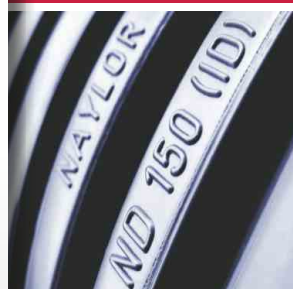
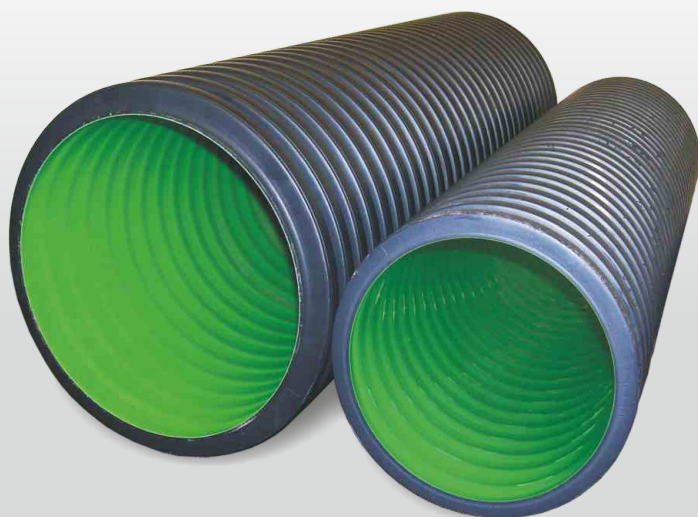


# NAYLOR DRAINAGE

*Made in the UK*  
Excellent Construction Products

## Metro Drain & N-Drain



## DN100-600 Twinwall Drainage Systems

email: [sales@naylor.co.uk](mailto:sales@naylor.co.uk) web: [www.naylor.co.uk](http://www.naylor.co.uk)



Winners -  
Growing Business



The MANUFACTURING  
EXCELLENCE Awards  
Winner - Best SME

# NaylorMetroDrain

Premium Drainage System



A new generation of HDPE high performance twin-wall pipes designed for use with all non-pressure, surface and sub-surface storm water drainage applications.

- **Smooth bore for superior hydraulic flow; corrugated outer wall for additional strength**
- **Available in carrier or perforated configurations**
- **Building Regulations and Highways Agency compliant**
- **British Board of Agrément approved**

## Why Twinwall?

Lightweight product - easier transport, handling & installation

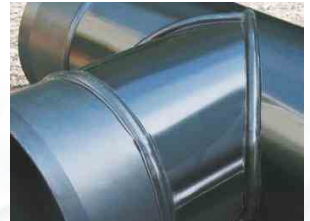
Recognised alternative to concrete and clayware pipes

High strength and durability

Excellent resistance to differential settlement

Minimal jointing compared with traditional materials

Easily cut to required lengths



## Why Naylor MetroDrain?

HDPE not PVC/PP

Enhanced profile - stronger pipe

Optimal environmental credentials

Improved abrasion resistance

Less brittle, less vulnerable to crack propagation

Ideal for cold weather applications



# Certification and applications

The MetroDrain Premium Drainage system has been specified and installed on many civil engineering and construction projects.

## Highway Drainage

Naylor MetroDrain is suitable for the collection and disposal of surface and sub-surface storm water. The product meets the specific requirements of the Highways Agency Manual of Contract Documents for Highway Works and is an approved alternative to the products in Table 5/1 of the Specification for Highway Works.

MetroDrain products can be adopted under the Highways Act (1980).

## Building Drainage

The Naylor MetroDrain Premium Drainage System is suitable for non-adopted surface water drains subject to Building Regulations and Standards throughout the UK.

BBA Certificate No: 09/H145

## Environmental

MetroDrain is ideally suited for use in environmental systems such as:

- Pump and sampling chambers
- Catchpits
- Soakaways
- Stormwater attenuation
- Manholes

## Golf Courses and Sports Fields

MetroDrain is perfect for use in the drainage of sports fields and golf courses. It can also be used in the construction of under pitch heating.

## Landfill

MetroDrain can be successfully used in landfill applications for leachate drainage and methane gas control.

## Agriculture

Naylor also manufactures N-Drain - a lighter duty general purpose Twinwall Drainage System for Non BBA applications such as agricultural projects.

