ChainLynx Bikepacking App – Routes

Pre-Release Technical Documentation — November 2025

1. Overview

Routes are the structural backbone of the ChainLynx Bikepacking App. Each route encapsulates maps, GPX data, elevation profiles, and social context — serving as both a navigation and community framework for riders. The Routes module supports offline-first usage, ensuring reliability even in complete signal loss.

2. Concept and Purpose

Concept: Routes define the journey framework. They combine geographic data, points of interest (POIs), trail reports, and user activity into a cohesive experience. Every feature in the ChainLynx ecosystem — Journals, Feed, and Meetups — anchors to a route.

Purpose:
• Provide structured navigation for multi-day bikepacking adventures.
• Enable riders to discover and download verified routes curated by the community.
• Facilitate real-time route-based interaction such as trail reports, live locations, and journals.

3. Route Data Architecture

Design: The route system uses a hybrid data model that combines local GPX parsing with centralized community data storage.

Structure:
• GPX Track: Primary geometry (polyline) with elevation data.
• Metadata: Route name, region, difficulty, distance, elevation gain, and tags.
• POIs: Water sources, campsites, hazards, and resupply points.
• Reports: User-submitted conditions or hazards linked to specific coordinates.
• Linked Content: Journals, photos, and discussions associated with that route.

4. GPX Download and Offline Storage

Functionality: Users can browse, download, and activate routes for full offline use. The GPX file, map tiles, and POI data are cached locally to guarantee usability without connectivity.

Workflow:
1. User selects a route from the Routes Hub.
2. App downloads the GPX file and associated metadata.
3. Offline map tiles are stored on-device (Topo, Terrain, or Satellite layers).
4. Route data becomes available offline, enabling navigation and data logging.

Storage: GPX and metadata are stored in the device's secure app directory. The data syncs periodically when online to fetch updated POIs and reports.

5. Route Activation System

Concept: Once a user downloads a route, they can activate it as their current journey. This "Active Route" state modifies the app's interface to display context-relevant data — map overlays, meetups, and live riders.

Behavior:
• The Map screen and Feed filter automatically to the active route.
• Journal entries and trail reports automatically link to that route.
• Active sessions are saved for resuming later, even offline.

6. Route Discovery and Filtering

The Routes Hub enables users to explore curated and community-submitted routes with rich filtering options.

Filters:
• Continent / Region
• Route Type (Gravel, Mixed, Singletrack)
• Distance and Elevation Range
• Difficulty (Easy / Moderate / Challenging)
• Popularity and Recent Activity

Recommendation Engine: A lightweight local algorithm suggests routes based on previous downloads, terrain preferences, and logged activities — all computed offline for privacy.

7. Community Contributions and Curation

Feature: User-created routes are an essential part of the ChainLynx experience. Riders can record and submit their own GPX files directly through the app.

Workflow:
1. Rider records a ride using the in-app tracker or imports an external GPX file.
2. The app extracts metadata and displays a summary (distance, elevation, POIs).
3. The user can add photos, notes, and route tips before submitting.
4. Submitted routes undergo moderation for quality and safety.
5. Approved routes become part of the public Routes Hub.

Moderation: Automated filters and human reviewers ensure route data integrity, remove duplicates, and validate metadata accuracy.

8. Integration with Journals and Feed

Routes integrate tightly with Journals, Meetups, and the Feed: • Journals — Entries linked to active routes show progress and reflections directly on the map.
• Meetups — Riders on the same route can coordinate rest stops or campsites.
• Feed — Trail reports, media posts, and highlights are automatically tagged by route ID.

This interconnected structure ensures every piece of community data — from posts to AI reports — is geographically and contextually relevant.

9. Recommendation

The Routes system establishes ChainLynx as both a navigation tool and a social discovery platform. Its offline-first design, coupled with user-generated content and robust filtering, ensures the app remains valuable across environments — from urban commutes to remote wilderness expeditions.