

Article

# Price movements in construction materials and plant hire, UK: 2019 to 2021

Price movements of construction materials and plant hire between 2019 and 2021 and their causes: a brief overview of construction in the UK, construction output indices and how these are computed, and construction inputs and their price movements and the factors behind them.

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# 1 . Main points

- Producer Price Inflation (PPI) inputs into construction continue to have an upward push on construction output prices in 2021.
- Increased construction output is pushing demand for construction inputs thereby increasing prices of inputs.
- Global prices trends of commodities such as iron and copper are pushing up construction input prices; iron ore prices have soared by 97% in July 2021 compared with the previous year.
- Global supply chain disruptions are impacting on the availability and price of construction inputs.

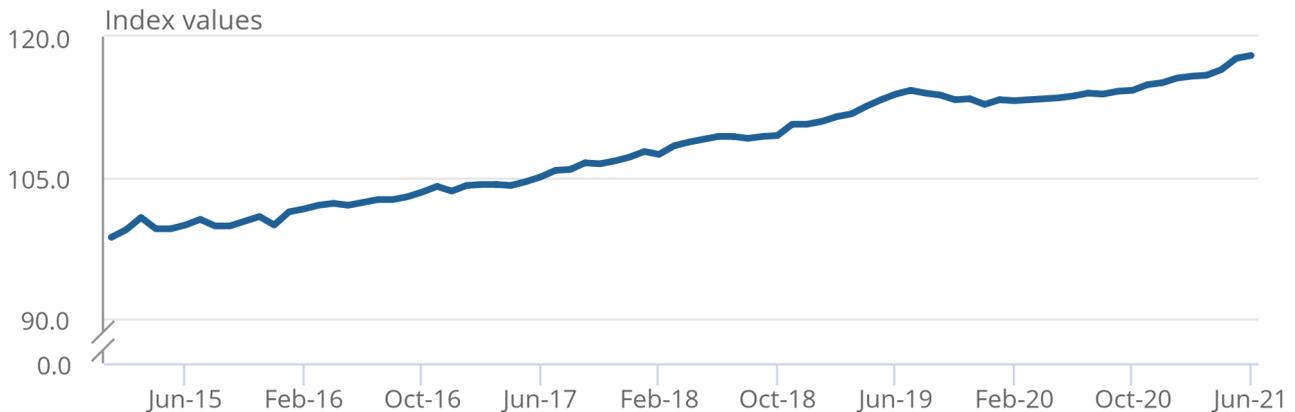
## 2 . Construction output prices in the UK

Figure 1: Construction output prices have been increasing since December 2019

Construction all work, prices, non-seasonally adjusted, UK, January 2015 to June 2021

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Construction all work, prices, non-seasonally adjusted, UK, January 2015 to June 2021



Source: Office for National Statistics - Construction output prices

Figure 1 shows the construction output prices up to June 2021. The annual rate of growth of construction output prices in June 2021 was 3.8%. Construction output prices have been increasing since December 2019 making that 19 consecutive months of positive monthly growth.