Green Inner Wall: MetroDrain - premium BBA product

Black Inner Wall: N-Drain - lighter duty general purpose product



**MetroDrain**



**N-Drain**

# Polyethylene

- for Improved Environmental and Technical Performance

The Naylor MetroDrain Premium Drainage system\* is manufactured in High Density Polyethylene (HDPE); competitor plastic products are primarily manufactured in either PVC or Polypropylene (PP). HDPE has important technical and environmental advantages:

*\*the same applies to N-Drain - our general purpose product for non-BBA applications*

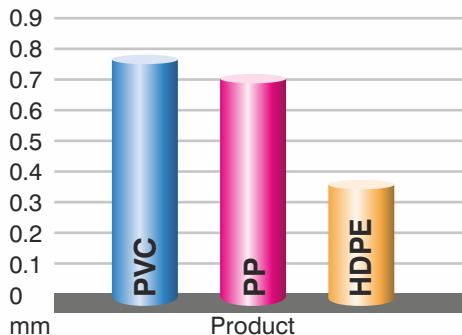
## Materials

|                                       | Advantages of HDPE vs PVC   | Advantages of HDPE vs PP   |
|---------------------------------------|---|--|
| <b>Environment</b>                    | Raw material production does not produce the toxic by-products associated with PVC production   | Use of recycled material can be maximised - using recyclate in PP production is problematic as impact resistance decreases dramatically with recycled material                   |
| <b>Abrasion Resistance</b><br>(Fig 1) | HDPE has less than half PVC's susceptibility to abrasion resistance: particularly important where sand and gravel are present in the pipeline | HDPE has around half PP's susceptibility to abrasion resistance  |
| <b>Vulnerability to Splitting Etc</b> | HDPE lacks the brittleness of PVC - this is particularly important in cold weathers and climates  | HDPE does not share PP's vulnerability to crack propagation - PP has around half HDPE's resistance and it is for this reason that PP is generally not used in pressure pipelines |

(Fig 1)

### Pipe Abrasion after 400,000 Load Cycles

**Source:**  
Technical University of Darmstadt



# Sustainability

## - Use of Recyclate

Naylor is one of the UK's largest users of recycled HDPE:

recycled/reprocessed materials are incorporated into our products where practicable and technically permissible **without compromising quality**:

- inbound materials are subject to stringent laboratory quality controls to ensure that the quality of finished goods is never compromised
- internal mixing and blending procedures are tightly controlled and maintained

*Source materials are:*

- Post consumer - processed from drinks bottles etc, originating in Municipal Recycling Facilities (MRFs): these are subject to stringent cleaning/sorting procedures
- Post industrial - produced as an industrial by-product or waste
- Reprocessed waste - any scrap product produced by our operations is granulated and the resultant material reused

### **Recycled material content:**

|                              | <b>MetroDrain</b> | <b>N-Drain</b> |
|------------------------------|-------------------|----------------|
| <b>DN 150, 225 &amp; 300</b> | <b>70%</b>        | <b>100%</b>    |
| <b>DN 375, 450 &amp; 600</b> | <b>70%</b>        | <b>70%</b>     |

NB above statistics apply to black drainage pipe: coloured pipe (blue/yellow) for utility applications may have a higher prime material content.

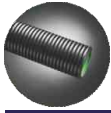
Certificates of raw material content are available for local authority and other client presentation.

- **Naylor's 2010 use of recycled HDPE material in pipe extrusion was just under 6,000 tonnes**
- **The energy saved is the equivalent of eliminating 12,000 tonnes of CO2 or removing over 9,000 cars from the road for a year!!**
- **Highways Magazine shortlisted us for the "Excellence in Recycling" Award**



# MetroDrain

## HDPE Premium Twinwall



**Carrier Drain (solid)**  
Plain Ended



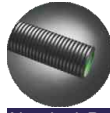
| Nominal Size | Pack Qty | Code  | ID mm | OD mm | Length m | Weight kg/m |
|--------------|----------|-------|-------|-------|----------|-------------|
| 150          | 33       | 71302 | 150   | 178   | 6        | 1.6         |
| 225          | 14       | 71303 | 225   | 267   | 6        | 3.0         |
| 300          | 9        | 71304 | 300   | 355   | 6        | 5.0         |



Integrally Socketed

| Nominal Size | Pack Qty | Code  | ID mm | OD mm | Length m | Weight kg/m |
|--------------|----------|-------|-------|-------|----------|-------------|
| 375          | 5        | 71355 | 375   | 434   | 6        | 7.4         |
| 450          | 4        | 71356 | 450   | 520   | 6        | 10.75       |
| 600          | 28/Load  | 71357 | 600   | 694   | 6        | 18.6        |

375/450/600 plain ended also available subject to minimum quantities and lead time.  
Codes 71305(375), 71306(450) and 71307(600).



