Solving Drainage and Water-logging Issues in School Playgrounds

About Redlynch Leisure

Redlynch Leisure is a leading provider of specialist surfacing, play equipment, outdoor fitness and Sustainable Drainage Systems for schools, parks and the outdoor leisure industry. For over 25 years Redlynch have been building a reputation for delivering solutions to the highest of standards, never compromising on quality.

This short guide is based on our 25 years+ experience in solving both big and small drainage and water-logging issues in schools.

Every location is different, so please get in touch with us for help in applying the principles in this guide to your project.

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Has Rain caused problems in your playground or sports field in the last 18 months?

Do parts of your playground become water-logged after rain?
Do some of your pathways or surfacing become muddy & slippery?
Have areas of your playground been unusable due to rain?

It's not your imagination, according to the Met Office, the 18 months to March 2024 have been the wettest recorded in UK history.

Are Rain Related Problems Likely to Get Worse?

Unfortunately, it is likely that the UK climate will get even more winter rain over the coming years due to climate change.

- On average, winters are expected to be warmer and wetter, while summers are expected to be hotter and drier.
- Data shows winters have already become around 1°C warmer and 15% wetter over the past century. The Met Office predicts winters will be between 1 and 4.5°C warmer and up to 30% wetter by 2070 compared to the 1990s.
- **NOTE:** This doesn't mean there won't be dry winters. However, very wet winters are becoming more common.

Rainfall Intensity is also increasing - making it harder for the ground to soak up the rain before it causes problems for you. If you haven't been reading about how climate change will affect us, see some of the evidence[1].

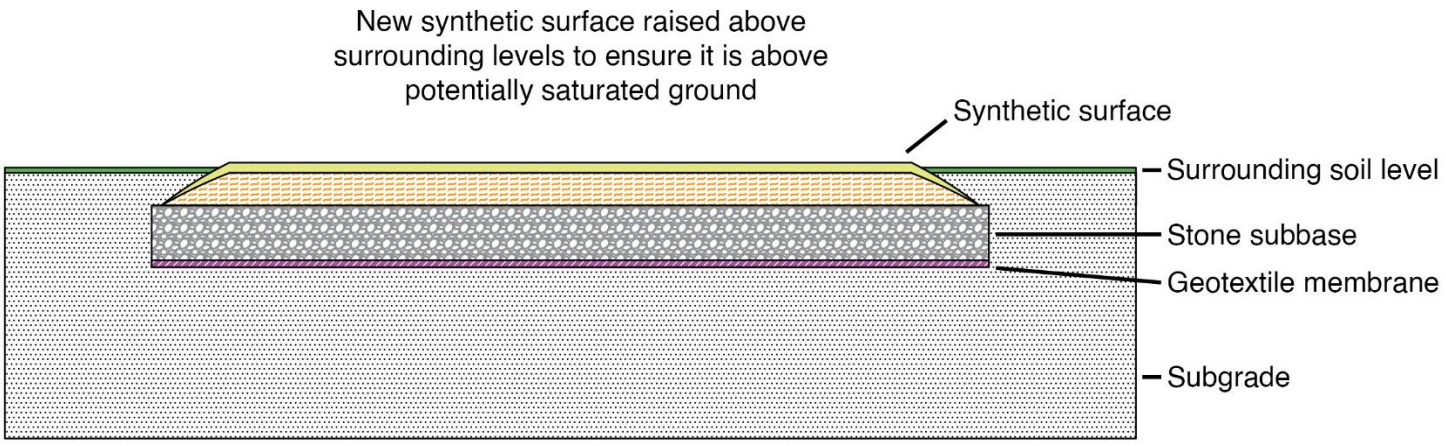
Possible Solutions

Has your surfacing been installed correctly?

It's much cheaper to install a new safety surface without paying attention to the small details that will have a big impact on both the durability of the surface as well as its ability to deal with rain.

Redlynch Leisure take pride in installing our surfacing correctly, so our surfaces are durable, permeable and beautiful.