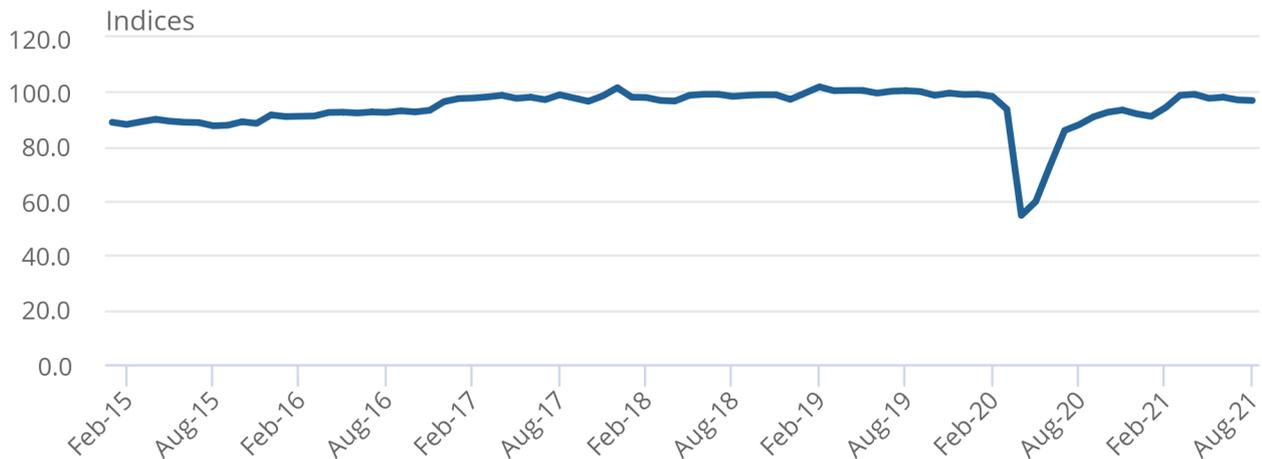
Construction output has however fallen. Monthly construction output fell for the third consecutive month in June 2021 by 1.3% (Figure 2). This is the largest monthly decline since December 2020 when output fell 2.2%. [The peak-to-trough fall in construction output between March and July 2020 was substantially larger relative to the 2008 to 2009 recession.](#) The recovery was however quicker, and the industry has continued to recover in the second half of 2020 and 2021.

## Figure 2: Construction output fell for the fifth consecutive month in June 2021

Monthly index, all work, chained volume measure, seasonally adjusted, January 2015 to August 2021

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Monthly index, all work, chained volume measure, seasonally adjusted, January 2015 to August 2021



Source: Office for National Statistics

## 3 . Changes to construction inputs over time

The construction industry uses various inputs. To understand what these inputs are this article will rely on [supply and use tables](#) to help us identify which sectors provide intermediate consumption for the construction sector.

The top six sectors that provide the construction sector with goods that go into its production process are:

- other non-metallic mineral products for domestic market
- fabricated metal products, except machinery and equipment for domestic market
- wood and products of wood and cork, except furniture; articles of straw and plaiting
- electrical equipment for domestic market
- other mining and quarrying products for domestic market
- rental and leasing services of construction and civil engineering machinery and equipment

## **Other non-metallic mineral products for domestic market**

Other non-metallic mineral products for domestic market consists of the following components:

- glass and glass products for domestic market
- refractory products for domestic market
- clay building materials for domestic market
- other porcelain and ceramic products for domestic market
- cement, lime and plaster for domestic market
- articles of concrete, cement and plaster for domestic market
- cut, shaped and finished stone for domestic market
- other non-metallic mineral products for domestic market

**Figure 3: Other non-metallic mineral products for the domestic market have been rising from 2019 to 2021**

Other non-metallic mineral products for domestic market, UK, January 2019 to September 2021

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Other non-metallic mineral products for domestic market, UK, January 2019 to September 2021



**Source: Office for National Statistics - Producer Price Index**

Figure 3 shows the price index for other non-metallic mineral products from 2019. The annual average index for other non-metallic mineral products for domestic market has consistently been on the rise from 2009 to 2020. The second-largest annual price rise since records began was recorded in 2019 at 3.12%.

Month-on-month, prices have increased, with the highest monthly prices recorded in September 2021 as shown in Figure 3.

Articles of concrete, cement and plaster for domestic market make up the largest input of this index followed by glass and glass products for domestic market, and other non-metallic mineral products for domestic market coming third.

Bills of quantities for various construction projects indicate concrete is one of the largest weighted inputs into construction. It is the largest weighted input for apartment blocks, roads and bridges, and the second-largest weighted input for detached housing and private industrial.

Articles of concrete, cement and plaster for domestic market saw a year-on-year increase of 4.3% and 5.1% in May 2021 and June 2021 respectively making it the highest increase of components in the index in 2021.

Other non-metallic mineral products for domestic market is the second-largest component of this index. Its largest component is bituminous mixtures based on natural and artificial stone materials and bitumen, natural asphalt or related substances for domestic use, which was at its highest price between June 2021 and August 2021, where prices were up 1.9% compared with previous periods in 2020.