**Filter Drain (perforated)**  
Plain Ended



| Nominal Size | Pack Qty | Code  | ID mm | OD mm | Length m | Weight kg/m |
|--------------|----------|-------|-------|-------|----------|-------------|
| 150          | 33       | 71312 | 150   | 178   | 6        | 1.6         |
| 225          | 14       | 71313 | 225   | 267   | 6        | 3.0         |
| 300          | 9        | 71314 | 300   | 355   | 6        | 5.0         |

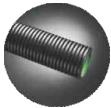


Integrally Socketed



| Nominal Size | Pack Qty | Code  | ID mm | OD mm | Length m | Weight kg/m |
|--------------|----------|-------|-------|-------|----------|-------------|
| 375          | 5        | 71365 | 375   | 434   | 6        | 7.4         |
| 450          | 4        | 71366 | 450   | 520   | 6        | 10.75       |
| 600          | 28/Load  | 71367 | 600   | 694   | 6        | 18.6        |

375/450/600 plain ended also available subject to minimum quantities and lead time.  
Codes 71315(375), 71316(450) and 71317(600).

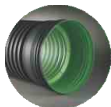


**Filter Drain (half perforated)**  
Plain Ended



| Nominal Size | Pack Qty | Code  | ID mm | OD mm | Length m | Weight kg/m |
|--------------|----------|-------|-------|-------|----------|-------------|
| 150*         | 33       | 71322 | 150   | 178   | 6        | 1.6         |
| 225*         | 14       | 71323 | 225   | 267   | 6        | 3.0         |
| 300*         | 9        | 71324 | 300   | 355   | 6        | 5.0         |

\*Subject to minimum quantities and lead time.



Socketed



| Nominal Size | Pack Qty | Code  | ID mm | OD mm | Length m | Weight kg/m |
|--------------|----------|-------|-------|-------|----------|-------------|
| 375*         | 5        | 71375 | 375   | 434   | 6        | 7.4         |
| 450*         | 4        | 71376 | 450   | 520   | 6        | 10.75       |
| 600*         | 28/Load  | 71377 | 600   | 694   | 6        | 18.6        |

\*Subject to minimum quantities and lead time.

150mm-300mm Pipe Plain Ended, Couplings and Seals sold separately.

375mm-600mm Pipe Single Socket, Seals sold separately.



**MetroDrain Double socket couplers**

One coupling and two seals are required per joint



| Nominal Size | Code  | Dimension mm A | Dimension mm B |
|--------------|-------|----------------|----------------|
| 150          | 71332 | 180            | 4              |
| 225          | 71333 | 287            | 4              |
| 300          | 71334 | 355            | 4              |
| 375          | 71335 | 330            | 20             |
| 450          | 71336 | 396            | 18             |
| 600          | 71337 | 490            | 22             |



**MetroDrain Sealing rings**

Two seals are required per joint



| Nominal Size | Material | Code  |
|--------------|----------|-------|
| 150          | EPDM     | 71342 |
| 225          | EPDM     | 71343 |
| 300          | EPDM     | 71344 |
| 375          | EPDM     | 71345 |
| 450          | EPDM     | 71346 |
| 600          | EPDM     | 71347 |



### Bends

Two seals  
are required per joint



| Nominal Size | Codes  |       |       |       |
|--------------|--------|-------|-------|-------|
|              | 11.25° | 22.5° | 45°   | 90°   |
| 150          | 71502  | 71512 | 71522 | 71532 |
| 225          | 71503  | 71513 | 71523 | 71533 |
| 300          | 71504  | 71514 | 71524 | 71534 |
| 375          | 71505  | 71515 | 71525 | 71535 |
| 450          | 71506  | 71516 | 71526 | 71536 |
| 600          | 71507  | 71517 | 71527 | 71537 |