Playground surfaces need drainage systems so rain does not sit on the surface of your playground. Redlynch Leisure install our permeable surfacing on a proper sub base so that water drains away naturally. What's more we use a geotextile membrane to make sure that water can percolate to the sub-soil underneath for as long as possible (this extends the life and durability of your surfacing).



See diagram above: Sometimes where the whole area is prone to waterlogging and there is nowhere on the site for the water to drain to, we raise the playground surface above the surrounding ground level so that the top surface and paths drain as efficiently as possible and most importantly, the playground surface is usable.

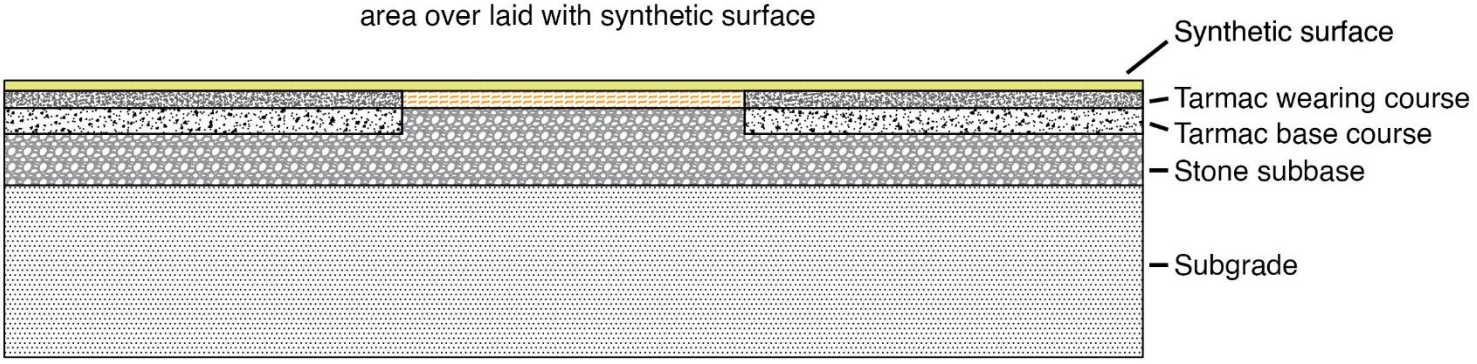
Problems with Surfacing Overlays

A surfacing overlay is where a new surface is laid over an existing surface. These are often a major problem as the cheapest solution is just to lay a new permeable surfacing layer onto the existing surface (often Tarmac or Concrete). This often results in water-logging and durability problems, especially if there are low points in the surface where water puddles.

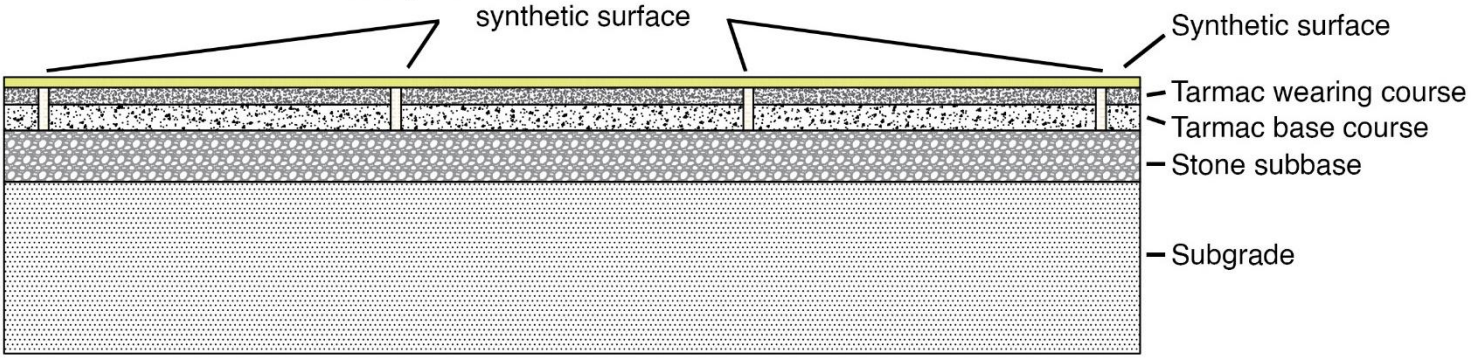
For a surfacing overlay to work properly we must ensure that water can pass through the surface and drain away naturally.