Bills of quantities used in determining weights indicate asphalt and concrete account for 77% of inputs into road construction. Asphalt is derived from crude oil and is primarily used in road construction. [Globally, crude oil prices have rebounded from their lowest in March 2020 but are still below their pre-pandemic high](#). This price rise has in turn affected the cost of asphalt by pushing up its price.

## **Fabricated metal products, except machinery and equipment for domestic market**

Fabricated metal products, except machinery and equipment for domestic market consists of the following components:

- structural metal products for domestic market
- tanks, reservoirs and containers of metal for domestic market
- steam generators, except central heating hot water boilers for domestic market
- forging, pressing, stamping and roll-forming services of metal; powder metallurgy for domestic market
- treatment and coating services of metals; machining for domestic market
- cutlery, tools and general hardware for domestic market
- other fabricated metal products for domestic market

**Figure 4: Fabricated metal products, except machinery and equipment for domestic market have been rising in price since December 2020**

Fabricated metal products, except machinery and equipment for domestic market, UK, January 2019 to September 2021

Figure 4: Fabricated metal products, except machinery and equipment for domestic market have been rising in price since December 2020

Fabricated metal products, except machinery and equipment for domestic market, UK, January 2019 to September 2021



Source: Office for National Statistics - Producer Price Index

Figure 4 shows the price index for fabricated metal products, except machinery and equipment for domestic market from 2019. The index has risen since December 2020, peaking in September 2021.

Structural metal products for domestic market are the largest component of the index, closely followed by treatment and coating services of metals, machining for domestic market.

Steel work and metal joinery are the largest weighted inputs into private industrial and the second-largest weighted into bridge construction projects. Structural metal products for domestic market had the steepest prices of the components that go into the index. August 2021 and September 2021 saw price rises of 13.4% and 15.7% respectively compared with similar periods in 2020.

Structural metal products are influenced by steel prices, which are on the rise in turn pushing up the price of structural metal products. According to data from the London Metal exchange (LME) from January 2019 till June 2021, the [price of steel rebar was at its highest in May 2021 peaking at US \\$780 per tonne](#).

Globally, steel prices have been on the increase. Steel prices have increased in response to an increase in iron ore, which is one of its major components. The [price of iron ore](#) is at the highest it has ever been. As at July 2021 price of steel per tonne stood at US \$214.55, making this a 97% rise compared with a similar period in 2020.

Supply chain issues have also affected the price of steel. According to the Financial Times, [material supplies have been hit by the rise of shipping costs \(paywall\)](#) as a result of the coronavirus (COVID-19) pandemic and the lack of capacity in Chinese ports. This has also contributed to steel prices rising.

Prices of treatment and coating services of metal; machining for domestic market have been rising albeit at a slower pace. They increased by 0.36% and 0.27% year-on-year to April 2021 and May 2021 respectively. This price rise can also be attributed to price increases of steel and other metals which form the main intermediate inputs into the sector.

## **Wood and products of wood and cork, except furniture; articles of straw and plaiting materials for domestic market**

This index consists of the following:

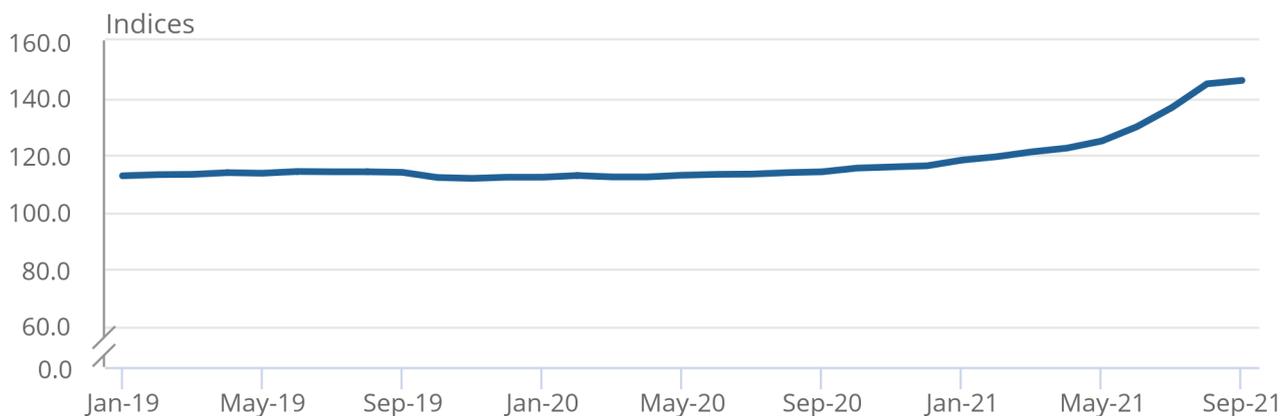
- wood, sawn and planed for domestic use.
- products of wood, cork, straw and plaiting materials