### MetroDrain Junctions

Three seals  
are required per joint



| Nominal Size | 45° Code | 90° Code |
|--------------|----------|----------|
| 150 x 100    | 71603    | 71604    |
| 150 x 150    | 71605    | 71606    |
| 225 x 100    | 71611    | 71612    |
| 225 x 150    | 71613    | 71614    |
| 225 x 225    | 71615    | 71616    |
| 300 x 100    | 71621    | 71622    |
| 300 x 150    | 71623    | 71624    |
| 300 x 225    | 71625    | 71626    |
| 300 x 300    | 71627    | 71628    |
| 375 x 100    | 71631    | 71632    |
| 375 x 150    | 71633    | 71634    |
| 375 x 225    | 71635    | 71636    |
| 375 x 300    | 71637    | 71638    |
| 375 x 375    | 71639    | 71640    |
| 450 x 100    | 71641    | 71642    |
| 450 x 150    | 71643    | 71644    |
| 450 x 225    | 71645    | 71646    |
| 450 x 300    | 71647    | 71648    |
| 450 x 375    | 71649    | 71650    |
| 450 x 450    | 71651    | 71652    |
| 600 x 100    | 71661    | 71662    |
| 600 x 150    | 71663    | 71664    |
| 600 x 225    | 71665    | 71666    |
| 600 x 300    | 71667    | 71668    |
| 600 x 375    | 71669    | 71670    |
| 600 x 450    | 71671    | 71672    |
| 600 x 600    | 71673    | 71674    |

Junctions incorporating other angles and diameters can be manufactured to suit special applications



### Lubricant

Lubricant is to be used on  
all sealed joints



| Code                          | Weight kg               |
|-------------------------------|-------------------------|
| 50001                         | 1                       |
| 50002                         | 2.5                     |
| DN Pipe Size                  | 150 225 300 375 450 600 |
| Average No. of Joints per Kg. | 25 15 12 8 6 4          |



### MetroDrain Level Invert Reducers

Double Socket

| Nominal Size | Code  |
|--------------|-------|
| 225 x 150    | 71703 |
| 300 x 150    | 71705 |
| 300 x 225    | 71706 |
| 375 x 150*   | 71708 |
| 375 x 225*   | 71709 |
| 375 x 300*   | 71710 |
| 450 x 150*   | 71712 |
| 450 x 225*   | 71713 |
| 450 x 300*   | 71714 |
| 450 x 375*   | 71715 |
| 600 x 150*   | 71717 |
| 600 x 225*   | 71718 |
| 600 x 300*   | 71719 |
| 600 x 375*   | 71720 |
| 600 x 450*   | 71721 |

Requires sealing rings on all sealed systems.

\*Subject to minimum order quantities and carriage if purchased in single units.

# N-Drain

## General Purpose Twinwall



**N-Drain  
Plain Ended Carrier drain**  
HDPE (solid)

| Nominal Size | Pack Qty | Code  | ID mm | OD mm | Length m | Weight kg/m |
|--------------|----------|-------|-------|-------|----------|-------------|
| 100 PE       | 85       | 71107 | 100   | 118   | 6        | 0.64        |
| 150 PE       | 33       | 71077 | 150   | 178   | 6        | 1.34        |
| 225 PE       | 14       | 71076 | 225   | 266   | 6        | 2.60        |
| 300 PE       | 9        | 71075 | 300   | 354.5 | 6        | 4.00        |
| 375 PE       | 5        | 71117 | 375   | 432   | 6        | 6.10        |
| 450 PE       | 4        | 71118 | 450   | 520   | 6        | 9.20        |
| 600 PE       | 24/Load  | 71093 | 595   | 692   | 6        | 17.30       |
| 375 S/S*     | 5        | 71068 | 375   | 432   | 6        | 6.10        |
| 450 S/S*     | 4        | 71005 | 450   | 520   | 6        | 9.20        |
| 600 S/S*     | 24/Load  | 71030 | 595   | 692   | 6        | 17.30       |

\*Subject to minimum order quantity and lead time.



