogen (total)	%	≥0.15		0.12	No	No	No	No
Phosphorus (available)	$\text{mg l}^{-1}$	16-100		92	Yes	Yes	No	Yes
Potassium (available)	$\text{mg l}^{-1}$	121-900		140	Yes	Yes	No	Yes
Magnesium (available)	$\text{mg l}^{-1}$	51-600		60	Yes	Yes	Yes	Yes
Carbon:nitrogen ratio	C/N	<20/1		19 / 1	Yes			
Exchangeable Sodium								
Calcium (available)	$\text{mg l}^{-1}$	<15		0.44	Yes			
Sodium (available)	$\text{mg l}^{-1}$			4200	N/A	N/A	N/A	N/A
Phytotoxic Contaminants	pH	58.0	6.0-7.0	>7.0				
Zinc (Nitric Acid Extract)	$\text{mg kg}^{-1}$	<200	<200	<300	92	Yes		
Copper (Nitric Acid Extract)	$\text{mg kg}^{-1}$	<100	<135	<200	32	Yes		
Nickel (Nitric Acid Extract)	$\text{mg kg}^{-1}$	<60	<75	<110	16	Yes		
Visible Contaminants								
> 2mm	%	<0.5		0	Yes			
Plastics	%	<0.25		0	Yes			
Man-made Sharps	%	zero in 1kg		0	Yes			

Full interpretation and recommendation for use and/or the improvement of this soil is available upon request



# Some typical verification photos



# Garden areas

Also need to consider!

- Getting more and more contacts due to poor quality of gardens:
  - waterlogging
  - over compacted soils
  - poor growing medium.





# Garden areas

Clauses **10.2.8** & **10.2.9** have been revised.

To help reduce the risk of waterlogging in garden areas, action, such as rotavating, is recommended to restore drainage characteristics of soil which has been compacted.

In situations where there is heavy compaction, such as under temporary roads, more heavy duty equipment may be required to loosen the ground or remove material.



# Further information

- NHBC Standards Technical Extra Issue 08 November 2012 [www.nhbc.co.uk/Builders/ProductsandServices/TechnicalExtra/](http://www.nhbc.co.uk/Builders/ProductsandServices/TechnicalExtra/)
- BS 3882: 2015 – Topsoil – Specification for Topsoil.
- BS 8601: 2013 – Specification for subsoil and requirements for use.
- Or call us –0344 633 1000, ask for “Technical Services”

# Thank you for listening!

## Questions?



Matthew Lennard

[MLennard@nhbc.co.uk](mailto:MLennard@nhbc.co.uk)

01529 421080



## Raising standards to protect homeowners