**Figure 5: Wood and products of wood and cork, except furniture; articles of straw and plaiting materials for domestic market have been on the increase since April 2020**

Wood and products of wood and cork, except furniture; articles of straw and plaiting materials for domestic market, UK, January 2019 to September 2021

Figure 5: Wood and products of wood and cork, except furniture; articles of straw and plaiting materials for domestic market have been on the increase since April 2020

Wood and products of wood and cork, except furniture; articles of straw and plaiting materials for domestic market, UK, January 2019 to September 2021



**Source: Office for National Statistics - Producer Price Index**

Products of wood, cork, straw and plaiting materials account for over 80% of this index while wood, sawn and planed for domestic use account for over 15%.

Prices of products of wood, cork, straw and plaiting materials have been on the increase since April 2020, with 17 consecutive months of price increase peaking in September 2021, an increase of 25.1% from September 2020.

Wood, sawn and planed for domestic use has also seen price rises of 42.6% for the period September 2020 to September 2021.

Timber prices have been on the rise worldwide occasioned by reduced exports from some of the world's top timber producers. Anecdotal evidence suggest timber merchants are having difficulties with their supply chain and demand.

According to the Forestry Commission, 60% of all wood in the UK is used in construction. The Forestry Commission figures also indicate that the UK imports about 80% of its timber, with 20% being produced locally. According to Timber Trade Federation, which is a trade body for timber importers, merchants, agents and manufacturers, these [timber imports](#) are from countries such as the United States, Sweden, Latvia, Estonia, France, Canada, Germany, Brazil, Finland and Cameroon.

Timber price rises can be understood through supply and demand. UK timber production has largely been consistent over the last few years but demand for wood and products of wood has increased over the same period. There has been a surge in UK housebuilding, with about 165,420 units built in 2018 and 178,310 in 2019, most of which are using timber frames.

Imports of wood and wood products have been on the increase in the last few years to meet demand. However, international demand for timber and timber products has also been on the increase. Countries such as the United States, Russia and Canada have had wildfires, which have curtailed timber production affecting supply in a market where demand is high. This has pushed up prices.

There is also anecdotal evidence of demand being driven by a resurgence in DIY and home improvements because of people being stuck at home and taking on DIY projects, helped further by the increase in disposable income for many households. According to the Timber Trade Federation, this has contributed to [increased demand for timber](#).

Timber merchants reported an increase in demand for wood during the lockdown period. This is further shown in the construction output repair and maintenance data, which have bounced back quicker than new work, with growth of 41.3% in Quarter 2 (Apr to June) 2020. Repair and maintenance private housing was the main contributor to this strong recovery.

## **Electrical equipment for domestic market**

Electrical equipment for domestic market consists of:

