Summary – July 2020
Devon and Cornwall received 79% of the long term average (LTA) rainfall in July, which was 'normal' for this time of year. Rainfall events occurred between 3 – 7 July, and around 24 July. Monthly mean river flows were mainly ‘normal’ for July. Daily mean flows were mainly ‘normal’ too, although some rivers recorded ‘above normal’ flows at the beginning of July and around 24 July. Soil moisture deficit increased until 21 July then decreased slightly, ending the month at 64mm, close to the LTA for July. Groundwater levels decreased but remain healthy. Reservoir storage dropped to 71%.

Rainfall
Devon and Cornwall as a whole received 79% of the July LTA, which is 'normal' for this time of year. Five catchments received 'normal' rainfall totals in July, five received 'below normal' totals and one received a 'notably low' total. Rainfall ranged from 106% of the LTA for the Torridge and Hartland Streams catchment to 49% of the LTA in the Otter Sid Axe and Lim catchment. There was rainfall at the beginning of July, and around 24 July. Rainfall maps and graph

Soil Moisture Deficit
Soil moisture deficit rose until 21 July, then dropped slightly to 64mm at the end of the month, which is only slightly above the July LTA of 61mm. SMD graph and map

River Flows
Most rivers had monthly mean flows that were normal for the time of year in July. Daily mean flows were also ‘normal’ on most rivers for much of the month, although many recorded ‘above normal’ flows between 3 – 7 July, and around 24 July, in response to the rainfall. At the end of July, daily mean flows were generally 'normal' for the time of year. River flow map and graphs

Groundwater Levels
Groundwater levels measured at all indicator boreholes are in recession but are generally healthy, ending the month between ‘notably high’ and ‘normal’ levels. Groundwater map and graphs

Reservoir Storage
The total reservoir storage for Devon and Cornwall decreased this month from 78% at the end of June to 71% at the end of July. Wimbleball dropped to 65%, Colliford dropped to 70% and Roadford dropped to 69%. Reservoir graphs

Glossary
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Rainfall

Figure 1.1: Total rainfall for hydrological areas across Devon and Cornwall for the current month (up to July 2020), the last three months, the last six months and the last 12 months, classed relative to an analysis of respective historic totals. HadUK data based on the Met Office 5km gridded rainfall dataset derived from rain gauges (Source: Met Office © Crown Copyright, 2020). Provisional data based on Environment Agency 1km gridded rainfall dataset derived from Environment Agency intensity rain gauges. Crown copyright. All rights reserved. Environment Agency, 100026380, 2020.

Soil Moisture Deficit

Figure 2.1: Latest soil moisture deficit compared to previous year, maximum, minimum and 1961 – 1990 long term average. Weekly MORECS data for real land use (Source: Met Office © Crown Copyright, 2020).
Month-end Soil Moisture Deficit (mm)

Figure 2.2: Soil moisture deficits for week ending 28 July 2020. MORECS data for real land use (Source: Met Office © Crown Copyright, 2020). Crown copyright. All rights reserved. Environment Agency, 100026380, 2020.
Figure 3.1: Monthly mean river flows at indicator sites for July 2020, expressed as a percentage of the respective long term average and classed relative to an analysis of historic July monthly means (Source: Environment Agency). Crown copyright. All rights reserved. Environment Agency, 100026380, 2020.
GWILLS, River Gannel

July mean flow: 3.13 cumecs
76% LTA

BODMIN DUNMERE, River Camel

July mean flow: 5.66 cumecs
108% LTA

RESTORMEL, River Fowey

July mean flow: 4.35 cumecs
76% LTA

GUNNISLAKE, River Tamar

July mean flow: 5.02 cumecs
67% LTA

TORRINGTON, River Torridge

July mean flow: 4.44 cumecs
79% LTA

UMBERLEIGH, River Taw

July mean flow: 4.59 cumecs
82% LTA

BELLEVER, East Dart River

July mean flow: 0.551 cumecs
90% LTA

AUSTINS BRIDGE, River Dart

July mean flow: 3.86 cumecs
87% LTA
Figure 3.2: Indicator river flow sites for Devon and Cornwall. Daily mean flow compared to an analysis of historic daily mean flows. (Source: Environment Agency).
Groundwater Levels