The 2 examples below show how Redlynch Leisure ensure that a surfacing overlay over an impermeable surface like tarmac will be more durable and have fewer water-logging problems.

Area of tarmac holding water removed and built back up with MOT type 1/3 aggregate and a layer of base course wet pour rubber. Entire area over laid with synthetic surface



30mm Holes drilled every 1m through the tarmac wearing course and base course and filled with pea shingle. Entire area over laid with synthetic surface



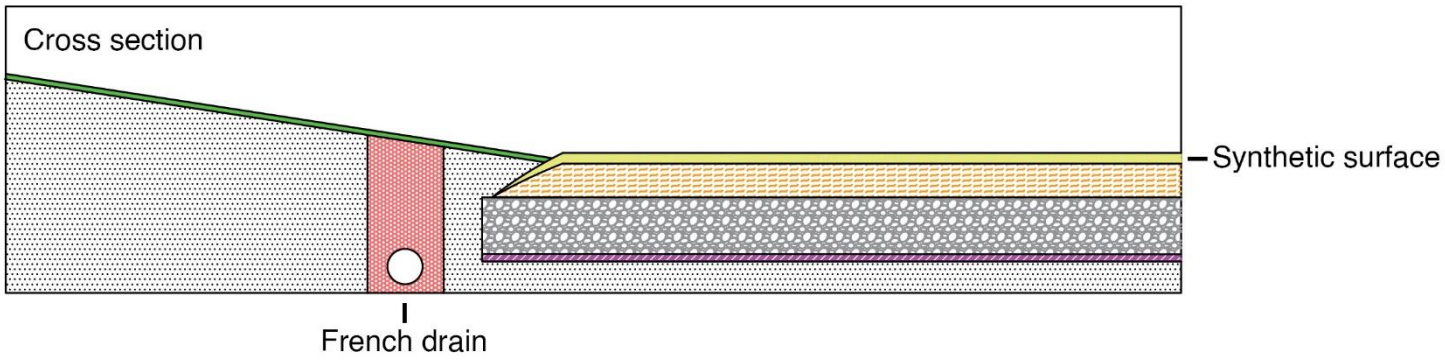
(Please note that the spacing and depth of the drilled holes is estimated by one of our experts and will not necessarily be at 1m intervals.)

Check and Improve Drainage:

- **Slopes:** Water runs downhill! Ensure the playground slopes slightly away from buildings and towards designated drainage areas. This allows water to flow naturally and prevents pooling. Sometimes we install our permeable surfacing higher than the surrounding area to assist with drainage.
- **Clear and Functioning Drains:** Regularly check and clear existing drains of debris to ensure proper water flow. Consider adding additional drains in low-lying areas prone to water accumulation.
- **Channels or Ditches:** Strategically placed channels or ditches can efficiently direct excess water to a safe location, such as a soakaway pit or a rainwater harvesting system (if feasible).

Where surrounding areas drain onto the playground surface, a strategically placed interceptor drain, or swale can help.

Where surrounding areas drain onto the playground, install interceptor drains at the bottoms of the slopes. If this area happens to be at a higher level, the drain can be taken to a lower level



Use Permeable Surfacing on a Proper Sub Base:

- **Permeable Surfacing:** Replace traditional, non-permeable surfaces with options like grass mats, wood chips, or our permeable rubber playground surfacing on a proper sub base. These allow rain water to drain through the ground, reducing surface puddles. This slow release of rainwater is helpful for our environment too, as it is less likely to add to the storm water overflows that contaminate our rivers. By using a Geotextile membrane under the stone sub base (so separating the subsoil from the stone), Redlynch Leisure's surfacing stays permeable and durable for longer. (Please note that grass mats often turn into a muddy mess if the subsoil cannot cope with the amount of rainfall: careful consideration should be given to when they should be used).