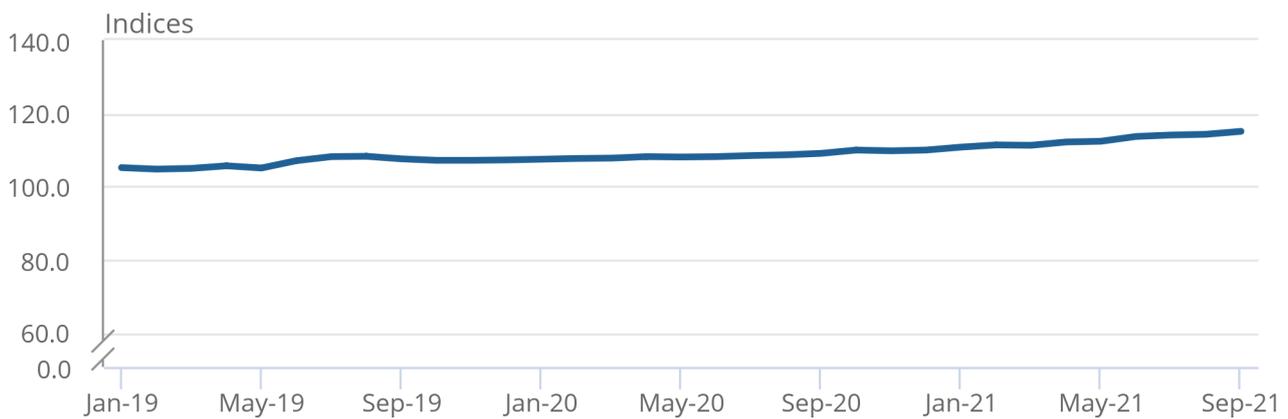
- electric motors, generators, transformers and electricity distribution and control apparatus for domestic market
- batteries and accumulators for domestic market
- wiring and wiring devices for domestic market
- electric lighting equipment for domestic market
- domestic appliances for domestic market
- other electrical equipment for domestic market

**Figure 6: Electrical equipment for domestic market is at an all-time high**

Electrical equipment for domestic market, UK, January 2019 to August 2021

Figure 6: Electrical equipment for domestic market is at an all-time high

Electrical equipment for domestic market, UK, January 2019 to August 2021



Source: Office for National Statistics - Producer Price Index

Prices of electrical equipment for domestic market are at an all-time high. The average annual price growth rate has been positive for the last 10 years. Year-on-year, September 2021 saw the highest price growth rate of 5.5%.

The top three indices by weight that make up this index are:

- electric motors, generators, transformers and electricity distribution and control apparatus for domestic market
- wiring and wiring devices for domestic market
- domestic appliances for domestic market

Prices for the three components have also been on the increase driven by among other things increases in prices of copper, silver and other raw materials such as resins and polymer chemical compounds used in insulation of cables and wires.

Copper is widely used in electrical equipment because it is a good conductor of electricity as well as being ductile. According to data from Trading Economics, [copper prices have been on the increase](#), from the lowest in March 2020 rising past pre-coronavirus prices and peaking in May 2021.

## **Other mining and quarrying products for domestic market**

Other mining and quarrying products for domestic market consist of:

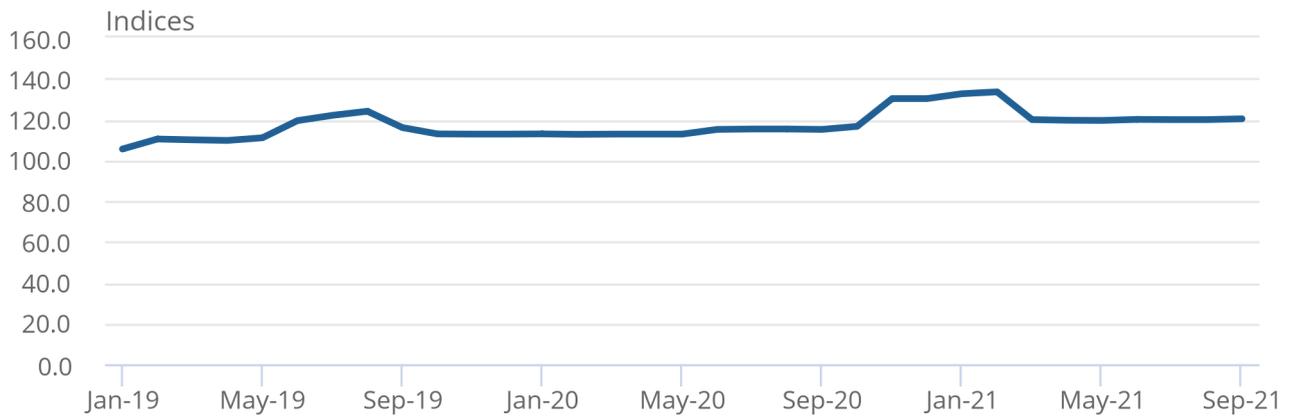
- mining and quarrying products not elsewhere classified for domestic market
- stone, sand and clay for domestic market

