

# SHIFTING SANDS

By Michael Burns

“The authentic integration of foreground and environment is a delicate balancing act that is reliant on skilled collaboration”

**D**irector Joe Connor's music promo for Ellie Goulding's 'Like A Saviour' sets the singer in a dreamlike desert landscape of rolling sand dunes, and saw DP David Procter BSC take another step in pushing the boundaries of cinematic virtual production (VP) using an LED volume.

"We've seen virtual production used widely for logistical reasons: the expense of travel, sustainability, scheduling, and also for creative control in terms of fantasy landscapes and lighting continuity," says Procter. "However, Joe's visionary concept hinged on creating a landscape where the passage of time, light, weather, and the horizon, could and would all be manipulated."

The cinematographer, an alumnus of the Berlinale Talent Campus, whose longform credits include *Bypass* (2014), the Netflix series *The Innocents* (2018) and Disney+'s *Black Beauty* (2020), has been shooting commercials with Connor for several years, and both "have aligned sensibilities, which always makes for rewarding collaborations," according to Procter.

Producer Fred Bonham Carter, at production company Just Fred, pulled together what Procter describes as, "A passionate and dedicated team, all keen to prove what VP could achieve within the constraints of short form. The aim was to create a grounded aesthetic that felt tactile and organic, somewhat paradoxical to the surreal concept. The allure was a creative approach that not only played to the strengths of VP but explored novel innovation, made possible solely by the exploitation of new technology."

"Joe and I felt that much of what has been achieved with virtual production has a certain look to

it – high contrast, glossy and sometimes betrayed by an artificial cleanliness. We wanted to lean into heat, flare, under-exposure and halation, imperfections that one can subliminally overcorrect when shooting in a controlled environment."

A further desire to avoid the polished tropes of pop promos led to a softer pastel aesthetic. Connor also wanted a naturalistic opening, drawing an audience into the 'real' location, before bending the rules of physics. The promo was shot at RD Studios in West London, with DNEG and Dimension Studio providing the LED volume and virtual production services.

"We wanted bold, graphic compositions, juxtaposed with looser handheld scenes to fluidly capture the dancers," says Procter. "The DNEG and Dimension team created a 5km-square desert landscape in Unreal Engine, complete with a live AI weather system and cloud rendering. We designed a sun path that allowed us to ramp-up the passage of time with a 24-hour cycle lasting just two minutes. The goal was a hybrid timelapse of light movement, with clouds that moved naturally rather than with the usual frenetic motion. This was a fascinating concept in itself, a surreal twist on reality made possible only by VP technology."

Having had previous VP experience, Procter admits he was apprehensive about the ambition of the piece, given the time constraints of a promo schedule.

"The size of our 3D landscape, plus the constant AI weather rendering, demanded unprecedented processing power which was undoubtedly our most

profound challenge," he says. "Joe wanted to push the technology to its absolute limit, and we danced with the devil."

Procter's prep was done remotely while shooting on other projects in Geneva and Istanbul, looking at crude pre-visualised images and designing a lighting plan.

"The creative challenge was to light our set in a way that felt naturally motivated, yet to maintain the ability to shift our ambience and sun angle to match our timelapse aesthetic – from dawn to dusk and into



the night," says Procter. "There is a misconception that the screens light the set for you in virtual production, but this is rarely the case. Aside from CRI issues of the panels themselves, authentic integration of foreground and environment is a delicate balancing act reliant on skilled collaboration."

The virtual set was comprised from an array of ROE Visual BP2.8mm V2 LED Panels in a 48-foot diameter arc with a height of 20-feet, as well as two



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13x16-foot wild walls.

“Sand is the nemesis of all things digital,” says Procter, “So production designer Oliver Hogan devised a circular deck safely that was set back from the screens and raised to avoid seeing the gap between real-world and 3D. Checking this in a 3D pre-vis was invaluable. The sand colour was carefully deliberated, and to help with integration we opted for some foreground contouring that could be easily added or removed.”

No ceiling panels were used; instead, the team opted to rig Ultra-Bounce fabric above the volume to act as a passive sky. “We supplemented this with Robe Forte and Clay Paky Unico moving heads bounced from the ground that could move and animate, enhancing the complexity of light, as if rendered by an organic sky,” says Procter.

The DP chose to shoot on Alexa Mini LF, with a set of Caldwell Chameleon SC Anamorphics. “These 1.8x Anamorphics marry the character of a vintage lens with the performance of modern glass,” he explains. “Although they are S35 lenses on paper, they do cover the LF sensor and lead to increased character around the edges of the frame.”

“Large format Anamorphic is a great choice for virtual production work as it’s easier to achieve focal separation from subject to the volume itself, helping with integration, and avoiding problems with moiré,” he adds. “Our camera package was supplied by Panavision and the lighting was supplied by PixiPixel and Nanlux who generously supported the project.”

“We chose Nanlux Evoke 1200B units as a backlight,” he adds. “We ran these without lenses as this gave the broadest spread of light across our set, with a 120° beam angle and dimming in 0.1% increments, and kelvin control from 2700k up to 6500k. When required, a Nanlux Dyno1200C rigged into an additional 20x12 Ultra-Bounce acted

as a frontal key. An additional Evoke 1200B was used with an Octodome where a more localised beauty-light was required or to act as a catchlight in wide shots.

“We lined the circumference of the volume with Chroma Q Colour Force LED batons which helped wrap around our directional light,” he continues. “All lamps were controlled via DMX through a desk in the hands of our operator/programmer Frankie Shields. As Joe wanted flexibility in our environment, sun path, time-of-day and transition length, we didn’t pre-programme frame-accurate lighting sequences. Instead, we pre-programmed 12 lighting states and transitioned ‘live’ between them, including dimming, colour shift and light direction.”

According to Procter pre-lighting with a camera is essential for virtual production.

“I’m accustomed to pre-lighting with a light meter, but with VP, it’s fundamentally down to how the camera sees, which can differ from human perception,” he says. “As we were pushing the live Unreal Engine rendering to its limits, the use of light cards on the volume itself wasn’t viable. Together with

long-term collaborator, gaffer Sol Saihati, we devised a lighting plan that gave us the versatility we required.”

“We paired our desk operator Frankie with post-vis supervisor Jesse Baber who was able to feed through cues, just seconds ahead of our shifts. While, with more time, the entire lighting design could have been pixel-mapped, this more organic approach allowed for human error and happy accidents, which is often when magic happens in filmmaking.”

Procter says you have to work within virtual production’s limitations, referring to it as “a visual grammar of slow-moving shots.”

“We found that by increasing the frustum size (the area of the virtual world the camera can see) to be wider than our actual focal length we were able to get away with much faster camera moves,” he says. “We chose a Scorpio45 Technocrane to enable elegant sweeping moves, whilst also allowing programmed planes.”

This all paid off and the promo has been well received internationally. “One seasoned director asked which desert we shot in,” says Procter. “So, kudos to the team!”