Figure 4.1: Groundwater levels for indicator sites at the end of July 2020, classed relative to an analysis of respective historic July levels (Source: Environment Agency). Geological map reproduced with permission from UK Groundwater Forum, BGS © NERC. Note: groundwater levels are reported at different times during the month and therefore may not be fully representative of levels at the month end. Crown copyright. All rights reserved. Environment Agency, 100026380, 2020.
Figure 4.2: Indicator groundwater level sites for major aquifers. End of month groundwater levels compared to analysis of historic end month levels (Source: Environment Agency, 2020).
Reservoir Stocks

Figure 5.1: Reservoir stocks in Devon and Cornwall (Source: South West Water).
## Glossary

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aquifer</td>
<td>A geological formation able to store and transmit water.</td>
</tr>
<tr>
<td>Areal average rainfall</td>
<td>The estimated average depth of rainfall over a defined area. Expressed in depth of water (mm).</td>
</tr>
<tr>
<td>Artesian</td>
<td>The condition where the groundwater level is above ground surface but is prevented from rising to this level by an overlying continuous low permeability layer, such as clay.</td>
</tr>
<tr>
<td>Artesian borehole</td>
<td>Borehole where the level of groundwater is above the top of the borehole and groundwater flows out of the borehole when unsealed.</td>
</tr>
<tr>
<td>Cumecs</td>
<td>Cubic metres per second ($m^3s^{-1}$)</td>
</tr>
<tr>
<td>Effective rainfall</td>
<td>The rainfall available to percolate into the soil or produce river flow. Expressed in depth of water (mm).</td>
</tr>
<tr>
<td>Flood Alert/Flood Warning</td>
<td>Three levels of warnings may be issued by the Environment Agency. Flood Alerts indicate flooding is possible. Flood Warnings indicate flooding is expected. Severe Flood Warnings indicate severe flooding.</td>
</tr>
<tr>
<td>Groundwater</td>
<td>The water found in an aquifer.</td>
</tr>
<tr>
<td>Long term average (LTA)</td>
<td>The arithmetic mean calculated from the historic record, usually based on the period 1961-1990. However, the period used may vary by parameter being reported on (see figure captions for details).</td>
</tr>
<tr>
<td>mAOD</td>
<td>Metres Above Ordnance Datum (mean sea level at Newlyn Cornwall).</td>
</tr>
<tr>
<td>MORECS</td>
<td>Met Office Rainfall and Evaporation Calculation System. Met Office service providing real time calculation of evapotranspiration, soil moisture deficit and effective rainfall on a 40 x 40 km grid.</td>
</tr>
<tr>
<td>Naturalised flow</td>
<td>River flow with the impacts of artificial influences removed. Artificial influences may include abstractions, discharges, transfers, augmentation and impoundments.</td>
</tr>
<tr>
<td>NCIC</td>
<td>National Climate Information Centre. NCIC area monthly rainfall totals are derived using the Met Office 5 km gridded dataset, which uses rain gauge observations.</td>
</tr>
<tr>
<td>Recharge</td>
<td>The process of increasing the water stored in the saturated zone of an aquifer. Expressed in depth of water (mm).</td>
</tr>
<tr>
<td>Reservoir gross capacity</td>
<td>The total capacity of a reservoir.</td>
</tr>
<tr>
<td>Reservoir live capacity</td>
<td>The capacity of the reservoir that is normally usable for storage to meet established reservoir operating requirements. This excludes any capacity not available for use (e.g. storage held back for emergency services, operating agreements or physical restrictions). May also be referred to as ‘net’ or ‘deployable’ capacity.</td>
</tr>
<tr>
<td>Soil moisture deficit (SMD)</td>
<td>The difference between the amount of water actually in the soil and the amount of water the soil can hold. Expressed in depth of water (mm).</td>
</tr>
</tbody>
</table>

### Categories

- **Exceptionally high**: Value likely to fall within this band 5% of the time.
- **Notably high**: Value likely to fall within this band 8% of the time.
- **Above normal**: Value likely to fall within this band 15% of the time.
- **Normal**: Value likely to fall within this band 44% of the time.
- **Below normal**: Value likely to fall within this band 15% of the time.
- **Notably low**: Value likely to fall within this band 8% of the time.
- **Exceptionally low**: Value likely to fall within this band 5% of the time.
Rainfall Catchments

Figure 6.1: Rainfall catchments in Devon and Cornwall. Crown copyright. All rights reserved. Environment Agency, 100026380, 2020.