**Figure 7: Prices of other mining and quarrying products have been relatively stable**

Other mining and quarrying products for domestic market, UK, January 2019 to September 2021

Figure 7: Prices of other mining and quarrying products have been relatively stable

Other mining and quarrying products for domestic market, UK, January 2019 to September 2021



Source: Office for National Statistics - Producer Price Index

Mining and quarrying products not elsewhere classified for domestic market is the largest component of this index, weighted at 90% of the index. Mining and quarrying products not elsewhere classified for domestic market saw a substantial price rise between October 2020 and November 2020 of 12.56% and further rising in January 2021 by 1.87%.

Mining and quarrying products is further influenced by the price of its largest component, granules, chippings and powder, pebbles and gravel. Price data are collected using surveys and respondents reported that the increase in prices was because of a reduction in volumes ordered hence discounts that were applied were no longer applicable. March 2021 saw quantities demanded go up and discounts reinstated. Price has been relatively stable since.

## Rental and leasing services of construction and civil engineering machinery and equipment

The Services Producer Price Index ([SPPI](#)) for construction plant hire is used to measure changes in the price of plant used in construction. The index measures changes in the price received by UK plant hire companies when providing plant without an operator to other UK companies and government. It includes items such as cranes, earth-moving equipment and site accommodation and it is compiled on a quarterly basis. Plant costs are measured using the same index for new work, and repair and maintenance.

### Figure 8: Rental and leasing services of construction and civil engineering machinery and equipment annual growth rates

Rental and leasing services of construction and civil engineering machinery and equipment, UK, Quarter 1 (Jan to Mar) 2015 to Quarter 3 (July to Sept) 2021

#### Figure 8: Rental and leasing services of construction and civil engineering machinery and equipment annual growth rates

Rental and leasing services of construction and civil engineering machinery and equipment, UK, Quarter 1 (Jan to Mar) 2015 to Quarter 3 (July to Sept) 2021



Source: Office for National Statistics - Services Producer Price Index

From Figure 8, we can see that there has been growth in annual prices albeit the growth being small. The rate of annual growth has been increasing since Quarter 2 (Apr to June) 2020, which is the highest price increase since 2015.

The marginal annual price growth rates can be explained by the number of players in the industry. According to the Inter-Departmental Business Register (IDBR), there were [over 4,165 businesses in the sector each having relatively small market share as of 2020](#). The relatively small market share of the players in the industry is an indicator of an industry with many players whose goods and services are not as differentiated, hence players compete on price, which in turn leads to prices rising marginally over time.

## 4 . Output price indices data

### [Construction Output Price Indices](#)

Dataset | Released 12 August 2021

A summary of the Construction Output Indices (OPIs) from April to June 2021, UK.

### [Producer price inflation time series](#)

Time series dataset | Released 20 October 2021

A comprehensive selection of data on input and output indices. Contains producer price indices of materials and fuels purchased and output of manufacturing industry by broad sector.

### [Services producer price inflation time series](#)

Time series dataset | Released 20 October 2021

Quarterly estimates monitoring the changes in prices charged for services provided to UK-based customers for a range of industries.

## 5 . Glossary

### Construction output estimates

Construction output estimates are monthly estimates of the amount of output chargeable to customers for building and civil engineering work done in the relevant period, excluding value-added tax (VAT) and payments to subcontractors.

### Seasonally adjusted estimates

Seasonally adjusted estimates are derived by estimating and removing calendar effects (for example, leap years such as 2020) and seasonal effects (for example, decreased activity at Christmas because of site shutdowns) from the non-seasonally adjusted estimates.

### Volume estimates

The volume estimates are calculated by taking the value estimates and adjusting to remove the impact of price changes.

## 6 . Data sources and quality

There are several material costs that go into construction in the UK. To understand how these material costs affect construction output prices, we need to understand how price movements are measured within the construction industry.

The Construction Output Price Indices (COPIs) provide inflation estimates within the UK construction industry. COPIs are compiled using existing Office for National Statistics (ONS) data sources on a project cost basis.