**N-Drain  
Plain Ended Filter drain**  
HDPE (perforated)

| Nominal Size | Pack Qty | Code  | ID mm | OD mm | Length m | Weight kg/m |
|--------------|----------|-------|-------|-------|----------|-------------|
| 100 PE       | 85       | 71108 | 100   | 118   | 6        | 0.64        |
| 150 PE       | 33       | 71078 | 150   | 178   | 6        | 1.34        |
| 225 PE       | 14       | 71080 | 225   | 266   | 6        | 2.60        |
| 300 PE       | 9        | 71079 | 300   | 354.5 | 6        | 4.00        |
| 375 PE       | 5        | 71119 | 375   | 432   | 6        | 6.10        |
| 450 PE       | 4        | 71120 | 450   | 520   | 6        | 9.20        |
| 600 PE       | 24/Load  | 71121 | 595   | 692   | 6        | 17.30       |
| 375 S/S*     | 5        | 71089 | 375   | 432   | 6        | 6.10        |
| 450 S/S*     | 4        | 71095 | 450   | 520   | 6        | 9.20        |
| 600 S/S*     | 24/Load  | 71029 | 595   | 692   | 6        | 17.30       |

\*Subject to minimum order quantity and lead time.



**N-Drain  
Couplings**

| Nominal Size | Code  |
|--------------|-------|
| 100          | 71085 |
| 150          | 71084 |
| 225          | 71074 |
| 300          | 71041 |
| 375          | 71098 |
| 450          | 71097 |
| 600          | 71044 |



**N-Drain  
Bends**

| Nominal Size | 11¼° Code | 22½° Code | 45° Code | 90° Code |
|--------------|-----------|-----------|----------|----------|
| 100          | 71401     | 71402     | 71403    | 71404    |
| 150          | 71223     | 71224     | 71227    | 71228    |
| 225          | 71064     | 71060     | 71052    | 71061    |
| 300          | 71055     | 71054     | 71056    | 71057    |
| 375*         | 71141     | 71142     | 71143    | 71144    |
| 450*         | 71145     | 71146     | 71147    | 71148    |
| 600*         | 71149     | 71150     | 71151    | 71152    |

\*Subject to minimum order quantities and carriage if purchased in single units.



**N-Drain  
Junctions**

| Nominal Size | 45° Code | 90° Code |
|--------------|----------|----------|
| 100 x 100    | 71405    | 71406    |
| 150 x 100    | 71083    | 71100    |
| 150 x 150    | 71220    | 71221    |
| 225 x 100    | 71103    | 71087    |
| 225 x 150    | 71058    | 71010    |
| 225 x 225    | 71016    | 71073    |
| 300 x 100    | 71086    | 71237    |
| 300 x 150    | 71019    | 71081    |
| 300 x 225    | 71070    | 71071    |
| 300 x 300    | 71072    | 71018    |
| 375 x 150*   | 71069    | 71168    |
| 375 x 225*   | 71190    | 71169    |
| 375 x 300*   | 71191    | 71170    |
| 375 x 375*   | 71192    | 71171    |
| 450 x 150*   | 71193    | 71172    |
| 450 x 225*   | 71194    | 71173    |
| 450 x 300*   | 71195    | 71210    |
| 450 x 375*   | 71196    | 71175    |
| 450 x 450*   | 71105    | 71176    |
| 600 x 150*   | 71197    | 71177    |
| 600 x 225*   | 71198    | 71178    |
| 600 x 300*   | 71199    | 71179    |
| 600 x 375*   | 71200    | 71180    |
| 600 x 450*   | 71201    | 71181    |
| 600 x 600*   | 71202    | 71182    |

\*Subject to minimum order quantities and carriage if purchased in single units.





**N-Drain Level Invert Reducers**  
Double Socket

| Nominal Size | Code  |
|--------------|-------|
| 150 x 100    | 71204 |
| 225 x 150    | 71203 |
| 300 x 150    | 71101 |
| 300 x 225    | 71205 |
| 375 x 150*   | 71206 |
| 375 x 225*   | 71207 |
| 375 x 300*   | 71208 |
| 450 x 150*   | 71106 |
| 450 x 225*   | 71209 |
| 450 x 300*   | 71210 |
| 450 x 375*   | 71211 |
| 600 x 150*   | 71212 |
| 600 x 225*   | 71213 |
| 600 x 300*   | 71214 |
| 600 x 375*   | 71215 |
| 600 x 450*   | 71216 |

\*Subject to minimum order quantities and carriage if purchased in single units.



