

# Technology Stack Version Information

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**Updated: November 22, 2025**

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This document tracks all major package versions used in the GreenScapes AI Next.js application, upgraded to the absolute latest stable versions.

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## Core Framework & Runtime

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### Next.js

- **Version:** 16.0.3
- **Type:** Bleeding Edge / Release Candidate
- **Features:**
  - Turbopack bundler (faster builds)
  - React Server Components
  - App Router
  - Improved performance and optimization
- **Migration Notes:** Updated from earlier versions to leverage Turbopack and latest React features

### React & React-DOM

- **Version:** 19.2.0
  - **Type:** Latest Stable
  - **Features:**
    - Improved React Server Components
    - Enhanced concurrent rendering
    - Better TypeScript support
    - Performance optimizations
  - **Breaking Changes:** None major, smooth upgrade path
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## Styling & UI

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### Tailwind CSS

- **Version:** 4.1.17
- **Type:** Latest Major Version (4.x)
- **Configuration:**
  - Uses @tailwindcss/postcss plugin
  - CSS-first configuration approach
  - Enhanced JIT compilation
- **Key Changes from 3.x:**
  - New PostCSS-based architecture

- Improved performance
- Better tree-shaking
- Simplified configuration
- **PostCSS Plugin:** @tailwindcss/postcss@4.1.17

## Framer Motion

- **Version:** 12.23.24
  - **Features:** Latest animation capabilities for React 19
  - **Usage:** Page transitions, interactive animations
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## TypeScript

### TypeScript

- **Version:** 5.9.3
- **Type:** Latest Stable
- **Features:**
  - Enhanced type inference
  - Better error messages
  - Improved performance
  - Full support for latest React patterns

### Type Definitions

- **@types/node:** 24.10.1 (Latest)
  - **@types/react:** 19.x (React 19 compatible)
  - **@types/react-dom:** 19.x (React 19 compatible)
  - **@types/react-google-recaptcha:** 2.1.9
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## AI & API Integration

### Google Generative AI (Gemini)

- **Version:** @google/generative-ai@0.24.1
- **Models Used:**
  - gemini-1.5-flash - Main content generation
  - text-embedding-004 - Vector embeddings
- **Features:**
  - Landscape visualization generation
  - Property audit reports
  - Quote estimation
  - Smart suggestions
- **API Updates:** Updated service layer for latest SDK syntax

### EmailJS

- **Version:** @emailjs/browser@4.4.1

- **Usage:** Contact form and quote request submissions
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## Database & ORM

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### Prisma

- **Client Version:** 7.0.0 (Latest Major)
  - **Prisma CLI:** 7.0.0
  - **Features:**
    - Type-safe database client
    - Migration system
    - Schema validation
  - **Breaking Changes:** Upgraded from 6.x to 7.0.0
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## Utility Libraries

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### State Management & Utilities

- **lucide-react:** 0.554.0 - Icon library
- **clsx:** 2.1.1 - CSS class composition
- **class-variance-authority:** 0.7.1 - Component variants
- **tailwind-merge:** 3.4.0 - Tailwind class merging

### UI Components

- **react-hot-toast:** 2.6.0 - Toast notifications
- **recharts:** 3.4.1 - Data visualization
- **react-google-recaptcha:** 3.1.0 - reCAPTCHA integration

### Document Processing

- **mammoth:** 1.11.0 - DOCX parsing
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## Build & Development Tools

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### Build Configuration

- **PostCSS:** Configured with Tailwind CSS 4.x plugin
- **Turbopack:** Enabled by default in Next.js 16
- **TypeScript:** Strict mode enabled

### Environment Variables

- **dotenv:** 17.2.3 - Environment configuration
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## Migration Summary

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### Major Upgrades Completed

1. **Next.js:** 14.x → 16.0.3
  - Turbopack integration
  - Improved build performance
  - Enhanced React Server Components
2. **React:** 18.x → 19.2.0
  - React Server Components improvements
  - Better TypeScript support
  - Performance enhancements
3. **Tailwind CSS:** 3.x → 4.1.17
  - New CSS-first configuration
  - PostCSS plugin architecture
  - Improved JIT compilation
  - Better tree-shaking
4. **TypeScript:** 5.6.x → 5.9.3
  - Latest stable release
  - Enhanced type inference
  - Better React 19 support
5. **Prisma:** 6.7.0 → 7.0.0
  - Major version upgrade
  - New features and optimizations

### TypeScript Fixes Applied





1. **Gemini Service** ( `services/geminiService.ts` ):
  - Updated API syntax for `@google/generative-ai@0.24.1`
  - Fixed `generateContent` response handling
  - Updated embedding generation methods
2. **Vector Store** ( `services/vectorStore.ts` ):
  - Fixed `GoogleGenerativeAI` initialization
  - Updated embedding API calls
  - Corrected type definitions

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
## Verification

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### Build Status






-  TypeScript compilation: No errors
-  Production build: Successful
-  All pages pre-rendering: Successful
-  Static optimization: Working

## Route Generation





Route (app)		
	 /	(Static)
	 /about	(Static)
	 /contact	(Static)
	 /quote	(Static)
	 /service-areas	(Static)
	f /locations/[slug]	(Dynamic)
	f /api/contact	(API Route)
	f /api/quote	(API Route)
	f /api/reviews	(API Route)

## Production Readiness

### Performance Optimizations

-  Static page pre-rendering
-  Automatic code splitting
-  Image optimization (Next.js Image)
-  Turbopack fast refresh
-  Tree-shaking with Tailwind 4

### SEO Features

-  Dynamic sitemap generation
-  Robots.txt configuration
-  Meta tags per page
-  Structured data ready

## Resources

### Documentation Links

- [Next.js 16 Documentation](https://nextjs.org/docs) (https://nextjs.org/docs)
- [React 19 Release Notes](https://react.dev/blog) (https://react.dev/blog)
- [Tailwind CSS 4.0 Guide](https://tailwindcss.com/docs) (https://tailwindcss.com/docs)
- [TypeScript 5.9 Release Notes](https://www.typescriptlang.org/docs) (https://www.typescriptlang.org/docs)
- [Gemini API Documentation](https://ai.google.dev/docs) (https://ai.google.dev/docs)

### Migration Guides

- [Tailwind CSS 3.x to 4.x Migration](https://tailwindcss.com/docs/upgrade-guide) (https://tailwindcss.com/docs/upgrade-guide)
- [React 18 to 19 Migration](https://react.dev/blog/2024/04/25/react-19-upgrade-guide) (https://react.dev/blog/2024/04/25/react-19-upgrade-guide)
- [Next.js App Router Migration](https://nextjs.org/docs/app/building-your-application/upgrading) (https://nextjs.org/docs/app/building-your-application/upgrading)



## Update History

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- **November 22, 2025:** Full stack upgrade to latest versions
  - Next.js 16.0.3
  - React 19.2.0
  - Tailwind CSS 4.1.17
  - TypeScript 5.9.3
  - Prisma 7.0.0
  - All dependencies updated to latest stable versions
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## Next Steps

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1. **Testing:** Comprehensive feature testing in development
  2. **Environment Setup:** Configure production environment variables
  3. **Deployment:** Deploy to production hosting (Vercel recommended)
  4. **Monitoring:** Set up error tracking and analytics
  5. **Performance:** Run Lighthouse audits and optimize
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Last Updated: November 22, 2025

Maintained by: GreenScapes AI Development Team