This approach involves input costs, which are material, labour and plant, weighted together for a selection of types of construction projects, with a mark-up being applied to account for profit by the construction firm. The result is considered a proxy for output prices. View [Section 3 of the Construction Output Price Indices QMI](#) for more detail on how this is calculated.

## Construction output

Construction output is made up of two sectors: new work, and repair and maintenance.

New work is further split into the following sub-sectors:

- housing (public and private)
- infrastructure
- public (other than housing)
- private industrial
- private commercial

Repair and maintenance is split into the following sub-sectors:

- housing repair and maintenance
- non-housing repair and maintenance

Within each type of work, weights are calculated from the ONS Annual Business Survey to calculate the representative weights of labour, material, and plant costs.

Table 1: Weights for each type of work from the Annual Business Survey

Index	Labour	Materials	Plant
<b>Housing</b>	44.3	50.2	5.5
<b>Infrastructure</b>	47.5	40.4	12.1
<b>Other Work</b>	54.5	39.9	5.7
<b>Housing R&amp;M</b>	60.6	35.8	3.6
<b>Non-Housing R&amp;M</b>	24.8	69	6.2

Source: Office for National Statistics

## How material weights are calculated in the Construction Output Price Indices

For new work categories in the Construction Output Prices Indices (COPIs), [Producer Price Indices \(PPIs\)](#) are used to measure material changes for projects.

The cost of each project is determined using bills of quantities (BoQs), which provide details of quantities of different materials needed for each project type. The projects are intended to be representative of UK construction. Using these assumptions, we are then able to weight together respective PPIs to form the materials components of the COPIs.

The types of work and bills of quantities (known as projects) for which we base these weights and how they are broken down are as follows:

- housing: detached houses (65% of the weight) and apartment (35% of the weight)
- infrastructure: roads (90% of the weight) and bridges (10% of the weight)
- public other: new office building (100% of the weight)
- private industrial: factory building (bill of quantity)
- private commercial: new office building (100% of the weight)

These projects are intended to be representative of UK construction for purposes of calculating purchasing power parities (PPPs). The [objective of PPPs](#) is to compare purchasers' price actually paid for a basket of comparable goods and services between countries.

[Section 6: How the output is created in the Construction Output Price Indices \(OPIs\) Quality and Methodology Information \(QMI\) report](#) provides a more detailed breakdown of the bills of quantities for each type of work.

Measuring input costs of repair and maintenance work is different in that there are no bills of quantity for repair and maintenance. Materials used to estimate costs of repair and maintenance have been selected using information from the [Annual Purchases Survey](#).

Materials used in housing repair and maintenance are shown in Table 2.

Table 2: Materials used in housing repair and maintenance

<b>Material</b>	<b>Weight</b>
<b>Plastic products</b>	20.97
<b>Fabricated metal products</b>	20.46
<b>Cement, plaster and concrete</b>	11.75
<b>Wood products</b>	11.14
<b>Furniture</b>	10.09
<b>Electrical equipment</b>	9.9
<b>Glass, porcelain and ceramic products</b>	4.61
<b>Textiles</b>	3.97
<b>Paints, varnishes, printing ink and mastics</b>	3.34
<b>Mining and quarrying products</b>	2.67
<b>Other basic metals and casting</b>	1.11
<b>Total</b>	100

Source: Office for National Statistics

The representative projects chosen for use in the Construction Output Price Indices for each type were selected as they are most reflective of the type of work undertaken in each category.

More quality and methodology information on strengths, limitations, appropriate uses, and how the data were created is available in the [Construction Output Price Indices \(OPIs\) Quality and Methodology Information report](#).

## 7 . Related links

### [Construction output in Great Britain: August 2021](#)

Bulletin | Released 13 October 2021

Short-term measures of output by the construction industry and contracts awarded for new construction work in Great Britain.

### [Construction statistics, Great Britain: 2020](#)

Bulletin | Released 19 October 2021

A range of statistics that are currently available on the construction industry including value of output, new orders by sector, number of firms and total employment.

### [Productivity in the construction industry](#)

Bulletin | Released 19 October 2021

An investigation into productivity growth and its drivers for the UK construction industry.