**Lubricant**

Lubricant is to be used on all sealed joints

| Code                          | Weight kg |     |     |     |     |     |
|-------------------------------|-----------|-----|-----|-----|-----|-----|
| 50001                         | 1         |     |     |     |     |     |
| 50002                         | 2.5       |     |     |     |     |     |
| DN Pipe Size                  | 150       | 225 | 300 | 375 | 450 | 600 |
| Average No. of Joints per Kg. | 25        | 15  | 12  | 8   | 6   | 4   |

# Fabrications

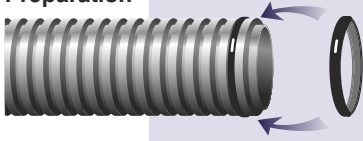
A comprehensive fabrication service is available producing complementary items such as chambers and catch pits.

Please contact sales office for price and availability.



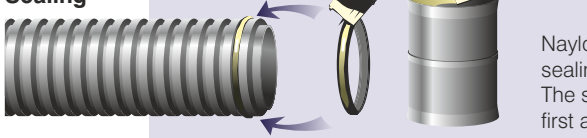
# Joining

## Preparation



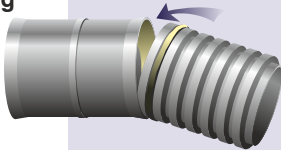
The Naylor MetroDrain Premium Drainage System is easily cut to length using a coarse toothed saw or jigsaw. Cuts should be made between the corrugations on the pipe. Before joining, the pipe ends should be cleared of all sharp edges and dirt.

## Sealing



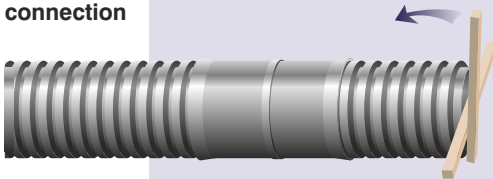
Naylor lubricant should be applied to the sealing ring and pipe end. The sealing ring is then located between the first and second corrugation on the pipe.

## Connector or fitting



Ensure the inside of the connector or fitting is clean and then apply Naylor lubricant. The connector or fitting should then be pushed over the seal and on to the pipe ensuring all surfaces are kept clean during this process. It is often easier to start this process with the pipe at a slight angle.

## The connection



The pipe should be pushed fully onto the connector or fitting until it reaches the stays within the connector or fitting. This can be done by hand or using timber as shown on the larger diameters.

Ensure that the alignment of the pipes is correct and that there is no excessive angular deflection.

# Pressure testing

## Air test

1. Seal the ends of the pipe and connectors or fittings with expanding stoppers.
2. Fill a U-tube manometer with water to the required level without any trapped air bubbles.
3. Connect the manometer to the port of one of the sealed stoppers.
4. Increase the pressure until 100mm of water (0.01 Bar) is achieved.
5. Let the pressure stabilise for 5 minutes and then increase the pressure to 100mm head of water if it drops.
6. Record the pressure after 5 minutes. It should not drop below 75mm head of water without any additional pumping.

## Water test

1. Seal the ends of the pipe and connectors or fittings with expanding stoppers.
2. A standpipe should be fitted at the top end of the pipeline, a maximum of 1.2 metres above the crown at the high end and 6 metres at the low end of the pipeline.
3. Fill the pipe with water and allow it to stabilise for 2 hours. Top up as required.
4. The water loss can be determined by measuring the quantity of water added to the pipeline to maintain the level during a 30 minute test period.
5. The water loss rate should not exceed 1 litre per hour per linear metre pipeline per metre of nominal pipe diameter.

The table below shows the maximum allowable loss of water during a 30 minute test period.

| Diameter | Maximum loss litres per minute |
|----------|--------------------------------|
| 100      | 0.05                           |
| 150      | 0.075                          |
| 225      | 0.1125                         |
| 300      | 0.15                           |
| 375      | 0.1875                         |
| 450      | 0.225                          |
| 600      | 0.3                            |

**Naylor Industries plc - more than 100 years of production and supply to the Construction Industry**

- **Clay Pipes** - for open trench and trenchless construction
- **Thermachem** - pipes and industrial ceramics for hot/aggressive environments
- **Band-Seal** - flexible pipe couplings
- **Plastic Pipes** - Twinwall ducting and drainage; land drainage
- **Gardenware** - The Yorkshire Flowerpot range of frostproof pots



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Until 2019

**NAYLOR**  
DRAINAGE

*Made in the UK*

Excellent Construction Products

**NAYLOR DRAINAGE  
LIMITED**

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