Sustainable Solutions:

- **Plants (especially trees) help:** Planting trees and shrubs in your playground helps to create a natural drainage system. Plant root systems help absorb water as well as aid the amount of water that the ground can store. Our rubber mulch tree pits can help incorporate trees into a playground by allowing water to percolate to the tree roots as well as minimising trip hazards.
- **Rain Gardens or Swales:** If you have sufficient space, create shallow, landscaped depressions that collect and slowly release rainwater back into the ground. These can be visually appealing additions to school grounds and offer opportunities for environmental education.
- **Slow down the drainage:** Direct rainfall into water butts, or even better into raised drainage beds. By slowing the rain from reaching drains, there is more chance that more rain will soak into the soil.
- **Sustainable Drainage Systems (SuDS):** These are more holistic sustainable solutions that try to mimic the natural drainage process in an integrated manner. That means the design needs to help rainwater infiltrate into the soil as much as possible and for any excess water to leave the site as slowly as possible (this is termed attenuation). SuDS usually require professional planning but offer a very effective and long-term solution for managing rainwater runoff - please contact us for help (info@relynchleisure.co.uk or call 01249 444 537).

Redlynch Leisure - Here to Help

If you have requirements to improve your outdoor space, please get in touch to see how our expertise can help. We provide a free design and quote service for our surfacing, playground and fitness equipment.
https://www.redlynchleisure.co.uk/contact/

Funding Opportunities

There are a number of different funding options for drainage works, especially in cases were slowing down the flow of drainage water from your school will benefit local waterways:

The Water Restoration Fund

https://www.gov.uk/government/publications/water-restoration-fund-guidance-for-applicants/about-the-water-restoration-fund

Your Water Company

Most water companies fund some projects aiming to reduce flooding or improve water quality. For example, Leicester City recently received £100,000 to deliver SuDS in local schools.

Defra

Surface water & Groundwater Flooding
Improving surface water drainage
Flood and Coastal Resilience

Local Government

Local authority & internal drainage board funding
There are also some “climate resilience” funds.

Further Reading

[Redlynch Leisure]
[Susdrain]
[Wildflower and Wetlands Trust]

Notes

[1] **Weather Data:** The Met Office reports an increase in the number of days with heavy rainfall (https://www.metoffice.gov.uk/about-us/news-and-media/media-centre/weather-and-climate-news/2023/new-research-shows-increasing-frequency-of-extreme-rainfall-events). This includes events exceeding 50mm and those reaching the 95th and 99th percentiles of historical averages (this means more very high rainfall days.

Climate Change: There is irrefutable evidence from IPCC that the atmosphere is getting warmer. A warmer atmosphere holds more moisture, leading to potentially heavier more intense rain.

Climate Change Projections: The Met Office suggests an increase in the intensity of downpours during extreme rainfall events in the UK, potentially by 5-15% per degree of regional warming (https://www.metoffice.gov.uk/about-us/news-and-media/media-centre/weather-and-climate-news/2023/new-research-shows-increasing-frequency-of-extreme-rainfall-events).

Extreme Rainfall Events: The Met Office also indicates a rise in the frequency of very heavy rainfall events. For instance, research suggests extreme rainfall events exceeding 20mm/hr could become four times as frequent by 2080 compared to the 1980s (https://www.metoffice.gov.uk/about-us/news-and-media/media-centre/weather-and-climate-news/2023/new-research-shows-increasing-frequency-of-extreme-rainfall-events).

Climate change is predicted to bring more extreme weather events in general. So while UK winters may be wetter overall, there could still be periods of drought in winter. UK Summers may become hotter and drier, but it is also more likely that the intensity of summer storms will increase.